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FACILITATING INDEPENDENT LEARNING EARLY IN THE FIRST YEAR OF SCHOOL

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ABSTRACT

This is a study of a) the nature and incidence of independent learning* in new entrant classroom settings and, b) the nature of the teacher-child interactions associated with such independent learning.

Systematic observation was used at school entry and three months later, to identify aspects of independent learning and the associated teacher behaviours. Six categories of child directed acts identified the range of behaviours from which independent learning could be inferred. Each category of teacher behaviour that appeared to facilitate independent learning in children was developed as a "mirror image" of each category of child directed acts. The teacher and four children in two new entrant classes were observed over the whole day for five days during two observation periods, one at the beginning of Term three and the other after 12 weeks. Each class was involved in normal classroom activities that covered the whole curriculum.

The children were engaging in a considerable amount of independent learning on entry to school and three months later. Many facilitative teaching acts occurred in the interactive style that was demonstrated in all aspects of the curriculum. The teachers spent a considerable portion of teaching time assisting children in one-to-one teaching situations and in small groups, encouraging their responses and fostering and supporting independence in their learning. There was some difference observed between teachers in the attention given to different categories and in the facilitative behaviour occurring in one-to-one interactions and small group teaching interactions.

A way of teaching emerges that differs from a teaching agenda determined by didactic, traditional instruction. The two teachers were deemed to be using the children's agenda

*Defined as "knowing how to generate and direct the processes of learning..." (see p.3).
to foster and support them in independent learning in the various curriculum areas. Some of the practical and philosophical features of the New Zealand education system that may contribute to this particular style of teaching are discussed.

The theories of learning and teaching deriving from this study place a value on independent learning (as here defined) in new entrant children and on the teacher's role in providing opportunities for it to develop. Independent learning a) ensures the continuation of learning at times when the teacher is directly engaged with other children, and b) derives from a teacher expectation that children will be able to actively process ideas and make some decisions about their learning. It engenders a power in children that sustains the momentum of learning.
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INDEPENDENT LEARNING: AN INTRODUCTION

Nau te rourou
Naku te rourou
Ka ngawari ake ngamahi

With your expertise and mine
the task will be easier

Nicky was sewing a gingerbread man shape drawn with marker pen on hessian material. She was going to stitch around it with wool. Nicky reached for a ball of yellow wool and threaded her needle with the loose end. She then cut a long piece of wool off the ball, pulled it until the two ends were together and tied a knot. She began sewing by pushing the needle in the material and pulling the attached wool through. Then Nicky noticed that the knot was on the wrong side of the hessian (i.e., on the front). She looked at the other side, then turned back to where the knot was and looked carefully at it. Picking up the scissors she cut the knot off and pulled the wool out. Nicky tied another knot and started sewing again, carefully pushing the needle up from underneath this time. After pulling the wool through she checked to see that the knot was on the correct side, then satisfied, carried on sewing.

Five-year-old Nicky was engaging in independent behaviour. There are many different ways in which children may indicate they are generating and controlling their learning. In this instance Nicky, working alone, spontaneously resolved a problem. Initially she made a mistake which she noticed, and then, by her own resources she sorted out the problem and solved it successfully. Her behaviour shows that she thought it through by herself, indicating a degree of cognitive engagement. Nicky was therefore working on her own learning.
In another example Anna's behaviour indicates the way she is attempting to make links for herself by relating information and discovering similarities. The teacher is helping her to understand the difference between what she had noticed from her knowledge of a previously known word and the new word.

Anna was composing and writing a story to go with a picture she had drawn about being scared. Anna had written the word 'we' herself. The teacher was helping with the next word 'were' which she had written for her to copy.

Anna: Maybe you wrote 'we' there. [pointing to the letters 'we' in 'were']
Teacher: No, no! That belongs there. I didn't write 'we'. 'Were', the beginning looks like 'we' doesn't it? It's longer. It's got other bits added. That makes it say 'were'.
Anna: Ohhh! Oh, I thought...
Teacher: If we only wrote that much [covered final 're'] what would it say?
Anna: 'We'.
Teacher: Yes. [uncovered rest of the word] But it's a longer word.
Anna: 'We' and 'were'. That's... that's got 'we'... you see... in it. [pointing to 'were']
Teacher: It has. Yes. It certainly doesn't say 'we' any more, does it? It says 'were'.
Anna: Mmmm.

(5.3 years)

Independent learners know how to learn and are able to take their learning further. As a result of their self-generated and self-directed actions their learning becomes more effective. They develop generic learning competencies and so may, it has been suggested (Bruner, 1973), increase their power over their own learning as further learning is generated. Their opportunities for learning are enhanced as they gain greater control over all types of learning.

To know and accept that young children entering school are able to engage in independent learning (and thus contribute to their learning) could be an important step towards ensuring that it will happen. By looking closely at children's early encounters with school learning, it may be possible to recognize independent learning when it occurs and to characterize some of the essential qualities involved. It may also be possible to identify the kinds of opportunities that are necessary for promoting and supporting such learning.
What is independent learning?

There has been a degree of vagueness about the notion of independent learning. The term "independent" occurs frequently in educational writing but the word and its derivations appear to be used in a variety of ways. Independence has been described by some researchers as simply working without adult supervision (Bennett, Desforges, Cockburn & Wilkinson, 1984; Brailsford, 1985; Galton, Simon & Croll, 1980), and by others as acting independently of adults (Glynn, 1981), or not depending on instruction (McNaughton, 1985). For Ferreiro and Teberosky (1982) independent learners "can comprehend the production mechanism of knowledge and consequently be creators of knowledge" (p.18). Central to independent learning in this research is the question of the nature of the contribution that children make to their learning (Clay, 1991a) and to the cognitive processes being developed (Wertsch, McNamee, McLane & Budwig, 1980).

One can explore ways in which children may operate when they are learning how to learn for themselves by adopting a view of children as constructive learners who may generate and extend their own learning. Within such a constructive framework, independent learning can be defined as:

*knowing how to generate and direct the processes of learning by working on grouping things together and categorizing them, by linking new information to what is already known, and by resolving inconsistencies while constantly altering and reorganizing ideas as experiences increase.*

There is a contribution of the teacher to this "knowing" process. In the school setting an essential facilitating component in children's independent learning concerns the way the teacher fosters learning and the nature of classroom management that provides the opportunity for independent learning.

The study of independent learning may lead to an understanding of the way young learners move to building cognitive competencies and constructing some "inner generating system" (Clay, 1991b, p.42) that allows them to further their learning by their own efforts. These mental activities generated by children are unseen processes. Hence the nature of independent learning, like the concept of higher order thinking discussed by Resnick (1987), is difficult to explain precisely. However, it may be possible to observe children engaging in certain kinds of behaviours that indicate that independent learning is taking place. The idea of inferring inner processing from behaviour may be illustrated from two examples. Resnick (1987) suggested that higher order thinking can be recognized when it occurs. For example, from various practical problem-solving tasks in
mathematics, it can be inferred that children who are regulating their own understanding of procedures, checking for consistency and attempting to relate what is known to new material are "constructing meaning", that is, engaging in interpretive work, rather than in mechanical manipulations. In Reading Recovery (Clay, 1993), an early intervention programme for young readers, inferences are made about the use of nonobservable strategies from careful observation of the child's responses in reading. Described by Clay, and inferred from text reading behaviour such as, for example, noticing and correcting errors, is a range of "in-the-head" strategies developed by readers who are involved in searching, monitoring and self-correcting, which form "a self-extending system of strategies" (1991a, p.3).

In the matter of independent learning, it could be inferred from observed behaviour that children may, by their own activity, be generating and directing some of the processes involved in learning. Evidence of such active processing might, therefore, be gathered by identifying specific behaviours which are thought to indicate that there is an opportunity for children to learn more for themselves.

The brief episodes of Nicky sewing (p.1) and Anna and the teacher talking about writing (p.2), provide illustrations of such activity. The wide range of verbal and nonverbal behaviours that could indicate independent learning, would probably include hypotheses, alternatives, inventions and solutions that have both arisen from children's own theories and have led to changes in these theories. Children could be building individual thinking power, and enhancing basic cognitive abilities.

Behavioural manifestations of features of independent learning such as showing relationships, checking on oneself, attending to errors, trying and testing, working at difficulties and rehearsing and repeating (see pp.83 to 95) indicate that the child is learning how to learn. The child then is likely to be able to generate further learning. Looking for independent behaviour as children engage in activities and interactions in the school setting may provide some insights into the way children actively contribute to their own learning.

Why independent learning is of interest

The argument being explored in this study is not that all children's learning should be independent, but that if increasing proportions of children's early learning were undertaken from this perspective, there would be benefits. Children might be able to
increase their learning power if they were oriented towards making some decisions about their learning, and if a proportion of learning opportunities arose from situations in which they were able to generate and direct their activities. By way of contrast, situations in which children rely solely on didactically delivered instruction from the teacher would appear to create dependence and limit opportunities for learning. Glynn (1981) claimed that independent learning in classrooms can only occur when there are sufficient opportunities to engage in academic behaviours outside the direct control of teachers.

Improved education is an important issue. Schools have been given the task of enhancing academic learning. For the educational enterprise to be successful, schools have a responsibility to enhance learning of the highest quality across the whole curriculum. The challenge of improving the effectiveness of early education and promoting valuable learning experiences in schools calls for continued attention to children's active role in learning. It is essential to ensure that each child gets the best start possible. Bloom (1964) suggested that early success leads to continuing success and that early failures are multiplied, stating, "early achievement in school has a powerful effect on later achievement" (p.41). If children are independent learners who know how to learn, and the environment is suitably supportive, they can get many opportunities to engage in powerful learning experiences. Such active, individual effort may lead them to be able to further their learning. It allows for going beyond teaching (McNaughton, 1985).

The active involvement of most children in some of their own learning is alleged to be a feature of learning in early childhood (DeLoache & Brown, 1987). By arranging for the availability, within school, of some learning opportunities that capitalize on children's prior learning experiences and that begin with children's competencies, teachers would provide for them to continue with some of their learning. Clark (1991) has argued that such a provision is similar to and consistent with the way in which they were learning in their preschool years. Such continuity of learning experiences could facilitate the transition to formal schooling and the continued development of independent learning.

Learning opportunities which involve active processing of ideas could, according to Glynn (1984), enable children to be more responsive to the school system, and to gain more from it. Being able early in formal education, to adopt a flexible problem-solving approach to new situations, tasks and activities should lead to effective approaches to new learning, assuming the opportunities are there. The sequence should be right and the meanings are likely to be sensible to the child, because the child is constructing them. This does not imply only consistently correct responding, for integral to having the confidence to initiate activity and take risks, will be the generation of errors. Indeed,
working constructively on errors could provide opportunities for independent solving (Clay, 1991a).

Clay (1980) suggested that the power from making one's own statement, and getting better at it, is self-reinforcing. When learning is under the control of the child, special inducements or extrinsic reinforcement are not required because such learning supplies its own reward and its own satisfaction (Glynn, 1981). Knowing how best to work on an appropriately selected task or the solving of a problem provides self-reinforcement and additional reinforcement may be superfluous or even restricting (ibid).

All children in a class should be helped by facilitation of independent learning. For example, more self-sufficient children should be able to explore some activities themselves and the teacher freed to foster similar learning with those children needing extra attention because they have had less opportunity or incentive for such learning prior to school. If the differences between children are likely to be greater at this time than at any other (Clay, 1985b), focussing on each individual child in ways that encourage independent learning should provide a setting for maximum learning in classes. Being able to manage school programmes to reach individual children and then to deal with them in ways that foster independence should allow the teacher to meet more effectively the wide range of development levels that exist in first classes. Clay (1991a) argued that working more intensively in the ways described above with the low progress children, and those needing guidance in particular areas, provides individual assistance and support that is both effective and efficient.

Change in learning over time should be facilitated because, if the teacher were effectively responding to each child, by adapting and adjusting their teaching to the individual’s particular responses, leading to higher levels of operating (Vygotsky, 1978), it is possible that the child could be developing generic knowledge about how to learn. For, it has been argued, and shown (Bruner, 1973; Clay, 1991a; Glynn, 1981), that as the child works on different kinds of information, generic competencies or facilitating interrelationships that power subsequent learning are constructed.

Increasing independent learning opportunities should also mean that children who learn how to learn within school will be able to continue to learn for themselves in and out of school. Iran-Nejad (1990) argued that resourceful learners are very adaptive and able to use their "dynamic and active self-regulating abilities", in order to learn effectively in different environments (p.594). For Glynn (1984), the significance of independent learning is that it allows children to control some of their own learning which results in strong generalization into novel contexts, of what is learned. Guthrie (1985) claimed the
impetus for continuing to acquire new knowledge outside school comes from children's self-initiated and self-guided learning that enables them in Bruner's (1966a) terms "to develop a decent... and a proper confidence in their ability to operate independently" (p.96).

The advantages of taking opportunities for engaging in some independent learning discussed in the previous section suggest that such activity is capable of enhancing the quality of children's learning. What then does this imply for independent learning in the beginner school context?

**Independent learning and the school beginner**

Independent learning is frequently referred to as being something which comes later in children's development (Holdaway, 1984), and so is not considered by those holding such a view to be appropriate for early school learning. As well, young preschool children have been thought to be unable to use strategies to problem-solve (DeLoache & Brown, 1987). Traditional views of education and schooling have held that, the younger the children, the more dependent they will be on the support of adults and other children. Recent literature, however, provides many examples of young children's competence, and this has led to revised views (Cazden, 1991; DeLoache & Brown, 1987; Donaldson, 1978) of what was previously believed. The young child is now seen by many as an active processor capable of selecting, organizing and utilizing information from the environment and from interchanges with others. The child is learning how to learn. Therefore, it could be expected, from the evidence described in the following paragraph, that such activity could occur in children's initial encounters with learning in school.

Some theoretical and research support for the early existence of independent learning comes from the area of reading acquisition. According to Clay (1991a), even novice readers are able to demonstrate and gain a degree of independence in reading appropriate texts. There is, however, another sense in which children become independent. Clay's theoretical perspective is that children build up "a system of behaviours which expands itself, i.e., a self-extending system," that allows them with minimal teacher help to become better readers every time they read (p.199). Specific data on independent behaviour is provided by McNaughton (1987). In studies of early literacy behaviour, he observed evidence of independence in the form of independent problem solving on text in the reading behaviour of good readers, after some teaching in school. Although this support comes from literacy learning, it could be expected that
such independent activity may be evident in other areas of the curriculum. Whether this is so will be one of the areas of inquiry for this study.

Children may vary in their demonstration of independent learning. Some children may have had fewer opportunities for active (school style) learning prior to school and may not generate their own learning in the school setting. Although the early competence of many young children is impressive, DeLoache and Brown (1987) claimed that a great deal of difficulty may be experienced in harnessing their natural tendencies as active learners to external demands such as to the form of learning required in schools. This could imply that the programme offered by schools may not be appropriately designed for those entering it. Of considerable importance may be receptiveness to the differences among children, and the kind of learning experiences available. Clark (1991) also suggested that there are a number of conflicts facing children as they begin school including a change in the notion of “work” and “play”. Regardless of the programme that school offers however, competent children can be expected to continue to be active learners. The other children may not or perhaps will not be constructive learners in the school setting, unless guided to continue, or helped in different ways to begin to engage in such learning (Brailsford, 1985; Ferreiro and Teberosky, 1982). This aspect is another for inquiry in this study.

Teaching learning interactions

Integral to the provision of independent learning opportunities from the earliest days at school is the view that learning is something the child does, while the teacher arranges for that child to continue to learn how to learn and thus be able to extend his or her learning. A significant link to the ways in which children can take their learning further is in the interactions that occur as teachers observe and interact with learners engaged in tasks and activities. According to Clay (1991a) and Wood (1988), allowing freedom for children to explore and learn on their own, and avoiding limiting their scope for engaging in such learning, can maximise effective cognitive development. But this is not always sufficient. Recent evidence (Rogoff, 1990; Wood, 1988), about children’s early learning suggested that attention must be given to the contribution of the school environment, in particular to the place of quality teaching in interactions for enhancing children’s opportunities to gain more independent control.

Changing interactions between teacher and child allow for children to take increasing responsibility for their learning (Mc Naughton, 1987). For this to happen, Clay (1991a)
suggested, requires teachers to develop a responsiveness to the child's initiatives when creating learning contexts. Teachers need to be sensitive and perceptive observers of what children can do, and able according to Rogoff (1990), to respond to their need for assistance or for greater autonomy. Effective interactions are those that achieve a situation for learning that is both challenging and supportive, and that adjust to the child's developing understanding.

As well as effective interactions with teachers, Cazden (1988a) and Tudge (1990) claimed that the opportunity to interact with peers may, in turn, provide additional situations that foster a child's own learning. The activities that children engage in with others in the classroom can allow for a range of varied interchanges. To provide best for such opportunities, it is claimed (Dyson & Freedman, 1990), that schools need to be very social places where there are ample opportunities for children and teachers to interact with one another. A further aspect of this investigation will be the context for learning available to children.

It appears that most children readily become effective learners in the real-world situations of early childhood. For example, Clay (1991a) has claimed they have already constructed self-extending systems. Clay described two cognitive systems preschoolers have built, one which generates and extends children's control over language, and one which allows them to make sense of the world. Iran-Nejad (1990) made a similar point when he concluded that in order for children to continue learning successfully, school learning contexts "must be arranged in such a way that the dynamic or spontaneous learning approaches that worked so well for children before school continue to work for them during school" (p.594).

Facilitating independent learning in the first year of school would appear to involve teachers identifying and then capitalizing on children's existing cognitive systems and increasing the opportunities for them to build an inner generating system to power all facets of learning. It should then allow children to function as resourceful and adept learners who know how to learn and who can therefore further their own learning.
The purpose of the study

This research was characterized by a theoretical view that considers the effective child learner as an active constructor of his or her progress. The research was concerned with the nature of independent learning in early schooling and the contribution of the school environment to such learning. The research also explored how teachers of new entrants facilitate a child's development as an independent learner. The challenge was to discover what occurs.

The research questions

The research questions concerned whether and how independent learning could be identified in the first year of instruction.

The first research question asked,

- What is the nature of independent learning? How might this be observed in new entrant classrooms?

The second question,

- To what extent did children engage in the activities suggested by the definition?

The third question,

- Is independent learning associated with particular classroom factors? For example, are there teaching moves associated with an increase or decrease of independent learning? Do there appear to be different opportunities in different classrooms?

Thus the focus of the research was on devising a way of identifying and explaining behaviour that might characterize independent learning in classrooms of young school beginners. It was also concerned with exploring individual teaching-learning interactions to discover how teachers effectively promote and support independent learning.
CHAPTER TWO

KEY ISSUES IN INDEPENDENT LEARNING

When asking whether, and how, children engage in independent learning in school, consideration needs to be given both to the ways in which children learn and the kind of instruction that teachers provide to facilitate learning. The review in this chapter presents some key issues associated with independent learning in school, prefaced by a theoretical framework for learning and teaching. Five themes arising from the literature are discussed and the implications for studying independent learning identified.

This and the next chapter are presented in tandem. Chapter Three concerns the observation of independent learning and how it can be described and identified in the first year classroom.

THEORETICAL PERSPECTIVES ON LEARNING AND TEACHING

Children's development as thinkers and learners has been a focus of developmental psychology in recent decades. Theories have been formulated to explain the young child's learning processes with a major role being given to the achievement of children. Over the last 15 years, however, emphasis has shifted from an almost exclusive focus on the child working in isolation with cognitive development considered a "solitary endeavour" (Rogoff, 1990, p. vii). Bruner and Haste (1987) have spoken of "the quiet revolution that has taken place in developmental psychology" (p.1). This revolution has involved recognition of the significance of the responsive social context through which children are learning to make sense of the world around them. The new perspective of learning is one of assisted or collaborative venture.

Major insights into this new perspective on learning and teaching derive in part from the work of Piaget, Vygotsky and Bruner. While all recognize that from an early stage children engage in the active construction and reconstruction of much of their own
learning and development, there are some differences in their various theories (Rogoff, 1990; Wood, 1988). These differences have implications for the concept of independent learning and for how such learning may be facilitated in the school setting.

Piaget (in observations of his own children and his work in genetic epistemology) set out to discover what children could do in learning and what they actually did. In explaining his theory of the development of intellectual structures as a dynamic process of adaptive interaction between the child and the environment, Piaget (1977) fostered an awareness of the young child as an active learner. Some of the early investigations of Piaget (1954) which coincided with his initial theorizing about stages of children’s thinking (preoperational through to formal thinking) were in aspects of science, mathematics, geometry, and natural logic and covered an age range part of which included young children. In investigating the nature of the knowledge they had in these areas he initially concluded (Piaget, 1971) that children learned to understand aspects of the world through their own actions and according to largely genetically determined sequences of levels of thinking and understanding.

Critique of Piaget’s constructivist theory arises from the apparent emphasis in his model on the child as a lone scientist mastering the world. Wood (1988) suggests that, for example, Piaget’s perspective of the individual child’s competence and development omits the importance of co-operative activity, and that “adults, social interaction and communication play a far more formative role in the development of children’s thinking and learning than his theory allows” (p.15). Piaget was insistent at an early stage of his theorizing about intellectual development that it was the child’s mainly unassisted activities that created intellectual competence. Subsequently, after Barbel Inhelder reported at a 1956 UNESCO Child Development Conference (no reference available) on the effects of Piaget’s “clinical method” on some children’s movement through his stages of cognitive development, he acknowledged (Piaget, 1971) the possibility of a child learning to understand his world better and quicker in the company of a skilled clinician asking a special kind of probing question about that understanding. This subtle change implies an inquiring adult who creates “opportunities” through challenges appropriate to the child’s stage of development. Although Piaget had little to say about the education of children in school, Inhelder, Sinclair and Bovet (1974) and Duckworth (1979) have studied ways of translating Piaget’s clinical method into a method for accelerating learning. Since Piaget’s theory is not one of teaching, educators have had to derive their own implications from his theory.
Vygotsky's (1978) theory focuses on the way social interaction with others can mediate and stimulate the child's development. He emphasized the notion of the relationship between individual development and the child operating in a shared social context, arguing that learning is primarily a social process. It is Vygotsky's concept of the "zone of proximal development" (the ZPD hereafter) that has considerable theoretical importance. To use his words, "the zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p.86). It is the ZPD that Vygotsky considered to be the area in which learning takes place and to be crucial as a context for cognitive development. The child can be helped or guided to reach a higher, more conscious, more reflective level of functioning through the ZPD. "Thus", Vygotsky stated, "the notion of a zone of proximal development enables us to propound a new formula, namely that the only 'good learning' is that which is in advance of development" (p.89).

Tudge (1990) contended that the ZPD must be considered in its theoretical context. He stated that "Failure to see the zone and the theory as a whole means that it is difficult to differentiate Vygotsky's concept from any instructional technique that systematically leads children, with the help of an adult, through a number of steps in the process of learning some set of skills" (p.156). The depth of the theory centres on the notion that children's participation in activities supported by skilled assistance, allows them to internalize the tools for thinking and subsequently to approach independently the learning with which they were initially supported. From shared and assisted activity the child is able to construct some "inner generating system" leading to the child being able, subsequently, to initiate and manage such learning. There is gradual movement from interspsychic to intrapsychic processing as the child engages alone in tasks that previously required assistance.

While instruction is placed at the centre of development, nowhere in Vygotsky's writings is there a detailed explanation of exactly what the adult expert does to mediate the child's engagement in activities so the child gains consciousness and control. Bruner's work, encompassing the active constructive child and the adult's role in scaffolding novel learning, creates a link between Vygotsky's theory of learning and how effective teaching might be carried out in the school setting.

In studies of thinking and learning Bruner (1961) confirmed the child's active role in the learning process. He described this as an individual constructing knowledge by taking input from the environment and organizing it in a meaningful way. Bruner (1960 & 1980)
theorized that as children work on different kinds of information they "construct generic competencies or facilitating inter-relationships" that serve to power subsequent learning. In his "Toward a Theory of Instruction" (1966a) he rephrased his ideas on the effects of children's self-initiated and self-guided learning in terms of enabling them to develop a real confidence in their ability to operate independently.

Within a framework of seeking to understand how children learn and how they can be helped to learn in school, Bruner (1966a) drew attention to teacher assistance as an important part of the learning experience. Among a number of assumptions underlying his theory, is his statement that "intellectual development depends upon a systematic and contingent interaction between a tutor and a learner" (p.189). This should not be taken to mean that the direction of the interaction is necessarily coming from the teacher. Bruner stressed the need for opportunities which allowed an approach to learning how to learn to be developed. He argued that "learning should not only take [the child] somewhere; it should allow [the child] later to go further more easily" (1960, p.17).

Evident in Bruner’s work is a notion central to Vygotsky’s theory; that children not only internalize how to carry out specific tasks but that they also internalize the instructional process. In order to find out what makes it possible for a conscious level of functioning to be accessed by the child, Wood, Bruner and Ross (1976) explored a notion implicit in Vygotsky’s theory, of a kind of scaffolding being erected by the teacher for the learner. This metaphor was used to characterize ways teachers can assist children’s learning by structuring children’s involvement in learning situations through interactional support. They described a scaffold as a "process that enables a child or novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts" (p. 90). The expert shares or facilitates the problem solving of any new or difficult parts of the activity and gradually the child takes over more of the task, thus sharing responsibility for producing a complete performance. As the child demonstrates more independent control of the task, the scaffold is gradually withdrawn. This process is a continuing one. The tutor keeps leading the child into new areas of constructive, independent activity remaining, as Bruner (1986) put it, "forever on the growing edge of the child's competence" (p. 77) but continually stepping back as the child achieves control. Bruner described how, in this “negotiable transaction ” (p. 76) from the more to the less competent, the child is achieving consciousness.

These theories about how children are learning how to learn and the place of teaching are of particular importance when considering independent learning in school. However, Wood’s (1988) caution about attributing too much to the effects of teaching and overlooking what must be acknowledged as the child’s achievement, a point stressed by
Piaget, is important. Because independent learning concerns the contribution of the child to his or her learning and to the cognitive processes associated with it, the learning child must be the central focus of this study. Nevertheless, whilst the characteristics of both learners and contexts are important in determining what takes place, it is the nature of the interaction between learners and teachers in the school environment that is seen by Bruner and others (see above) to be of particular significance for promoting independent learning. In order to define and conceptualize independent learning and its relationship to teaching, and to identify the implications for studying the concept in classrooms, the exploration of issues that follows will focus on how independent learning can be thought about in school.

Five themes have been distilled from the literature, each containing an issue central to the concept of independent learning in school. The themes in which the issues occur are: (a) children learning, (b) teachers and teaching, (c) the classroom setting, (d) child initiated and teacher initiated learning, and (e) transition to school.

**ISSUES IN CHILDREN LEARNING**

Children enter school to continue learning rather than to begin. This raises the issue of how children go about learning early in school. Given the complexity of learning, how can children learn most effectively in school?

Two different views about the nature of children's learning have dominated the literature. On the one hand there is the perception of the child as a receiver of knowledge. The other view is of the child as a learner who is actively constructing his or her own knowledge.

**THE CHILD AS A RECEIVER OF KNOWLEDGE**

According to this view the young child is a relatively passive learner in a learning environment that is controlled by the teacher. In this perspective, that might be termed a "traditionalist" (although according to Wells, 1986, it has not yet gone out of fashion) view
of learning, the child is considered more a receiver than a constructor of knowledge. The direct transfer of knowledge is implied. The child has a non-initiating, receptive role in learning. According to Gagne (1965), learning is dependent primarily on the acquisition of necessary skills and associations leading to the acquiring of knowledge. The teacher controls the introduction of new information and an ordered sequence of skills by organizing both information and skills according to levels of difficulty. Simple associations are built up into more complex configurations (Rosenshine, 1987). Learning from such a viewpoint arises solely from the prior experiences a child has had. What the child learns is added to what is already known, rather akin to building a tower of blocks (Tagatz, 1976). This position implies that the learning of the child is controlled, as Tagatz puts it, to assure that "the learner has the 'right' experiences and will therefore make the 'right' responses" (p.76).

Cazden (1991), in challenging this view of learning, characterized it as that of "inscription on an inert blank slate by means of the learner's practice and the culture's reinforcement" (p.418). It can be argued that when children's activity is not the result of making their own contributions through their own actions, but is the result of teacher prescription of what they should learn and under what conditions they will recall it, children are likely to believe that the control of their learning lies outside their efforts. They may learn that their task is not to initiate and therefore they are not in these circumstances intellectually active learners. This view of learning has been rejected by cognitive developmental psychologists according to Hughes (1989), Resnick (1989) and Wells (1986), for it is not considered adequate to account for the active involvement of children as constructive learners.

THE CHILD AS A CONSTRUCTOR OF KNOWLEDGE

In contrast to the above is the view that most of children's learning arises from their own self-initiated interactions with their world. From their youngest days they explore their environment intensively and purposefully, seeking to understand the things around them by observing, experimenting, investigating and questioning. Donaldson (1978) described the inquiring and striving of the young child as "wanting to know" and "wanting to do" (p.86). Children actively interacting with their environment in this way, are constructing understanding of their environment and experiences. They work persistently on problems, attempting to sort out the complexity, to get things to fit together, to find solutions, leading to the child being what Bruner (1973) has called "a 'natural' problem
solver in his own right" (p.157). By endeavouring to relate the unfamiliar to what the child already knows, he or she is seen to be acquiring strategies for processing information and for dealing with new situations. In Smith's terms, children learn by "testing hypotheses and evaluating feedback" (1988, p.182).

The view of children as active learners participating in their own learning, is supported by a number of different sources. Early advocacy came from the work of the British psychologist Susan Isaacs (1930) using systematic observations of children learning through exploring and discovering. For Isaacs, engaging with the real world within the school setting played a significant role in providing an extension of early learning opportunities. Her work, and that of Piaget, Bruner and Vygotsky, suggests that they agree about the importance of the child's contribution to learning. They all perceive children's learning as a process of construction, in which information extracted from the environment is given meaning. Children create a mental picture of the world around them through their experiences. There is a considerable difference between the notion of the young learner as the receiver of knowledge that comes from outside and the learner as a creator and constructor of knowledge. Emphasis on the individual child has dominated perspectives on cognitive development with a research focus on the child's individual efforts in the process of learning. Ferreiro and Teberosky (1982) refer to "thinking children" (p.12). These are active learners; children who contribute actively to their learning, working on answering the questions arising in the world around them, obtaining knowledge primarily through their own activity. Studies have shown that when children are engaged in interactive processes, their learning is enhanced (Brown & Campione, 1981; Karmiloff-Smith, 1984; Rogoff, 1982).

The view of children as active constructors of their knowledge and thus the concept of the "active learner", is now well accepted. Clearly, learning contexts and the circumstances that surround learning influence what occurs in important ways. This leads to a consideration of the effect of environments on a child's learning and cognitive development.

**Language learning**

If one looks closely at natural situations outside the school, optimum conditions for learning can be identified. Language provides an example, for oral language learning is characterized by the participation of children in the process of learning to talk. Almost all children learn to become competent first language users in a natural environment by
exposure to the constant use of language. In such a linguistic environment, the children initially produce "inventions" that change as they develop and modify their own vocabulary (Bloom, 1964), learn a complex set of grammatical rules (Brown, 1973), and learn to generate many other sentences different in context from the original sentence they controlled (Bruner, 1962). As they construct their own language in this way, children develop an understanding of the world and a resource for communicating to others. This learning is an interactive process taking place in a situational context where there is a systematic correspondence between what children hear and what is taking place around them (Halliday, 1975).

The developmental changes which occur in the early mastery of spoken language are considerable. As described by Brown (1973) they move from the simple to the complex. Children produce in the early stages their own, unique language. This is rapidly modified so that by school entry most children's speech approximates that of the adults in their community (Cazden, 1972). Complex learning has taken place and this successful learning has been accomplished without a curriculum, without formal instruction, without teacher control, and without a sequence provided by programmed materials. It has taken place in an environment where there are opportunities for interactions, where approximations are accepted, where children regulate and monitor their own learning and proceed at their own pace. Children have been engaged in actively constructing their own language processes.

Learning in the school environment

If children learn to use language so effortlessly, one can then ask what this implies for all other learning, in particular for learning in school. Beginning school is a major new experience for young children. Into this novel and complex place for learning, they bring a variety of experiences from a wide variety of different situations. The critical importance of transitions between contexts in children's lives has been emphasized by Bronfenbrenner (1979) who sees children's first encounters in this educational context having considerable influence on their subsequent learning. Clay (1985a) has suggested that "at the beginning of schooling, when children enter formal instruction, the foundations of all their future interactions with education are being laid" (p.48). The early learning experiences in this academic context should therefore provide optimum support and challenge for children's continuing cognitive development.
Considerable learning has already been achieved by children as preschoolers. For much of this learning their efforts have been directed towards constructing a theory in order to make sense of the world and "conducting experiments" to test this theory (Smith, 1988, p.182). Individual children learn for themselves through their own devices but also in interaction with an environment rich with models. They have been actively involved in developing their own learning processes. Transition to school should provide opportunities to continue this situation, to foster further the kind of active learning already underway, and build on the strategies already developed in the preschool social context. Wells (1986) suggested it is not to be expected that on entering school the child's strategies should change immediately or that the kind of adult support that most helps the child alters. It should be possible for the school environment to promote and extend the kind of learning that occurs so effectively prior to school.

ISSUES IN TEACHERS TEACHING

How learning might be best accomplished in school concerns the issue of how teachers should manage instruction. The concept of the child as an active learner leads to a consideration of the importance of opportunities for learning and thus to the role of the teacher in providing these. Cazden (1991) asked, "how can the active child best be helped by the active teacher?" (p. 420). An active learner is responsible for taking some of the initiatives for, and hence for generating, some of his or her own learning. What the learner can do may be facilitated or inhibited by what teachers do and by the opportunities they provide.

There is a considerable divergence of view about how teaching relates to learning and thus about teaching approaches conducive to learning and cognitive development. At the risk of oversimplifying the matter it may be said that teaching is either a matter of (a) providing didactic instruction, (b) providing a rich environment, or (c) guiding and facilitating learning.
PROVIDING DIDACTIC INSTRUCTION

One view of teaching defines the teacher's role as that of controlling the learning situation and prespecifying and then controlling what it is that the children should learn. In this view, teaching is essentially didactic or systematic instruction based on detailed specifications. Emphasis is on the teacher as the controlling figure and a provider of information with the child as the recipient of instruction. Rosenshine (1987) described such teaching as "explicit, step-by-step instruction directed by the teacher" (p. 257). The teaching proceeds from the simplest to the more complex kinds of learning in a logical analysis (Becker, Englemann, Carnine & Rhine, 1981). In such instruction characterized primarily by teacher-talk, frequently followed by specific tasks to reinforce the instruction, the teacher is imparting a body of knowledge to children.

Wells (1986), in a critical comment on this approach, suggested that "children are placed in the passive role of respondents, obliged to accept the teacher's definition of what is considered relevant" (p.28). Glynn (1981) claimed that as almost all the teacher behaviour in this model is of an essentially supervisory nature, the interactions able to be initiated by children are limited. The learner can only respond to what is controlled by someone else and may well become dependent on this.

Current practice

According to Taylor (1989) widespread practice, if not tacit acceptance of this view, has meant didactic instruction has dominated learning for many children in schools in the United States. Cuban (1984), (studying teaching methods over time), Langer (1984), (when reviewing studies of literacy instruction), and Sirotnik (1983), (who examined approaches to teaching across the curriculum), all argued that beliefs about instruction appear to have adhered to the same principles for many decades. Evidence from recent comprehensive research in United States schools indicates the continuation of such practices. In a study of 1016 classrooms at all levels, Goodlad (1983) found didactic patterns of instruction predominated with little variation across and within schools. Langer (1984), summarized the "current" situation by claiming that the instruction teachers provide limits the opportunities children have for reflective engagement. It focusses not on assisting children to extend their learning but more on checking the accuracy of their responses.
Research in schools

Evidence from recent research in primary schools in Britain (Bennett, Desforges, Cockburn & Wilkinson, 1984; Galton, Simon & Croll, 1980), also found what they characterized as a traditionalist approach to teaching, though with some different emphases. Their studies showed that teaching tasks were predominantly teacher dominated and managed. Within social relationships, teachers showed responsiveness to children's needs, but instruction was teacher directed and controlled. Routine practice tasks were prevalent for academic learning. It was very rare for tasks to challenge problem solving skills or enhance individual intellectual effort. Interestingly, Anderson and Burns (1989) pointed out, in a recent comprehensive book on research in classrooms, that the central, directive role assumed by teachers has even been widely accepted by the vast majority of researchers studying teaching. Few have questioned the way it permeates schooling.

The relevance of the large scale studies described above, carried out in elementary, primary and secondary schools for beginning classes, is unclear. Teachers may approach working with young children in different ways. Some information comes from a study of teachers of first classes by Hughes and his colleagues (Hughes, 1988; Goldsborough, 1988; Gulliver, 1988) in Britain. The findings from interviews indicated that the teachers appeared to hold a traditional view of children as passive, receptive learners, and did not contemplate the active engagement of children in their learning. Whether teachers' stated beliefs reflect the way in which they carry out instruction is not clear from the research. Desforges (1989), for example, found mathematics teachers of five to seven year olds, who, despite holding constructivist views, assumed very directive, dominant roles in the classroom. He suggested that the circumstances and constraints under which teachers worked largely dictated the way they interacted with children. Clearly the situation is complex, and may vary in different settings. Research to date appears to suggest that forms of didactic teaching are fairly widely practised.

A focus on teacher control of instruction means children who submit to it have limited control over learning interactions and may become dependent on external controls. McNaughton (1985) claimed that in reading, learning arising from situations dominated by adults' control is less effective than that occurring mainly under the child's control. Clay (1991a), pointed out that teaching in a didactic way does not allow for children being active, constructive learners. It would appear that under such teaching conditions children's opportunities for growth and development are narrowed.
Alternatives to didactic instruction

The basis for concerns about excessive amounts of didactic instruction for what appear to be large numbers of primary of elementary school children seems in its extreme form to lie in a number of questionable assumptions about the nature of the restraints there are to young children engaging in independent learning. For example, there is a view that many young learners on entry to school are incapable of furthering their own learning in each area of the primary curriculum, and that they therefore need to be instructed in "the logic" which is allegedly implicit in school subjects such as reading, writing and mathematics. Such a logic is associated with the idea (Gagne, 1965) of a "best order" for teaching the various components of, for example, reading (individual letters and sounds, then words, etc.), and, writing should follow reading. School beginners in particular are seen to need to be instructed according to such logical sequences which are worked out by primary school teachers well before children arrive at school. There is also seen to be a best way of teaching that places considerable emphasis on instruction and on the child as a receiver of knowledge and an obvious way of planning the delivery of much of the curriculum (whole class instruction, ability grouping, annual or biannual school entry for beginners). It follows that the most suitable relationship between teacher and taught stands in contrast to the flexible and informal quality of much preschool learning.

Alternatives to didactic instruction have seemingly arisen out of, or are associated with, different theories and philosophies of child development, learning and teaching; the nature of individual differences, of social factors and the influences of contexts on learning; and with different circumstances, such as school entry at or about a child's fifth birthday (as in New Zealand), and the relative homogeneity and smallness of the population (again, as in New Zealand).

PROVIDING A RICH ENVIRONMENT

Contrasting with the view of instruction described above, is one where the teacher's role is perceived as primarily to create conditions for children to teach themselves (Cambourne, 1988; Goodman & Goodman, 1990; Graves, 1983). The child's active involvement is seen to require teachers mainly to withdraw from creating teaching situations and to adopt a supportive role. It suggests refraining from any direct attempt to organize or manipulate children's behaviour, leaving each individual free to move in
almost any direction. The literature from this approach describes the central role of the teacher as creating a rich, stimulating environment which provides the right conditions for the children to both develop and learn in their own time.

Perceiving teaching in this way may arise from belief in the "growth from within" model (Cashdan, 1976) or from belief in the need to provide for a democratic classroom where the children organize all their activities (Bennett, 1978). King (1974) cautioned against what she saw as misinterpretations of teaching in learner oriented settings when writing about informal learning. Seeing teaching as avoiding giving directions or having expectations of the children, she argued, was in conflict with the teacher's responsibility of furthering children's learning. Those who share the view of Cambourne (1988) and others that the provision of a stimulating environment is paramount do not claim a completely nonparticipatory role for the teacher. They do, however, appear to take a stance on the place of instruction. In a discussion of the issue, Cazden challenged the assertions made in Davidson (1988) that suggest instruction is "contrived, isolated and inconsistent with development" (Cazden, 1991, p.420). Cazden also pointed out that there is still no research evidence to support the adequacy for all children of just immersion in a rich environment. A non-interventionist stance implies that all children can teach themselves and will move forward in appropriate directions. While successful learning may occur for many children in this way there may be others for whom this is unlikely without appropriate teacher assistance.

There is increased awareness that allowing the child just to engage freely in self-directed and self-initiated learning is not sufficient in itself (Clay, 1991a; Dearden, 1984). Such an approach can, it is argued, restrict the opportunities available to learn and may limit the continued growth of some learners. Although encompassing the concept of the active learner, an indirect approach to teaching that leaves children to develop in their own way may not allow for the potential in the contribution of an active teacher.

GUIDING AND FACILITATING LEARNING

If attention shifts from thinking about teaching from these polarized perspectives and moves instead to "emphasizing the joint problem solving in instructional communication" (Rogoff, 1984, p 28), teaching could become a part of an interactive process between learners and teachers where the child is considered an active learner and the teacher has an influential role in helping in ways that will lead to further learning and
development. Wood (1988) supported this perspective when writing about collaborative learning between teacher and child. When discussing Vygotsky's theory he stated that "co-operatively achieved success lies at the foundations of learning and development" (p.25). According to Wells (1986), the most powerful learning takes place when the child is actively involved in the process through sharing in the responsibility, with the teacher as guide and facilitator. The teacher's function is to help children develop and organize their learning in ways that will lead to further learning. How is this shared instruction to be managed?

Guidance in cognitive development is provided, Rogoff (1984) suggested, "through the arrangement of appropriate materials and tasks for children, as well as through tacit and explicit instruction, as adults and children participate together in activities" (p.38). The importance of both the environment and the nature of the active role of the teacher within it is clearly identified. Cazden (1991) wrote about the most favourable environments for literacy learning in school. She called for an optimal mix that includes within a rich environment some instruction as required, using the metaphor of "instructional detours" first proposed by Clay and Cazden (1990). The essential idea is of a slight detour from the firmly established main road whenever needed. The main road is the active environment that allows for child sponsored learning experiences, and the detour, direct instruction.

**Achieving a balance**

Such a view is consistent with that offered by Sulzby, Teale and Kamberelis (1989). In their conclusions about classroom teaching for literacy learning, they suggested that within a literacy rich environment there should be teacher guidance that may include some direct teaching. The perspective is shared by Applebee and Langer (Langer, 1984), who developed an alternative model of literacy instruction in response to concern about the limitations of didactic teaching. Their proposed approach "permits a fusion of the need for direct instruction in new skills with the recent concern with reading and writing processes" (p. 124), thus involving both teacher and child in "instructional interaction" (p. 128).

While these comments are directed towards literacy learning, there is no reason to believe that they do not apply to instruction in other aspects of curriculum even though the nature of the learning required in each aspect is different. Following a study of mathematics practice in schools, Desforges and Cockburn (1987), discussed fostering
higher order skills in mathematics teaching with young school children. They pointed to the importance of the availability of an environment with interesting tasks that have mathematical potential, and stressed the vital role of the teacher for engaging in exchanges. In their words the teacher "clearly plays a significant steering role" (p. 153).

The perspective outlined is not a novel one and may be characteristic of teaching for some children. Research in infant classrooms in New Zealand documents supportive teaching in both literacy and mathematics, occurring in an environment that is rich with varied learning experiences (Clay, 1985b, 1991a; McNaughton, 1987; McNaughton and Ka'ai, 1990; Rapin, 1991; Watson, 1980; Yeoman, 1987; Young-Loveridge, 1987). Teachers in these studies were observed to work in a variety of ways with children in whole class, small groups, and with attention to individual children. They did so by observing what children were doing and facilitating learning in a programme that aimed to provide flexible and diverse opportunities for learning.

The perspective on teaching described as guiding and facilitating learning appears promising for influencing cognitive development in important ways in the classroom (Rogoff, 1990; Tharp & Gallimore, 1988; Wood, 1988). It provides an account of school learning that allows for both the provision of a range of learning experiences in a rich and stimulating environment, and for the teacher to play an important role in assisting children to learn. The active teacher is arguably best able to help the active child, by arranging for optimum learning opportunities and by guiding children's cognitive efforts so they can increase their control over, and understanding of, the meanings of their world.

The interactive nature of teaching

Considering the teacher as a facilitator of learning places emphasis on the nature and level of teaching-learning interactions between teacher and child.

Shared activity has been shown to enhance problem solving and this has led to greater awareness by cognitive psychologists of the role of interaction with others (Rogoff, 1990). Social encounters between the novice and more knowledgeable others provide for joint problem solving with guidance. Rogoff used the concept of "apprenticeship" to describe the way young children achieve their cognitive competence through guided participation in cultural activity. The collaboration that occurs with family members in a child's early learning was emphasised by McNaughton (1991a) who considered family
“active agents” in the child’s construction of literacy. It seems that one way young children can learn is through observation, and trial and error. As they interact with peers and adults and their environment, their cognitive development is enhanced (Katz, 1987).

Interacting with children in ways that will encourage learning requires learning about how children learn. It is one of three significant aspects that theorists suggest are required for teaching (Gelman & Greeno, 1989). Two further aspects are explained by Wood, Bruner & Ross (1976). They suggest that the teacher needs to provide optimum opportunities for learner competencies in order to display and stretch these competencies. What the learner can do must be taken into account for the starting place will be where the child is. With such knowledge the teacher can better respond to present individual competencies. Thus, close observation of children while they are engaging in learning, and analysis of and sensitivity to their growing competencies is required (Clay, 1991a). Teachers need to note critical changes and to be aware of opportune times to extend learning. They can then judge when it is appropriate to give increased responsibility to the child. This is not to say the teachers await the “teachable moment” before interacting with a child, but that within interactions they seek to utilize the actions and responses of the child to greatest effect.

The teacher must also, Wood, Bruner and Ross (1976) noted, have a theory of (or hypothesis about) the nature of the task or the problem from the child’s viewpoint and how it might be addressed. Teachers need to know what it is the learner is trying to learn. Awareness of the next steps that might be taken can produce decisions that are most beneficial to the child’s development of strategies. It is more likely that learning for each individual will be encouraged in appropriate directions if the teacher understands sufficiently the acquisition of reading, writing, oral language and mathematics as well as in other aspects of the curriculum. This would seem particularly important for teachers of young children who are engaging in the acquisition stages of important aspects of learning, for these directions will be different for different children. The attention and response of the teacher to the child’s present understandings and competencies, and knowledge of the sequence of development required for effective progress in any particular curricula area, become interrelated.

A knowledgeable and observant teacher would appear to be critical to ensuring that the learning that takes place for most children before school, continues to be accomplished and extended in school. As a facilitator and guide the teacher can assist young children to be active learners, particularly by engaging with them in quality interactions.
ISSUES IN THE CLASSROOM SETTING

The role of activity in learning and the way teachers might help children become active learners lead to the issue of the kind of environment in which learning and teaching are carried out. What comprises a responsive environment? As with the kind of teaching available, the way in which the classroom setting is managed may facilitate active learning of the child or may preclude such learning. It may also affect the kind of teaching the teacher can offer.

When considering the continuum of classroom environments described in the research available on learning and teaching, some distinctions can be made within two perspectives identified. These are described here as the classroom as a structured social context and the classroom as a responsive social context.

A STRUCTURED SOCIAL CONTEXT

If the school environment is seen as a structured social context the organization of the classroom setting is usually such that the teacher plans and determines most of what happens in the classroom. A number of characteristics can be identified. Bennett, Desforges, Cockburn and Wilkinson (1984) in describing such settings suggested the interactions are mostly structured and managed by the teacher. The teacher attempts, Cazden (1988a) noted, to allow for only one person at a time to speak. Classrooms are typically organized so that most of the instruction occurs in the whole class situation or in ability groups (Slavin, 1987). Decisions regarding placement in groups are usually made on the basis of some form of assessment. Once classified, children most often remain in these groupings throughout the year (Goodlad, 1983). Assigned “seatwork” activities, interspersed among whole class and small group teaching, are frequently designed to complement instruction and to provide practice in skills (Emmer, 1987). The children may be engaged in similar tasks to each other for much of the time. Opportunities for interaction with the teacher and with peers throughout the day may be rare.

The style of classroom organization described may affect the way in which children can interact with the environment. In such settings there are often restrictions on the opportunities children have for language development (Tizard & Hughes, 1984), for interaction with peers (Cazden, 1988a), and on the kinds of activities to which children
have access (Clark, 1991). Thus, opportunities for children to be active learners may be constrained.

A RESPONSIVE SOCIAL CONTEXT

A different perspective on organization of the environment involves a setting that provides many possibilities for enhancing learning. Teachers usually create and design conditions that involve opportunities for children to have access to a wide range of varied and engaging tasks and activities, involving interesting and challenging material (Glynn, 1984). Such activities and materials are intended to provide worthwhile content and focus for interactions. A range of organizational patterns pertain with none of them being used exclusively. There are varied opportunities for children to work in different ways throughout the day, ranging from individual teacher-child interactions, peer dyads and small groups, to larger groups and whole class settings (Hiebert, 1991; McNaughton & Ka’ai, 1990). These different situations form, Hiebert suggested, “multiple classroom contexts” (p.138) and teacher skill in their use is crucial to their success.

Varied patterns of organization in a responsive social context, provide in different ways for teacher input related to content and processes, for the application by children of new learning, and for opportunities for exploration and creativity by each child. A style of interaction referred to above, (and elaborated on pp.184 to 187) between teacher and children and among children, can be fostered. Supporters of this view consider opportunities for interactions an essential aspect of the quality of the child’s education. Clay (1985b) discussed the importance of identifying classroom situations in which opportunities for interactions with children are optimised. The suitability of the context for learning has to be considered in relation to the developmental levels and needs of the children (Corno & Snow, 1986; Wood, 1988).

Contexts for development

The notion of teachers creating contexts in which children can be active, constructive learners, has a long tradition (Katz & Chard, 1989). Examples of environments where very young children were engaged in self activating learning are provided in the preschool traditions that reflect the influence from child development on the study of the individual child. Nursery and kindergarten situations in the United States organized to
permit personal involvement for each and every learner have been described (Weber, 1970). Developments in preschooling in Britain have had similar emphases, essentially focussing on the child as a whole person and accentuating the importance of “spontaneous play”. Access to learning was by way of active experience and experimentation (Chazan, Laing & Harper, 1987). These developments showed that young preschool children were learning in environments where the emphases, which evolved from claims of a developing understanding of children’s development, fostered what was described as each child’s “natural” capacity for learning in a wide variety of situations. There were individual learning opportunities, and the content of the curriculum was mainly the “world of the child” which included the experiences and things the child brought into the situation and those that were already there.

However, the principles of preschools are often markedly different from the principles of primary school practices, although procedures established to foster active child learning in the school setting can be found in infant and primary classrooms. The innovations focal to child-centered education referred to as “informal education” were first worked out by a number of infant schools in Britain much influenced by practices in the progressive nursery schools described above (Gardner & Cass, 1965). These innovations were given acknowledgement and reaffirmation by the Plowden Report (HMSO, 1967). The publication provided an important summary of the previous 30 years research, and described “informal” or “child-centred” education, presenting its practices and apparent premises. It gave strong impetus to what was claimed to be the established developmental and child-centred tradition of the British Infant school (which was subsequently adopted in various forms in other countries including New Zealand). In reporting on the Plowden recommendations Tough (1982) alleged that, “it supported the view that learning would be improved by teaching methods that focussed on the needs of individual children, and by a “discovery” approach that would not only motivate children through greater involvement in their own learning, but at the same time place learning on a sounder conceptual basis” (p.55).

The report placed emphasis on the needs of each child and stressed that because of the wide ranging differences in children, class instruction was not satisfactory. Individualization of attention and work was proposed. Ideally it was considered that attention should be individual, but because sharing out teacher time was a major problem, some teaching of small groups of children was also proposed. Further it was suggested that children could often be engaged in individual work, not requiring the help of the teacher. In stressing the importance of fostering a “discovery” approach to learning in each individual child’s activity, the report suggested that teachers were responsible through constant dialogue to encourage children in enquiries which would lead them to
find out for themselves. They were to encourage questioning, probing, pursuing and exploring, and to guide children unobtrusively. Emphasis was on the child’s sustained involvement in learning. These practices became known in the United States as the “open education” approach to teaching and learning (Dearden, 1984; Katz & Chard, 1989).

The stress on individualization both of attention and of work has received strong criticism backed by high quality research in Britain. Galton, Simon and Croll (1980) suggested that individualization is widely implemented but not in the way it was recommended, because teachers either misinterpreted or ignored the possibilities for increasing interaction between teachers and children and for small group activities. The researchers claimed that individualized teaching was not progressively oriented in the sense described as integral in fostering a “discovery” approach but was “overwhelmingly factual and managerial” (p. 157). The teachers’ interactions with individual children were mainly related to task supervision. The researchers argued that the teacher “does not have time to devote her mind to, or engage in, the kind of interaction with individual pupils that the Plowden Report described” (p.157). They did describe some teachers who had high levels of, in their terms, quality interaction with individual children. Teachers achieved this by very effective organisation which allowed them the extra time for dealing with children. Nonetheless, it was concluded that teachers still had not been able to organize their programme in ways that would realize what they saw to be the aims of the Plowden Report.

However, this research was done at the third through seventh years of teaching and may not apply to new entrant teaching. There are likely to be many differences between how a teacher organizes the classroom and works with children at the entry level and how a teacher who is involved with older children in the upper classes operates. The case study analysis of a first classroom in Britain (Hamilton,1977) supports this assertion.

The classroom context is a “complex entity” (Hiebert, 1991, p. 134). It is consistent with contemporary theories of the nature of the child as a constructive learner, that for active learning to occur the child requires access to purposeful activities, varied materials and ample opportunities for interactions with others. This implies a context that is flexible and responsive. What children learn depends in part on the learning context they are in (Iran-Nejad, 1990; Smith, 1989). The way the classroom setting is managed allows to a greater or lesser degree for children to be proactive in their learning.
ISSUES IN CHILD INITIATED AND TEACHER INITIATED LEARNING

What specific features of the environment enhance active learning?

Contrasting views are held as to what comprises appropriate opportunities for learning for children moving into the school setting. The contrasting views can be identified as child initiated or teacher initiated learning opportunities.

An attempt is made to provide a distinction between child and teacher initiated opportunities for learning. Frequently used terms such as progressive, activity, or integrated day methods; formal and informal approaches; structured and unstructured or open and traditional education; do not always give sufficient indication of the actual opportunities available to children to initiate or enhance their learning. In addition, various meanings and interpretations have been attached to these terms with resulting confusion. However, the making of the distinction described above does not suggest that opportunities for learning can ever be neatly categorized. Clearly this would be an unrealistic and over simplified view of the complexity inherent in learning and teaching interaction. It is the implications of these types of learning opportunities for the active, constructive learner, that is the main area of interest here.

**Teacher initiated opportunities for learning**

Where the learning opportunities are primarily teacher initiated, activities and experiences are almost all selected, presented, directed and monitored by the teacher. Learning tasks are frequently organized in a linear, and strictly sequenced manner (Chall, 1983), with a predetermined and often relatively inflexible curriculum. When discussing teacher-initiated activities, Katz and Chard (1989) suggested it is too often assumed that children need to be led step by step through a planned curriculum or prescribed activity. The outcomes are frequently defined in terms of the information to be gained and the skills to be developed. Wells (1986) claims that in order to succeed in activities that are tightly compartmentalized, children are expected to follow the intentions of teachers and the teaching priorities on their agendas.
Instructional materials and curricula designs will often identify the content that should be taught and in what order, and with learning activities simplified and broken up into small units. These are often referred to as teacher-proof curricula (Clay, 1991a; Wells, 1986). Bereiter (1980) is one of several curriculum theorists who criticises the way that this approach involves the reduction of the conceptual and problem solving demands of early school learning. Justification for what is a teacher-initiated organization of the curriculum in a lock-step fashion is in terms of avoiding errors at all costs. This notion allegedly relies on the theory that learning is best achieved by avoiding incorrect responses. Hence, preventing wrong responses appears to be part of the teachers' function (Katz & Chard, 1989). Correct responses need to be retained and incorrect ones eradicated.

When the teacher initiates the majority of the tasks, there are limited opportunities for the child to make open ended responses or decisions or choices, or to follow individual interests, for what is to be learned is predetermined. According to Yetta Goodman (1990) the children have to meet the teacher's programme; they have to adapt to the curriculum rather than the curriculum being adapted to them.

**Child initiated opportunities for learning**

While there may be some overlap here with the earlier section on how children operate as active learners, it is important to explore what it means for children to have the opportunity to initiate learning tasks. When activities that can be initiated by the child are available in the classroom, the child may become the prime agent in the learning process, especially when the starting points come from the child. Determining what will be attempted some of the time provides children with the opportunity not only to initiate tasks but to tackle ones where there is a personal challenge, tasks that require them to explore, to test out hypotheses, to seek creative solutions and to make discoveries (Bruner, 1986; Clay, 1991a; Wood, 1988). Experiences such as these are alleged to provide opportunities for reasoning, problem solving, analysing and self-monitoring (McNaughton, 1991a). Children are active participants engaged in creating their own meanings out of encounters with the school environment. When provided with choices and options they may then assume responsibility for some of their own learning. Interests and abilities provide a starting point for deciding what activities in which to engage. A proportion of these decisions are the child’s.

Access to tasks, resources and materials that are interesting and which children like or seem to enjoy, as noted earlier, are obviously likely to stimulate and sustain interest, for they allow children to engage in personal ways. But, more importantly, if children are able
to take initiative for choosing some of their own activities some of the time, the building of cognitive processes could be facilitated Clay (1986). Clay considered that a considerable number of opportunities should be available for children to make their own responses to tasks, and cautioned against stultifying such development. The opportunities available for learning may affect the kind of learning that can occur. Within an environment where children are able to initiate some of their own learning, the freedom to investigate different ways of learning through active exploration and discovery may provide them with some opportunities to be learning more for themselves.

**A balance of learning opportunities**

A clear distinction has deliberately been made between opportunities for engaging in tasks in the school setting that are child initiated and those that are teacher initiated. However, there may well be quite a range within the broad grouping defined as teacher initiated activities. Perhaps "teacher directed" learning opportunities is a better term for the position characterized above, leaving teacher initiated opportunities to apply more generally to situations set up by the teacher, but that have opportunities for the child to have considerable control over the tasks within them. When discussing language in the curriculum, Cashdan (1986) emphasised the need to think about the "reconciliation of direct and indirect approaches in teaching", but strongly cautioned against getting "the balance wrong" (p. 15). A balance of child initiated and teacher initiated learning opportunities may well provide for the most effective learning situation for active learners.

**ISSUES IN TRANSITION TO SCHOOL**

If the teachers' role in optimizing children's development in school requires them to attend closely to children and their competencies in order to foster change in appropriate directions, the issue of teachers' understanding and knowledge of new entrants emerges. Does how children are perceived on entry to school contribute to their opportunities for learning? Beginning school signals an important transition in children's lives. The provision of an environment in which teaching is designed to address children's abilities, and thus allow for continuation of child initiatives, involves understanding and knowledge of school beginners.
In the literature available, two contrasts in teacher expectations of new entrants can be identified. One is that school beginners have similar needs and the other is that needs and starting points are very different.

EXPECTATIONS OF SIMILARITY

Chall (1983) claims that educators for whom the curriculum is central appear to work from a belief that all school beginners should be expected to start in almost exactly the same place and move through similar learning sequences. They assume that this will be appropriate for individual children. In addition, a widely held belief that young children entering school are incompetent leads inevitably to a need for them to be led point by point through a planned curriculum of directed activity to be told what to do and to be in an environment that reflects order, regularity and consistency. A standard beginning for children entering school with a wide variety of learning needs seems a contradiction to some. Equally contradictory is the concept of readiness (Carll & Richard, 1977). A teacher’s programme that results in each child encountering a common set of instructional activities, and that has children joining into existing programmes regardless of what they can already do, may restrict opportunities for learning to which the child ought to have access, and may well delay the development of some children. In some cases these procedures may be associated with annual and bi-annual admission of new entrants.

VARIETY OF NEEDS AMONG SCHOOL BEGINNERS

The alternate view holds that children of a particular age are unequal in their mastery of skills and Duckworth (1979) claims that one can assume that in any class group of children, “there will be enormous variations in levels of understanding and in the breadth and depth of knowledge already developed” (p.311). Research points to the wide variability found at school entry (Clay, 1966, 1985b; Goodlad & Anderson, 1987; Hammond, 1986; McNaughton & Ka’ai, 1990; Yeoman, 1987). Indeed, the differences between children entering school for the first time may be more pronounced than at any other time (Clay, 1991a). For example, there is marked diversity in the concepts they have developed, the vocabulary they have built up, their control of the structures of language, the nature of the drawings and writing they produce, and in the ways they engage in classroom life. Such individuality among new entrants should, Clay believes,
be regarded as an asset rather than a liability. Smith (1978) argued that the fact that children are individuals and therefore will learn at different rates may be seen as an administrative inconvenience but one on which education must capitalize.

Accepting and building on the individuality among children can be an opportunity to celebrate the diversity inherent in cultures. In an appraisal of individual learning, Goodlad (1983) argued that increased knowledge of individual differences and individuality necessitates a high value being placed on recognising and responding to varying differences in children. As a result the programme for each child can start from where the child is and work from the child’s personal strengths. By making it possible for each child’s learning to build on particular competencies, the learning of individual children should be facilitated.

If, as it is claimed by some educators, all children do not come to school highly motivated, eager and ready to learn, then a start in school that builds on what each child knows and can do on entry would seem to be essential. Two research studies may provide some support for the importance of addressing differences. From a study of the development of literacy of preschool children, Ferreiro and Teberosky (1982) claim they can now assume that well-prepared children will keep on progressing by themselves and ill-prepared children will falter. When observing five year old kindergarten children, Brailsford (1985) found that while “high print aware” children made progress, this did not occur for the “low print aware” children. In neither of these studies were children in an instructional programme but there still may be implications for learning in school. Some children will be likely to need to be taught how to generate their own learning when they enter a school setting.

Maximising access to learning in school

Research findings indicate that many children begin school with considerable skills, knowledge and cognitive capabilities (Hughes, 1989; McNaughton & Ka’ai, 1990; Young-Loveridge, 1987). There may of course be a considerable difference between the evidence from developmental research and the views held by some teachers of young children. In an interview study in Britain reported by Hughes (1989), it was found that the teachers generally did not view children on entry to school as more competent “than previously considered”. The teachers’ beliefs focussed on children’s deficiencies in the intellectual, linguistic and social areas, and on the perceived negative influence of the home. Many of these beliefs were not based on teacher observations of the children and the home setting. The implications of such perceptions may be very influential. In a
comprehensive appraisal of early education, Clark (1991) pointed out that the beliefs teachers held about children's competence determine to a great extent not only the challenges set, but also expectations of their attainment within these.

Following Clay (1993a), Gould (1981) has suggested that by developing tools and procedures for observing behaviour closely and becoming aware of, rather than just assuming what each child can do, teachers should be better able to help each child move forward as they learn to do more for themselves. Some children might need more individual help than others, thus calling for greater responsibility on the teacher's part to see that she knows what the important behaviours are to look for, and the appropriate sequences of learning to foster (Clay, 1991a).

THE PHENOMENON OF INDEPENDENT LEARNING

Consideration of the prior problem of how the concept of independent learning can be thought about in school prompted the analysis of key issues in independent learning.

Examination of the issues concerning processes of learning and teaching and the contribution of the learning environment was integral to a consideration of the phenomenon of independent learning in early schooling. At this point important aspects regarding the concept of independent learning emerging from the literature are drawn together.

ACTIVE LEARNERS AND ACTIVE TEACHERS

The natural situation of first language learning and the observations of psychologists who have made a significant contribution to the study of learning in young children point to the kinds of procedures that may be necessary for promoting and supporting learning in school. New understandings about new entrant learning that have been refined by recent insights from developmental and cognitive psychology have led to the notion of the child as an active learner and to the context for learning as an active environment. Such an environment requires (Cazden, 1991) an active teacher who has a critical role in
furthering children's learning and for both organisational and educational reasons that the children who have some control over generating and sustaining some of their own learning. Teaching moves in interchanges with individual children could be made in relation to their understandings. It is essentially an interactive view of teaching and learning.

Such a perception, it has been argued, is at variance with a context for learning where the encounters are predominantly teacher controlled and the learning process therefore directed almost continually by a teacher who also prejudges or predetermines the fine details of what the child will learn.

IMPLICATIONS OF STUDYING INDEPENDENT LEARNING IN SCHOOL

What are the implications then of these issues for studying independent learning and what hypotheses about ways of facilitating independent learning early in school may need to be investigated?

Implications for the study of independent learning are summarized under:

(a) the child as a learner

(b) the teacher of school beginners

(c) access to engaging activities

(d) continuity of development.

The child as a learner

An appraisal of abilities of young children and what they bring to school has led cognitive and developmental psychologists to a review of images of how young children learn. The notion of the child engaging in some independent learning early in schooling deserves further investigation. Smith (1988) claims that most children have active ways of making sense of the world of school when they first encounter it. There is also, in the research and comment of such as Clark (1989); Hughes (1989); Katz and Chard (1989), a basis
for considering the proposition that an optimal learning situation is one where some opportunities are available for individual children to explore activities, develop ideas, discover new things, solve problems and thus extend their existing ways of learning.

Therefore a classroom programme where each school beginner has some opportunities to learn about the things of personal interest to them and where at the same time value is placed on thinking and questioning, doing and testing, could provide a productive setting for individual development. In addition, interacting with real situations in a flexible environment and acquiring new strategies could facilitate children learning how to learn for themselves.

**The teacher of school beginners**

The ways the teacher fosters opportunities for children to operate as active learners appears to be central to the promotion of independent learning. One requirement of an environment suitable to development of some independent learning is a setting that is rich in possibilities for learning. The second is for teachers who are available to each child to stimulate, assist and support learning in a variety of ways. A particular mix of these combined ingredients could well, it has been argued (see p.37), maximise and facilitate opportunities for independent learning.

The differing effects of different kinds of individual attention could also be examined between one-to-one teacher-child interactions (child alone) and interactions with individual children in small groups. The learning context may be structured in a way that allows for individual initiatives. It would require teachers to be knowledgeable and well trained in understanding and observing how children learn, as well as how they can be helped to be more independent.

A classroom organised for a wide range of activities and a teacher readily accessible to each child could be examined for the effects of the provision of opportunities for independent learning. Before the teacher can get to individual children to engage in individual interactions and provide appropriate guidance in any effective way, the wider spectrum of the class has to be addressed. Flexibility in organization and a less formal style of programme would be factors which may facilitate the opportunities for individual teacher-child interactions. The organization of an activity programme where children are working independently (yet productively) for some of the time could free the teacher to work with individuals and small groups. Such a management pattern Clark (1991)
pointed out, spreads the limited adult attention available in the classroom. At the same
time the development of productive independence is likely to be a sound investment for
future learning.

Access to engaging activities

If the programme allowed for sufficient interest and stimulation and provided
opportunities for fostering problem solving and learning to think, it is hypothesised that
optimum learning opportunities should be available to support the whole enterprise of
increasing independent learning. The chance for children to be actively involved in some
of their own learning in the school situation suggests that for all kinds of children the first
infant classroom should have a variety of enriching activities and opportunities for
learning in a constructive mode. A wide range of learning activities could provide the
learning opportunities to suit the multiple entry points in level of skill and knowledge of
school beginners. Being able, for some of the time, to select what to do and how to do it,
would allow scope for the child's active involvement.

Various factors could preclude the child being an active, constructive learner, such as
over-emphasising any one approach to learning, imposing specific ways of learning or
constricting the opportunities available. Conversely, if there is little guidance or control
children may move in diverse and maybe inappropriate directions. They may fail to gain
competence with early strategies and may practice or learn inappropriate behaviours
(Clay, 1993b; Dyson, 1985).

Continuity of development

Before school the child has learned many things (Resnick, 1989; Young-
Loveridge, 1987). Even so, much of the particular learning required in order to profit from
and respond to the formal education of the school will be novel to the school beginner
(particularly in reading, writing and mathematics). It might therefore be appropriate to
consider as an hypothesis that if new learning could be approached in a manner
continuous with the style of a child’s earlier learning (which will differ from child to child),
then the shift from preschool to school learning may enable each individual child to
respond successfully to the programme in their own way.
The wide gap recognized among children on entry to school should be considered in relation to the competencies that are required in schools. All children should be able to gain the necessary skills and knowledge from the opportunities the school system provides, whatever their starting levels. The teacher would need among other things to support those children who are not well underway as self-generating and self-directing learners in the school setting. In first classes there could be the risk of activities being presented that do not meet individual children's needs or competencies at the point at which they are introduced (Taylor, 1989). Children may become baffled by the tasks and a discontinuity of experience could be created possibly leading to the development of inappropriate functioning (Clay, 1993b; Cullen, 1991a). Teachers' attending to individual children's competencies, and avoiding interruption to learning, should allow school beginners to profit more readily from the learning experiences available.

**Summary**

Relevant to studying independent learning are factors which may contribute to children generating and directing some of their own learning in the school setting. Arising from the above the following points may be considered salient to the concept of independent learning.

If children entering the novel school situation have the opportunity actively to participate in a programme flexible enough to allow them to:

(a) build competencies and achieve success by engaging in stimulating and varied tasks and activities that interest them, and that provide support and challenge for cognitive development

(b) have opportunities for engaging in interactions with the teacher and others, and to have access to teaching learning interactions whereby the teacher helps children to complete tasks initially, gradually withdrawing help as their control increases, allowing them to achieve similar learning by themselves

(c) be able to initiate and explore some of their own learning activities, i.e., to initiate interactions with people or material, in a flexible environment
(d) start from past learning, build on personal strengths and move in appropriate
directions by various routes at their own pace

then, they could have opportunities to learn how to learn and take their own learning
further.

The provision of an appropriate school learning context in which children can generate
and direct some of their own learning creates many challenges for teachers. It requires
the efficient management of the learning of individuals in classes. In Holdaway’s words
“to teach is to maximise the opportunities for learners to learn” (1984, p. 11). On the other
hand, as Cazden (1991) has intimated, very little is known about how active learners can
be helped by active teachers. In specific terms, Como and Snow (1986) suggested that
research needs to address the question of ways that “individual teachers can best adapt
to individual students” (p. 625).

If it is accepted that learning how to learn arises out of social interaction (Rogoff, 1990;
Vygotsky, 1978), the opportunity to engage particularly in quality one-to-one interactions
may be an important link in attempts to provide for the most appropriate instruction for
children entering school. In such encounters, active teachers could foster in school the
kind of learning that could help each child function as an independent learner, able to
contribute to his or her own learning.

These encounters are deemed to be of continuing importance and worthy of further
investigation.
CHAPTER THREE

CAPTURING INDEPENDENT LEARNING IN THE CLASSROOM

There are two aspects to the identification of independent learning in the classroom. The first is a matter of deciding how independent learning in children can be described, identified and analysed in the classroom context. The second is how to capture the teacher behaviour that is related to the independent learning observed in teacher-child interactions. The latter part of the chapter describes coding schemes used in studies of one-to-one interactions and discusses their relevance to the present study.

DESCRIBING AND IDENTIFYING INDEPENDENT LEARNING

THE CLASSROOM CONTEXT

All observations of young children’s learning were made in classroom settings and an analysis made of all the activities and interactions and the contextual factors associated with that learning. Valsiner (1985, 1988) stressed the importance of studying cognitive development in what he described as a "context-bound" approach, where both the child and the environment are explicitly analysed.

He contrasted this with "context-free situations" which are unspecified environments not including the context of the child’s actions. Valsiner claimed that "the meaningfulness of the environment within which children develop has been largely forgotten as an
important aspect of the study of children" (1985, p.132). This view is shared by others. In relation to literacy learning, Hiebert (1991) pointed out that the usual literacy study concentrated on the acquisition or instruction of a process without addressing the context of occurrence. Gamer (1990) argued that consideration of the setting was essential for the productive study of learners' use and lack of use of learning strategies. She proposed a "theory of settings" to capture the variations in contexts and what might occur within them (p.522).

The complex environment of the school classroom may influence the way children operate. Evidence from studies carried out both in laboratory playrooms and homes indicates that the nature of the strategic activity often alters with variation in settings (DeLoache, Cassidy & Brown, 1985; Ceci & Bronfenbrenner, 1985). Laboratory studies, therefore, have limitations for studying learning in school because of the difficulty in relating their findings to classroom settings. Wood (1988) claimed in relation to research on learning that the outcomes often found in laboratory group studies rarely occurred in school.

Glynn (1984) has emphasized the contribution of classroom factors to children's opportunities for taking their own learning further. He wrote about the classroom learning context and how it contributed to the child's opportunities for independent learning. Glynn claimed that it was within responsive social contexts, "that individuals acquire not only specific skills, but also generic knowledge about how to learn. It is this generic knowledge that allows individuals a measure of control over, and hence independence in, these social contexts" (Glynn, p.1). He argued that the way the learning context is arranged can affect whether or not children become autonomous and independent learners. Drawing on an accumulation of research, Glynn identified some characteristics of the classroom context that he considered essential for independent learning. These were: (a) self-initiated access by children to varied, engaging materials, (b) involvement in shared activity between novices and experts, (c) enhancement of reciprocity between learners around tasks, and (d) the provision of feedback contingent on responses rather than on accuracy.

McNaughton (1987) has in relation to reading acquisition identified "setting events" as those events that function to intensify the "opportunities, resources and encouragement to engage in independent reading" (p.141). These setting events were identified as: (a) the support of an interactive learning context, (b) the modelling of independent reading by others, (c) being able to choose to read, (d) access to texts of a suitable level, and (e) the opportunities to engage in writing.
The environmental factors for independent learning, considered important by these authors in particular, complement in part those which arose from the analysis of key issues associated with independent learning (see Chapter Two). There is an emphasis on the provision of an environment rich in varied activities to which children have individual access, as a basis for independent learning. Katz and Chard (1989) point to activities that "engage children's minds" (p. 43). Equally important (McNaughton, 1985) is the place of the teacher and the quality of the interactions occurring. Along with shared experiences with peers, these aspects of the learning context can be identified as important opportunities for children to take their own learning further.

CONSTRUCTIVE COGNITIVE ACTIVITY

Resnick (1987) wrote about the complex thinking processes central to effective learning at all levels. She identified the importance of higher order skills stressing that such processes as, "elaborating the given material, making inferences beyond what is explicitly presented, building adequate representations, analyzing and constructing relationships - are involved in even the most elementary activities" (p. 45). The message contained within this statement has to be seen, according to Resnick, as the most significant from recent research on the nature of thinking and learning. Resnick also pointed out that there is clear evidence that, while particular knowledge is required, "many aspects of powerful thinking are shared across disciplines and situations" (p. 45). The implications for instruction, she suggested, are that from the beginning class on, in every branch of learning, higher order thinking needs to pervade schooling. For the child learner, such complex cognitive engagement involves the effective development of cognitive strategies.

The development of "in-the-head" strategies that form a self-extending system for learning to read (Clay, 1991a), was described in the first chapter. Integral to this concept of how the child becomes independent as a reader, is the notion of the child constructing a network of strategies which lead to increasing learning power. According to Clay, the child "learns how to instruct himself" (1991a, p.48). Clay's concept of a self-extending system was applied to both oral language acquisition and learning to make sense of the world, as well as to reading. Boocock (1991) proposed a similar self-extending system in writing, and set out to capture changes in the developing writing processing system. Ferreiro and Teberosky (1982) pointed to research evidence of young children understanding the underlying operations in mathematics, and acquiring a kind of
knowledge that had "great powers of generalization" (p.14). Characteristic of the acquisition of all the systems described appears to be the building of an inner network of strategies that powers and extends the child's learning. This is similar to what both Clay, (1979a) and Holdaway (1984) called a "self-improving system", and Stanovich (1986) termed a "bootstrapping process". Clay's subsequent term (1991a), a self-extending system, implies that literacy activities can become "self-managed, self-monitored, self-corrected and self-extending" (p.345).

The definition of independent learning developed in Chapter One indicates the complex processing involved. It encompasses the development of a system of strategies that form an inner generating system. The notion of developing knowledge about how to learn, which in turn can lead to further learning, would appear to be supported by the research of McNaughton (1985). He studied how children achieve independence from instruction in reading. Clearly identified was the child's contribution to the process. Problems encountered during reading provided opportunities for self-directed learning to occur. McNaughton pointed out that specific descriptions of the solving and learning outcomes could not be generalized to other populations of readers. What he did claim however, was that "the phenomenon of independent learning is general, and generalizations about its attributes can be made" (p.9).

As discussed earlier, it is the nature of the child's contribution to independent learning and to the cognitive processes involved that are key emphases in this research. Close observation of the child's behaviour could lead to inferences about the "unseen" set of strategies children could be using as they engage in independent learning. Behavioural evidence of independent learning could be obtained from children's actions and dialogue as they are involved in the tasks and conversations that are integral to the daily pattern of classroom life. The description of behaviours from which independent learning could be inferred would arise from identifying the cognitive activity, that is, the mental processes that could be involved. The development of a system of generative strategies (Bruner, 1973) that allows children to take their own learning further involves such constructive cognitive activity.

**Problem solving activity**

There are many different processes in problem solving (Bruner, 1966a). According to Rogoff (1990), problem solving is a global definition of cognition that emphasises the active nature of thinking. If, in learning and thinking, children are working on processing
information in the course of problem solving with varying degrees of skill, gradually acquiring greater expertise, then according to Wood (1988) they can be said to be engaging in constructive cognitive activity.

Much of the research in the area of early cognitive activity has been concerned with how young children perform when confronted with an experimental task situation that requires them to function by themselves. Tasks have generally been set up in undetermined environments and thus have taken place in the context-free situation discussed earlier (Valsiner, 1988). Such studies of aspects of early cognitive development provide increasing evidence of the way that young children learn through active experimentation (DeLoache & Brown, 1987), testing theories and altering their ways of problem solving as a result of experience (Karmiloff-Smith & Inhelder 1974/75). But these studies have controlled (or sought to control) the influence of variables in order to be able to generalise about cognitive development.

**Self-generated learning**

Self-generated learning can be considered a key integral to independent learning. The self-generated nature of children's thinking and learning is illustrated by the learning that is generated by the child without any requirement to change or without external reinforcement. The active nature of very young children's self-generated learning has been illustrated by studies of mainly preschool children setting up and solving problems. Research conducted by DeLoache, Sugarman and Brown (1985), Karmiloff-Smith (1979), and Karmiloff-Smith and Inhelder (1974/75), in a series of laboratory-type studies, used data gathered primarily by describing individual children's activity in detail, and also from spontaneous comments. It showed young children generating goal-directed learning and constructing and generalizing theories about ways to deal with errors. Children allegedly searched for data in order to test and adjust present theories and hypotheses about how things work (Brown & Palinscar, 1989), creating "theories-in-action" (Karmiloff-Smith, 1984) as they worked on altering their theories on their own initiative. According to Carey (1985a) it is a well-established partial theory that is one factor that frees children to try to extend the theory to other phenomena thus allowing them to construct new theories.
Self-directed learning

Self-directed learning is a second key facet of independent learning interrelated with self-generated learning. Children have to direct, that is, to continue to manage or regulate, their own thinking, in any effective problem solving situation. Self-regulation is a complex organizational concept which occurs in both cognitive and social development. It involves the general cognitive processes by which people manage their cognition. According to Diaz, Neal, and Amaya-Williams (1990) "self-regulation is the child's capacity to plan, guide, and monitor his or her behaviour from within and flexibly according to changing circumstances" (p.130). This definition appears to represent ways the construct is generally perceived (e.g., DeLoache & Brown (1987); Kopp (1982); Wertsch, McNamee, McLane & Budwig (1980)). However, authors describe the processes involved in somewhat different ways and may use a variety of terms interchangeably. One factor influencing the use of different terminology is whether writers are discussing social or cognitive learning. It is important to this study that the focus should be on the notion of the child's self-directed learning.

Self-regulation has been studied extensively with older children and adults. Recent research into the cognitive self-direction of young children has ranged across activities such as active memory strategies that involve planning (DeLoache, Cassidy & Brown, 1985), and research studies indicating early intelligent searching (Haake, Somerville & Wellman, 1980). Studies such as these draw attention to the active nature of children's learning as they direct or manage their own learning opportunities and experiences. It can be expected that because the activity is their own, children are likely to be learning and generalizing processes of self-regulation (Wood, 1988).

Identifying self-generated and self-directed learning

Self-generated and self-directed learning are central to the definition of independent learning developed for this research. An important question at this stage is whether and how these facets of the phenomenon can be identified in the classroom context. DeLoache and Brown (1987) discuss the nature of young children's cognition and learning from the perspective of child generation and direction. They claim that evidence of the child's self-generated and self-directed learning can be observed. Along with other researchers, they have identified active, inventive and systematic behaviour in laboratory-type situations where tasks were at a level that enabled the underlying processes to be tapped. The behaviours indicating such learning may be more difficult to
identify in a relatively uncontrolled classroom environment where the tasks and activities have to meet wide ranging needs.

While it is expected that young learners will become more articulate about their behaviour over time, it would appear to be inappropriate to require that conscious and articulated self-analysis is necessary proof of young children's involvement in their own learning. Vygotsky (1978) described how preschoolers can often initially do more than they can understand. "Rule-governed" behaviour has been applied to language learning when children appear to use what they know and apply it initially indiscriminately without being able to articulate a rule. The child is not, suggested Clay (1991a), engaged in conscious problem-solving activity. Children able to correct their own errors spontaneously may be unable to explain what they did or why they did it. Karmiloff-Smith and Inhelder (1974/75) stressed the need to recognize a difference between children successfully acting and being able to explain what they had done.

According to DeLoache and Brown (1987), situations in which children are operating spontaneously on problems without external influence or instruction provide some of the best evidence of self-generated and self-directed learning. There are of course limitations in this view. It does not fit with the perspective that interchanges between the young child and an adult are crucial to development and learning (Bruner & Haste, 1987; Cazden, 1991; Vygotsky, 1978). It emphasises self-directed learning but does not take social learning into account. Thus, in relation to school learning observation of the child in a solitary situation does not provide for recognition of the effects of context on behaviour. Restricting observations to situations involving only the child learner while effectively controlling particular variables reduces the opportunities for discovering more about how children might engage in self-generated and self-directed learning, for what purpose and in what circumstances.

The work of these researchers contributes to a theoretical model of the child as self-generating and self-directing. It draws attention to the presence of numerous self-regulatory skills in the behaviour of very young children, providing various kinds of verbal and nonverbal evidence of their ability to originate and guide their learning. But because of their particular nature the implications of such studies for school beginners are difficult to determine. While advancing our views of cognitive development, laboratory-type research provides limited guidance as to how to describe and identify the manifestations of such learning from all the activity that is occurring in the ongoing stream of behaviour in varied learning situations with class-size groups of children. There is a challenge for people involved in classroom research to identify evidence of independent behaviour during interactions and engagement in tasks in that context. It might be argued as
Stenhouse, MacDonald, Humble and Verma (1970) and Stake (1973) have done that detailed descriptions of context and children's and teachers' behaviour within it, can provide teachers with a means of generalising from these situations to their own.

STUDYING INDEPENDENT LEARNING IN EARLY SCHOOLING

In this study the task of identification and analysis of independent learning is to be done by observing independent behaviour from which independent learning can be inferred. A conceptual analysis of the essential qualities and processes involved in the self-generation and self-direction of learning drawn from the literature and observed in preliminary trials resulted in the identification of six aspects including: showing relationships, checking on oneself, trying and testing, attending to errors, working at difficulties, and rehearsing and repeating. An elaboration of each of the aspects follows.

Showing relationships

Children may be seen to make links with what they know and in the process they may discover relationships. They manipulate concrete objects, directly or in their heads, as well as manipulating the relationships of ideas. As children engage in new experiences they may use their images from the past and actively try to make sense of the new experiences, creating new learning (Piaget, 1977; Wood, 1988). Understandings of abstract environments and relationships are seen to be developed following opportunities for observing, comparing, sorting and classifying (Cannella, 1985). Such processes involve searching for connections as children link up to prior learning and knowledge, forming categories and rules about the world (Bruner, 1980; Bruner, Goodnow & Austin, 1956).

Checking

Monitoring processes can be considered a form of self-managed activity. Self-monitoring or checking behaviour involves the child attending to what he has done and doing something about it (Clay, 1991a). When they are given the opportunity to do so children will often monitor their actions as they interact with materials and others in their environment, and they often operate with a range of checking strategies. They notice conflicts, when what is known does not match with what is observed (Inhelder, Bovet,
Sinclair, 1974). Self-monitoring plays an important role in reading development (Brown, 1982; Clay, 1985a), in writing development (Boocock, 1991), and indeed for all educational processes in schooling.

**Trying and testing**

Building a knowledge resource that is available for use on new situations requires developing a system of generative strategies for use in novel problems (Clay, 1991a; Desforges & Cockburn, 1987; McNaughton, 1987). Through these processes children learn how to work out things for themselves, using searching strategies to draw on previous knowledge, to predict, to make inferences, to note connections, all in order to construct meaning. The strategies generated by children allow them to problem-solve novel text, to construct and produce their own writing, to reason about real problems in mathematics, social studies and science, and to create products in arts and crafts. They develop flexible use of a range of strategies amongst which they search for those they might use.

**Attending to errors**

McNaughton (1985) and Holdaway (1984) identify self-regulatory performance as self-correction behaviour in reading. A strong body of research points to the importance of self-correcting strategies in early reading behaviour (Clay, 1991a; McNaughton, 1987). The concept of self-correction was first applied to reading by Clay (1966). It has been used in other areas such as writing (Boocock, 1991), mathematics (Desforges & Cockburn, 1987) and construction activities (DeLoache, Sugarman & Brown, 1985), and has been described as "self-repair" in language studies (Karmiloff-Smith, 1986). Children are managing their own behaviour when they spontaneously attempt to correct errors they have made and attempt to find some way to "right the wrong". They are rejecting their initial response and are, by raising eyes, pursing lips, frowning and the like, or by attempting a further response, clearly searching for information with which to make a better attempt. When self-correcting their own errors, children are often able to confirm the attempt in different ways. There is in such activity, an opportunity to learn more about how to learn. However, it is not only successful responses that create this opportunity. Partially correct attempts may prove in effect to be productive processes.
Working at difficulties

When working at overcoming practical difficulties or obstructions, children reorganize their levels of understanding and develop multiple access routes to their knowledge (Duckworth, 1979). Trying to get past obstacles promotes the kind of innovative behaviour which often helps to solve problems and thus enhances problem-solving skills (Chazan, Laing & Harper, 1987). Difficulties encountered while engaging in many different tasks in diverse situations provides for such challenges.

Rehearsing and repeating

Self-generated rehearsal and practice involves the child in doing the same things and getting better at it (Holdaway, 1984; Smith, 1988). Practising an activity until the child has gained control of it can be seen to allow it to be done easily and with fluency. Fast, fluent responses of the familiar can also be seen to help to free attention to attend to new aspects of tasks and to make links to things known (Smith, 1988). Purposeful returning to and repeating of tasks may be later observed to have fostered developing processes. In early reading it has been shown to provide children with opportunities to practice reading strategies and to put complex activities into smoothly operating sequences. In early writing it allows for extending control over the words that can be written and the ability to attempt new words from what is known. In beginning mathematics number skills are reinforced. Revisiting the familiar provides opportunities for children to bring more knowledge to something they have done before, to work on material that is easy for them, and to orchestrate behaviours they have learned previously (Clay, 1988). The notion of rehearsing also involves the opportunity to explore very early forms of literacy and numeracy activities (Goodman, 1990).

In the independent learning of young children any or all of the behaviours described here within the processes of self-generating and self-directing may be apparent. Identifying these processes that are implicated in independent learning should follow from recording examples of relevant behaviours and suitably categorizing them. Observing classroom behaviour from which inferences can be made about how children are engaging in independent learning (see Chapter One), provides a means of studying it.

To this point the essential qualities and processes that account for all the independent learning observed in this study have been identified and explained. From this analysis six categories describing the independent behaviour from which independent learning could
be inferred were developed. These categories of child behaviour are presented in Chapter Five.

IDENTIFYING INDEPENDENT LEARNING IN THE CLASSROOM

Very little classroom research is available on the incidence and nature of independent learning of young children. No early school studies were found that investigated the general nature of independent learning across all aspects of the curriculum. However, the way children achieve independence in early reading has received some research attention. In three reading studies based in Auckland schools, McNaughton (1987) looked at how teacher assistance led to subsequent independent performance. He argued that a feature of successful beginning readers was the way they were contributing to their learning. McNaughton sought to describe changes in two indicators of readers' independence, namely self-regulation of performance (defined as self-correction) and problem solving activities. These had been found to be related to learning in previous studies (McNaughton, 1985; Wilson & McNaughton, 1983).

This research provided evidence of the occurrence of independent learning in the specific context of independent reading. As a result of these studies of early readers, McNaughton (1985) made several generalizations about learning. He stated these as: "Active learning arises from solving problems. Such learning promotes development. It is achieved via idiosyncratic (programme specific) solving strategies. Finally, these strategies and learning become increasingly effective and independent" (p. 24).

In McNaughton's (1985) research children's contribution to their own learning was apparent. However, McNaughton pointed out the seemingly paradoxical nature of the situation. He stressed the importance of the teacher's contribution to this ability of the child to "go beyond teaching". It is clear from this research that while independent learning involved the independent processing of the child, the potential contribution of the teacher was an integral factor to the way in which a child's self-generated and self-directed learning was effectively promoted and supported. This view is reflected in Vygotsky's (1978) theory that the child learns to manage or regulate his or her own learning process initially through interactions with adults who, as the child gains some control, gradually allow the child to take over the process. The child is being helped to learn how to learn.
This set of studies provided clear evidence of young children's independent learning in reading acquisition. These children were taking their own learning further. It was their capacity to engage in processes of self-correction and problem solving that were explored. These processes are encompassed in the framework of self-generated and self-directed learning. The studies were carried out in the classroom setting and thus were context bound and directly related to school learning.

They were, however, concerned with learning in just one curriculum area. A question remains regarding opportunities for independent learning across different aspects of the curriculum. As well, the observations were confined to individual children engaging in oral reading. There is no information available about behaviour that might occur during the different kinds of learning experiences that occur in classrooms. And finally, as with the studies of cognitive development, the observations were of children working alone on a task, and the behaviour was not identified from the ongoing stream.

It is the nature of the active, ongoing new entrant classroom that has to be addressed when behaviour is to be observed throughout the school day in that setting. Within the learning activities available, engagement in tasks interspersed with interactions between teacher and child and between children are all part of the operation of the typical beginning classroom. The activities and interactions can, in certain circumstances, create a stream of behaviour made up of sequences of events. These dynamic aspects of interactive behaviour (Bakeman & Gottman, 1986) needed to be captured for this research in a way that allowed for the preservation of the features of both child and teacher behaviour in interactions and activity.

The phenomenon of independent learning in the classroom has to be studied by both researchers and teachers within such a framework in order that it may be better understood. Central to understanding how children might be contributing to and extending their own learning is the identification and analysis of independent learning through observing behaviour. Analysis of the ways in which particular forms of teacher behaviour might be providing appropriate settings for the development of opportunities for independent learning is also necessary. Attention is now given to ways of identifying teacher behaviour in teacher-child interactions that might contribute to the development of independent learning.
STUDYING TEACHER-CHILD INTERACTIONS

To research the role of interactions in independent learning it is necessary to identify both the teacher's and the child's behaviour. Appraisal of coding schemes for observing teaching moves that have been developed for studies of interactions could provide guidance for designing a way to categorize teacher behaviour which might foster and support independent learning.

The social situation being studied is the "one-to-one" relationship between an adult and a child, or between the teacher and a small group (see Chapter Four, p.77). Instruction, considered as joint problem solving with guidance, is that which has the potential to take children beyond what they can achieve independently at that time (Brown & Ferrara, 1985; Rogoff, 1990; Vygotsky, 1962). Teachers guide, but it is the children who are considered to monitor and integrate their own learning. Hence, instruction in this special sense is deemed to help the child engage in independent learning and interactions are multiple connections between teacher and child. Studies of one-to-one interactions illustrate current theories concerning the joint participation of adult and child in early learning. The studies add to the understanding of the practical implication of these theoretical perspectives and contribute to the rationale of the present research.

RESEARCH STUDIES OF INTERACTIONS

While there are few studies focussing on teacher-child interactions in early school settings, there is considerable research investigating interactions in the informal setting of the nursery school or kindergarten, in the home and with older children in school. Preschool studies are of interest, for there is some similarity between how preschools are organised and the informal type classroom environments new entrant children encounter in New Zealand (Renwick, 1984). While there is some overlap, studies of interactions can be summarized under those concerned with: (a) children's language development, (b) the role of language in thinking (i.e., the effect of teacher's questions and statements on the child's cognitive development), and (c) the kind and styles of teaching interactions between adult and child.
Children's language development

The only studies located on the contribution of one-to-one teacher child interactions to the language development of children (all five year olds) in beginning school settings were those of Wells (1986) in Britain, and Clay (1985b) and Kerin (1986) in New Zealand.

Wells (1986) attempted to discover "how the one-to-one interaction between child and adult was contributing to the child's language learning" (p.12). His coding scheme identified potentially facilitating features of utterances being used by the adults and children. It identified the language experience of five year olds as they made the transition from home to school. The utterances were coded into seven categories: context of activity; speaker and addressee; communicative function; semantic content; temporal reference; syntactic complexity; and incorporation. Analysis of the data showed that teachers dominated the conversation, initiating most of the interchanges. Children were mainly in a respondent role. Wells found that teachers provided significantly fewer opportunities for "learning through talk" than did parents.

With the exception of Wells' first two categories which are setting events, the use of the categories in this system appear limited to studying the development of children's oral language. The teacher behaviours identified are not used in a way that make them relevant to fostering independent learning.

More specific detail of the teachers' actions was identified in studies about oral language in new entrant classrooms in New Zealand. While focusing on language learning, a number of the categories captured teacher moves that promoted and fostered learning. These behaviours are of interest because of the attention to teachers' supporting and facilitating behaviours that are not specific to language development or to a particular curriculum area. The coding scheme developed by Clay (1985b) and replicated by Kerin (1986), was designed to "show the kinds of teaching interactions occurring" (p.62). The teacher behaviours were analysed into categories of teacher moves and consequences for children. These categories applied to teacher verbal and nonverbal behaviours and were labelled: talk-more; restate; model; support; link; shape; and add. Also coded were teachers' control statements, initiation of contacts and their acceptance, rejection and reward of children's behaviours. The category system documented in a detailed way how teachers were working with children, how they used teaching opportunities, how teacher attention created differential opportunities for continuing language development and how patterns of distribution differed across groups of children.
The role of language in thinking

A number of studies on the role of language in thinking were concerned with cognitive demands and responses. They have drawn on category systems that originated in the schemes devised by Tough (1977, 1979) and Blank, Rose and Berlin (1978). Both of these schemes concerned instructional process and were designed to be used by teachers to facilitate individual dialogue with children to assist them in learning to think and to extend their cognitive learning.

From a project which analysed language samples from three, five and seven year olds, Tough (1979) developed a classification of the cognitive uses of language and dialogue strategies. She offered this as a framework to guide teachers in examining how their comments and questions "help the child think and express his thinking through the use of language" (p.91). Teachers were guided to distinguish between "open-ended" questions and comments which called for reasoning, for comparisons to be made or other action concerning thinking to be taken, and "closed" ones where responses were determined by the question and for which a single word answer or gesture would be sufficient. The broad category headings used were: orienting (inviting the child to think), enabling (to pursue further) using follow-through, focussing, checking, informing, sustaining and concluding.

The Blank et al. (1978) scheme was directed to the essential facets of language required to stimulate the child's intellectual activity and to the "tutoring" role of the teacher. They were interested in facilitating higher level intellectual activities in the preschool setting with three to five year olds. The essential elements in productive teacher-child exchanges were identified and systematized to present "what we believe the teacher can and ought to be saying to the child in the effort to have that child gain maximally from the (pre)school experience" (p.3). The categories for teacher behaviour were grouped into four levels: a) matching perception; b) selective analysis of perception; c) reordering perception; and d) reasoning about perception. The work led to the presentation of ways in which instructional processes may be adjusted to respond better to the child's level of proficiency in conversation.

Cognitive demands seen as specific requests for the child to use certain defined cognitive skills are integral to the two classifications. Both have been drawn on to develop coding systems in a number of studies particularly those of Tizard and her colleagues as indicated below. The framework Tough (1979) provided is relevant to this study in that it described how the teachers' behaviour allowed for open or limited responses by children.
Interest in the talk of preschool teachers and of mothers as they interact with young children has led to a number of studies in Britain over the last decade. The coding schemes used in some of these studies identified the content of the conversational interactions in relation to cognitive demands by looking very closely at each teacher move in preschool settings. They provide an effective way of identifying how teachers can foster children's thinking. As they cover a wide range of cognitive processes they would be applicable to observing how teachers interact with school beginners and to the relative effectiveness of teachers actions and subsequent interactions. Tizard, Hughes, Pinkerton and Carmichael drew on both the schemes described above to develop coding systems for their research of the conversations of four year olds in home and nursery school settings. Their sets of findings are reported in several publications (Tizard et al., 1982, 1983a, 1983b).

The report most relevant to this study concerns the examination of the use of cognitive demands by teachers and mothers. Tizard and her colleagues used a coding scheme they considered included "important thinking skills and represent the kind of questions included in pre-school educational programmes" (p.107). The following categories, which increase in complexity, were used for coding the types of demands made by the adults: labelling; attributes and simple descriptions; recall and narration; explanations and generalizations; and 3R knowledge. Tizard et al. found that while more cognitive demands relative to other kinds were made at school, they were of a different kind and occurred at a higher rate in the home, because there was more talk there.

A very simple categorization system used by Wood and Wood (1983) for analysing cognitive demands and responses in conversations was based on that developed by Tizard and her colleagues. They reordered and combined Tizard et al.'s (1982) categories to identify the demands made by a teacher in conversation as: high demands (Tizard et al.'s explanations and generalizations); medium demands (all Tizard et al.'s other categories); and low demands which Wood and Wood added to the system (i.e, two choice questions and tags, p.153). Their analysis was aimed at exploring the relationship between children's cognitive performance and teacher demand. The study confirmed previous findings that while high level demands did lead to high level responses, question after question strung together by the teacher limited the children's talk.

The coding schemes used in these studies provided a way of categorizing each teacher move in relation to requesting certain defined cognitive skills in interchanges with young preschool children. As teacher behaviour is coded independently of child behaviour the schemes are applicable to identifying teacher behaviour in other settings. However, as
the studies concerned preschoolers, only one type of cognitive demand (defined as 3R knowledge) concerned literacy and numeracy. As well, teacher behaviours related to fostering early, formal instruction were not included.

The kind and styles of teaching interactions

While interactions with older children may differ from those with younger children it is of interest to examine the category system developed to observe teacher conversations in the large scale observational study referred to earlier. This was carried out in British primary school classrooms (7–11 year olds) by Galton, Simon and Croll (1980). The observational instrument was designed to allow detailed analysis of the type of questions and statements used by teachers so that the quality of teacher-child interactions could be determined. In six major conversational categories, questions were separated from statements. They were each coded as either task, task supervision or routine. In addition the questions were classified (by children's responses) into those resulting in recalling facts, closed solutions, or open solutions. Using this coding scheme, Galton and his colleagues found that the interactions with individual children were primarily of a task supervision or routine type and thus in what they labelled the "lower level." The dialogue which furthers a child's own learning was very infrequent.

The complex scheme used in this study allowed for a comprehensive analysis of interactions across all subject areas in many different classrooms with older children. Particular emphasis was given to the analysis of open questions as these were seen to relate most closely to "encouraging enquiry and discovery learning" (p. 8). As the coding of teacher questions was determined by the child's response the use of this aspect of the scheme is limited for this study.

The category systems described above were all devised for one-to-one interactions in individual situations. However, a study by Rapin (1991) of interactions within the group/class situation is of interest as it was undertaken in New Zealand new entrant classrooms. Rapin developed a system of coding the interactions from classroom observations as a basis for studying whether and how teachers used activities which individual children could enter and perform at different levels. The teacher behaviours within the interactions were coded as extend: simplify; collaborate; model; independent; praise; reorient; correct; question-open; question-closed; and other. While the analysis indicated that teachers provided flexible, adjustable activities more often than non-adjustable ones, both types were considered complementary for flexible instruction.
Rapin's coding scheme (c.f. Clay's (1985b) system but for studying oral language) for use in the classroom setting categorized distinct teacher moves in all curricula areas related to facilitating or possibly limiting children's learning. It also identified ways in which teachers fostered open and closed responses.

IDENTIFYING FACILITATIVE TEACHER BEHAVIOUR

Each of the coding systems used above was devised to fulfil the purposes of the investigator. Bakeman and Gottman (1986) emphasized that researchers should determine what they think is important and what they want to extract from the passing stream of behaviour, and to use a tightly focussed coding scheme to achieve this. Some of the category systems developed to analyse adult behaviour in interactions have been summarized under three main groupings. These concerned; children's language development, the role of language in thinking, and the kind and styles of interactions teachers use. As each has a particular emphasis, the behaviour and distinctions thought to be important for exploring the problem are reflected in the decisions made regarding the coding scheme. In the studies on oral language learning, the category systems identified the opportunities that were available in interactions for fostering children's language development. The emphasis in schemes and research related to extending children's cognitive learning was on identifying the elements in conversation that assisted children in learning to think. The coding schemes for analysing particular styles and quality of interactions that occur in the general classroom teaching of this study reflected the investigator's orientation and were designed to identify the full range of teaching moves among the interactions taking place.

The aim of the analysis of teacher behaviour in the present study was to explore the nature of teaching acts that enhanced children's opportunities to take their learning further. The coding scheme needed to embody the behaviours and distinctions is important for exploring this problem. The underlying assumption was that supportive teacher behaviour which encouraged and stimulated children's thinking and learning would facilitate independent learning more effectively than would teacher behaviour not directed toward this end. Given this assumption the question was: To what extent and in what ways will facilitative teacher behaviour affect the nature and incidence of independent learning in children?

The perspective is compatible with aspects of many of the coding systems developed for the research studies summarized above. Teacher behaviour that is categorized broadly as either "open" or "closed" can be abstracted from the schemes devised and from many
of the sub-categories within them. The schemes concerned with developing children's thinking and the studies on cognitive demands have these features documented. The notion of open versus closed is also incorporated in different ways in the research on the style and kinds of teaching interactions, although Galton, Simon and Croll (1980) considered a response from a child was required to make such a distinction. In the study reported here a child response was not required in order to distinguish what is here called facilitative teacher behaviour (see p.95).

For this study it was decided that a finer distinction than open or closed was required in order to ensure that all aspects of supportive and facilitative teacher behaviour that could create increased opportunities for independent learning were taken into account.

Categorizing teacher behaviour

A selective coding scheme (see pp.99 to 105) was developed to categorize all aspects of teacher behaviour that were deemed to promote and support independent learning. The six categories developed in order to code independent learning in children were used as a basis for identifying teacher moves that were considered facilitative of independent learning. Using Wood & Wood's (1983) term, the categories of teacher behaviour were the "mirror image" of the classification of examples of independent learning in children (see below). A similar procedure was adopted by Wood and Wood. They used Tizard et al.'s system for classifying teacher cognitive demands and then took the mirror image of these to classify the child's cognitive responses.

Categories

<table>
<thead>
<tr>
<th>Independent learning in children</th>
<th>Facilitative teacher moves (for independent learning)</th>
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</thead>
<tbody>
<tr>
<td>showing relationships</td>
<td>showing relationships</td>
</tr>
<tr>
<td>checking</td>
<td>checking</td>
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<tr>
<td>trying and testing</td>
<td>trying and testing</td>
</tr>
<tr>
<td>attending to errors</td>
<td>attending to errors</td>
</tr>
<tr>
<td>working at difficulties</td>
<td>working at difficulties</td>
</tr>
<tr>
<td>rehearsing and repeating</td>
<td>rehearsing and repeating</td>
</tr>
</tbody>
</table>
All teacher behaviour related to creating opportunities that might facilitate child behaviour in any one of the six categories of independent learning was described as a facilitative teacher move (see Chapter Five, p.95). The coding scheme of facilitative teacher behaviour was applied to both children’s actions and their talk in classroom settings. The analysis was intended to show what kind of teacher behaviour might assist the development of independent learning. The details of the coding scheme used for analysing teacher behaviour in teacher-child interactions are in Chapter Five (p.99).

Summary

The purpose of the review in Chapters Two and Three was to clarify the nature of the concept of independent learning and how it was to be studied in the classroom setting. The essential qualities and processes involved have been identified and explained to provide a conceptual formulation that seeks to account for examples of independent learning by school entrants. Category systems for both children’s independent behaviour and teacher behaviour associated with facilitating independent learning were described.
CHAPTER FOUR

METHOD

This chapter presents an introduction to the features of new entrant classrooms in New Zealand schools, followed by sections on the outline of the study, the selection of teachers and children and a description of the research setting. The final sections set out the observational and recording procedures, describing how the child and teacher behaviours were recorded for later analysis.

The next chapter will include a detailed description of how these data were analysed into a series of categories designed to capture independent learning and associated facilitative teacher behaviour.

NEW ENTRANT CLASSROOMS

From their first encounter with school, New Zealand five-year-olds are involved in academic matters. Teachers provide children with extensive opportunities for talking and listening, for reading, writing and numeracy learning, for developing science, nature study, social studies and health concepts, for engaging in art and craft, music and movement, drama and physical education. These opportunities are provided in a context of integrated activities which span a broad national curriculum. Children are exposed to a literacy based programme in which they are immersed in oral language and book language and in which early writing tasks form an integral part. The environment is rich in print. A wide range of varied mathematical apparatus and environmental materials aims to foster the development of early numeracy concepts and skills. Other experiences through environmental studies and expressive activities using different art forms, craft construction, acting, and musical activities are also available. Together with literacy activities, these experiences are often incorporated into topic, interest or thematic studies, creating opportunities for integrating activities. The expressive work and creative
exploration in which the children engage, can be seen on walls in classrooms, foyers and corridors.

Children in New Zealand begin school on their fifth birthday (Birch and Birch, 1970), so they enter school at any point in the school year, except that following school holidays, a small cluster of children may start together. The first or reception class is usually referred to as the new entrant class. Children stay in this class for varying lengths of time, for the organizational pattern of the junior school over the first three years is flexible and relatively unstructured. While the school day is from nine a.m. to three p.m., children starting school sometimes go home an hour earlier than the others for the first few weeks, as they adjust to the new environment.

The early attention to academic matters means children are being helped to acquire and to improve literacy, numeracy and other school-related learning. It does not imply a formal approach to teaching or to the learning context. The classroom setting is best characterized as informal and flexible. Children move around the room or even outside it when involved in tasks in small groups or alone. Working in this way, they frequently talk with those working near them so there is a constant hum of chatter. The teacher may work with the whole class, with small groups in various parts of the room, or she may move among the children as they engage in tasks, setting up individual teaching interchanges. These are classrooms where the intention is to have children working within a social context of interaction and involvement that fosters independent learning*.

DESCRIPTION OF THE STUDY

Young children's early learning opportunities and the teaching-learning interactions they engaged in with the teacher were explored in an intensive observational study in two new entrant classrooms. In this research, systematic observation was used to identify and eventually to understand the nature and correlates of independent learning as it occurred among the activities and interactions of new entrant classrooms.

Observations were required that allowed for examination of all those child and teacher moves that provided evidence of and contributed to independent learning. While it is difficult to focus on both sets of behaviour at once, it is necessary to consider both in terms of social interaction. Preliminary trials provided the opportunity to explore procedures for recording individual children's behaviours and for taking observations of teachers' behaviour while teaching.

* Such a term has an accepted meaning in the New Zealand educational scene.
The nature of the learning experiences to which the children had access were important in examining how independent learning might occur. For young children entering school, a distinction can be made between two different kinds of observable learning experiences that are relevant for this study. The first is engaging in activity non-interactively (i.e., engaging in action without talking with others), and the second is participating in interaction (i.e., engaging in talking with others). These two situations however, overlap in the continuous "stream of behavior" (Bakeman & Gottman, 1986). A feature of this research design was that during each ten minute observation period the observer's attention changed from the observation of all behaviours occurring as a child engaged in activity, to observation of child and teacher or child and peer talk in any interaction with that child, and vice versa. This procedure aimed to record the stream of behaviour.

The collection of behavioural data on the ways children engaged in activity allowed for possible identification of instances of children taking their own learning further. Teacher and child interactions were recorded so that an analysis could be made of those contributions within teaching interactions between teacher and child which might support and promote such independent learning. Collectively then, an observation record was made of (a) children's activity that arose out of both self-selected learning situations, and out of learning situations which were initiated by the teacher, and (b) the learning opportunities occurring within teacher-child and peer interactions.

Additional data were also gathered to provide information about the individual and environmental contexts of independent learning. A selected range of tests was used to assess differences among children on entry to school, and to capture change over time in children's literacy and oracy learning. These tests were administered at the beginning and at the end of the study. To gain an understanding of the children's perspectives on how they learnt, they were interviewed informally, and asked "How do you learn?"

SAMPLE

Selecting the teachers

Optimum learning situations were sought for this investigation of independent learning. As very close and detailed observation of the educational context in which teaching and learning were occurring was required, a sample of two new entrant classes was considered sufficient for the study. Selection criteria were required for both teachers and
the learning situation. As these might have created considerable difficulty with teacher selection, as large a pool as possible of candidate teachers was initially obtained. Senior educators of the Department (now Ministry) of Education, advisers to junior classes, University and College of Education early childhood lecturers and principals of schools were asked to nominate suitable teachers from permanent teachers with a minimum of three years teaching experience at the new entrant level in schools in metropolitan Auckland. Selection guidelines included teachers who provided programmes that were considered to foster children's independent learning. It was also suggested that indications of such a programme might be the providing of opportunities for children to initiate or select some of their own activities (drawing, constructing, writing, reading etc.), and provision for the occurrence of "quality" one-to-one interactions with the teacher.

A necessary requirement for selection was that the teachers have, in their classes, a new intake of at least four, but preferably more, five year olds who had started school at the beginning of Term three (early September). Another factor in selection was that the children involved in the study would not be likely to be transferred out of the new entrant class before the end of the school year (December) when the research would be completed. This criterion was met and no children were lost from the study for this or any other reason. In addition, the teacher was to be the only person teaching that class (i.e., was not released by another teacher for any part of the day). Of necessity therefore, the classrooms had to be conventional one teacher rather than multi-teacher situations.

Selection criteria for teachers were applied strictly and, as Table 4.1 shows, only two teachers in the sample met all the criteria. It is important to note that Miss Cox and Mrs Sengler,* the teachers selected, were regarded as particularly able and talented. They were trained in New Zealand. Mrs Sengler had 15 years teaching experience with new entrant children. She had been teaching this age group at Kumin for three and a half years. Miss Cox had moved to Bruntlee at the beginning of the previous school year. She also was very experienced having taught new entrants for a total of 11 and a half years. Both teachers had engaged in inservice training. In particular, they had completed the Early Reading Inservice Course (ERIC) which focussed on early literacy behaviour and approaches to teaching (Slane, 1979), and had participated in a research project concerning children's engagement with the new entrant programme of instruction and in 12 post-research discussion sessions (Clay, 1985b).

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* Pseudonyms were used for the schools and teachers to respect confidentiality. Permission was willingly granted by parents and the schools to use all the children's names. The use of their real names was important for describing some examples of independent learning.
Table 4.1
Description of research sample: teachers

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total teachers recommended (on basis of independent learning criteria)</td>
<td>20</td>
</tr>
<tr>
<td>Teachers not teaching new entrant children</td>
<td>4</td>
</tr>
<tr>
<td>Teachers regularly released by another teacher from teaching the class</td>
<td>6</td>
</tr>
<tr>
<td>Class taught by other teacher(s) during part of the day (cross-grouping)</td>
<td>3</td>
</tr>
<tr>
<td>School population not suited to the project (non-representative: very high socio-economic area)</td>
<td>2</td>
</tr>
<tr>
<td>Insufficient number of new entrants entering at the beginning of Term 3</td>
<td>3</td>
</tr>
<tr>
<td>Research sample</td>
<td>2</td>
</tr>
</tbody>
</table>

Selecting the children

Since it was important to be able to analyse each child's actions and conversations with the teacher very closely, a sample of only eight children was selected for the study. Two girls and two boys from each of the two classes were selected from the newly entered five year olds. At Kurnin school, where Mrs Sengler taught, the four subjects were randomly sampled from the seven most recent new entrants. The girls were Anna and Renee, and the boys were Toby and Adam. Only four children were available for selection at Bruntlee school in Miss Cox's new entrant class. These were two boys and two girls, Phillip, Lyle, Rachael and Nicky. All these children were considered by their teachers to be typical of the new entrants in their classes.

At the first observation time the children were five years old. Observations began within three weeks of the children's fifth birthday (the range was from 6–19 days at Kurnin and 10–21 days at Bruntlee). At the beginning of the second observation time the average age of the children was five years, three months.
The new entrant class size in the two schools was similar. Over the course of the study the classes changed as a result of the continuous entry policy for five year olds. A small group of children was moved out of each room during the term. The number of children in each class at observation Time 1 and Time 2 respectively, was 25 and 30 at Kumin and 24 and 28 at Bruntlee. There was an ethnic mix of children in the two classes including children from European (Pakeha), Maori and Pacific Island families. At Kumin approximately two thirds of the children were European and one third from the other ethnic groups. The school population was highly transient in a community where the full range of economic groups was represented, from economically advantaged to economically disadvantaged. At Bruntlee there were almost equal numbers of Maori and European children with one child from the Pacific Islands. Both the school population and the community were described as stable with the families in the area considered to be in the middle to low economic range.

SETTING

The features of classrooms described above, which reflect general practice in New Zealand junior school classrooms (Department of Education, 1985), were applicable to the two new entrant classrooms in the study. There were many learning opportunities created by Miss Cox and Mrs Sengler in an environment where the children worked without close teacher supervision for parts of the day. Children were encouraged to take considerable responsibility for their own activity and the programme was supportive of their endeavours. Each teacher worked closely with the children, helping and guiding their learning as necessary while, at the same time, building self-reliance. The classrooms were rich in opportunities for observing and analysing both children's behaviour as they engaged in learning opportunities, and teachers' behaviour as they assisted them.

There were numerous occasions during the day when the children were participating in tasks or action related to reading, writing, mathematics, science or social studies, health, art and craft, music and drama. They could be reading interesting and well illustrated little story books from the wide range available in New Zealand schools; composing and writing their own stories about, for example, a current interest such as spiders, a recent beach trip or a favourite book character; exploring with science equipment, water or sand; seriating a range of items, or sorting and matching varied natural and manufactured materials; painting with dye over a crayon drawing of a ghost they had created; or using other resources in many different ways.
Throughout the day children were either able to select for themselves the kind of task they wished to engage in or were asked to do particular tasks by the teacher. The majority of these tasks allowed for the product to be created individually by the children, allowing them to represent their own ideas in their own way. For a significant proportion of the time the children were able to explore, to attempt new things, to problem solve and to initiate novel responses.

The two main kinds of learning experiences discussed above, namely activities and interactions, often occurred in tandem. Children might talk to their neighbour about what they were doing while engaged in some action; a group of children might talk as they worked on a task; or the teacher might spend time talking with an individual, discussing the work in progress. Thus, interactions often emerged out of the activity being undertaken. Children were encouraged to interact with their peers and were free to talk to each other over the day as they worked around large tables or indeed anywhere in the room, engaged in particular activities or participating in drama, role playing or music making. It is important to note that opportunities to talk freely did not create excessive noise levels, because both teachers had good classroom management and organisational skills and the children were encouraged to take responsibility for their own behaviour.

There were many opportunities for individual teaching interactions throughout the day. The teachers sat alongside children and worked with them, helping and guiding them in their tasks. They moved around the children, while they were at low worktables or wherever they were located inside or outside the classroom. The teachers might work for quite long periods with any one child but they spread their attention across all children over time. They appeared unhurried in these interactions, concentrating their attention on the children with whom they were talking and the task in hand. (See p.103 and Appendix B.3 for examples of this type of teacher activity.)

However, while there were many opportunities for both peer and teacher-child interactions, much behaviour was nonverbal. Within the opportunities children had to engage in a wide range of interesting activities, they were able to use what they knew and could do from their actions without having to put these actions into words. They often worked for long periods alone at an activity, fully engaged in what they were doing (see Appendix B.2), while painting a picture, reading a book, working on a story, sewing, making an elaborate construction or viewing aphids on roses through a magnifying glass.

In the two new entrant classrooms there were four main organizational patterns used throughout the day. Children were sometimes gathered all together as a whole class,
sitting on the carpet in front of the teacher; sometimes they were part of a small group working with her; sometimes they were engaged in varied individual tasks sitting at large group tables; and sometimes they joined with others or worked alone in areas set up for mathematics, science, drawing, construction, writing, reading etc. or engaged in such tasks in free spaces around the room. Except for the times when teachers were with the total class or were teaching a small group, they moved around the room interacting with individuals, often for extended periods of time, or talking and working with small, informal clusters of children (see p.98).

The ways in which the teachers and children worked and used the environment over the period of the day in the new entrant classroom had to be accounted for when planning the behavioural observations because of the freedom and diversity that was apparent.

**ASSESSMENT**

Children are very different on entry to school (see p.35 and p.40). They have learned many things from a wide range of preschool experiences. Individual children's starting points, as well as the way teachers respond to individual differences and build on each child's strengths, are of particular interest in a study of independent learning.

The children's knowledge of and control over some of the competencies required in school was measured at the very beginning and at the end of the study. Reading, writing and oral language were probed. No appropriate mathematics assessments normed for New Zealand were available at the time data was gathered for this study.

The following tasks were considered appropriate in that they assess performance and the nature of change in literacy and oral language learning reflecting some of the emphases of the programme in initial schooling in New Zealand (McNaughton & Ka'ai, 1990). Assessments used were: Concepts About Print, Letter Identification, Writing Vocabulary (Clay, 1985a, 1993a) and Record of Oral Language (Clay et al., 1983).

An informal interview with the children asked them to describe how they thought they learnt.
OBSERVATIONAL PROCEDURES

Observations were planned for two different times so that the behaviours of both the children and teachers were observed near school entry and after the children had been with their first teacher for almost three months. This meant that not only could a range of behaviours be observed at each time but also change could be inferred over that period. In September, when this study began, the third and final term of the school year was starting, and a few children were waiting to enter school. Some 15 weeks later the school year ended, just prior to Christmas.

Observations focussed on the opportunities children had for working by themselves, with others or with the teacher, on tasks across all curriculum areas and on all the interactions occurring. Occasions when the whole class was together with the teacher were excluded from the systematic observations, because it was not possible to tape-record the contribution of individual children within the frequent collective responding prevalent in this situation. It was also difficult to ascertain the level of attention and involvement of any particular child within such a large group. Informal descriptions were recorded of this part of the day, as part of gathering information about the classroom context.

The first set of observations was made when the children had been at school for up to two weeks (Time 1) and the second took place after about 12 weeks at school (Time 2). Thus, observations were made from mid September to early October and from mid November to early December. In all there was a total of 20 school days used for observation. Data were gathered for five days in each classroom at each observation time. Observations were carried out over the whole school day. The length of the school day varied for these children. At Time 1 it was from 9 am to 2 pm and for Time 2 from 9 am until 3 pm. Excluded were the periods of the morning interval (15 minutes), lunch time (one hour) and the short afternoon break (five minutes).

Both observation one and observation two were scheduled to be made in the two classrooms over a two and a half week period. Observations of the equivalent of a school week were made by observing in half day blocks.

Schools were visited alternately, where possible, so the observations were spread across the period scheduled and were on different days of the week. Each day of the school week was not sampled. Attempting to achieve this would have spread the observations over too extended a time period. As well, in an earlier observation study of
ten new entrant classrooms in Auckland the researcher found there was no significant difference between what occurred on any day of the school week (Watson, 1980).

Making observations over the whole school day enabled the full range of learning experiences the children encountered to be sampled. However, as the children had shortened afternoons, at Time 1 fewer observations were made during the afternoon programme. Opportunities for learning to do and to make things, and teaching interchanges occurring with the teacher, were known to take place more frequently within the context of what is variously referred to by new entrant teachers as theme, unit or interest studies, or "developmental" or "free choice" activities. Curriculum time devoted to the above aspects would often occur in an afternoon session of school as considerable attention was given to the acquisition of early reading and writing behaviours in the morning programme in New Zealand classrooms (Clay, 1985b; McNaughton & Ka'ai, 1990; Watson, 1980).

In order that the normal life of the classrooms continue without change a tentative programme for observing was developed and finalized after consultation with the two teachers. Particular school organization required different arrangements. Flexibility was required so that special school events, teacher commitments, illness and various other interruptions that are part of school life could be accommodated. Mrs Sengler and Miss Cox were asked to keep to their normal programme. Every effort was made to ensure that the presence of the observer did not create any disruption. Experience gained from the earlier observation study carried out by the researcher, and from informal observation in these two classrooms suggested that it would not be difficult for the observer to remain uninvolved. It was explained to the children before the observation commenced, that the researcher had to keep writing on her papers and to work the tape recorder, and so could not help them with their work or talk to them. No difficulty was experienced. Observations were made within the classroom itself and did not continue if the class moved outdoors for activities such as physical education, to visit the school library, to go to movie film viewing, school assemblies or to combine with another class. On the other hand, observations continued if target children went outside to continue the tasks they were engaged in.

One child at a time was the focus of the observations. For ten minutes, continuous observations were made, allowing for sequences of participation in activities, and interactions with the teacher and other children to be recorded. Pilot observations had indicated that a ten minute sequence of behaviour provided a substantial sample of any activity being engaged in and also allowed for recording sustained portions of conversation. Such a length of time also provided opportunity to observe children changing tasks.
CODING PROCEDURES

Developing a coding scheme is the initial move in observational research, according to Bakeman and Gottman (1986) in their comprehensive account of observing interaction. The success of the study hinges on such a coding scheme, for if the "lens is thoughtfully constructed and well formed (and aimed in the right direction) a clearer view of the world should emerge" (p.19). Three coding schemes were used in this study to try to identify independent learning and the teaching moves associated with it. The first involved a way of segmenting the stream of observed behaviour into the two kinds of learning experiences being studied, namely, engagement in activity and engagement in interaction. The second and third coding schemes reanalysed these data. The second coding scheme concerned the categories which were developed to identify instances of behaviours, called "child directed acts", considered to be indicators of independent learning. The third scheme was devised to identify "facilitative teacher moves" associated with independent learning. The latter two schemes are pivotal to the analysis of independent learning. The detail of the construction and application of these two coding schemes is in the next chapter.

Learning experiences

The recording procedure adopted allowed for detailed observations of the two main kinds of learning experiences relevant to this study. To differentiate between actions and interactions, the behaviour of each observed child was divided into activity episodes, interaction episodes (further classified into two categories; teacher-child and peer), or into non-episodes for situations deemed as not providing a learning experience.

Episodes of activity

At various times throughout the day, children were working on individual or, sometimes, group tasks such as reading books, writing stories, drawing, building or using mathematics equipment. The period when an observed child was involved in such tasks, without talking to others, was identified as an episode of activity. Activity was defined as all noninteractive behaviour (i.e., it included talking or reading aloud to oneself but not to others) which related to any task being undertaken by an observed child. It involved observations of target children as they engaged in activities that were (a) initiated by themselves, (b) initiated by the teacher, (c) initiated by peers, or that (d) occurred fortuitously.
Episodes of interaction

During the many occasions when children were working on the tasks described above, the teachers moved around the room to work with individual children, with small clusters of children that had formed, or to gather small groups together around them for particular teaching purposes. The children also frequently talked to each other as they worked. The involvement of a target child* in any conversation was identified as an interaction episode. An interaction was defined as all verbal and nonverbal behaviour occurring in interchanges that included the observed child. It involved observations of the target children as they participated in, (a) teacher-child interactions (one-to-one interchanges with the teacher, and, interchanges with the teacher and additional participants) and, (b) peer interactions.

Non-episodes

Occasionally a child would not be engaged in either of the above situations as they were perhaps between tasks or upset for some reason. A non-episode was therefore defined as all behaviour that did not fit episodes of activity or interaction as described. This included, for example, such behaviour as (a) a child waiting for the teacher, (b) crying or otherwise upset, (c) tidying up work completed, or (d) aimlessly wandering around the classroom.

All the behaviour was divided into episodes. The episode types were mutually exclusive and exhaustive. Considerable variations could occur in the length of episodes. For example, episodes of activity ranged from a brief encounter with a puzzle to lengthy participation in composing and writing a story. Episodes of interaction could include short interchanges in response to a question by a child or a long and detailed dialogue about how to make a Japanese kite. If a child changed from one activity to another it was recorded as a new episode. The description of how episodes began and ended and the classification system used for identifying the sub-episodes within the learning experiences are described in a later section of this chapter (p.76).

Making the observations

Two kinds of recording were used to obtain as much behavioural data as possible about what the teacher and the identified children were doing in the classroom. These recordings covered both child engagement in activities and interactions. Detailed written

* One of the eight children in the study.
records were made of all engagement in activities, using procedures which are described under the later section called Observation Records (p.76). In addition all non-episodes were included in the written records.

For the second type of behavioural observation, engagement in interaction, all conversations were recorded verbatim by audio recording using radio microphones, supplemented with written notes of as much nonverbal behaviour as possible. The attempt to record all verbal behaviour in interactions can be difficult (see Gazden 1988a; Clay 1985b), so audio recording was considered to be the only sure way to gain a precise record of the teacher-child and peer interactions, even though this meant time consuming preparation of transcripts (Tizard & Hughes, 1984). Audio and written recordings were selected in preference to video recording as the children were constantly moving around the classroom and on occasions outside it. Attempting to follow them closely with video equipment was impractical. However, at Time 1 and Time 2 in both classrooms, a sequence of observations that included each child in the study was videotaped to provide a record of the classroom setting and a visual record of some of the learning activities available.

Audiotape recordings were made of all interactions that involved the target child currently being observed and the teacher, and that child and any other children. The teacher wore a radio microphone throughout the observations. Recordings were made on cassette tapes on a tape recorder system set up to allow for intermittent recording. When, at any time during an observation sequence, the teacher had contact with a target child, the recorder was started by remote control by the researcher. It ran until the interaction ended when it was turned off by remote control. This system avoided the recording of the large amount of teacher talk which was unconnected with the child being observed. As well, later transcribing of the tapes was facilitated by this editing procedure.

A separate audio recording system was used for each target child’s conversations. Cassette tapes were used to record the full ten minutes of observation for each child. A radio microphone attached to a small storybook was placed close by the group of children of which the target child was part, or nearby if the child was alone. (Radio microphones record everything within about a three metre radius.) If the child moved position, the researcher picked up the book and small device and replaced it near the new location. (The cassette recorder was moved if necessary.) The children appeared to take little notice. It had been explained that tape recording of talk going on in the classroom would be taking place using the same kind of microphone the teacher was wearing. At the end of the study some examples of the tapes, recording interactions,
were played to the children. They were very interested to identify members of the class and listen to the teacher. Some of the videotaping described above was also replayed.

Recording the conversations on this two-way system had particular advantages. Interchanges between child and teacher were recorded on both audio-taping systems, providing some protection against any technical problems that might occur and alleviating concern over recording in classrooms with a potentially high noise level. It was expected that this would occur when all children were engaged in and talking about a wide variety of different tasks. Few problems were encountered and reasonably clear recordings were obtained.

Photographs were taken by the researcher of all the target children's individual work as well as of classroom displays which included their products.

**The ten minute observation samples**

The four children in each class were observed in sequence. When the first ten minute observation sample was completed for child one the researcher's attention shifted, after a one minute pause, to the next child. Observations of the four target children were rotated. A ten minute behaviour sample for each of the four target children in one class (allowing a minute for the changeover) meant a full observation sequence took 43 minutes. The observational sequence for the four children was determined randomly and prepared in advance for each day of observation. If a target child was absent the next child in the order was observed. Missed observations were made up on subsequent observation days, maintaining a balance for each child across each part of the school day.

The total observation time was 36 hours spread over four and a half hours for each child. At Time 1, 16 hours were recorded. There was a minimum of one and a half hours of observation on each of the ten days. At Time 2, when observation totalled 20 hours, two hours were recorded on each observation day.
OBSERVATION RECORDS

The observation records provided a detailed account of each ten minute observation sequence segmented into episodes of activity, episodes of interaction and non-episodes. They were compiled from the written field notes and the transcription of the taped interactions. They also contained additional information gathered about the situations in which the episodes occurred. These records formed the data for further analysis of child behaviour into the categories of child directed acts and of teacher behaviour into categories of facilitative and other teacher moves. The analysis procedures for coding these records are presented in Chapter Five.

Identifying episodes and non-episodes

The written field notes recording engagement in activity and notes related to the context of engagement in an interaction were written on to a Field Observation Record Sheet (Appendix A.1). When the tape recordings were transcribed, all these data were combined to form the written record of a ten minute behaviour sample.

The following section describes how activity and interaction episodes were identified.

Activity episodes

An activity episode began with a starting move which could be a target child’s action, a teacher’s direction, non-verbal action, or comment by peers. For example, a child could decide to paint a picture or the teacher could suggest that the child choose to read, to write a story or use the water tray. An activity episode ended when the task was completed, interrupted or disbanded (see Appendix A.2). Activity episodes were divided into three sub-episodes according to their origin. These were further differentiated on the basis of the opportunities they offered the child.

1. Child initiated activity occurred when the child selected the task from an (a) open-ended choice, (b) limited choice, or (c) teacher provided options

2. Teacher initiated activity occurred when the teacher initiated the task and it was (a) indirect (element of choice involved), (b) assigned open, or (c) assigned limited
3. Incidental activity was that which occurred fortuitously.

More detailed descriptions are provided on Appendix A.2.

**Interaction episodes**

Starting moves for interaction episodes came from the teacher, the target child or were "outside starts" involving other children. They could be verbal or nonverbal. For example, a target child could ask the teacher for help with story writing. The end of an episode was marked by the conclusion of the interchange, an intervention of some kind or the interaction ceasing. There were two types of interaction episodes labelled teacher-child interactions and peer interactions.

1. Teacher-child interactions

Four sub-episodes were used to distinguish the kinds of teacher-child interactions occurring. The way the interaction was initiated determined the classification. Sub-episodes were those when the teacher (a) engaged in an interaction with an individual target child alone (individual), (b) interacted with a target child within small group teaching (embedded), or (c) interacted with an individual target child in an informal group. Small group teaching (d), involved interactions where the target child was present but was not engaging in interaction with the teacher individually. These interactions could be started by either the teacher, or the target child.

2. Peer interactions

Peer interactions were those where either the target child was interacting with one other child or with a group of children. They were started by either the target child or another child.

Details of both the starting and ending moves and the sub-episodes for teacher-child interactions are in Appendix A.3 and for peer interactions, in Appendix A.4.
Setting data

A Field Observation Record Sheet (Appendix A.1) was used to record the details of the setting once an episode had been identified. Specific information was recorded about organizational settings, classification of the curriculum area and tasks, location of the child, and the materials being used, for each episode.

Organizational settings

The kinds of organizational situations in which the children were participating were coded into five categories. They were (a) teacher-child alone, (b) child working alone, (c) informal group, (d) small group teaching, and (e) incidental. Definitions of the organizational settings are in Appendix A.5.

Curriculum areas and tasks

A broad classification was given to the area of the curriculum that the teacher had specified as taking place at particular times during the day. Three terms were used synonymously by the teachers to describe times when children could work from a range of varied tasks that covered all curriculum areas including science, social studies and health activities. They were choosing time, developmental activities, and theme-based activities.

Areas identified separately were reading, mathematics, and story writing; art, craft, construction and sewing were classified together and physical education was the final curriculum area noted by the new entrant teachers. Each task within a curriculum area was identified to indicate the varied range of tasks available in each classroom. The curriculum areas are to be found in Appendix A.6 and the list of tasks is in Appendix A.7.

Location and materials

Where the child was positioned was noted by identifying the part of the classroom in which the child was working (e.g. library, worktable, carpet area). The materials and equipment being used were briefly described to provide an indication of the resources available.
Summary

At this point the description of the study and procedures are summarized. The framework outlined provides an introduction to the detail of the coding schemes used to identify children's independent behaviour and teacher behaviour which are presented in the next chapter.

Categories of behaviours involve instances of behaviour which contain identifying features that indicate that children in some way may be initiating and directing the processes involved in learning for themselves, classified into categories. Examples of behaviours are illustrative examples of instances of the identified behaviours. Characteristics of independent learning involve the identification of some aspects which appear to be associated with independent learning. Facilitative teacher behaviours concern the teaching moves within teaching interactions, that create opportunities for independent learning. The types of learning experiences available and the independent learning opportunities teachers initiated are classroom factors. Individual differences in teachers' behaviour relative to one another and the children relate to both teaching interactions and creating a context for learning.

Chapter Five presents the comprehensive category scheme of both child behaviour and teacher behaviour associated with independent learning.
CHAPTER FIVE

CODING THE OBSERVATIONS

The aim of the analysis was to identify in the observation records, incidences of child behaviour which exemplified independent learning, and to capture the teaching interactions associated with such activity. The first part of the chapter describes how independent learning was identified by child directed acts. The second part explains how the teacher moves in the teacher-child interactions were analysed.

IDENTIFYING INDEPENDENT LEARNING IN CHILDREN

On the basis of the definition developed in Chapter One (p.3) behaviours were identified indicating that the child may be initiating and directing processes involved in learning.

Child directed acts

The form of independent learning described as child directed acts was defined as follows:

*child directed acts are instances of behaviour containing identifying features indicating that the child in some way may be generating and directing by his or her own activity the processes involved in learning.*

To identify and analyse the independent learning shown by new entrant children observation data from written records were analysed and coded as child directed acts. Independent learning was inferred from these behaviours (see p.3).
The notion of independent learning was based on a conceptual framework which drew on the theoretical perspective of a constructivist approach to learning. Tentative categories were devised a priori. These were tested on transcripts of interactions and written field notes of episodes of children's activity observed in classrooms during preliminary observations. The detailed classification of child behaviours was revised and expanded as a result of further observations.

The six categories (see definitions pp.83 to 95) were:

1. showing relationships
2. checking
3. trying and testing
4. attending to errors
5. working at difficulties
6. rehearsing and repeating

While the categories were primarily designed to specify what was observable, there was also an attempt to interpolate mental processes. The categories were not inclusive of all cognitive processes but they focussed on behaviours that were considered central to young children's learning in early schooling. As they were being used in new entrant classrooms they had to be applicable to a wide range of behaviours occurring in many varied tasks and situations, across all curriculum areas. The behavioural codes within each category attempted to reflect this variety. Characteristics of independent learning were identified from the data coded as child directed acts.

The form of the data

Out of the total behaviour observed and recorded as either episodes of activity or episodes of teacher-child or peer interaction (see Chapter Four, p.76) only those episodes which yielded child directed acts were noted for further analysis and interpretation. An overview of the analysis of child directed acts (CDA) is shown in Table 5.1.
Table 5.1
Analysis of child directed acts

<table>
<thead>
<tr>
<th>Total stream of behaviour</th>
<th>Episodes</th>
<th>Non-episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity</td>
<td>Peer Interaction</td>
</tr>
<tr>
<td></td>
<td>CDA</td>
<td>Non-CDA</td>
</tr>
</tbody>
</table>

The instances of behaviour containing identifying features indicating a child directed act were selected from the stream of child behaviour. Usually only part of an episode was analysed because child directed acts occurred intermittently. However there could be a number of child directed acts occurring in any one episode. A single category coding system was used and any instance of behaviour containing features of child directed acts was identified according to one of the six categories which were therefore mutually exclusive. Behaviours that could occur in more than one category were made mutually exclusive by definition. All attention to errors and action taken was coded in category four: attending to errors and text reading and writing were excluded from category five: working at difficulties. The identification of complex behaviours required very knowledgeable and experienced observers. Considerable advantage was obtained by having written records from which to work.

**CODING CHILD DIRECTED ACTS**

Instances of behaviour that contained identifying features of a child directed act formed one unit of analysis. The stream of behaviour in an activity episode or teacher-child or peer interaction episodes was analysed according to moves the children made. A child move was defined as any action taken by the child related to the task they were engaged in or any contribution to an interaction. A single move or sequence of moves to which a child directed act was assigned:
1. Began with the first child move having identifying features that corresponded with one of the six categories.

2. Ended when either:
   a) the next child move had identifying features belonging to a different category
   b) in the next child move the quality of the action or interaction changed and no longer fitted the category
   c) the child completed the task or the interchange ended
   d) the child stopped the task or changed to another task (i.e., a different kind of activity was coded as a new episode)
   e) the observation ended.

Each child directed act was assigned in relation to all of the previous information in the ten minute period. While the full context was not specifically categorized in the coding scheme, it was important that it be taken into account so that it was possible to interpret the behaviours within the ongoing situation.

Child directed acts were assigned into the six categories designed to identify the independent learning that was occurring as follows. If any one of the following behaviours was observed the instance was considered a child directed act. The definition of each independent child behaviour category is followed by descriptions of the codes and behaviour, and illustrations of child directed acts occurring within examples of both activities and interactions.

**Category 1: showing relationships**

*Showing relationships* is defined as making links or connections between objects or ideas, discovering similarities and regularities, detecting patterns, or relating and grouping information from different sources.
A child directed act occurs when a child:

1. Identifies or relates information, ideas or objects which fit a concept or category, that is, (a) linking of information, or (b) relationship of ideas, or (c) relationship of concrete/manipulative objects (e.g., says "that bit's from a pig" — pointing to a pastebrush's hairs; says "They are playing rugby because that ball is on the ground"; draws a dog as something the child is frightened of; matches objects to a pattern; matches language to print i.e., points while teacher reads).

2. Discards information, ideas or objects which do not fit a concept or category (e.g., says "No, that one [letter] doesn't fit"; says "These shorts [for the doll] are far far far too small").

3. Attempts to identify a relationship between information, ideas or objects but is not necessarily correct (e.g., says "Joy Cowley! Joy Cowley!" [author] as teacher holds up "The Three Little Pigs" book, a traditional tale).

4. Makes links with something known to make a new response (e.g., finds something to use to depict an object e.g., a cardboard box to make a fridge; represents in own way something known e.g., creates a caterpillar).

The following examples from the behaviour records illustrate the kinds of child directed acts categorized as showing relationships.

There were a number of different ways in which the children attempted to identify or relate information. Sometimes the relationship was one of ideas which fit a concept, as in this example of Anna's drawing. Here Anna's behaviour indicates she is relating ideas. A cat was chosen to represent something of which she was frightened.

[Anna was working on a task following the introduction and reading of a little book "I am Frightened" [Storybox]. She had been asked to draw something she was frightened of. She chose to draw a cat.]

Anna: Using a red crayon she drew the cat's face, put eyes and ears then drew a long oval shaped body. She started to colour the body in red, making lines that looked rather like fur standing up. Then she drew a tail. With a white crayon she began to colour over the top of the body. She continued the task until completed.
At other times children clearly indicated the way they were relating objects. Nicky makes the connection between the uses of pig's hair discussed earlier and the product, a pastebrush in this instance. The comment followed a farm visit.

Nicky: Do you know what? That bit's from a pig! [pointing to the bristles on the pastebrush]

Sue: What?

Nicky: That bit is from a pig. Miss Cox told us this morning.

Toby drew on what he knew, supporting this knowledge with evidence from the illustrations to make links in the following discussion.

[A little storybook was being introduced in preparation for individual reading to a small group of children. The teacher held the book so they could see the pictures.]

Teacher: What does Bill like to play?

Marcel: He likes to play soccer because he's got soccer boots.

Teacher: Yes he has. Indeed.

Toby: No! He's going to play rugby!

Kim: Look at...

Teacher: Oh! Rugby! How do you know it is rugby?

Toby: Course it's rugby, because that ball is on the ground. [pointing to the oval rugby ball in the picture]

Teacher: Okay! [smiling]...

**Category 2: checking**

*Checking* is defined as checking on oneself; being aware of processing and/or performance including planning, rehearsing and mediating through nonverbal or self-verbalizations; monitoring, comparing, confirming, and evaluating.

Child directed acts occur when the child:

1. Spontaneously comments on what the child can achieve or plans to do or needs prior to undertaking the task
   (e.g., says "This is going to be a butterfly"; says "I could cut out that first").
2. Makes a spontaneous verbal or nonverbal evaluation of self in relation to performance while engaged in, or on completion of a task, i.e., how well or poorly the child can do, is doing or did, or what the child knows or needs (e.g., says "This isn't hard"; says "I need two more counters"; says "I can't!"); nods firmly when sees a difficulty is solved).

3. Comments on what the child knows or doesn't know, can or can't do, is doing or needs to do in general (e.g., "I like reading stories!; I know about dinosaurs").

4. Explains to others what happened or consequences of what could happen, or how to do something in relation to what the child is doing, plans to do, or has done (e.g., "I am going to have to make it flat before I cut out the stars").

5. Indicates checking on the task in progress or on completion (e.g., by re-reading aloud [i.e., repetition in reading]; by counting to check quantity etc; by commenting on the task, e.g., says "This isn't a long book; I'm tipping it out now 'cause it's full").

6. Indicates that product or performance is unsatisfactory (e.g., screws up a painting and starts again).

7. Appeals for help when identifies something novel or unknown and realizes that it cannot be solved (e.g., a word in the text [verbal or nonverbal]).

8. Regulates attention while counting by pointing, or while reading by pointing to a continuous text (without reading aloud).

Among the examples of children checking on their own performance was how they commented on their success.

[Renee was doing an alphabet task, matching alphabet cards by making a pile for each letter.]

Renee: [added letters 'n' and 'b' correctly to existing piles and then did the same with 'q'; turned to Marilyn the child beside her]

I'm getting some right! [proudly]
Sometimes the children monitored their performance in more than one way. Toby commented on his own achievement, as well as identifying what he thought he did not know, asking for help.

[After he finished reading his new story book Toby went to the teacher who was sitting near the group.]

Toby: I can read it!
Teacher: Hmm mmm. [smiling]
Toby: [began reading accurately] Who's going to lick the bowl [added in an extra word 'no', then read] I am. [continued to read accurately] No, I am! I am! I am! I am! I am! Stop! said Dad. [stopped and said to the teacher] What's that word? [pointing to 'I am']
Teacher: I am. [pointing to each word as she said it slowly]
Toby: [read] I am.

In other instances children were monitoring by commenting about what they were doing. In yet others they were evaluating their performance. The following example illustrates these behaviours.

[Anna had chosen to paint — her picture was a butterfly.]

Anna: Anna painted some of her picture then put her paintbrush down and folded one third of the paper over onto the painting. [the teacher had introduced this technique earlier in the week] [said aloud to herself] Like that. Put that bit over. She opened the paper out then folded it back again, pressing it hard with her hand. She opened it out again, looked at it carefully, then screwed it up and put it on the floor in the corner. She reached for another piece of painting paper.

Category 3: trying and testing

Trying and testing is defined as searching for alternatives, exploring and checking options, predicting, or testing something out and confirming, revising or rejecting it.
A child directed act occurs when the child:

1. Makes tentative hypotheses and tests them out (e.g., is reading a novel [new] book* and anticipates what the text will say [attempts to read may not necessarily be correct]).

2. Attempts to write a letter of a word, a word or a message (attempts may not necessarily be correct [not letter-like forms]).

3. Composes a message orally, identifies orally words or a letter to write, or for the teacher to write.

4. Confirms result of testing an hypotheses (e.g., comments on the outcome).

5. Evaluates and revises hypotheses according to test(s) (e.g., puts different colours of paint on top of each other each time trying to get green).

6. Accepts or rejects hypotheses (e.g., tries various pieces of a puzzle leaving those that fit in place; seriates according to size of objects, changing order as another object is added).

Some of the ways children attempt to work on testing hypotheses and at problem-solving, as they engage in learning about reading, writing and mathematics and are working at other tasks, are represented in these next examples.

[Rachael's group had just been introduced to a new reading book by the teacher. They were asked to read the book by themselves. Rachael was reading aloud to herself pointing to each word as she read.]

Rachael: Grandpa, Grandpa come with me.
Text: Grandpa, Grandpa come with me.

Rachael: Let's go fishing in the sea.
Text: Let's go fishing in the sea.

Rachael: What will we get?
Text: What will we fish for? What will we get?

* Novel (new) text for this research is (a) a new book introduced by the teacher to a group or child and the child's first individual reading of it and, (b) unfamiliar library books.
Rachael: Two big snapper for our tea.

Text: Three fat snapper for our tea.

[Phillip was working at the puzzle table in maths time. He had completed one jigsaw quickly then began another.]

Phillip: Phillip tipped out the jigsaw puzzle of a rocket. He started to put the pieces in, beginning with the smallest ones from the nose of the rocket and continuing in order of size. He found the base of the rocket and put that in. He tried each of the four pieces that were left in the next space. He turned the last piece four different ways to see if it would fit. He continued trying each of the pieces until he was called to join a group by the teacher.

[Lyle was writing a story about Santa Claus after the teacher had read them a book about Christmas aloud.]

Lyle: [wrote carefully ‘The s’] — [called to the teacher] Miss Cox! Miss Cox! Look what I did. [showed his writing]

Teacher: What did you write?

Lyle: [read] The ah... The ah...

Teacher: [read what he’d written] The /s/... What do you want to write?

Lyle: Santa... [writing episode continues]

[Adam had chosen to go outside on the verandah of the classroom with other children to the water tray. He was working with a variety of plastic containers in the water.]

Adam: Adam picked up a funnel and poured water into it, watching it go right through. Then he put his index finger on the end and held it there tightly. [Brian poured water into the funnel for him] Adam kept his finger on the bottom. When the funnel was full he took his finger off. [said aloud to himself] There it goes! There it goes! There goes the water!
Category 4: attending to errors

*Attending to errors* is defined as correcting or attempting to correct an error made (i.e., that arises from the child's own performance); discovering inconsistencies and attempting to resolve or resolving the dissonance of conflict by seeking solutions.

A child directed act occurs when the child:

1. Self-corrects an error (with no help of any kind)
   (e.g., reads Dad for Father and corrects it; writes “is” for “in”, rubs it out and writes “in”).

2. Makes an effort to correct an error but is unsuccessful
   (e.g., labels a set of 2 with a card showing 4, then takes it away and puts a card showing 3; reads “Martin” for “Bill”, says “No!” then reads “Peter”).

3. Persists with working on trying to correct an error i.e., more than one attempt made to correct without being successful
   (e.g., reads “we” for “when”, tries “went”, then “we” again).

Of the many examples that might be given to illustrate how the children noticed errors and tried to do something about them, often successfully, the following instances indicate the variation this category covered.

*Adam had just dictated a story for his picture to the teacher who had written it in his book for him leaving space under each line of text. She asked him to write it in the space and left him.*

Adam: Adam began to write his story underneath the teacher’s scribing. He wrote two words but had started writing the second line of the story instead of the first. He looked at what he had done and realized it was wrong. Looking around he called to the teacher across the room.

Adam: Mrs Sengler, I’ve doned a mistake! Mrs Sengler, I’ve doned a mistake!

Teacher: [came over and worked with him...]

[and a little later when he made the letter ‘g’ the wrong way]

Adam: Doned a mistake again! [aloud to himself expressively]
[The maths task Rachael was working on required her to create groups of counters, put them into set rings and label the equations with numeral cards and the word 'and'.]

Rachael: She put two counters together in one set ring and put three cards underneath it as indicated.

\[
\begin{array}{c}
00 \\
\text{and} \\
1 \\
\end{array}
\]

One was incorrect. Rachael looked at it, took away the first 'and' card and replaced it with a 2 card.

\[
\begin{array}{c}
00 \\
2 \\
\text{and} \\
1 \\
\end{array}
\]

She read the equation from the beginning aloud to herself. As she reached the 1 card she changed it for a blank [indicating zero] card.

\[
\begin{array}{c}
00 \\
2 \\
\end{array}
\]

[The children read new reading books for themselves after the teacher had introduced the story to them. This is Toby's first attempt at "The Bear Family".]

Toby: [began reading aloud]

Text: Here is Father Bear.

Toby: Mother [stopped] Here [SC*] is Mother Bear.

Text: Here is Mother Bear.

* SC = self-corrected error spontaneously

**Category 5: working at difficulties**

*Working at difficulties* is defined as actively meeting difficulties i.e., obstacles, and working on finding solutions by making discriminatory judgements.

A child directed act occurs when the child:

1. Solves a difficulty effectively
   (e.g., tries to do cross arm in skipping and can't but keeps trying and finally does; turns paper around so shape eventually fits space available).
2. Attempts to solve a difficulty encountered but is not successful (e.g., tries to thread the needle but can't and gives up).

3. Persists with attempts to solve a difficulty (e.g., keeps on trying to balance the tower of blocks that keeps toppling).

4. Partially solves a difficulty (e.g., gets one side of the railway track in place but not the other).

5. Suggests a way to possibly solve a difficulty (e.g., says "I could cut it out [the picture] and stick it back there").

Some of the situations where children were operating on difficulties and the ways they tried to work at them are illustrated in the following examples.

[Toby was making a face puppet out of a round piece of cardboard. He was trying to make a small hole in the top to put a piece of string through. He folded the top edge over and tried to cut a hole with the scissors.]

Toby: I couldn’t. [to Matu nearby] I’ll have another try.

Matu: Try with mine. [handed over his scissors]

Toby: [began to try again — cuts a little bit out] If I cut this way I’ll do it... [tried again to cut through the cardboard — cut a bit more out making a bigger hole — smiled broadly] Done the hole! [to Matu] I need string now.

In some situations the obstacle is not easily overcome.

[Anna had decided to make a doll’s house in the making area. She had chosen a cardboard box for the house and had used pieces of cardboard to make some walls. She searched through all the boxes available and then went over to the teacher who was working with children on the carpet area. Anna waited nearby until she was free.]

Teacher: Yes.

Anna: I can’t find something to be a fridge. [refrigerator]

Teacher: You can’t find...?

Anna: Something to be a fridge.
Teacher: Something to be a fridge! Mmmmm! [in a warm, understanding voice]

Anna: Something that would be right for a fridge. But I can't find anything!

Teacher: How about hunting for a little, tiny box?

Anna: I know. That's what... that's what I were... I was looking for a little box. [shows shape with hands]

Teacher: There's bound to be some in those big boxes in there.

Anna: I've had a look there. Right down to the bottom of one.

Teacher: Lamond brought some matchboxes today. Would they be any use?

Anna: [raised eyebrows, shrugged] Mmmmm!

Teacher: Lamond is busy with Mrs Lem at the moment. He put them in the making room. They might be in among the big boxes.

Anna: Mmmmm! [thoughtfully] Well, I'll just have to cut it [i.e., a big box] [goes off]

Category 6: rehearsing and repeating

Rehearsing and repeating is defined as engaging in the early stages of reading, writing, manipulating, etc.; or improving own performance by purposefully repeating or practising a task.

A child directed act occurs when the child:

1. Engages in the early stages of tasks (e.g., invents the text or some of the text in a book when attempting to read it; attempts to write using discrete letters and/or letter-like forms i.e., rehearsing writing, not generating an identifiable story).

2. Repeats an activity, task, action purposefully immediately after initial completion, that is, self-initiated repetition (e.g., makes a jigsaw for a second time; counts objects in a set again).
3. Repeats the same activity again at a later stage (e.g., makes another crown).

4. Rereads own writing or own dictated story (i.e., familiar text).

5. Writes from a model available (i.e., teacher's scribings, words on wall charts).

6. Engages in a task previously undertaken that is familiar (e.g., rereads a text previously read, i.e., familiar text*; writes familiar words, i.e., name, known words [when there is evidence of having written them previously]).

The first examples cover the area of engaging in early (preparatory) learning.

[Rachael chose to go to the writing area taking a piece of work she had done earlier in the day.]

Rachael: Picked up a black felt pen and on the paper she had worked on previously began to write letters and letter-like forms beside those already there.

[In the class library area Adam had picked up a book called “The Three Little Pigs”. After a while he opened it and began to read.]

Adam: [read aloud, inventing the text] He went to look for a house. [turned page] Please give me some bricks. Please. Yes, you can make bricks for a house. [turned page] Give me some sticks. Give some sticks. Yes. Give me some sticks and you can make a house. [turned page]...
[continued until the end of the story]

The final example shows how children often purposefully repeated or practised a task.

[Phillip, working on a maths task, had been asked to make a pattern of a person with geometric shapes on the top of the one made on a card.]

Phillip: Phillip reached out and got the circle and triangle he needed for the head and body, the two squares for the legs and two for the arms and placed them on the shape to complete the figure. He

* After day one, a new book is regarded as a familiar text. Included also as familiar reading is a second individual reading by a child on day one.
looked at what he had done, then tipped the shapes off and started to do the task again completing it quickly.

These are identified within episode types. Examples of the extended activity and interaction episodes that were observed are in Appendices B.2, B.3 and B.4.

We now turn to the analysis of teacher behaviour in the teacher-child interactions.

STUDYING TEACHER BEHAVIOUR IN TEACHER-CHILD INTERACTIONS

This second part of the chapter explains how the episodes of teacher-child interactions were reanalysed to examine teacher behaviour. In the systematic analysis of these episodes, the teaching acts that were considered likely to facilitate independent learning were identified and described. In such teaching acts or moves the teacher is judged to be assisting the child to learn more about how to learn.

Category systems in the review of interaction studies had been considered (see p.54) and the common elements of the coding schemes identified and discussed in relation to the intentions of this research. A coding scheme was developed for this study to identify teacher behaviour that may facilitate independent learning.

Facilitative teacher moves

One form of teacher behaviour that fosters opportunities for independent learning was labelled facilitative teacher moves and is defined as follows:

*teaching moves in teacher-child interactions that create opportunities likely to promote and support independent learning.*

To identify teaching moves facilitative of children's independent learning the six categories of independent child behaviour (see p.81) were applied to teacher behaviour. All teacher moves in teacher-child interactions related to creating opportunities that could
assist the child to engage in independent learning were coded into the appropriate category. As described earlier, relevant observable child behaviours were validated against the definition of independent learning (see p.3) and checked by independent observers (see end of chapter for discussion of inter-observer agreement).

Each facilitative teacher move was categorized to match the child behaviour categories (see Chapter 3). Wood & Wood (1983) spoke of coding schemes for teacher behaviour in cases like this taking the "mirror image" of categories of child behaviour. Such teacher behaviour that is considered to provide opportunities to promote and support independent learning in a child was encompassed in a variety of ways in each category. For example, the teacher might be extending the children's responses when teaching them something new about how things are linked (category one: showing relationships); inviting anticipation of the text when reading a new book (category three: trying and testing); or requesting a reason from the child when helping them to solve an error (category four: attending to errors) (see pp.83 to 95).

The teacher moves could be direct or indirect, and relate to cognitive effort, performance and products. Such moves included the ways in which teachers were deemed to have created opportunities for independent learning through cueing, prompting, linking, shaping, eliciting, inviting, extending, supporting, modelling, requesting or explaining.

Facilitative teacher moves could therefore be occurring in relation to varied tasks and situations.

All remaining teacher behaviour was classified as other teacher moves.

The form of the data

Teacher moves within the teacher-child episodes of interaction were the focus of the analysis of teacher behaviour. The procedure for the analysis of teacher behaviour differed from that used for analysing child directed acts. Whereas only instances of behaviour indicating child directed acts were identified from child behaviour occurring, all the teacher behaviour in the teacher-child interactions was coded because interactions were being analysed. The nature of the categories of teacher behaviour is indicated on Table 5.2.
Table 5.2
Analysis of teacher behaviour

<table>
<thead>
<tr>
<th>Total stream of behaviour</th>
<th>Episodes</th>
<th>Non-episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity</td>
<td>Peer interaction</td>
</tr>
<tr>
<td></td>
<td>Facilitative teacher moves</td>
<td>Other teacher moves</td>
</tr>
</tbody>
</table>

CODING THE TEACHER BEHAVIOUR

A teacher-child interaction consisted of turns (of talking) taken by the teacher and the child. Each teacher turn was analysed according to the nature of the moves the teacher made. A turn comprised a single move or a series of moves. A move formed the unit of analysis. The boundaries between teacher moves were defined by a shift from one idea or part idea to another. Thus a move could consist of a single word, a part of a sentence, a sentence or a series of remarks and included questions, statements and comments as well as nonverbal behaviour integral to a teacher move. Each successive move was assigned to one of the six categories of facilitative teacher moves (1) to (6) or coded as other teacher moves (0). The researcher identified the moves in each turn and these moves were coded by expert observers.

The coding scheme consisted of mutually exclusive and exhaustive codes. Behaviours that could occur in more than one category were made mutually exclusive by definition. Thus, all attention to errors and action taken is coded in category four: attending to errors and text reading and writing were excluded from category five: working at difficulties. All teacher behaviour in teacher-child interactions was analysed to allow for a distinction to be made between the teacher moves that were relevant to facilitating independent learning and those that were not. This differed from the analysis of child directed acts where the focus was on the behaviour indicating independent learning.
Before analysing the specific teaching moves the episodes of teacher-child interaction were classified into types.

Classification of teacher-child interaction episodes

There was a wide variety of data in the teacher-child interactions. Not only did teacher-child interactions occur in different settings, but the length of the interactions varied considerably. They included extended conversations which could continue throughout much of the ten minute behaviour sample, and brief interchanges. Examination of pilot data showed that the teacher-child interactions occurred in both one-to-one and within group settings. These two situations were identified for analysis.

The distinction was considered relevant because analysing teacher behaviours that occurred in each of these settings may show variation in the teaching moves related to enhancing independent learning. For example Cazden (1988b) suggested that teachers may make more cognitive demands in small group than one-to-one settings. Others have emphasized the importance and value of one-to-one interactions in early schooling (Clay, 1985; Wood, 1988). Studies of new entrant classrooms (including this one) to date do not allow for any comparison of the relative merits of the two settings.

The episodes of teacher-child interactions were coded within the first coding scheme into four types of interaction as follows:

(a) individual interactions (one-to-one situations with the teacher and a target child alone)

(b) individual interactions in small group teaching (one-to-one interactions with a target child embedded within small group teaching)

(c) individual interactions in an informal group (i.e., interactions occurring when the teacher is interacting in an informal situation with a target child and other children)

(d) small group teaching (interactions occurring in situations initiated by the teacher for group instruction without specific attention to a target child).
Categories for assigning teacher moves

The teacher behaviour in the interactions was analysed into the same six categories designed to identify children's independent behaviour but from the perspective of facilitative teacher moves. The descriptions of facilitative teacher moves used by the coders follow each definition of an independent child behaviour category.* A brief interaction illustrates one kind of teacher behaviour coded for each category. A selection of examples of interactions follows the category descriptions.

Category 1: showing relationships
(see pp.83 to 95 for definitions)

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Identify or relate information which fits a concept or category, that is, (a) linking of information, or (b) relationship of ideas, or (c) relationship of concrete/manipulative objects
   (e.g., find something smaller than that one; which others match together?; put them in front of you and measure and see what you can see).

2. Discard information, ideas or objects which do not fit a concept or category
   (e.g., no, not that one. Think again).

3. Realize that attempts to identify a relationship between information, ideas or objects are incorrect
   (e.g., How can you tell if they belong or not?).

4. Make links with something known to make a new response
   (e.g., You know this letter. [shows 'm']. This new one is like it. [shows 'n'] Can you write this letter?).

In the example that follows the teacher is assisting Renee to identify similarities and to link her response to something known.

* Examples within a variety of types and length of teacher-child interactions containing facilitative moves are in Appendices B.3, B.4.
[Renee had dictated a story about her picture and had just read it.]

Teacher: Can you look at that big long word 'butterfly', and look at 'bedtime'. Can you see anything that's the same about 'butterfly' and 'bedtime'?

Renee: They're both long.

Teacher: Yes. Anything else that's the same?

Renee: They both start with 'b'.

Teacher: They do! Just like 'baby'.

Renee: And 'boy'.

Teacher: You're right!

Category 2: checking

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Comment on what the child can achieve or plans to do or needs to do prior to undertaking a task (e.g., How will you begin?).

2. Evaluate oneself in relation to performance while engaged in, or on completion of a task (e.g., How are you managing the sorting? How can you check?).

3. Comment on what the child knows or doesn't know, can or can't do, is doing or needs to do in general (e.g., What do you think about that?).

4. Explain what happened or consequences of what could happen or how to make something in relation to what the child is doing, plans to do or has done (e.g., How will you make the cowshed?).

5. Check on the task in progress or on completion (e.g., How did you get on?).
6. Regulate attention by pointing while counting or reading continuous text [without reading aloud]
   (e.g., Can you point to the words while I read? Touch each one when you count).

The teacher in checking on the task completed is helping Lyle to monitor what he has done.

[Lyle was matching pigs and piglet shapes as a mathematics activity.]

Teacher: Now, how did you get on with the pigs, Lyle? What did you do?
Lyle: I matched them up.
Teacher: And were there enough mother pigs for the babies?
Lyle: I needed to count.
Teacher: And what did you find out?
Lyle: More mothers.
Teacher: Many more?
Lyle: Just one.
Teacher: I see!

Category 3: trying and testing

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Make tentative hypotheses and test them out
   (e.g., You read it. What do you think it says? I wonder if you are clever enough to work this out? [novel text] [see p.88]).

2. Attempt to write a letter of a word, a word, or a message
   (e.g., Think very carefully. Like you wrote it this morning. You can do all that. You write it... "and" after the "h" comes? You see if you can do it by yourself [write a story]. The s ... [articulates beginning of next word]).

3. Compose a message orally, identify orally a word or a letter to write or for the teacher to write
You tell me. How would you like your story to start? What comes next? If you want to write cuckoo, how will you start to write it? Cuckoo [stresses 'c'].

4. Confirm the result of testing an outcome (e.g., Why is that what you expected would happen?).

5. Evaluate and revise hypotheses according to test(s) (e.g., What could you try now?; Try to work out which of your sets this could go in and think why it could; See which of the other pieces might fit the space. Keep trying different pieces).

6. Accept or reject hypotheses (e.g., What would be a good reason for that to be there?; How can that happen? Let's see if you are right).

The teacher is encouraging Toby to test out and check the options he identified.

[Toby had drawn a picture to illustrate the page in the class booklet about their recent trip. He came to show it to the teacher.]

Toby: I could cut the fish out then I could stick it in there.

Teacher: If you want to.

Toby: Or I could just glue it there.

Teacher: Yes you could. You'll have to make a decision won't you. Do you want to try it out and see whereabouts you're going to glue it first to see if it's going to fit?

Toby: Okay.

Category 4: attending to errors

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Correct an error (e.g., No, start from this place [pointed to the beginning of the line the child was reading]).
2. Attempt to correct an error
   (e.g., Try that again. Think about what is happening in the story. What could that word be? Have another look).

3. Notice an error
   (e.g., Ooh! Is that Bill? [in text reading] What about this? [pointing to an incorrect set in maths] That didn't work right did it?).

In this example Lyle's attention was drawn to an unnoticed error.

[Lyle was writing his own story about the flower show. He'd left a word incomplete.]

   Teacher: You've nearly finished this. [pointing to 'th'] You've forgotten something.

   Lyle: I can spell 'the'. [added 'e' to complete the word]

Category 5: working at difficulties

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Solve a difficulty
   (e.g., What do you think you could do?).

2. Work at solving a difficulty
   (e.g., Let's think why that doesn't work first).

3. Suggest a way to possibly solve a difficulty
   (e.g., Well, how could you join these together?).

Sometimes the teacher encouraged the child to think about the difficulty encountered in order to work at it.

[ Toby wanted to hang up the face puppet he had made.]

   Teacher: How are you going to do the hole?

   Toby: I don't know.
Teacher: You'll have to have a little think about that won't you and see if you can find an idea of how to make a hole.

Toby: Mmmm. [nodding] [see p.92 for what follows]

Category 6: rehearsing and repeating

Facilitative teacher moves are those related to creating opportunities that could assist the child to:

1. Engage in the early stages of tasks (e.g., Here are some new library books to look at).

2. Repeat an activity, task or action immediately after initial completion or at a later stage (e.g., Can you make it again, faster? You could build another one later).

3. Write from a model provided (e.g., Write this one next [pointing to word]; This is how you write “snails” [wrote word]).

4. Reread own writing or own dictated story (e.g., Read what you've written. Can you read your story?).

5. Engage in a task previously undertaken that is familiar (e.g., You could choose whichever book is your favourite to read again. Right, you start from the beginning and see if you can manage it now).

The way the teacher attended to helping a child repeat a task to gain greater control over it is illustrated here.

[Rachael had just successfully learned how to thread a needle with wool.]

Teacher: Let's do it again.

Rachael: I think I can.

Teacher: You push it over. [i.e., the wool] You push it down. Push. Good!

Rachael: [tries again and succeeds]

Teacher: Good!
Inter-observer agreement

The establishment of the consistency of the observer coding is an important requirement of research that involves behavioural observations. Johnson and Bolstad (1973) consider that there is no single established way to assess observer agreement or consistency, for the index must be tailored to suit the purpose of each investigation.

The agreement statistic chosen for calculating inter-observer agreement in this study was Cohen's kappa. Kappa, developed by Cohen (1960) indicates the proportion of agreements corrected for chance agreements. It is suggested by Bakeman & Gottman (1986) that it may be among the most stringent ways of determining agreement.

The gathering of the data and the preparation of the written records were undertaken by the researcher. Agreement was demonstrated by making inter-observer checks using a second trained observer.

A standard protocol was available in the form of the coding schemes developed. The coding manual used for carrying out the agreement checks consisted of three parts. Part One was the code catalogue in which the categories of child directed acts were defined and illustrative examples provided (see section above, Child Directed Acts.) Part Two was the code catalogue in which the categories for assigning teacher moves were described with illustrative examples (see Facilitative Teacher Moves above, and Appendix B.1). Part Three detailed the tasks required and the procedure for carrying them out (see Tasks for Coder Agreement, Appendices B.6 and B.7).

The two observers independently coded the data according to the procedure described. Observer agreement was calculated separately for each school for both observation times for the following three levels of analysis:

1. Identifying episodes with child directed acts.
2. Coding of child directed acts into six categories; showing relationships, checking, trying and testing, attending to errors, working at difficulties, rehearsing and repeating.
3. Categorization of teacher behaviours into seven categories.
Interrater agreement between two coders using protocols in coding 1) episodes, 2) child directed acts and 3) teacher behaviour into categories (using Cohen's kappa) was .82, .89 and .71 respectively, all well within acceptable ranges.

The summary and interpretation of data gathered on the incidence of child behaviour that exemplified independent learning and of teacher-child interactions associated with such learning follows in Chapters Six and Seven.
CHAPTER SIX

REPORTING THE RESULTS:
CHILDREN'S INDEPENDENT LEARNING

The nature and incidence of independent learning in new entrant children's behaviour together with the teaching interactions that support or promote opportunities for independent learning were central to this research. The analysis of these two areas forms the major focus of the next two chapters. In this chapter all the data on child behaviour are used initially to present overall findings on independent learning, followed by data for each school and for individual children. Chapter Seven concerns the teaching interactions and the evidence of teachers promoting opportunities for independent learning in teacher-child exchanges.

INDEPENDENT LEARNING

Detailed observations were made of school beginner behaviour just after children's entry to school, and 12 weeks later, as they worked on various tasks and interacted throughout the school day. The first major task was to define and then to identify examples of independent learning and to develop a way of studying the contexts in which it occurred. It proved possible to identify behaviours indicating that children may be initiating and directing the processes involved in learning for themselves. These aspects of child behaviour were categorized as child directed acts. The written records of the ten minute samples segmented into episode types were analysed in detail with each instance of a child directed act coded into one of the six categories of independent learning (see p.82).
Data analysis

Three sets of analyses were undertaken. The first set covered independent learning occurring at the two observation times with relation to the observation of child directed acts in general and in the six categories. The second provided the basis for comparisons of the occurrence, variation and change over time of child directed acts in the three episode types and across the categories. The third set dealt with the emergence of child directed acts in organizational settings, curriculum areas and in child and teacher initiated tasks.

In order to provide an overall perspective of independent learning for the analyses and discussion of the nature and extent of independent learning, the data from both schools were aggregated and presented for both observation Time 1 and Time 2. To allow for an examination of similarities and differences between settings and across children, the report and discussion analyses for aspects of individual differences were carried out on the data for each school and for each child at both observation times. Finally, for classroom features associated with independent learning, both aggregated data and individual school and child data were analysed.

Data for analysis

A considerable amount of data was available for analysis. There were 36 hours of observation (Table 6.1) with a longer school day the major factor in accounting for more observations being made in the second wave of data collection. There were relatively few (70 out of 1526) instances of behaviour categorized as non-episodes*. Non-episode behaviour (e.g., wandering aimlessly around the classroom) was not analysed because it did not provide a learning experience. Of the 1526 episodes recorded about half (51%) contained 1335 examples of behaviour identified as child directed acts which signalled that children may be generating and directing their own learning in some way.

* Defined as all behaviour that could not be classified into activity, teacher-child interaction or peer interaction episodes.
Table 6.1
Total behaviour by observation, episode and child directed acts

<table>
<thead>
<tr>
<th></th>
<th>Number of 10 minute observations</th>
<th>Total episodes</th>
<th>Episodes with CDAs</th>
<th>CDAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>96</td>
<td>646</td>
<td>287</td>
<td>433</td>
</tr>
<tr>
<td>Time 2</td>
<td>120</td>
<td>880</td>
<td>492</td>
<td>902</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>1526</td>
<td>779</td>
<td>1335</td>
</tr>
</tbody>
</table>

As discussed earlier (p.73) there was considerable variation not only in the length of episodes but also in the length of the instances of behaviour categorized as child directed acts. In order to represent what was going on as accurately as possible the data are presented (Tables 6.2 to 6.12) as a percentage of the incidences of behaviour observed. The codes for data to be analysed in this way were mutually exclusive and exhaustive. In Table 6.13 behaviour is reported as an average for the ten minute behaviour sample yielding a rate per unit of observations as another way of illustrating the marked variation in lengths of episodes containing child directed acts. Using time as a variable allowed for recording the average incidence of child directed acts for each child per ten minute observation.

THE NATURE OF INDEPENDENT LEARNING

The nature of independent learning and ways it might be observed have already been established. It was addressed initially by a thorough survey of the literature and conceptual analysis of independent learning (Chapters Two and Three). These steps were followed by the development of appropriate definitions, and the application of the category system to the classroom observational data in order to see whether this phenomenon could be reliably detected.
Having determined that the phenomenon could be studied in classrooms, the features of independent learning were then explored in terms of six categories of child directed acts.

**Independent learning**

It proved possible to reliably identify the occurrence of independent learning operationalized as a child directed act. The data showed that as school beginners (first observation) the five year olds were already engaged in a considerable amount of independent learning. Child directed acts occurred in more than 40 percent of all episodes observed at Time 1 (Table 6.2). There was a noticeable increase over the two observation times in the percentage of episodes with child directed acts.

*Table 6.2*

*Percentage of episodes with and without child directed acts (CDA) across observations*

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Episodes with CDA</th>
<th>Episodes without CDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44.43</td>
<td>55.57</td>
</tr>
<tr>
<td>2</td>
<td>55.91</td>
<td>44.09</td>
</tr>
</tbody>
</table>

It was the cognitive engagement of the children in child directed acts signifying independent learning that was of paramount interest in this study. A striking feature of the data is the range and the number of child directed acts emerging in the different categories, even at the time children were new to school (Table 6.3). While there was considerable variation in percentage occurrence across different categories (3% to 44%) the percentages within a category at each observation time were similar. The ranking of percentages for each of the four categories with the most independent learning was the same at both Time 1 and Time 2. Children were consistent in their levels of engagement in these behaviours. The two lowest categories exchanged positions at Time 1 and 2.
Table 6.3
Percentage of child directed acts in each of six categories at each observation time*

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Showing relationships</th>
<th>Checking</th>
<th>Trying &amp; testing</th>
<th>Attending to errors</th>
<th>Working at difficulties</th>
<th>Rehearsing &amp; repeating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44.34</td>
<td>23.33</td>
<td>8.31</td>
<td>2.77</td>
<td>7.39</td>
<td>13.86</td>
</tr>
<tr>
<td>2</td>
<td>43.35</td>
<td>18.29</td>
<td>10.86</td>
<td>5.54</td>
<td>3.77</td>
<td>18.18</td>
</tr>
</tbody>
</table>

*Categories total approximately 100 per cent

By far the most commonly occurring child directed acts at both Time 1 and 2 were in showing relationships. This facet of learning, namely discovering and making connections by attempting to relate information to things that the children already knew (e.g., Toby insisting ... "He’s going to play rugby ... because that ball is on the ground"; Nicky pointing out that the brushes’ bristles were pig's hair), appeared to be integral to many of the ways of learning that new entrant children were being encouraged to explore. Activities were designed with opportunities for children to create or construct the task, so their responses were individual. They were not merely playing, nor were they reproducing the teacher's product. They were participating in thinking activities which could account for the substantial level of engagement in this category.

As they worked on varied tasks with different materials, and talked about them with others the children were also observed to be monitoring their own performance by checking on themselves in different ways (e.g., Renee proudly exclaiming "I'm getting some right!"; Anna considering her half-finished painting unsatisfactory, screwed it up and started again). An average of 20 percent of child directed acts was observed to fall in this category across both observation times. Being able to check on oneself requires the freedom to do so. The findings indicated that in these two classroom settings, children felt confident enough to monitor and evaluate their own performance and products.

Approximately 16 percent of the child directed acts fell in the rehearsing and repeating category. A relatively wide range of behaviour was captured including instances of engagement in very early literacy and numeracy activities (e.g., Adam inventing the text for “The Three Little Pigs”) as well as occasions involving returning to previously novel tasks (e.g., when Phillip quickly remade his successfully completed geometric puzzle). What seems necessary for self-initiated rehearsal and practice is an acceptance by
teachers of its importance, together with opportunities and encouragement for it to take place. Children need also to have sufficient choice in decision-making and time to carry out these activities. The level of behaviour occurring in this category suggested that these requirements were being met.

Child directed acts were observed to occur most frequently in the three categories described above. A distinction can be made between these and the remaining three categories, trying and testing, attending to errors and working at difficulties. The first three can be considered to involve less complex cognitive processing than the latter. As expected, there were fewer child directed acts emerging in the more complex processing categories but considering the kind of behaviours involved (problem-solving on novel text; noticing and solving errors for oneself; overcoming obstacles) it is still interesting to note their early appearance. New entrants were building over a relatively short time what appeared to be a developing control over these processing behaviours.

The average proportion of child directed acts over the two observations in the trying and testing category (Table 6.3) involving children searching, predicting and confirming options, was approximately ten percent. Included in this category was the testing of hypotheses and the solving that learners needed to engage in as they approached tasks in various areas (e.g., Rachael working at getting meaning as she read a new storybook aloud for herself; Adam testing his hypothesis about stopping water going through a funnel with his finger). What seems to be important for children to be able to develop strategies to engage in such problem solving, is that they have suitable opportunities, that meaningful learning tasks are available and, particularly, that these tasks are at an appropriate level to allow each child to build on existing competencies and to use developing strategies effectively. From the early emergence of children's active exploration as indicated by this category, these conditions can be assumed to have been met to some degree.

In the categories of attending to errors, and working at difficulties, there was an average of approximately four percent and six percent of child directed acts, respectively. Attending to errors involved awareness of the existence of an error by the children (e.g., Adam exclaiming "I've doned a mistake" when he started on the incorrect line; Lyle's frustrated "I'm getting a mistake" as he was composing his story). It also involved evidence of searching in an attempt to achieve a correct fit by their own initiative (e.g., spontaneous self-correction by Toby when reading "The Bear Family" and by Rachael as
she labelled her maths sets). In order to notice and then try to correct their own errors, children have to feel able to take risks, and have the incentive to seek a solution to any errors for themselves. Evidence of this behaviour would suggest that this was happening.

There was also evidence that in these learning contexts children were able to meet and work on obstacles (e.g., Toby tussling with making a hole to hang his cardboard puppet; Anna trying to find something to make a refrigerator for her doll's house). Child directed acts in this category, working at difficulties, (which applied to all curriculum areas except literacy activities) emerged in different situations. These data suggest that children were being presented with difficulties to solve, and given encouragement to attempt to solve them.

Results showed that unevenness occurred in the distribution of child directed acts in the six categories. This may be explained by the different kinds of behaviours identified as child directed acts (see examples pp.83 to 95). Whilst together they were considered to signal the developing comprehensive processes being used by independent learners, each category involved a specific process. In examining the behaviour encompassed by the three categories that had the greatest quantity of child directed acts a pattern can be identified. When searching for connections, discovering and forming novel relationships for themselves, children appear to be building on earlier experiences with their world. This is also the case when they draw on a range of checking strategies developed in many different situations when monitoring what they have done or are going to do.

Further, there is evidence that preschool children often revisit the familiar, repeating tasks and exploring early forms of literacy and numeracy as Holdaway (1984) and Goodman (1990) have described. It could be expected that such behaviours would be observed in a responsive school environment. These classrooms seemed to allow for continuity and development of these aspects of prior learning. Thus, the children were able to access, apply and extend behaviours that were already part of their repertoire to some degree, creating new learning as Bruner (1980) suggested, through the interesting and varied tasks they engaged in and their interactions with teachers and peers.

More complex is the development of a system of strategies to use in novel problem solving, in noticing and correcting errors and in meeting the challenge of overcoming difficulties or obstructions. While these processes are also applied by young children to their early learning, such operations are developed with increasing complexity while learning to read and write, when acquiring numeracy concepts and in more complex creative and constructive activities. Children are working on several levels of analysis when engaging in these tasks.
Some evidence of such complex processing comes from a detailed analysis of the behaviour observed in the attending to errors category where both noticing errors and correcting them spontaneously were coded. At the first observation this behaviour was minimal but, with one exception, children not only identified errors but self-corrected them. This self-correction strategy occurred initially on simple reading and mathematics tasks. At Time 2 when the incidence of attending to errors had doubled, every child was observed overtly correcting some mistakes on varied tasks of increased difficulty. There were only three occasions when an error was noticed but was unable to be corrected by the child. These findings were unexpected. It was considered that school beginners may be noticing some of their errors but would not necessarily be able to fix them up. It appears that active learners are developing a strategy of self-correcting (or self-regulation) relatively early on school related tasks. Self-correction in reading is one illustration of processing activity according to Clay (1991a) and McNaughton (1987) for it provides evidence of the child 'making sense out of the process' (Holdaway, 1984, p.19). With 60 percent of the self-corrections observed occurring in reading it appears that these children were beginning to process information effectively in this area. While the role of self-correction in other areas of the curriculum is less clear it would seem to be a positive indicator of successful processing.

Specific, informal teaching in reading, writing and mathematics began on children's entry to school, matched to their competencies. Children were being helped to move from whatever early forms of literacy and numeracy behaviours they controlled, towards constructing more complex processing systems. Such behaviour may be particularly indicative of independent learning. It could be expected that as teachers continued to assist children in this academic learning over time, more child directed acts would appear in the trying and testing, attending to errors and working at difficulties categories.

In sum, the categories had been designed on the basis of a conceptual analysis of the notion of independent learning to identify aspects of behaviour that could be considered to indicate children were generating and directing some of the processes involved in learning for themselves. They signified independent learning. The findings suggest that the children were actively engaged in pursuing their own learning in ways that matched both definitions and categories that derive from them. As they worked on tasks within different curriculum areas, these five year olds were making many links to things they knew and demonstrating that they were, over time, building a greater understanding of relationships. They were monitoring their own behaviour in different ways and practising the new behaviours they were learning to control, thus developing more fluent responding. Sometimes they were testing out and revising options, and developing
alternative approaches to problem solving. Less often they were noticing their errors and attempting to deal with them and initiating some active problem solving when beginning to tussle with particular difficulties encountered. These constructive behaviours were observed to occur in the children’s actions (activity) and in their talk with others (interactions). They are explored further in subsequent analyses, as is the teacher’s role in prompting this active processing.

THE EXTENT OF ENGAGEMENT IN INDEPENDENT LEARNING: OVERALL ANALYSIS

The second analysis concerned the extent and quality of children’s engagement in independent learning. All the activity and interactions taking place in the classrooms were observed in three types of episodes: activity, teacher-child interaction and peer interaction. Each provided different opportunities and settings for learning and each was analysed to identify the child directed acts that occurred. The incidence of child directed acts and the change over time are reported together. The data are presented as a percentage of all child directed acts at each observation time.

Independent learning in episode types

Varying percentages of child directed acts occurred across each kind of episode. Table 6.4 demonstrates that the children were making the transition into early schooling as active learners engaging in a considerable amount of independent learning within the varied situations that were available. Activity episodes accounted for the highest percentage of child directed acts at both observation times. The distribution pattern altered from Time 1 to Time 2. At the first observation time, more than half of child directed acts occurred in activity episodes (when the children were working on tasks without talking to others).
Table 6.4
Percentage of total child directed acts within each episode type

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Activity</th>
<th>T/ch interaction</th>
<th>Peer interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>51.04</td>
<td>26.10</td>
<td>22.86</td>
</tr>
<tr>
<td>2</td>
<td>40.80</td>
<td>38.14</td>
<td>21.06</td>
</tr>
</tbody>
</table>

Activity episodes spanned all curriculum areas. They are illustrated here, first by an example from a writing task. Anna was going to write a story under the picture she had drawn. She opened up the reading book "I Am Frightened". With a crayon she began to copy from the writing in the book. Her sentence was "I am frightened of...". Attention to error followed by self-correction occurred when Anna noticed and removed the incorrect letter and corrected it spontaneously (in a somewhat unorthodox way!).

Anna: Wrote 'l a' under her drawing; looked closely at the book and read from the book 'I am fr...'; wrote 'f' (she had missed the 'm' off 'am'); looked at what she had written and then looked at the book she was copying from and noticed her error; began to scratch out the 'f' with her finger-nail, changing it into an 'm' when enough crayon was scratched off.

In a second illustration Nicky too, had noticed and corrected her mistake as she attempted to put a story she had written onto the overhead projector to read.

Nicky: Put the overhead transparency of her story upside-down on the projector; looked up to the screen to begin reading, said 'upside down' aloud to herself, and turned the transparency around. She looked up at the screen again, smiled when she saw that it was now the correct way up and read her story out loud.

At Time 2 child directed acts in this episode type had decreased to approximately 40 percent. This may be accounted for by a change in the kind of activities children engaged in over time, by differences in the categories of child directed acts emerging at each observation, or by both. It may also have been influenced by the increase in opportunities for one-to-one interactions with the teacher observed at Time 2.
At the second observation there was an increase in the child directed acts occurring in teacher-child interaction episodes. Occasions when children were interacting with the teacher accounted for approximately 38 percent of the total child directed acts for that time. The increase in this episode type was of a similar magnitude to the decrease in child directed acts in activity episodes. As teacher-child interactions are examined in detail in the next chapter, two brief examples of this episode type are provided. The first occurred in mathematics when Nicky was labelling sets with number cards.

Nicky: [to teacher] Is that one?
Teacher: Check!
Nicky: It's got an 'o'. It's got an 'n'. It's the right one! *

The second took place when Anna was re-reading the story she had written.

Teacher: What's the first word?
Anna: I don't know.
Teacher: Oh come on. Think hard. I think you do.
Anna: [read] We
Teacher: That's right! [warmly]

The observation records at Time 2 showed that the teachers had begun to help children learn more about reading, writing and mathematics as well as about other curriculum areas. They spent considerable time working alongside children individually and in informal groups, talking with them about what they were doing, encouraging them to think about how to go about their tasks and teaching them new skills. These interactions were therefore more frequent and longer at the second observation. (See Appendix B.3 and B.4).

The child directed acts emerging in peer interactions remained relatively static (22% av). The next episode represents the kind of interactions that occurred.

Rachael: Now I'll do my name. [wrote 'Rachael' on her paper in pencil]
Mona: I've done mine.
Rachael: Hardly see mine can you!
Rako: I've done two. [first name and surname]
Rachael: I'll do it again. [wrote 'Rachael' underneath pressing hard] Now you can see it!... I've done two of my name.

* A letter named is identified as 'o'; a letter sounded is identified as /o/.

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Compared to the other episode types, situations where young five year olds were talking to each other about the task in hand or what they had been doing, appeared to provide more limited opportunities for children to take their own learning further over time. However, it is important to note that this episode type captured mainly peer dialogue. While the lowest percentage of child directed acts was in peer interactions, it is possible that the interchange may have led to child directed acts that occurred after the interaction ceased, that is, in ensuing activity episodes.

**Independent learning in categories**

When the child directed acts in each of the episode types were further analysed into categories, the percentage of child directed acts within each category was markedly different (Table 6.5). The range across categories and observation times was from 0 percent to 24 percent at Time 1 and 0.22 percent to 19 percent at Time 2.

A feature of the data is that engagement in activities accounted for more child directed acts across each of the categories than any other episode type. This remained consistent at the second observation. Overall there were only five instances out of 36 comparisons (Table 6.5), of more child directed acts in any category occurring in another type of episode. At times when the teachers were interacting with children (teacher-child interactions) child directed acts emerged most often in three categories; *showing relationships*, *checking*, and *trying and testing*. In peer interactions only in the first two categories, *showing relationships and checking*, did child directed acts occur with any consistency.
Table 6.5
Percentage of child directed acts within each category for each episode type across observations

<table>
<thead>
<tr>
<th>Obs time</th>
<th>Episode type</th>
<th>Category</th>
<th>Showing relationships</th>
<th>Checking</th>
<th>Trying &amp; testing</th>
<th>Attending to errors</th>
<th>Working at difficulties</th>
<th>Rehearsing &amp; repeating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Activity</td>
<td>Showing relationships</td>
<td>24.02</td>
<td>4.39</td>
<td>4.39</td>
<td>2.54</td>
<td>6.00</td>
<td>9.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Checking</td>
<td>12.47</td>
<td>6.24</td>
<td>3.46</td>
<td>0.23</td>
<td>0.69</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td>7.85</td>
<td>12.70</td>
<td>0.46</td>
<td>0.00</td>
<td>0.69</td>
<td>1.15</td>
</tr>
<tr>
<td>2</td>
<td>Activity</td>
<td>Showing relationships</td>
<td>14.86</td>
<td>3.10</td>
<td>2.99</td>
<td>3.88</td>
<td>2.88</td>
<td>13.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Checking</td>
<td>18.85</td>
<td>6.43</td>
<td>6.98</td>
<td>1.44</td>
<td>0.55</td>
<td>3.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td>9.65</td>
<td>8.76</td>
<td>0.89</td>
<td>0.22</td>
<td>0.33</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Results showed that the children were making many links for themselves (showing relationships) in all three types of episodes. For example, they would turn to the teacher or their neighbour and comment on connections they were making such as Lyle's excited exclamation after he found the letter L.

Lyle: That starts with me, Michael!

They might, while working alone, identify relationships as Rachael did in mathematics when accurately constructing patterns that matched with counters. Across episode types and observation times child directed acts in this category ranged from 8 percent to 24 percent.

Children's checking on their own behaviour increased in all episode types over the observation times with the majority of child directed acts in this category occurring in the interaction episodes. In this example from a peer interaction episode checking is illustrated by Nicky's comment on what she was able to do, that is, evaluation of self. The children frequently shared their perceptions aloud with others. Nicky had chosen to write a story about spider webs. Her story was, "The spider is going to look for the fly!"
Nicky: [read aloud what she had just written] for the ... [wrote and said aloud 'I' [said aloud fly [looked over to the small easel blackboard where the word fly had been written by the teacher]... [wrote and said aloud 'I', 'y'] Only once! I didn't even look! [excitedly to Michelle] [she had only looked once even though she had copied down two letters]

Activity episodes provided the greatest opportunity for the children to improve their own performance through rehearsing and repeating. From 10 percent to 14 percent of child directed acts emerged in this category at the first and second observation time. Children often returned to tasks practising assiduously at their own pace and level of persistence as Holdaway (1984) described. In this illustrative episode observed soon after she began school, Rachael had chosen to go to the writing area. She had with her a piece of writing she had done earlier in the day when she had been practising emergent writing behaviours for herself. She returned to this self-selected task concentrating intently.

Rachael: Picking up a black felt tip pen she began to write carefully on top of the pink letters and letter-like shapes on the paper, writing more letters and letter-like forms.

Fewer child directed acts emerged in the remaining three categories and across observations. There were increases in some instances of child directed acts and decreases in others. Most noticeable was an increase in child directed acts in the trying and testing category at Time 2 when children were interacting with the teacher. An illustrative excerpt follows.

Toby: [read] Here is Father Bear. Mother [corrected himself] Here is Mother Bear. Bill [for 'Here']
Teacher: Ooh! Is that Bill?
Toby: [shook head — read] Bill
Teacher: No. Start from this place. [pointing to beginning of sentence]
Toby: [read] Here is Bill Bear.
Teacher: Right!

A change occurred in the activity episode type at Time 2 when fewer instances of child directed acts than for Time 1 were recorded in the working at difficulties category. Anna's behaviour when she was in the home corner with the dolls provides an example.
Anna: Started to try to put a trouser suit on the doll. Began with the pants, pushing the doll's legs together to try to get them into the trouser legs. Tried all sorts of ways of getting one then the other in. Not succeeding, she gave up.

Child directed acts in the category, attending to errors occurred predominately in activity episodes. This illustration from Lyle took place when he was matching letters onto segments of a caterpillar labelled with the alphabet.

Lyle: Put letter 'w' on top of letter 'm'. Turned the 'w' upside down and tried it again. Realized it didn't match and took it off.

The diversity in these findings may be accounted for, in part, by the reasons discussed earlier (p.113) regarding the differences in the kind of processing behaviours captured by each category and how this related in particular to new literacy and numeracy skills required in school. It also may be explained by the different opportunities that the episode types provided. In activity episodes children were able to engage in many open-ended, worthwhile tasks that had content relevant to the children and purpose in terms of the goals of early learning. They also allowed for searching for solutions and problem solving and for individual creation and construction of products. Children were not constrained by limitations imposed by the teacher or by the tasks. In one-to-one interactions the teachers were usually building active independence from the child’s strengths. They encouraged and supported individual cognitive effort working from each child's responses as they interacted with them. Peer interactions provided the opportunity for children to talk to one another informally. They discussed what they were doing and shared perceptions of their performance and the products they produced. Each episode type involved a different kind of engagement. Together they created varied opportunities for children to work in different ways throughout the day. Such variety in settings was considered by Heibert (1991) and McNaughton and Kai’ai (1990) to be essential to an educational context that allows for children to be proactive in their learning.

The information about what was occurring in relation to independent learning was presented from another perspective. The percentages of occurrence of child directed acts were ranked from highest to lowest for each episode type at each time. Table 6.6 shows consistency in the rankings of categories across episode types. This was tested for Time 1 and for Time 2 using the Kendall coefficient of concordance W and the resulting coefficients were significant (T1: W=0.737, p<.05; T2: W=0.733, p<.05). For
example, the category *rehearsing and repeating* occurred in the same order for each episode type for Time 1 and Time 2 while in two out of three episode types, the category *showing relationships* was ranked first.

### Table 6.6
*Categories of child directed acts ranked in order of percentage of occurrence for each episode type*

<table>
<thead>
<tr>
<th>Obs time</th>
<th>Episode type</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Showing relationships</td>
<td>Checking</td>
</tr>
<tr>
<td>1</td>
<td>Activity</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>T/ch interaction</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Peer interaction</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Activity</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>T/ch interaction</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Peer interaction</td>
<td>1</td>
</tr>
</tbody>
</table>

Overall, with respect to episodes, there was more consistency in activity episodes from Time 1 to Time 2 in the relative order of the percentages of child directed acts occurring in the six categories, indicating again the stability in this episode type.

While the results from Table 6.5 indicated the importance of children having opportunities for engaging in each type of episode in the classroom, what most clearly emerged is the consistency with which engagement in activity created opportunities for self-activated learning. Being able to select from and engage in many different activities in which a high level of task success is maintained through enriched opportunities, appears to fit with notions of children actively interacting with their environment (Wood, 1988) and thereby constructing understanding of their environment and experiences. It is possible that inner-directed strategies could be being fostered as children make their own contributions through their own actions in these ways. If children's opportunities for engaging in enriching activities are restricted (for example by extensive whole class instruction) they may be prevented from developing such strategies.
THE EXTENT OF INDEPENDENT LEARNING: INDIVIDUAL SCHOOLS

The second analysis, about the way in which children engaged in independent learning, is next presented using individual data from each school. The data on categories in the types of episodes were analysed as above. Following the analysis of the total child directed acts in the types of learning experiences, a more detailed analysis of the categories of child directed acts within each episode type was undertaken.

Independent learning in schools

It was apparent that in each school the children were engaging in independent learning to a similar degree at both observation times (Table 6.7). The percentage of episodes that contained child directed acts was noticeably alike and there was considerable consistency for both Time 1 and Time 2. Both teachers appeared to be organizing their classrooms in a way that allowed for these learning experiences to occur. At the second observation, there was evidence of child directed acts in more than half of all episodes.

Table 6.7

<table>
<thead>
<tr>
<th>School</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
<td>43.46</td>
<td>55.31</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>45.43</td>
<td>56.41</td>
</tr>
</tbody>
</table>

In both schools child directed acts in each episode type increased from the first to the second observation time but, there was some variation between schools at each time (Table 6.8). The data indicated there were marked differences between the schools in the percentages of child directed acts that occurred in the teacher-child interaction episodes. A higher percentage of the interactions at Kurnin school contained these behaviours (44% to 64% from Time 1 to Time 2). At Bruntlee, a much lower percentage of this episode type containing child directed acts at Time 1 (30%), increased to 51 percent at Time 2.
Table 6.8
Percentage of episode types with child directed acts for each school across observations

<table>
<thead>
<tr>
<th>School</th>
<th>Observation time</th>
<th>Activity</th>
<th>T/Ch interaction</th>
<th>Peer interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kumin</td>
<td>1</td>
<td>48.06</td>
<td>43.84</td>
<td>37.50</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>1</td>
<td>65.97</td>
<td>29.79</td>
<td>30.39</td>
</tr>
<tr>
<td>Kumin</td>
<td>2</td>
<td>61.99</td>
<td>64.39</td>
<td>39.60</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>2</td>
<td>68.79</td>
<td>51.05</td>
<td>44.64</td>
</tr>
</tbody>
</table>

Thus, while both teachers were creating opportunities for engaging in many teaching-learning interactions with children within their classes, it was very interesting that at Kumin school almost 15 percent more of the teacher-child interaction episodes at each observation time involved child directed acts. This may have occurred for a number of reasons including the particular way of interacting with children that Mrs Sengler adopted. It may have been that she emphasized particular tasks which generated more child directed acts with her children. However, it also may have been the case that the children or perhaps even a particular child engaged differently in the interactions.

Similarly there were differences between schools in percentages of child directed acts in activity episodes at Time 1. Considerably more child directed acts occurred in these episodes at Bruntlee than at Kumin. However, this difference was much less apparent at the second observation. It may have been that initially Miss Cox at Bruntlee provided more opportunities for children to engage in varied activities that had greater potential for the children to take their own learning further. Or, as noted above, it may have been that the children responded differently to the tasks.

While there were fewer differences between schools in the percentages of child directed acts in peer interactions there was a marked increase in child directed acts from Bruntlee children, between Time 1 and 2. The greater overall similarity between schools suggested that the opportunities for children to further their own learning in these situations were seemingly less influenced by the teachers, the curriculum or by particular classroom factors.
Independent learning in categories for schools

There was a high level of consistency in the ways children were engaging in independent learning. Table 6.9 shows that child directed acts occurred in all of the six categories for each school. However, some similarities and differences emerged in the analysis in the percentage of behaviour in each category within and between schools, and over time. Overall, there was more similarity than difference between schools in the incidence of child directed acts in the categories at Time 2.

The individual school data below show that there were similarities between Kumin and Bruntlee in the incidence of child directed acts in the categories of showing relationships, in rehearsing and repeating and in working at difficulties at both observation times.

Table 6.9
Percentage of child directed acts in categories across schools and observations

<table>
<thead>
<tr>
<th>School</th>
<th>Observation time</th>
<th>Category</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Showing relationships</td>
<td>75</td>
<td>32</td>
<td>5.15</td>
<td>0.52</td>
</tr>
<tr>
<td>Kumin</td>
<td>1</td>
<td>Checking</td>
<td>46.44</td>
<td>15.48</td>
<td>10.88</td>
<td>4.60</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>1</td>
<td>Trying &amp; testing</td>
<td>45.29</td>
<td>19.08</td>
<td>9.89</td>
<td>5.52</td>
</tr>
<tr>
<td>Kumin</td>
<td>2</td>
<td>Attending to errors</td>
<td>41.54</td>
<td>17.56</td>
<td>11.78</td>
<td>5.57</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>2</td>
<td>Working at difficulties</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rehearsing &amp; repeating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The greatest difference emerged between schools at Time 1, in the occurrence of child directed acts in the category checking. On school entry, children were monitoring their own behaviour more than twice as much at Kumin than at Bruntlee. Three months later this had altered and a similar pattern of child directed acts emerged in both schools. Another less marked difference was between the percentages of child directed acts in the category trying and testing with fewer child directed acts occurring at Kumin than at Bruntlee, at Time 1. At Time 2 however, the percentage at Kumin had increased to be much closer to Bruntlee. Also, at Kumin at the first observation there was very little indication of children attending to errors. Again this had changed to be similar to that at Bruntlee at the later observation. Thus, there was both uniformity and some variation in the data between schools.
The uniformity between schools may be explained by the reasons presented above and, to some extent, by the kind of behaviours that were involved in the two categories occurring most consistently (showing relationships, checking). These behaviours relate very closely to the tasks available in the setting. In both classrooms the observational data indicated many opportunities for children to make links with what they knew and also to return to and practise previously novel tasks. As well, both teachers had begun to foster new academic learning in literacy and numeracy.

It is somewhat unclear what accounted for the initial variation between schools, particularly in the checking category. The differences observed in children on entry to school were discussed in Chapter Two. The diversity among these children was apparent. Assessment data captured the wide variation in early literacy achievements (see Appendix C.3). Children may engage in a variety of ways in the tasks and interactions available in early schooling and thus some variation in behaviours could be expected. The kinds of opportunities could also vary, particularly in the first few weeks of school as teachers allow children to adjust to a new environment. This appeared to be the case in this study. Each context for learning had particular features. The new children at Kumin were involved in the initial settling-in period in a greater range of self-selected activities. They chose freely from constructive and creative tasks for at least the first hour and a half each day. Permanent areas for art and craft construction, water exploration as well as defined areas where reading, writing and mathematics materials were available were a feature of the classroom design. This was somewhat in contrast to Bruntlee where, while there were some permanent areas established, less classroom space meant more setting up was required for many tasks. Also, the school day began with more teacher guided tasks, usually around a theme. Observations also suggest that in the setting at Kumin, children initially talked more to each other and in many of these exchanges there was comment on and evaluation of what they were doing.

Table 6.10 shows the incidence of child directed acts in each category for the three episode types. With some exceptions the highest percentage of child directed acts occurred in the category showing relationships for all types of episode in both schools, although it occurred in different amounts in each episode type.
### Table 6.10
Percentage of child directed acts in categories for all episode types across schools and observations

<table>
<thead>
<tr>
<th>School</th>
<th>Obs time</th>
<th>Episode type</th>
<th>Category</th>
<th>Showing relationships</th>
<th>Checking</th>
<th>Trying &amp; testing</th>
<th>Attending to errors</th>
<th>Working at difficulties</th>
<th>Rehearsing &amp; repeating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
<td>1</td>
<td>Activity</td>
<td></td>
<td></td>
<td>19.59</td>
<td>4.64</td>
<td>2.58</td>
<td>0.52</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T/child Interaction</td>
<td></td>
<td></td>
<td>12.37</td>
<td>9.28</td>
<td>2.06</td>
<td>0.00</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td></td>
<td></td>
<td>9.79</td>
<td>19.07</td>
<td>0.52</td>
<td>0.00</td>
<td>1.55</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>1</td>
<td>Activity</td>
<td></td>
<td></td>
<td>34.02</td>
<td>4.18</td>
<td>5.86</td>
<td>4.18</td>
<td>8.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T/child Interaction</td>
<td></td>
<td></td>
<td>12.55</td>
<td>3.77</td>
<td>4.60</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td></td>
<td></td>
<td>6.28</td>
<td>7.53</td>
<td>0.42</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Kurnin</td>
<td>2</td>
<td>Activity</td>
<td></td>
<td></td>
<td>12.87</td>
<td>2.76</td>
<td>2.30</td>
<td>3.45</td>
<td>2.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T/child Interaction</td>
<td></td>
<td></td>
<td>22.99</td>
<td>7.13</td>
<td>7.59</td>
<td>2.07</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td></td>
<td></td>
<td>9.43</td>
<td>9.20</td>
<td>0.00</td>
<td>0.00</td>
<td>0.46</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>2</td>
<td>Activity</td>
<td></td>
<td></td>
<td>16.70</td>
<td>3.43</td>
<td>3.64</td>
<td>4.28</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T/child Interaction</td>
<td></td>
<td></td>
<td>14.99</td>
<td>5.78</td>
<td>6.42</td>
<td>0.86</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer interaction</td>
<td></td>
<td></td>
<td>9.85</td>
<td>8.35</td>
<td>1.71</td>
<td>0.43</td>
<td>0.21</td>
</tr>
</tbody>
</table>

In both Bruntlee and Kurnin, child directed acts consistently emerged in the *checking* category. Interestingly, for Kurnin children at Time 1 a higher percentage of child directed acts occurred in peer interactions than in any other episode type. There was often a hum of chatter at Kurnin. At Time 1 these conversations seemed to centre around planning and monitoring their actions as this conversation in the art and craft area indicates.

Toby: Look at mine. *[holding up drawing]*

Hopu: *[looked up]*

Toby: I'm cutting it out. I'm cutting out my duck.

Leanne: A duck! That isn't a duck.
Toby:  [firmly] I did a duck!
Brian:  [looking over] What's that? What is it?
Toby:  Duck! I'm cutting it out.

The amount of child directed acts in this category was not sustained at Time 2. It appeared that as the children became more involved in acquiring control over reading, writing and mathematics behaviours, they interacted less frequently about the tasks in which they were involved.

When the children returned to familiar books and tasks, including construction activities and writing, coded as *rehearsing and repeating*, it was in the activity episodes that child directed acts most often emerged. Varying incidences of child directed acts were observed in relation to other categories in each of the episode types with some similarity across schools.

**INDIVIDUAL CHILD DIFFERENCES IN INDEPENDENT LEARNING**

Analysis of data from individual children's independent learning allowed for consideration across variables of the similarities and differences among children. Child directed acts observed in the episode types across the two observation times were examined first, followed by an analysis of the child directed acts emerging for each child. The results were then looked at in relation to the achievement data for each child.

**Independent learning in episodes for individual children**

The individual data on children illustrated the substantial proportion of episodes with child directed acts. Table 6.11 shows the variation in occurrence across children was reduced by Time 2.
Right from the beginning of school all children were active learners with relatively high levels of child directed acts emerging for all children but Adam. However, he more than doubled his output from Time 1 to Time 2. The other most noticeable increases were observed for Nicky and Rachael. The two children (Phillip and Anna) with relatively little change had the highest percentage of episodes with child directed acts at Time 1 and were close to the average at Time 2.

The similarity of the proportion of episodes with child directed acts at Time 2 suggests that all children were able to take advantage of the availability of opportunities to be independent learners. The similarity further suggests that all children were responding to opportunities to build on and increase existing independent learning. While it could be claimed that the teachers may have created a "ceiling effect" in that the range narrowed considerably across children, this did not appear to be the case. As episodes varied widely in length and type and the child directed acts observed also encompassed a wide range of behaviours, different children were engaging differently in episode types. Also the kinds of child directed acts emerging were different for different children.

For all of them the nature and difficulty of the task had altered and for most the complex behaviour that emerged was a possible consequence. The children had begun school
with markedly varied experiences and competencies (Appendix C.5). The teachers appeared to have adjusted the teaching-learning opportunities available to allow a degree of self-management of their learning for each individual. This is explored further in following sections.

**Incidence of independent learning for each child**

The amount of independent learning occurring in the form of child directed acts for each target child in relation to the others in his or her school is shown on Table 6.12. The percentages are worked out separately for each school at each time. At Kumin the percentage of child directed acts attributable to each child was variable at both Time 1 and Time 2, although the range had reduced over time. Toby engaged in the most child directed acts at both observation times. The differences across children at Bruntlee were less marked. The range was narrow with slightly more variability occurring at Time 2. At this school it was Lyle who consistently had the highest percentage of child directed acts.

<table>
<thead>
<tr>
<th>School</th>
<th>Child</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kumin</td>
<td>Anna</td>
<td>24.23</td>
<td>23.91</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>12.89</td>
<td>26.67</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>29.38</td>
<td>20.46</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>33.51</td>
<td>28.97</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>Phillip</td>
<td>24.69</td>
<td>21.63</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>23.43</td>
<td>23.55</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>27.62</td>
<td>32.98</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>24.27</td>
<td>21.85</td>
</tr>
</tbody>
</table>
Independent learning per ten minute observation

Another way to address the wide variation in the length of both episodes and child directed acts was to examine the individual differences among children in the observation samples. Observations had been made for ten consecutive minutes and the child directed acts occurring were reported as an average for each observation for each child.

When time was used as a variable (Table 6.13) the substantial amount of child directed acts occurring early in school for all children was further illustrated. A clear picture of what each child was doing emerged. Noticeable was the increase in the rate of child directed acts for the total sample from one observation time to the next. The mean number of child directed acts at Kumin for Time 1 was 4.04 and for Time 2, 7.25. A similar pattern was observed at Bruntlee with an increase in the mean from 4.98 initially to 7.88 at the second observation. A comparison of the mean number of child directed acts for the eight children at Time 1 (4.51) with the mean number at Time 2 (7.57) was made using a t test for related samples. The result indicated that the increase was statistically significant ($t=5.64, df=7, p<.05$). Across children in both schools the range of the averaged child directed acts also altered markedly. At Time 1 the range was from two to five for each ten minute period, and at Time 2 from six to ten.

Table 6.13
Child directed acts per ten minute observation sample for each child

<table>
<thead>
<tr>
<th>School</th>
<th>Child</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kumin</td>
<td>Anna</td>
<td>3.92</td>
<td>6.93</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>2.08</td>
<td>7.73</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>4.75</td>
<td>5.93</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>5.42</td>
<td>8.40</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>Phillip</td>
<td>4.92</td>
<td>6.73</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>4.67</td>
<td>7.73</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>5.50</td>
<td>10.27</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>4.83</td>
<td>6.80</td>
</tr>
</tbody>
</table>
One child (Lyle) was engaged in more child directed acts per ten minutes than the other children at both times. This may partly be accounted for by a feature emerging in the qualitative data. Owing to Lyle’s relatively difficult behaviour Miss Cox worked with him more often than the other children and particularly at Time 1. She interacted very skilfully with him successfully reinforcing academic behaviours rather than attentional behaviours. However, it is not being suggested that this fully accounts for Lyle’s high rate of engagement in independent learning. He was at both observation times very actively working at learning. Of particular interest is that Lyle was exhibiting behaviours in the three categories identified earlier as the more cognitively complex ones (see p. -) leading towards independent operating. Almost one third of his child directed acts both at Time 1 and Time 2 were in these categories (trying and testing, attending to errors, working at difficulties). A shift was observed in the level of the tasks with which he was able to successfully engage. In a matter of weeks he had moved from reading and self-correcting [SC] on simple one line caption books (e.g., “I am a father... teacher” [SC]) to applying these behaviours to many books with more complicated text (e.g., “The lazy pig oh! oops!... The sun is [SC] up early in the morning”; and Appendix B.2).

In contrast, Adam had the lowest amount of child directed acts at time 1, but showed the greatest increase at Time 2. His behaviour is illustrative of the marked diversity between children in the study and the implied adaptability required of their teachers. When Adam began school he had a very limited repertoire of early literacy behaviours (see Appendix C.5) including restricted control of oral language, very little knowledge about how books worked, and the ability to only write two letters (A and M) among lines of circles and letter-like forms. The majority of the child directed acts observed at Time 1 related to carrying out and evaluating simple matching tasks in different curriculum areas and to inventing text. By Time 2 when he was engaging in many more child directed acts he was beginning to show control over emergent behaviours in reading and writing. He had become more responsive in group teaching sessions when new books or mathematics concepts were introduced. While he was not yet reading books or writing stories alone, Adam could monitor where to start and how to move to the next line (e.g., “I’ve forgot” when he went wrong). He could dictate a complete sentence (e.g., “They can’t drive the car because they... it [SC] has no gas”). His child directed acts at both observations were mainly in the three categories, showing relationships, checking and rehearsing and repeating. A few instances of behaviour in the remaining categories were beginning to emerge at Time 2. Adam still had a great deal of early learning to do but he was clearly beginning to gain experience and engage more effectively with the novel tasks he was meeting. It is difficult to know whether Adam was being helped in the most appropriate ways. Informal comment from the teacher suggests she may not have fully appreciated
Adam’s very limited language control, but she certainly engaged in many supportive interactions with him that matched his current needs.

**Summary of the extent of independent learning**

The data showed that new entrant children in two classrooms were actively and in a number of different ways engaging in a considerable amount of independent learning. For both observation times independent learning in the form of child directed acts was observed in all categories but was distributed unevenly across them. Observations indicated there was considerable scope for independent learning in all three types of episodes in these particular classrooms. Most child directed acts occurred when children were engaged in activity episodes. The greatest increase across observation times appeared in teacher-child interactions. Changes occurred in observations at children’s entry to school and three months later both in the child directed acts categories and in the episode types. There was considerable similarity between individual schools in the pattern and incidence of child directed acts. Differences have been discussed at each point that they occurred.

**Assessments**

As described earlier (see p.69) the children were assessed at the beginning and end of the study on aspects of early reading and writing knowledge and on control of oral language structures. It was considered important to ascertain whether the sample characteristics were comparable to those of new entrant children in other studies. Assessments of aspects of emergent reading and writing behaviours are available from research in Auckland schools. Clay (1985b) reported data on 72 children from six schools, Nalder (unpublished, 1985) described 16 children from four schools, and McNaughton and Ka’ai (1990) reported on 16 children from five schools. A range of scores of children entering school was represented. Data were also available from one study three months after entry. The descriptions of the eight children in the present study at 5.0 and 5.3 and the data from the three reports are shown in Appendices C.1 to C.4.

A comparison of data from this study with three other New Zealand samples at school entry shows similarity across all assessments (see Appendix C.1). A comparison of the profiles of children at 5.3 years with Nalder’s data also indicate similarity (see Appendix C.2). The means of the children in this study were apparently no different from many others of the same age entering school in Auckland.
Data on the sample in this study in Appendices C.3 and C.4 illustrates the extent of the diversity among individuals and between schools. The individual assessment scores in Appendix C.5 showed that on entry achievement varied widely. The scores, with one exception out of forty comparisons, increased in an appropriate direction from the beginning to the end of this study. At the second observation time twelve weeks from entry, a similar diversity was again observed in the assessment scores.

The relationship of independent learning to what was happening in terms of achievement in important aspects of the curriculum was looked at by examining the changes in achievement test scores and the occurrence of child directed acts over time. Data on three possible relationships were considered. One concerns the extent to which independent learning opportunities available in the classroom may help a child in due course to learn things well enough to score higher on achievement tests. A second possibility is that since the opportunities for independent learning are directed more to how to learn they are only likely to be related to an increase in "item learning" on the tests in a moderate way. A third possibility is that there is not necessarily a relationship between independent learning and achievement test scores.

A total assessment score was derived for each child by summing the individual assessment scores. The rationale for summing the scores was that the assessments were all concerned with literacy and oracy and, in addition, the relative performance of a child on each assessment was similar. The children were ranked on each assessment and the association among the sets of rankings was tested using the Kendall coefficient of concordance $W$. There was a consistency in the ranking of each child across assessments at both Time 1 and Time 2 ($T1: W=0.875, p<.001; T2: W=0.836, p<.01$).

To look for a possible relationship the summed assessment scores were ranked and compared with the ranked child directed acts occurring per ten minute observation for each child. The first analysis was for the entry (Time 1) data ranked as in Table 6.14. Data on entry to school reflect the prior school experiences of each child. Except for in the case of two children, the scores and child directed acts were not ranked similarly. Differences in the rank order were marked, reaching a difference of four ranks in both directions. On this basis, it can be said that while children on entry to school were engaging in considerable independent learning there was, with two exceptions, no apparent relationship with assessment scores. The child whose achievement scores were very low on entry to school also engaged in less independent learning than the other children at that time.
Table 6.14  
Rank order for achievement scores and child directed acts per ten minute sample for Time 1  

<table>
<thead>
<tr>
<th>School</th>
<th>Child</th>
<th>Assessments</th>
<th>Child directed acts in 10 min observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
<td>Anna</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>Phillip</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

The test scores and child directed acts for Time 2 relate to the three months of schooling the children had experienced. The rank order (Table 6.15) was again different for assessments and child directed acts. With two exceptions, the differences range between one rank order position to six rank order positions in both directions.

Table 6.15  
Rank order for achievement scores and child directed acts per ten minute sample for Time 2  

<table>
<thead>
<tr>
<th>School</th>
<th>Child</th>
<th>Assessments</th>
<th>Child directed acts in 10 min observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
<td>Anna</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>Phillip</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>6</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
While all children were showing improvement in reading, writing and oral language assessments, 12 weeks into the first year of school is probably much too soon for a clear relationship between independent learning and achievement to be shown. Independent learning could be observed to occur, but these children were not yet fully engaged in the aspects of emergent literacy behaviours identified in the achievement levels. Other researchers have shown that even in the first six to 12 months in school children are adjusting to school learning and responding in different ways, thus making differing progress (Clay, 1991a; Nalder, 1985).

Further, the transition into school is a major period of change for young learners. The assessments administered are unlikely to be measuring change on all these fronts. They ask about specific sorts of literacy knowledge (McNaughton & Ka’ai, 1990) and control over oral language structures. When children have very little knowledge there is a slow build-up to increased competencies. This can be likened to the curve of language learning with its slow take-off. At this stage of schooling, a much longer gap between testing is likely to be needed to test for a relationship between literacy achievement scores and independent learning.

In addition, if the relationship between the two variables was only moderate, a small sample would not show it. There were two schools and only four children in each of these schools in the study. A larger sample would be required to test for a relationship between independent learning and achievement scores. This study was designed to develop categories to identify independent learning and to test their validity. In order to carry out such a task thoroughly, the numbers of children studied had to be kept low. There was also marked variability in the scores of individual children. This diversity on such a small sample limits any conclusions that can be drawn from the data.

At the second observation time all children had achieved a relatively high incidence of child directed acts and an extended range of categories of such acts. Achievement varied widely, but the analysis of child directed acts reported above showed all of the children very actively pushing the boundaries of their own learning even though of different types (Table 6.13). The children with relatively low assessment scores on entry were still seen to be working actively on their learning with a degree of independence. It could be argued that this was a result of good teaching because the children were being taken from where they were to somewhere else in what many educators have argued is an appropriate direction. Yet it is in a direction that some of those same educators would argue is not typical of learning and teaching styles in many schools (Chapter Two). Whether it is better than other forms of teaching was not examined in this study. However, what is interesting is that all children in this study, with the possible exception
of one, already had relatively high percentages of child directed acts at Time 1 and the
greatest change between Time 1 and Time 2 was for the child who had the lowest
achievement scores on entry to school.

INDEPENDENT LEARNING AND CLASSROOM FEATURES

The third analysis concerned the classroom features associated with independent
learning. The school is a new and powerful environment for most child learners.
The way the teachers arrange the classroom context is likely to influence opportunities
for independent learning within it. How the emergence of child directed acts varied in
relation to organizational setting, curriculum areas and child and teacher initiated
learning opportunities is reported in the following section.

Organizational settings

Evidence of independent learning in the form of child directed acts showed variability in
the three episode types across the five organizational settings (Table 6.16). The range of
settings available in the two classrooms produced differential incidences of child directed
acts. Considerably more child directed acts emerged in the informal group setting than in
any other organizational setting; 80 percent (of all child directed acts) were recorded at
Time 1 and 68 percent at Time 2.
Table 6.16
Percentage of episodes with child directed acts in organizational settings

<table>
<thead>
<tr>
<th>Episode type</th>
<th>Observation time</th>
<th>One-to-one</th>
<th>Child working alone</th>
<th>Informal group</th>
<th>Small group teaching</th>
<th>Incidental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>1</td>
<td>0.00</td>
<td>3.64</td>
<td>51.64</td>
<td>0.36</td>
<td>0.00</td>
</tr>
<tr>
<td>Teacher-child interaction</td>
<td>1</td>
<td>10.18</td>
<td>0.00</td>
<td>6.91</td>
<td>4.00</td>
<td>0.36</td>
</tr>
<tr>
<td>Peer interaction</td>
<td>1</td>
<td>0.00</td>
<td>0.00</td>
<td>22.18</td>
<td>0.00</td>
<td>0.73</td>
</tr>
<tr>
<td>Activity</td>
<td>2</td>
<td>0.21</td>
<td>4.62</td>
<td>42.23</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Teacher-child interaction</td>
<td>2</td>
<td>18.49</td>
<td>0.42</td>
<td>5.88</td>
<td>7.35</td>
<td>0.21</td>
</tr>
<tr>
<td>Peer interaction</td>
<td>2</td>
<td>0.21</td>
<td>0.00</td>
<td>20.17</td>
<td>0.21</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Within the pattern of organization in each classroom children could move around freely. There were no set seats for children and groups formed around large rectangular tables, on the carpet or in "interest" areas. Children had ready access to all the equipment and materials they required. For example, they did not need to ask if they could use the scissors, PVA glue, paper or the overhead projector etc., although they did need to check when they wanted to dye their pictures because of the teachers' past unfortunate experiences.

Arrangement of the classrooms was such that books, writing and mathematics activities were readily available. There were plenty of free spaces in which complete constructions could be designed, built and allowed to remain for a time, and for groups of children to set up music and drama activities. In the writing, art, craft, or construction areas or library for example, children were freely able to talk to one another at all times.

Activity type episodes in the informal group setting accounted for more than 50 percent of episodes with child directed acts at Time 1 and 40 percent at Time 2. Few episodes of the activity type with child directed acts occurred in any of the other four organizational settings shown on Table 6.16. As would be expected it was the one-to-one organizational setting that accounted for most episodes with child directed acts in teacher-child interaction type episodes. Times when a child was working alone with the teacher produced more episodes containing child directed acts at Time 2 (18%) than at
Time 1 (10%). In this setting teachers were encouraging children to extend their responses in writing stories, by inviting anticipation of text in reading or requesting reasons for something that might have occurred in mathematics or science. Smaller percentages of child directed acts emerged in these interactions at Time 1 and Time 2 when children were in the informal group and small group teaching settings.

A consistent pattern of child directed acts emerged across both observation times in the informal group setting in peer interaction episodes as children worked alongside one another. Child directed acts occurred in around 20 percent of episodes in this setting. The reasons for this consistency are unclear. As noted above peer interchange captured the dialogue and not action or performance. Children were observed to share comments about the task in hand but also to frequently talk about non-task related aspects. Perhaps the opportunities available for increasing child directed acts are restricted by this setting.

Curriculum areas

The classrooms had what may be called an informal curriculum in that the teachers tended not to compartmentalize the day into set periods for involvement in particular curriculum areas. The exceptions were specific times assigned for reading and mathematics (see Appendix A.6). However, both reading and mathematics activities also tended to be integral to most other curriculum activities. First thing in the morning the children worked on mostly self-selected tasks (often referred to as choosing time, developmental activities or theme-based activities; see p.78), extending their own personal interests, following up on shared experiences (e.g. a farm visit, a flower show or a teddy bear’s picnic), or on a theme common to the class (e.g. spider webs, snails, safety to and from school). These construction, reading, writing and drama activities were often revisited at other times in the day. Teacher-initiated and some child-initiated literacy and numeracy activities occurred within the times set aside for these curriculum areas.

A count was made of the incidence of episodes with child directed acts that occurred in the curriculum areas as defined above (see Appendix C.6). They emerged in all episode types and in the five broad areas of the curriculum at Time 2. The highest percentage of child directed acts in activity episodes at both observation times occurred in reading time (av. 19%) and in choosing time/theme based activities (av 18%). The average for mathematics was nine percent. Episodes of teacher-child interactions containing child directed acts (5% to 13% of episodes) occurred across curriculum areas. The highest percentage was in mathematics (13% at Time 2). Similarly within peer interactions at
Time 2 there were episodes with child directed acts in all curriculum areas. The highest percentage occurred in the choosing time/theme based activities period.

**Child-initiated and teacher-initiated opportunities**

An important finding was that both children and teachers were initiating activity and interaction episodes that contained child directed acts in each of the classrooms observed (Table 6.17). Teachers initiated more than two thirds of these episodes. Proportions were similar for both teachers in each episode type and across time. There was also a relatively consistent pattern for children across schools and time with slightly more activity episodes (av. 35%) than interaction episodes (av. 27%) initiated by children.

<table>
<thead>
<tr>
<th>School</th>
<th>Observation time</th>
<th>Activity</th>
<th>Episode type</th>
<th>Teacher-child interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child initiated</td>
<td></td>
<td>43.55</td>
<td>30.00</td>
<td></td>
</tr>
<tr>
<td>Teacher initiated</td>
<td></td>
<td>56.45</td>
<td>70.00</td>
<td></td>
</tr>
<tr>
<td>Bruntlee</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child initiated</td>
<td></td>
<td>33.68</td>
<td>22.73</td>
<td></td>
</tr>
<tr>
<td>Teacher initiated</td>
<td></td>
<td>66.32</td>
<td>77.27</td>
<td></td>
</tr>
<tr>
<td>Kurnin</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child initiated</td>
<td></td>
<td>33.33</td>
<td>23.52</td>
<td></td>
</tr>
<tr>
<td>Teacher initiated</td>
<td></td>
<td>66.67</td>
<td>76.47</td>
<td></td>
</tr>
<tr>
<td>Bruntlee</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child initiated</td>
<td></td>
<td>32.30</td>
<td>31.03</td>
<td></td>
</tr>
<tr>
<td>Teacher initiated</td>
<td></td>
<td>67.80</td>
<td>68.97</td>
<td></td>
</tr>
</tbody>
</table>
This finding is interesting from two perspectives. First, these data provide evidence that child directed acts do not emerge solely from learning situations that are initiated by children. The majority of the tasks the teachers offered children were clearly allowing the children sufficient freedom to make open ended responses in purposeful, interesting activities which Dyson (1985) considered central to constructive learning. They were therefore typically teacher-initiated rather than teacher-directed tasks (see p.33).

The kinds of tasks available centred around becoming a reader (e.g. being introduced to and reading short storybooks); becoming a writer (e.g., dictating composing and writing stories); and developing mathematics skills (e.g. exploring with a wide range of materials). Opportunities for expressive activities such as art, craft, construction, drama etc., were also common. These tasks allowed for personal interpretation and creativity for children to select their own ways to proceed and thus for the creation of individual products. It is likely that under such conditions children were actively processing information and communicating and building understanding by negotiating meanings from their own knowledge. Children were not constrained by limitations enforced by the task, nor by the teachers' instructions about how to carry it out. The teachers were not predetermining the specific elements of what was to be learned (Goodman, 1990) nor presenting a set of skills to be learned in a linear way (Wells, 1986).

Secondly, at both observation times all children initiated some of their own activity by engaging in self-generated and managed tasks of their own choosing. That child directed acts emerged in these episodes suggests that children were not only gaining competence with early strategies but that the tasks they initiated provided valuable learning experiences. Children were also initiating 26 percent of interactions with teachers. This result differs from the research of Clay (1985a) and Kerin (1986) where new entrant children initiated very few interactions with teachers. One reason for such child initiation in this study may be related to the particular responsiveness of the teachers to the children. They clearly valued their contributions, working with them "in partnership". A special rapport was evident in both classrooms. The following incident is illustrative of the relationship established between teachers and children early in school.

Lyle: [sitting beside the teacher and other children at a large worktable — reached over and cupped the teacher’s face in his hands and turned it towards his work]

Teacher: [smiling] You...

Lyle: Miss Cox. Look !!!
Another reason for this result may relate to the informal and flexible way teachers adopted for working in the classrooms. Access to the teachers was easy. Children were readily able to approach the teachers as they worked on the carpet area with small groups, or as they moved around the room interacting with children which they did for much of the day. Teachers were never observed sitting at their desks. Children did not need to queue for help or wait for long periods to have their turn with the teacher. They had opportunities for using their initiative but with the knowledge that teacher assistance was available if and when it was required.

These responsive classroom contexts were workplaces that appeared to allow maximum opportunities for a balance of appropriate teacher guidance and self-selected tasks. They are in contrast to the first year classrooms described by Cullen (1991b) where there was limited provision for any independent decisions by children about materials or activities and a predominance of direct teacher instruction.

In sum, the results showed that child directed acts arose out of many episodes that were initiated by teachers. These teacher-initiated opportunities were distinguished from teacher-directed opportunities. They allowed for access to meaningful tasks relevant to children and appropriate for their levels of functioning. Further, these tasks appeared to foster opportunities for learning in a constructive mode. Importantly, from entry to school children were initiating many of their own activities. Noteworthy is the fact that new entrants were initiating conversations with the teacher. Thus, children were able to work on the things that were of interest to them in purposeful ways and to engage in interactive dialogues that they frequently originated. The teachers' approach to children's learning, their way of interacting with children and how the classrooms operated may all have contributed to the occurrence and variety of child directed acts in both teacher and child initiated episodes.
CHAPTER SEVEN

REPORTING THE RESULTS: TEACHER BEHAVIOUR THAT FACILITATES INDEPENDENT LEARNING

The ways teachers in two classrooms demonstrably helped children to learn more for themselves in individual teaching-learning encounters in relatively complex classroom settings came to be a matter of particular importance to this study. The aim was to identify facilitative teacher moves in interactions occurring throughout the school day in two classrooms.

TEACHER BEHAVIOUR IN TEACHER-CHILD INTERACTIONS

Right from the beginning of school in these two classrooms there were children who were beginning to engage with various tasks while the teachers worked alongside individuals, talking with them about what they were doing and encouraging them to think about how to go about these tasks. These teacher-child interactions were in one-to-one situations, in individual interactions embedded in group teaching and in individual exchanges within informal groups. The teachers also worked with children in small group teaching situations where there were often further examples of facilitative teacher behaviour.

Detailed analyses of the nature of teacher behaviour in these different types of teacher-child interactions were conducted. The following sections present results from an examination of facilitative and other teacher behaviour observed in individual encounters.
over two observation periods. These results provide information concerning the ways the teachers were deemed to have promoted and supported independent learning as well as its relationship to particular classroom factors.

The results are presented in four sections. The first covered the quantity, variety and kinds of facilitative teacher behaviour in general. The second comprised the six categories of facilitative teacher moves across the four interaction types. The third section dealt with the opportunities for children's independent learning in different interaction types. Finally, comparisons were made between the two schools of individual teacher behaviour.

Facilitative teacher behaviour in the three individual interactions was distinguished from that found in small group teaching because each setting was considered to have produced a different kind of teaching-learning interaction (see p.99).

Data for analysis

There were 1526 episodes observed of which 442 involved teacher-child interactions. Of the 442 episodes, 218 had instances of independent learning, signified by child directed acts. The teacher behaviour in all the teacher-child interaction was analysed in detail, independently of child behaviour. There were 5582 teacher moves and considerable variability in the length of the moves. The data are presented as a percentage of all the instances of teacher behaviour observed, and the codes were mutually exclusive and exhaustive.

TEACHER BEHAVIOUR: OVERALL ANALYSIS

Facilitative teacher behaviour

The incidence of facilitative teacher behaviour was considerably higher than for other* behaviour at both observation times (Table 7.1). Teachers were between them creating many (up to 63%) opportunities within the teacher-child interactions to assist the children to become more independent as learners. Much of their teaching was focussed on fostering and supporting independent behaviour that could assist children to be able to be learning more about how to learn and thus take their own learning further.

* Examples of other behaviour are in Appendix B.1.
Table 7.1
Percentage of facilitative and other teacher behaviour in two classrooms at each observation time

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Teacher behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facilitative</td>
</tr>
<tr>
<td>1</td>
<td>61.87</td>
</tr>
<tr>
<td>2</td>
<td>63.03</td>
</tr>
</tbody>
</table>

Both teachers (see also Table 7.6) were found to be skilled at promoting learning opportunities for these school beginners by attending closely to each child's needs and fostering change in appropriate directions within activities appropriate for each individual's development. Many of their teaching acts seemed to be specifically directed towards assisting children to become "learners in control" (Glynn, 1992, p 1). The teachers were each cueing, prompting, linking, shaping, supporting and praising children's efforts in many different ways. They were also eliciting responses from children, by inviting their views or interpretations, requesting reasons for actions undertaken as well as modelling and explaining new or difficult aspects for them. Some of these teaching moves are illustrated in the following interaction which occurred when Lyle was writing a story to go with the spider web he'd drawn on an overhead transparency.

Lyle: [had written 'The spider od'] — [was composing] and, and, and ....
Teacher: You read what you've written.
Lyle: The [paused]
Teacher: Good. [encouragingly]
Lyle: What does that say? [no response from teacher] spider [read slowly]
Teacher: You're right! You're right!
Lyle: [reread] The spider ...I think I'll have to write 'and' now.
Teacher: What was your story? Tell me the whole story from the beginning.
   The spider...[prompting]
Lyle: The spider is, is... in, in.
Teacher: Do you want that to say 'is'? [pointing to 'od' that he'd written]
Lyle: [nodded — teacher rubbed it out for him] Do... did I say 'and' too?
Teacher: Well, you tell me your story. The spider...
Lyle: Is [wrote 'is'] is in [wrote 'n' for 'in'. Looked at it. Shook his head]
Teacher: Try it out there. [on scrap paper] You're nearly right.
Lyle: [wrote 'up'] — [teacher rubbed out 'n']
[wrote up in story] a [wrote 'a'] Done it! Done it!
Teacher: What did you write?
Lyle: 'A', 'a'. I did 'a'.
Teacher: Read it now.
Lyle: [read] The spider is up in ... on
Teacher: On. What will it start with?
Lyle: 'O' [letter name]
Teacher: Right. Is that what you want to write? Are you sure that's ...
Lyle: On [teacher rubbed out 'a'] — [wrote 'on']
Teacher: Good, you did know how to write 'on'. Read it. [pointed while child read]
Lyle: The spider is up on [generated] the web. [wrote 're' — looked at it] Oh!
squeezed in an 'h' between the letters for the — read aloud for himself]
The spider is up on the... web.
Teacher: Web, web [saying slowly] web, what will it start with?
Lyle: /d/, /d/
Teacher: It starts with? You say it. [child nearby said /w]
Lyle: /w/
Teacher: What does the 'w' look like? Do one there. [pointed to scrap paper]
Lyle: [wrote 'w' correctly]
Teacher: Good boy and the rest of it is like that. [wrote rest of word 'eb' on paper for
him to copy]
Lyle: I know how to do a 'e'. [as he copied 'eb'] — [read] The spider is up on the
web.
Teacher: That's right. Good. Go and put it on the screen [of the overhead projector]
and read it to us all.

Lyle was helped to use his existing knowledge and from this starting point was
encouraged to try to reach out to learn more about what was new for him in writing. The
teacher modelled what she felt he was not yet ready to attempt. She adjusted her
support according to her knowledge of what the child could control and her
understanding of what he was trying to learn. Such teaching which has been described
as assisted performance by some educators, is here seen as forms of facilitative
behaviour.

This example and others in Appendices B.3 and B.4 and on p.152 indicated that the
ways teachers shared in joint interactions with children were compatible with Smith's
(1993) account of the kinds of teaching interactions that would occur in "the Vygotskian
classroom" (p.57). She described how both teacher and child became actively engaged in shared tasks for extended periods particularly during early learning stages. Children were thus able to advance in their zone of proximal development (Vygotsky, 1978).

Both teachers in this study it seemed, expected and encouraged children to use and build on what they knew and could do. They often praised their efforts. They sometimes coaxed them to try to do new things and supported their attempts, however uncertain. When appropriate they showed them or told them what to do. This could be interpreted as fostering access to what Bruner (1980) called “new kinds of knowledge” and understanding by asking questions and presenting challenges aimed at helping children to think, to test out options and to relate what they already knew to new experiences. In such ways one could say they were fostering constructive processes, that is, helping children negotiate and construct meaning through purposeful activity as they interacted with them. Teachers participated in this way in shared contexts with children when, for example, discussing mathematics or science concepts, reading books, writing stories or working on a construction problem.

Table 7.1 also shows a striking consistency in the extent of facilitative behaviour at both observation times. The continuous entry policy of five year olds into New Zealand schools may provide a part explanation for this uniformity. For while this study observed school beginners near the start of their schooling and 12 weeks later, these particular children entered an ongoing classroom context that had been established for some eight months. In order to cope with this kind of situation the teachers had developed particular ways of working with children in an environment with interest areas, materials, equipment and classroom routines in place.

Within each class there were some children who had been at school from the beginning of the year until the time the observation began. It could be expected, therefore, that the kind and style of teaching patterns established would not be altered to any great extent for new children, but that the teachers would respond to the child’s initiatives assisting each child as appropriate. They could be said to be working from each child’s agenda. The following episode illustrates the way in which the teachers worked from individual children’s competencies, responding to personal starting points. In a mathematics activity the teacher was helping a small group of children make relative judgements by grouping coloured sticks. She initiated an individual interchange with Toby starting from the one coloured stick he had in front of him. Her teaching moves built on his responses, furthering his understanding of specific number concepts, by helping him use concrete materials to confirm his hypothesis.
Teacher: Toby, what can you tell me about one.

Toby: Well... One is less number than two.

Teacher: Less is it? Good!

Toby: And nought's lesser.

Teacher: Yes!

Toby: Umm... One number is less than two and there's ummm...

Teacher: What about three?

Toby: It's umm...

Teacher: Is it more than or less than one?

Toby: It's more.

Teacher: Is it? How do you know three is more than one?

Toby: Umm... it's ummm... got three... and umm one's only one stick.

Teacher: All right. Leave your one stick there. Now get three and put three there. [pointed] We'll see if it's more.

Toby: [put three sticks down]

Teacher: Now is three more than one?

Toby: Yup. [nodded]

Teacher: How can you tell?

Toby: 'Cause that is only one [pointed to one stick] and that's one, two, three. [pointed to each stick in the other set]

Teacher: Well done!

Such individual meeting and extending of children's learning levels did not only take place when the teacher was working with a single child. Often, particularly when children were composing and writing their own stories, the teacher would provide individual help for a few children at the same time while sitting with them at a group table.

Clay's (1985b) description of teachers of new entrants providing "a rich set of opportunities" (p.23) could well be applied to the teaching learning experiences available to the children in this study. Individual intellectual effort was being enhanced in interactions with teachers who were sensitively observing and responding to what children were actually doing, thus ensuring they were continuing on independent learning routes. It can be suggested that the more teaching follows a child's agenda, the more it will be appropriate for each child's learning and therefore likely to assist such learning.
Categories of facilitative teacher behaviour

The facilitative teacher behaviour occurring in all the teacher-learning interactions over two observation times is shown on Table 7.2. These data provided insights into the attention teachers gave to each specific form of behaviour that in this study was considered to foster independent learning.

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Showing relationships</th>
<th>Checking</th>
<th>Trying &amp; testing</th>
<th>Attending to errors</th>
<th>Working at difficulties</th>
<th>Rehearsing &amp; repeating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31.95</td>
<td>24.92</td>
<td>18.85</td>
<td>2.56</td>
<td>3.51</td>
<td>18.21</td>
</tr>
<tr>
<td>2</td>
<td>32.11</td>
<td>26.52</td>
<td>12.62</td>
<td>5.11</td>
<td>6.23</td>
<td>17.41</td>
</tr>
</tbody>
</table>

Four categories accounted for the majority of facilitative teacher behaviour at each observation time. There was a relatively high percentage of facilitative behaviour in both the showing relationships and checking categories. Teachers were consistent over both observations with from 25 percent to 32 percent of moves in teacher-child interactions related to these two categories. In the showing relationships category children were being assisted to identify and relate information to help them understand how different things are connected. In the following example from a story sharing time, links are being encouraged between letters and something very familiar — their names.

Louise:  He's got a 'T' on it. [his teeshirt]
Teacher: He's got a 'T'. 'T' for ?
          'T' for Toots. That's his name. If you wore your letter of your name you'd have a ...?
Lyle:    'T'!
Teacher: 'L'. 'L' for Lyle.
Lyle:    [smiled]
Teacher: And you'd have a 'M'. 'M' for Michael. [to Michael] Nicky would have a...?
Nicky:   'N'
Teacher: 'N' for Nicky.
          [continued for all the children in the group]
The teachers also helped children to monitor their actions (checking) in many different ways across curriculum areas. In a group session in mathematics the children were asked to get two things that matched. Renee chose a numeral card for eight and a picture card with eight flowers.

Teacher: Why did you choose those two?
Renee: They both are eight.
Teacher: Would you like to check for us in a loud voice so we can hear?
Renee: [paused]
Teacher: How can you check?
Renee: By counting.
Teacher: [smiled] Okay. You point and count for us.
Renee: [pointed to and counted each flower on the card]
Teacher: Was there eight?
Renee: Yes. [smiling]

The consistent attention that teachers gave to encouraging children to attend to very early literacy and numeracy activities and to revisit and re-explore familiar tasks at both observation times was apparent in the rehearsing and repeating category of facilitative teacher moves. That teachers were fostering these opportunities indicated that they understood the value of practice to achieve fluent responses and of informal opportunities to explore printed material and reinforce number skills in children's development. In the following example the teacher was encouraging children to return to books she had introduced and read with them.

Teacher: Now in the box today are some books that we've already read before, and I would like you to choose one ... that you would like to choose all by yourself ... and then you can try and read it and then take it home to read to someone there. If you get stuck I'll give you a helping hand. [she held up each book giving its title as she spread them all out on the carpet]

In the trying and testing category teachers in this study were providing opportunities for children to use and enhance their problem solving strategies, to search, to predict, and to explore and check options, early in their schooling. This suggested that with the kinds of learning experiences the teachers were providing there was an expectation that children would be in a sense, negotiating meaning and understanding. An example from the teaching of reading to new entrants illustrates aspects of the complexity involved in teaching for active processing. The children had been exposed to meaningful books from
the start and were encouraged to expect reading to make sense. These teachers shared books with the children. They read to them, and introduced new storybooks by talking about the story and reading it to and with them. Children were thus prepared to read the story for themselves. (In the example given // indicates cuts).

Teacher: [holding up the small book so all children in the group of six could see the pictures and the text] This book's called “Sleeping Out”. What does sleeping out mean?
Toby: Camping.
Teacher: Mmm. Camping sleeping outside. How many of you have slept outside? // Who has never slept outside? // What’s it like in a tent, Lucas?
Lucas: Well, you can hear all sorts of different noises and scratching. //
Teacher: Let’s look at what happened to these people when they go sleeping out. Whereabouts are they camping? // What could it be? // Who do you think? // I wonder what other sounds they heard?

These excerpts illustrate how the teacher explored the main ideas of the story, built on children's prior knowledge and encouraged them to anticipate both the events in the story and the text. She was fostering comprehension, helping children learn how to use the pictures and the text to think about the rest of the story. The children, as usual, were able to and did respond in individual ways. Such situations, according to Smith (1993), demonstrate the teacher’s ability to work in the zone of proximal development with a group. Somewhat less teacher behaviour in the trying and testing category at Time 2 may be explained by a shift in emphasis from an initial teacher effort to help children search out and check options to one of encouraging them to process more of the information for themselves.

The low overall percentages in the attending to errors and working at difficulties categories is probably a reflection of the relative complexity of these behaviours. By Time 2 the incidence in these categories was still low. But, there were clear indications that, as the children adjusted to the new environment of formal school work, the teachers were able to move them gradually towards developing competencies in these relatively complex behaviours. Examples below illustrate this. They were helping them to learn more about how to notice and attempt to correct their errors as in this seriation task in mathematics.

Teacher: I want you to have a think about the sizes of those ones. [pointing] See if you can fix that little part. It's tricky!
They were supporting them to overcome obstacles.

Teacher: Yes, you need a piece of wool about that length. Can you thread the needle?
Rachael: [shook head]
Teacher: You have a try.
Rachael: [took wool and needle]
Teacher: Squeeze it. Squeeze it with your fingers. Squeeze it tight like this. [showed Rachael how to do it on another piece of wool]
Rachael: [tried]
Teacher: Tight. Roll it like that. Make it so that you can't really see it Rachael. Squeeze it in there like that. [showed her]
Rachael: [did so]
Teacher: That's right. That's right. And push the needle down over the top.
Rachael: Like that?
Teacher: [nodded]
Rachael: [kept trying to thread the needle] I can't put it in. I can't really do it.
Teacher: [watching, came closer] I'll squeeze it with my fingers and you can push the needle over the top.
Rachael: [did so]
Teacher: You push that needle down. Good girl! That's it! Right! There you are! You've done it. Pull it through.
Rachael: [pulled the wool right through]
Teacher: Oh! Let's do it again.
Rachael: [went to use the pointed end of the needle. Noticed that it was wrong. Turned it around to the other end so that she had the eye by the wool the teacher was holding. Threaded it successfully]

It appeared that the teachers were in various ways and contexts maximising children's access to learning within school, acknowledging the behaviours that had emerged in preschool contexts and building on this learning. By fostering continuity of development the teachers were allowing the continuation of child initiatives, contrary to a trend in some educators' concerns that the styles of home and school learning can remain isolated from one another (e.g. Glynn, 1992). At the same time these two teachers were consistently focussing on helping children construct understanding of meaning and develop new skills.
Facilitative teacher behaviour in interaction types

Four types of teaching-learning interactions were identified in the classroom context (p.77). The percentage of facilitative teaching behaviour occurring in the combined (three) individual and in the small group teaching interactions is presented in Table 7.3. In this analysis a distinction was made between individual interactions occurring in group teaching, and small group teaching generally.

More facilitative teaching moves than other behaviour occurred in both kinds of interactions across the two observations. The combined individual interactions accounted for consistently more facilitative teacher behaviour (av. 38%) than did small group teaching (av.23%).

Table 7.3
Percentage of teacher behaviour for combined individual interactions and group teaching at each observation time

<table>
<thead>
<tr>
<th>Interaction type</th>
<th>Observation time</th>
<th>Facilitative</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined individual interactions</td>
<td>1</td>
<td>39.54</td>
<td>27.45</td>
</tr>
<tr>
<td>Small group teaching</td>
<td>1</td>
<td>22.33</td>
<td>10.68</td>
</tr>
<tr>
<td>Combined individual interactions</td>
<td>2</td>
<td>35.23</td>
<td>19.68</td>
</tr>
<tr>
<td>Small group teaching</td>
<td>2</td>
<td>27.79</td>
<td>17.29</td>
</tr>
</tbody>
</table>

In individual interactions it appeared that the teachers were able to create many opportunities deemed to foster independent learning. There were numerous instances of individual exchanges that included facilitative teacher moves as children were reading and writing stories, acting out an event in the home corner, working with science and equipment, creating a construction, painting or even learning how to tie a shoelace as in the illustration below, for example. It illustrates skilful scaffolding (see p.14). The teacher got Adam to concentrate on teaching what she thought he could learn to do at this time, while she carried out the rest of the task. She thereby could be said to have prepared him for later achieving the whole task alone.
Adam: Mrs Sengler. [put his feet out so she could see his shoelaces were untied]
Teacher: Oh dear me! I think you'd better have a practice. Come over here and I'll show you how to practice. Two of them! Right come over here. We'll practice. You have this shoe and I'll have this one. [gave him a practice sandshoe and kept one herself]
Adam: No! [laughing tone]
Teacher: Come on! Yes! You have to learn! 'Cause when you're six I'm not going to do your shoes up any more and you'll be six one day. I'll show you how.
Teacher: See that one. [pointed to left lace] Right! You have that shoe. You get your two bits, one in each hand. Right, now you have to cross them over. [teacher did so with hers]
Adam: I don't do the first bits. [crossed the laces over as shown]
Teacher: That's right. Now you've got to get that crossed over bit through there. [showed him]
Adam: [began to push it through]
Teacher: Pull it down through. That's it, good, now put the bits one in each hand... and pull.
Adam: [did so]
Teacher: That's the first part!! Right, untie it and see if you can do the first part by yourself.
Adam: [put head in hands — then thumb in mouth]
Teacher: Oohh! Hard work isn't it? Have a try.
Adam: [picked up laces]
Teacher: Cross over first ... That's right.
Adam: [crossed over]
Teacher: Now poke one bit through.
Adam: Ahh! [trying hard but didn't achieve it]
Teacher: [watching Adam]
Adam: Poked it through. [after trying again]
Teacher: Got it through the hole. Good boy! Then what do you do?
Adam: [pulled the two laces correctly]
Teacher: Right. Now you can do bits from now on! Have one more try, One more try.
Adam: [tried again, starting it quickly and correctly]
Teacher: Oh look at this! This is getting so clever. Good! You even know what to do next without me telling you.
Adam: [pulled laced through]
Teacher: [watched him finish] There you are. If your shoes come undone you have to do the first part and I'll do this part [did the bow] for a little while, but you have to do the first part, then I'll show you how to do the next part.
It would seem that these varied tasks and situations occurring in the informal activity settings set up and managed by the teachers (while also "managing" the rest of the class) allowed for an interactive style of teaching that the teachers used to advantage. The rich set of activities available, which were freely accessible to children, also allowed for shared interactions with individual children to be an integral part of the classroom learning context.

Considerable facilitative teacher behaviour also and necessarily occurred in small group teaching that did not include individual interactions with target children. These situations were also analysed as they provided a different kind of teaching-learning event. Group interactions might be an appropriate term for such sessions. They tended to be occasions, as for example in mathematics, where children worked together on a variety of new tasks guided by the teacher as they sat in a large circle or where, in reading, they listened to the teacher explore ideas and encourage anticipation of a story, read co-operatively with the group, chorused answers or individually contributed to questions asked or opinions invited. An example of facilitative teacher behaviour in small group teaching follows. The children had been at school for three weeks.

Teacher:  
[introducing a new book to children in preparation for individual reading of it]  
And look at this. It's a strange name! [wrote 'Toots' on the blackboard]  
Toots. Sssh Phillip. [to child talking]  
Toni:  
Apple.  
Teacher:  
No. His name is...?  
Shona:  
Carl.  
Teacher:  
Toots.  
Chorus:  
Toots, Toots.  
Teacher:  
Would you like to be called Toots?  
Chorus:  
No! [laughing]  
Teacher:  
Well, that's his name. [puts a circle around Toots on the blackboard] That... this book is about Toots. Toots is going off to buy something for his feet. If you look at his feet, what do you notice?  
Chorus:  
Green.  
Teacher:  
They're green!  
Bob:  
Shoes.  
Teacher:  
Shoes? [quickly]  
Lyle:  
No, feet. [loudly]  
Teacher:  
What is missing?  
Louise:  
Socks and shoes.  
Teacher:  
Missing. Right. Socks and shoes are missing. He has no socks and shoes.
Lyle: That will be a... [laughs]
Teacher: He is going off to find something for his feet. [points to the title — reads]
"Boots... for... Toots." [clearly] That's the name of this book. [continued...]

Such new extrant group exploration and sharing of the ideas and concepts required for anticipating and working on text, offered children with somewhat similar reading behaviours, exposure to facilitative teaching acts to which they could and did respond variably. In a number of these episodes the target children were overtly taking part. According to Smith (1993) such could be seen as children working in their zones of proximal development in shared activity with others. Sometimes the children being studied offered no contribution in such interactions. They just listened and watched. Non-participatory behaviour in such settings may not hinder access to effective learning opportunities. It is feasible that non-contributory children will benefit from the dialogue and interaction that occurs in small groups as Johnson and Johnson (1975) found. Certainly, the data revealed that target children in this study were often exposed to intensive facilitative teaching in these settings.

The groupings used by the teachers were regularly altered according to the rate of individual progress of children in the curriculum area even during these beginning weeks at school. Appropriate challenges were readily available as the children responded in different ways to the learning opportunities that were offered.

An interesting finding was the relatively large amount of other teacher behaviour occurring on Table 7.3. The highest percentage of other behaviour was in the combined individual interactions at Time 1 (27%). Sometimes other behaviour related to management issues.

Teacher: Excuse me! What's going on?
Children: [silence]
Teacher: Well, there should be something! There should be reading.

At other times the teachers were spending time showing children how to work in the informal activity setting as in this example from a mathematics session.

Teacher: Now remember, when you are finished the pegboards, what are you going to do?... Put your name on it. And then? After that?
Louise: Go to another table.
Teacher: You are going to choose one of the boxes with shapes of different sizes in. I want you to work by yourselves today. I'm not going to be here very much
at all so first you do these two pegboard patterns, then put your name on it so I know which is yours, then you choose one of the boxes, then go away and do that all by yourself and last of all when you have done all of those things you can go to the puzzle table. Three things to remember.

The teachers thus ensured they had given help with procedural aspects of tasks that were new to most children such as working with mathematics equipment, reading for themselves in the library, or using the overhead projector. At the same time, however, (see Table 7.3) children also had access to facilitative teaching that was promoting and supporting their own efforts in these individual interactions.

**Individual interaction types**

Table 7.4 provides detail of the extent of facilitative and other teacher behaviour within each of the three individual interaction types. The highest percentage of facilitative behaviour took place in the individual (one-to-one) and individual in informal group settings (20% to 30%).

**Table 7.4**

*Percentage of facilitative and other teacher behaviour within three individual interaction types at each observation time*

<table>
<thead>
<tr>
<th>Interaction type</th>
<th>Observation time</th>
<th>Teacher behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Facilitative</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>1</td>
<td>29.89</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td>1</td>
<td>8.50</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td>1</td>
<td>20.63</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>2</td>
<td>28.36</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td>2</td>
<td>5.80</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td>2</td>
<td>30.00</td>
</tr>
</tbody>
</table>
A high proportion of the one-to-one interactions observed in one-to-one and informal group settings were encounters of sustained teacher-child conversation that frequently continued over many turns. They were therefore quite different to Cazden's experience of the teacher — "stopping momentarily on her individualized rounds" (1988b, p.20).

The social organisation of both the classrooms in this study was such that the teachers were consistently successful in facilitating learning opportunities within individual interaction types (Table 7.4). As a result they were manifestly providing for both the development of personalized, individual interchanges with children, and the management of their teaching time to achieve extended interactions. Extended interactions often involved composing and constructing stories, understanding number concepts and reading books. These are illustrated in Appendices B.3 and B.4.

Observation records (Appendix A.1) showed that sometimes such interactions occurred as the children were grouped around the teacher, sitting on the central carpet area individually reading short story books aloud or using mathematics equipment. At other times interactions occurred when the teacher sat down beside the children to assist them as they worked at the large work tables drawing, writing or constructing. There were also occasions when the teacher and child interacted when she stopped as she was moving around the classroom to engage in talk about the tasks children were undertaking such as working with water, dough or the construction blocks, studying the nature table's exhibits, painting a picture, or completing a jigsaw puzzle. The consistency with which both teachers were encouraging children to "talk more" (Clay, 1985b) is different from the low incidence of this behaviour reported by Clay in her research on teacher-child interactions in new entrant classes.

Considerably less facilitative and other behaviour occurred when teachers interacted with individual target children in group teaching settings (Table 7.5). The most common form of interactions in these settings were short, involving relatively few turns. The first example below, occurred during the teaching of reading. A new book had been introduced and shared together and the group was working on some features of the print.

Teacher: [to group] See if you can find 'am' in the story?
Toby: [pointed to 'are']
Teacher: Read your story Toby.
Toby: [read] What are..
Teacher: Ohh! Is that an 'am'?
Toby: Nuh!
Teacher: Try another page.
Toby: [turned back. Looked closely. Found 'am'. Pointed and read] 'am'. I am frightened. [stressing 'am']
Teacher: Oh, aren't you clever!

While some individual in group episodes occurred in reading sessions, it was more often during mathematics when teachers called on individuals to respond. Some interactions were very brief.

Teacher: What do you notice Phillip?
Phillip: It's getting bigger.
Teacher: Getting bigger. [expressively] Right!

Others continued over a sequence of moves.

Teacher: Tell me why Rachael ...Can that go with that one Rachael? [pointed to set with rod and orange bottle top]
Rachael: Yes cause it's orange.
Teacher: It's orange. Anything else? [pause] Anything else that's different?
Rachael: [shook head]
Teacher: Right, tell me what's the same about these two Rachael.
Rachael: They're all green and they're the same size.
Teacher: Well they're just about the same size. Tell me why these went together?
Rachael: Cause they're the same colour.
Teacher: Same colour. Are they the same shape?
Rachael: [nodded] Teacher: They are. What shape is that?
Rachael: Round.
Teacher: Good girl. It's a round shape and this one is a ...?
Rachael: Round.
Teacher: It's a round circle shape.

Sometimes the response was unexpected and unrelated to the intended task which here was to label sets with numeral or word cards.

Teacher: [turning to Lyle] What have you done?
Lyle: Miss Cox! Miss Cox! [loudly and excitedly] I've found 'to'! [He had put his finger over the 'w' in the word 'two' and discovered 'to']
Teacher: [expressively] Clever boy! You have!
As these illustrations indicate, the teachers were attempting to create specific individual teaching interactions within group instruction. They provided further opportunities for capturing individual children’s ideas, understanding and thinking. That these interactions were relatively short may be explained by the fact that other children were involved. Having them wait for long periods while the teacher worked with a single child could be seen as poor management and, to that extent, unprofitable.

A further area of interest was the potential of the two settings, namely group teaching and individual teaching for the promotion of independent learning opportunities. The data on facilitative teacher behaviour from both types of interaction occurring in small group teaching situations were combined and compared with teacher behaviour in one-to-one exchanges in individual teaching. The results indicated a consistent quantity of facilitative teaching acts in both situations and at each observation time (45% and 49% within all small group teaching, and 55% and 51% in individual teaching outside this setting). These results demonstrated that while the teachers were able to work in ways that allowed for facilitative teaching in two very different kinds of settings more opportunities were created in one-to-one interchanges.

The classroom environment functioned effectively to support this teaching. The observations in these two classrooms were made at the acquisition stages of reading, writing and mathematics which offer the greatest challenge to teachers. A common area of concern is how to keep the remainder of the class purposefully engaged while the teacher interacts with one child or with a small group of children. The findings reported earlier on the quantity of child directed acts (Chapter Six) demonstrated that the teachers were working towards having the children be as independent as possible. Children were able to work effectively without teacher assistance. Thus, the teachers were freed to provide the most appropriate learning opportunities for children without the demands of “what to do with the others?"

Overall, the results showed that these two teachers were able to combine group practices with a considerable amount of individual teaching and they used both as important aspects of the programme. The teachers appeared to optimize opportunities for interacting with children. While most facilitative teaching occurred in individual interactions, a considerable percentage emerged in group teaching. Individual teaching did not in this study appear to be in preparation for group instruction as Clay (1985b) had suggested. Nor was individual teaching seen as replacing small group teaching. Cazden (1988b) had reported this as a view that she understood was being promulgated in New Zealand schools at that time. In this study both kinds of settings were apparently valued
in the teachers' programmes and used early in the children's schooling. A responsive social context had been created in which a style of teaching that encompassed many facilitative teaching acts prevailed.

**Child directed acts in interaction types**

Of interest were the opportunities that the different settings created for children's independent learning. The quantity of child directed acts emerging in the four interaction types is presented in Table 7.5. Almost half of the teacher-child interactions contained child directed acts (this represented 31% of all episodes with child directed acts). The most striking feature of these data was the relatively high percentage (more than one third of all the instances at both observation times) of child directed acts that appeared in the individual (one-to-one) interaction type.

<table>
<thead>
<tr>
<th>Interaction type</th>
<th>Observation time</th>
<th>Child directed acts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual (one-to-one)</td>
<td>1</td>
<td>44.35</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td>1</td>
<td>24.19</td>
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<tr>
<td>Individual in group teaching</td>
<td>1</td>
<td>8.87</td>
</tr>
<tr>
<td>Small group teaching</td>
<td>1</td>
<td>22.58</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>2</td>
<td>38.53</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td>2</td>
<td>26.47</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td>2</td>
<td>12.06</td>
</tr>
<tr>
<td>Small group teaching</td>
<td>2</td>
<td>22.94</td>
</tr>
</tbody>
</table>

A lower but similar percentage of child directed acts occurred in both individual in informal group interactions and in small group teaching. Fewer child directed acts emerged in the individual in group teaching interaction. Surprisingly, the percentages were similar for both observations for each interaction type.
Clearly, individual encounters provided more opportunities for independent learning in the form of child directed acts than any other teacher-child interaction setting (illustrative examples of child directed acts in such situations are in Chapter Five, pp.83 to 95). The high percentage of child directed acts observed suggest that the extended nature of many of these interactions with children provided the most profitable learning experience for advancing independent learning.

It was in one-to-one exchanges (and in the interactions in informal groups) that the skill with which the teachers assisted individual children with tasks they were initially unable to effect for themselves was most clearly observed. They were leading and encouraging children to take increasing responsibility for their own actions. The emergence of a relatively high percentage of child directed acts in these interaction types suggested that a particular style of teaching in several different settings contributed to the promotion of children's power and control over their own processing.

Not only were the teachers enabling children to reach forward to achieve at higher levels but also they were exploring completely new ideas with a child. At other times they were helping children to use what they already knew, or they were encouraging practice. The assistance was offered in different ways across different tasks but, whatever the curriculum area, teachers were actively supporting the children, seizing the appropriate moment to offer guidance, encouragement, information, to demonstrate, or to help correct mistakes.

Independent behaviour occurred in all curriculum areas, in many varied types of episodes and across different patterns of organization. Yet because the behaviour was ongoing and much of it set within an interactive style of teaching, the teacher and child were frequently working together sharing a task. In such interactions the teachers were often seen to be attempting to provide opportunities for the children to learn more about how to learn. The opportunity created did not necessarily result in immediate evidence of child directed acts. An exploratory attempt was made to trace back over the sequence of teacher moves to see if any patterns prior to the emergence of a child directed act could be identified. There were no clear indications of any consistent patterns. The teachers seemed more to be promoting emerging strategies by interacting or teaching at particular points, helping the children to build an efficient processing system (Clay, 1991a). Any child directed acts that occurred may therefore be a reflection of the child's developing processing ability.
TEACHER BEHAVIOUR: INDIVIDUAL SCHOOLS

The opportunities provided by the teachers in each school are reported first with regard to the quantity of facilitative and other teacher behaviour.

Facilitative teacher behaviour: individual schools

There was surprising consistency in the opportunities for promoting and supporting independent learning provided by both teachers. The percentages of facilitative teacher behaviour for the teachers at both Kumin and Bruntlee schools were very close at Time 1. Even at Time 2 the difference was about ten percent (Table 7.6). There was a similar pattern for other behaviour although the percentage of this behaviour was much lower.

Table 7.6
Percentage of facilitative and other teacher behaviour across schools at each observation time

<table>
<thead>
<tr>
<th>Observation time</th>
<th>School</th>
<th>Facilitative</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kumin</td>
<td>62.71</td>
<td>37.29</td>
</tr>
<tr>
<td></td>
<td>Bruntlee</td>
<td>61.07</td>
<td>38.93</td>
</tr>
<tr>
<td>2</td>
<td>Kumin</td>
<td>67.88</td>
<td>32.12</td>
</tr>
<tr>
<td></td>
<td>Bruntlee</td>
<td>58.47</td>
<td>41.53</td>
</tr>
</tbody>
</table>

This comparison showing the extent of and similarity in the facilitative behaviour of each teacher supports the original nomination of these two teachers amongst those deemed to be providing opportunities for independent learning to occur and develop. Both were creating a responsive environment and were directing their teaching towards assisting children to be active, constructive learners. Neither teacher assumed a directive, dominant role in the classroom. Interestingly, these findings for schools regarding
facilitative teacher behaviour reflect the consistency observed between schools in the overall incidence of child directed acts that emerged in episodes (see Table 6.7).

Categories of teacher behaviour: individual schools

Table 7.7 shows how facilitative teacher behaviour was distributed across all categories for each school. A feature of the data is that the two teachers provided different opportunities for children in some of these categories. The greatest differences at both observation times were in two categories. At Time 1 Miss Cox at Bruntlee attended less (13%) to assisting the children to be checking on themselves than did the Kumin teacher Mrs Sengler (23%). At Time 2 there was less behaviour in each category for both teachers, but a similar difference remained. On the other hand, in the category trying and testing the situation was more or less reversed. The teacher at Kumin attended much less to this category than did the Bruntlee teacher. At the second observation this increased to a 19 percent difference between them.

Table 7.7

Percentage of facilitative teacher behaviour in all categories across schools at each observation time

<table>
<thead>
<tr>
<th>Obs. time</th>
<th>School</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Showing relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Checking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trying &amp; testing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attending to errors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Working at difficulties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rehearsing &amp; repeating</td>
</tr>
<tr>
<td>1 Kumin</td>
<td>40.60</td>
<td>23.40</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>41.55</td>
<td>13.03</td>
</tr>
<tr>
<td></td>
<td>18.00</td>
<td>30.35</td>
</tr>
<tr>
<td></td>
<td>6.40</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>1.80</td>
<td>2.44</td>
</tr>
<tr>
<td></td>
<td>9.80</td>
<td>11.00</td>
</tr>
<tr>
<td>2 Kumin</td>
<td>45.72</td>
<td>19.90</td>
</tr>
<tr>
<td>Bruntlee</td>
<td>34.47</td>
<td>8.38</td>
</tr>
<tr>
<td></td>
<td>45.72</td>
<td>19.90</td>
</tr>
<tr>
<td></td>
<td>30.35</td>
<td>15.59</td>
</tr>
<tr>
<td></td>
<td>15.34</td>
<td>2.88</td>
</tr>
<tr>
<td></td>
<td>4.47</td>
<td>2.88</td>
</tr>
<tr>
<td></td>
<td>11.43</td>
<td>11.43</td>
</tr>
<tr>
<td></td>
<td>1.82</td>
<td>15.34</td>
</tr>
</tbody>
</table>

Differences in three other categories were of interest. The Bruntlee teacher at Time 2 engaged in less facilitative behaviour in the category showing relationships. Secondly, while there was a relatively small amount of such teacher behaviour in attending to errors at the first observation at both schools, Mrs Sengler paid more attention to helping the children to notice and attempt to solve some of their errors at Time 1. The opposite occurred in rehearsing and repeating at Time 2 with Miss Cox facilitating more of these behaviours.
The differences in the opportunities the teachers provided in the checking and the trying and testing categories may be explained, in part, by the different way the teachers worked with the children. Mrs Sengler typically interacted individually with children about the activities or constructions they were working on. This offered considerable opportunity for helping them to check on their own processing and performance by monitoring, comparing and confirming (p.103).

As well, she placed emphasis on having children take responsibility for their own actions. Thus, she created many opportunities likely to foster checking. Even when problems arose over routine matters such as wasting paint or scribbling on the table with crayon (other), she encouraged the children to think about appropriate action rather than to correct or reprimand.

Teacher: You know, all that paint would have painted another caterpillar for us. Now we've run out. [pause] Oh dear! [long pause] Well, hang these [paintings] up to dry. Wash the brushes as well...You've got good common sense. You don't need to do silly things.

Teacher: Excuse me. Now I have a question to ask. Who did this? [pointing to the crayon scribble on the table — no response] Well, what are you going to do about it? [pause] Well, you'll have to get it off somehow. You'll have to work out how to do it. It's your problem.

On the other hand small group teaching (see Table 7.8) was often used in addition to one-to-one interchanges by Miss Cox. She regularly worked with small groups when she was introducing and reading new books with the children. They frequently were extended teaching sessions (see Appendix B.5). The way in which this situation allowed many opportunities for assisting children to search and test out options, that is, trying and testing, was discussed earlier in this chapter (p.151). The relatively high percentage of behaviour observed in this category for the Bruntlee teacher suggested her intention was to provide the opportunities for children to learn how to use searching strategies in order to construct meaning in small group settings.

Interaction types: individual schools

Similarities and differences in the kinds of opportunities the teachers were creating were also observed within the interaction types. As in previous analyses, more facilitative than other behaviour occurred in all types. Table 7.8 shows the mean percentage of
facilitative behaviour for each teacher in the two broad interaction groupings. Each teacher had a preference for a different setting: Mrs Sengler at Kumin for the individual setting and Miss Cox for group teaching. The greater difference between them was in the combined individual interaction types.

Table 7.8
Mean percentage of facilitative teacher behaviour in each school

<table>
<thead>
<tr>
<th>Interaction type</th>
<th>School</th>
<th>Facilitative behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined individual</td>
<td>Kumin</td>
<td>45.21</td>
</tr>
<tr>
<td></td>
<td>Brundee</td>
<td>30.03</td>
</tr>
<tr>
<td>Small group teaching</td>
<td>Kumin</td>
<td>20.10</td>
</tr>
<tr>
<td></td>
<td>Brundee</td>
<td>29.74</td>
</tr>
</tbody>
</table>

This difference in the percentage of facilitative behaviour revealed in combined individual interactions may be accounted for in the different style of interaction that each teacher used with children. Both teachers engaged in conversations that worked from the children's responses but Mrs Sengler at Kumin more frequently focussed her attention on having the children think for themselves. She could be heard offering alternatives for them to weigh up, encouraging them to make decisions alone, or helping them examine the appropriateness of what they had done. Her questioning for a response was persistent. Often she was working individually with one of the children in a group, continuing the conversation and gently persuading the child to work through a problem using his or her own resources. (In the examples given // indicates cuts.)

Teacher: What's happened to yours? // So what can you do to fix it?// Why do you need to get one more? // What can you tell me about four and two?
Anna: Four's older than two.
Teacher: How do you know four is older than two? // How much more than three is it? You're doing good thinking. // How much more than two is it? // How could you make two say four?...

Frequently she would repeat a question when the child had not been able to respond to it, sometimes two and even three times. On occasion she would rephrase the question slightly but most often it would be a repetition of the same question.
The Bruntlee teacher Miss Cox, also engaged in detailed conversations with the children, but in a different style. She appeared to work towards helping the children understand ideas. She talked to them, in the sense of explaining things to them, often going over a point or a direction for a task a number of times. There were often detailed explanations of how the children might do things. She frequently asked the children to explain to her what they were going to do or how they were going to do it. As well, she often elicited these responses from the children in small steps seemingly helping them to gain greater control over the tasks they were engaging in. Frequently statements were repeated and then elaborated ending by drawing a full statement together, as a kind of summary, as in this segment from a typical episode.

Teacher: Have a look at the koala's legs. // You can't see the other one because he's hanging on the tree. Why does the koala need such long claws?

Phillip: 'Cause see how high he can climb the tree.

Teacher: To hang on. Right! They love climbing trees and they need sharp claws, sharp strong claws to hold themselves up there. // I hope you are going to remember his fluffy ears, his sharp claws, his fluffy body, very fluffy body, and the tree. // They love climbing trees with leaves, special leaves to eat.

Some interesting patterns emerged for each teacher in the data on facilitative teacher behaviour in each of the individual type of interactions (Table 7.9).
Table 7.9
Percentage of facilitative teacher behaviour in individual interaction types across schools at each observation time

<table>
<thead>
<tr>
<th>Interaction type</th>
<th>Observation time</th>
<th>School</th>
<th>Facilitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual (one-to-one)</td>
<td>1</td>
<td>Kurnin</td>
<td>23.27</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td></td>
<td></td>
<td>10.48</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td></td>
<td></td>
<td>28.42</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>1</td>
<td>Bruntlee</td>
<td>37.60</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td></td>
<td></td>
<td>6.20</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td></td>
<td></td>
<td>11.57</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>2</td>
<td>Kurnin</td>
<td>29.25</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td></td>
<td></td>
<td>5.00</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td></td>
<td></td>
<td>35.21</td>
</tr>
<tr>
<td>Individual (one-to-one)</td>
<td>2</td>
<td>Bruntlee</td>
<td>27.23</td>
</tr>
<tr>
<td>Individual in group teaching</td>
<td></td>
<td></td>
<td>6.83</td>
</tr>
<tr>
<td>Individual in informal group</td>
<td></td>
<td></td>
<td>23.29</td>
</tr>
</tbody>
</table>

Noticeable was the consistency across observations demonstrated by Mrs Sengler at Kurnin in both one-to-one and informal group situations. More opportunities were created in the latter setting at both times. On the other hand, three times as much facilitative behaviour occurred in the one-to-one setting as in the informal group at the first observation for Miss Cox. There was a change from Time 1 to Time 2 when a pattern more like her colleague's was revealed. Finally, the lowest percentages of facilitative behaviour for both teachers occurred in interactions embedded in small group teaching.

The difference in these patterns may be explained by what each teacher considered important for assisting school beginners to move into this new learning environment.
Attention was drawn earlier to the particular features of their style of working. Miss Cox at Bruntlee tended to emphasize understanding of the experience or the task to be carried out, while Mrs Sengler appeared to have an expectation that even very young children could be helped to attempt to think about and resolve the problems they met.

It is not surprising then that the Bruntlee teacher initially made more use of the one-to-one situation to assist the children through cueing, linking and shaping the children's responses. She did this while introducing them to, for example, the classifying, sorting and seriation materials they would be working with in mathematics or when helping them write stories. She worked with each child alone often drawing them away from others nearby. The observation records showed that she kept returning to individual children to ensure each was able to engage in the task in hand and effectively helped each one if necessary. For example, soon after Phillip began school there was the following exchange.

Teacher: [looking at Phillip's name which he had written — 'P', 'h' (back to front), 'llip']
Just about forgot the 'i'. Where's the 'i'? [paused then smiled] Tell you what Philip.
Phillip: What?
Teacher: Use this nice sharp pencil. [got pencil out of the pencil tin] Write your name again on that line. [pointed to the folded line on the blank paper] Think very carefully. Like you wrote it this morning for me.
Phillip: [wrote 'P']
Teacher: Good boy. There's the 'p'. Now what comes after the 'p'?
Phillip: [wrote 'h']
Teacher: Excellent! And after the 'h' comes? Don't worry about that. [the edge of the paper was curling up] You think. Think hard and remember.
Phillip: [wrote 'i']
Teacher: Ahh! 'i'. I'm glad you remembered the 'i'. Good boy!
Phillip: [smiled] Wrote 'llip'.
Teacher: Won-der-ful! You've got it perfect. That's exactly right Phillip! Excellent! You can go and choose a stamp.

By the second observation she was fostering many more learning opportunities within the informal group setting as well, and thus spending less time with individual children alone, although when she did work with children one-to-one they tended to be extended interactions (Appendix B.3).
The opportunities that the Kurnin teacher provided for facilitating children's independent learning were, as noted, made both with individuals in informal groups and alone at both observation times. She interacted frequently with the children as they worked individually and with others on their tasks and constructions. The "developmental activities" that began the day in that classroom meant that children were interacting socially and co-operatively on self-initiated tasks. During this period Mrs Sengler particularly used these, as well as other opportunities during the day, to elicit responses, invite opinions and extend the children's own ideas as this example shows.

Teacher: Now see if you can read me the colours that you think are warmer colours.
   What colours make you feel warm Anna?
Anna: My warm, warm one, the very very warmest one is red.
Teacher: Mmm.
Anna: And my second one starts with the yellow and then ... I've forgotten the name. [pointing to orange]
Teacher: [laughed] What's its name? Ask Dana if he knows.
Anna: Oh yeah! I remember ... oh ... and orange.
Teacher: Do any of the colours make you feel cold at all?
Both children: Yes.
Teacher: Which colours are cold ones?
Dana: Umm ... green.
Teacher: Green does. Why does green make you feel cold?
Dana: Because it's a lake.

She appeared to value the children's contributions as she encouraged them to develop learning from their own resources. Many opportunities were informally created to talk and work along with the children, assisting them to extend their thinking and their learning.

Taken together, these analyses of teacher behaviour in interactions indicated that, overall, more facilitative behaviour was demonstrated by the Kurnin teacher in individual settings while for the teacher at Bruntlee it was in the small group teaching setting. In the types of individual interactions the one-to-one exchanges were the dominant source for the Bruntlee teacher at Time 1. The increase of facilitative behaviour by her in the informal group setting at Time 2 matched the consistent, relatively even occurrence of this behaviour in both these settings by the Kurnin teacher across observations.
Opportunities for independent learning for each child

The percentage of facilitative teacher behaviour that was directed towards individual children varied across children and between schools (Table 7.10). This variation was true for both teachers but more particularly for the Bruntlee teacher. There were differential amounts of facilitative behaviour offered by the teachers according to their perception of each child’s needs.

A higher percentage of facilitative teacher moves were directed towards Lyle at Bruntlee than to any other child. The way Miss Cox persisted with facilitative teaching in Lyle’s case (most particularly at Time 1) rather than focusing on his behaviour difficulties was discussed earlier (p.132). The reduced level of facilitative teaching behaviour at Time 2 may be seen as a successful outcome of this earlier approach.

The relatively high percentage of facilitative teacher behaviour directed at Rachael during the second observation time appeared to arise out of the need to make up for her relatively slow progress in constructing her own stories and engaging in early reading tasks. Miss Cox was often observed working alongside her and guiding her efforts in these areas at Time 2 (Appendix B.1). Most of the other children at Bruntlee were exposed to a somewhat similar level of facilitative opportunities, with the exception of Nicky, particularly at the second observation time. This is consistent with the way Nicky was engaging effectively with school learning for herself. She worked intensively on activities, testing out hypotheses, making links to new things and working at solving problems (see p.1). Other children were working in similar ways, but Nicky was observed to work for a considerable proportion of each observation time without teacher help.
Table 7.10
Percentage of facilitative teacher behaviour for each child in each interaction type at each observation time

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Child</th>
<th>Facilitative behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Kurnin</td>
<td>Anna</td>
<td>17.13</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>18.18</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>12.91</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>14.49</td>
</tr>
<tr>
<td>1 Bruntlee</td>
<td>Phillip</td>
<td>12.06</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>11.94</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>26.00</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>11.07</td>
</tr>
<tr>
<td>2 Kurnin</td>
<td>Anna</td>
<td>12.13</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>19.89</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>19.06</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>16.80</td>
</tr>
<tr>
<td>2 Bruntlee</td>
<td>Phillip</td>
<td>14.28</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>20.26</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>14.47</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>9.45</td>
</tr>
</tbody>
</table>

It is interesting to note that while Phillip had had limited preschool experiences and required considerable help with early literacy and mathematics learning, Miss Cox did not appear to be creating any additional opportunities for him at Time 2. This could have been because she considered he needed to gain further control over what he was already learning to do. Conversely, she may not have realized how limited his behaviours were. Her close and continuous observation of the children make the former seem more likely. No particular trends emerged at Kurnin school indicating markedly different attention to individuals. The range of facilitative teaching acts across children was five percent at Time 1 and seven percent at Time 2. Adam received most attention during both observations. He needed considerable encouragement and support to enable him to engage in the learning opportunities available in the classroom and these data affirm
that assistance. When Renee started school at Time 1 she worked effectively at a variety of tasks. As her competencies in literacy and mathematics learning increased Mrs Sengler worked with her more often in these areas extending her learning. By Time 2 Anna was showing evidence of working in a similar way to Nicky, persisting with problems by herself and often working at tasks without needing or requesting much teacher help. Toby, similarly, worked steadily, calling for or receiving assistance as appropriate.

With the exception of decisions made by Mrs Sengler with regard to Adam at Time 1, no striking patterns were identified in the facilitative teacher behaviour in each of the six categories for individual children. Both teachers' behaviour was distributed unevenly across the categories for all children suggesting that teaching was being tailored to individual needs. At Time 2 almost all categories were used with all children. Adam was initially given special attention by the Kurnin teacher in two category areas apparently because of what she perceived as limited preschool experiences. She spent by far the greatest proportion of her teaching effort time helping him to see relationships at Time 1. She also assisted him to check on his own actions. At Time 2 she was working with him across all categories but particularly encouraging him to re-engage in familiar tasks for practice and fluency in what he was learning to do.

**Child directed acts in interaction types**

In terms of the opportunities available to individual children for independent learning, exposure to different interactions in most cases provided different kinds of opportunities for each of them. Table 7.11 shows the percentages of child directed acts that emerged in each interaction type. The variation in the incidence of these acts in the four interactions is striking. For some children, in some situations, no child directed acts appeared (e.g. in small group teaching). For others, in the same interaction type, a high percentage was recorded, such as for Lyle, at Time 1.

The percentages of child directed acts occurring across interaction types among children at Kurnin School fluctuated from 0 percent to 26 percent. The range was even a little wider (0–31%) at Bruntlee School. These high and low percentages of child directed acts and those in between appeared in different types of interactions. For most children at Kurnin School relatively few child directed acts emerged in individual interactions in group teaching and, at Time 1, hardly any appeared in the group teaching setting. Toby's high percentage in one-to-one interactions at Time 1 stands out among the child directed acts occurring there.
Table 7.11
Percentage of child directed acts in interaction types for each child across schools at each observation time

<table>
<thead>
<tr>
<th>Observation time</th>
<th>Child</th>
<th>Individual (one-to-one) teaching</th>
<th>Individual in group</th>
<th>Individual in informal group</th>
<th>Small group teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Kurnin</td>
<td>Anna</td>
<td>16.36</td>
<td>3.64</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>5.45</td>
<td>1.82</td>
<td>9.09</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
<td>7.27</td>
<td>1.82</td>
<td>18.18</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Toby</td>
<td>25.45</td>
<td>0.00</td>
<td>9.09</td>
<td>1.82</td>
</tr>
<tr>
<td>1 Bruntlee</td>
<td>Phillip</td>
<td>7.25</td>
<td>2.90</td>
<td>4.35</td>
<td>2.90</td>
</tr>
<tr>
<td></td>
<td>Rachael</td>
<td>8.70</td>
<td>2.90</td>
<td>0.00</td>
<td>8.70</td>
</tr>
<tr>
<td></td>
<td>Lyle</td>
<td>4.35</td>
<td>4.35</td>
<td>4.35</td>
<td>26.09</td>
</tr>
<tr>
<td></td>
<td>Nicky</td>
<td>15.94</td>
<td>0.00</td>
<td>5.80</td>
<td>1.45</td>
</tr>
<tr>
<td>2 Kurnin</td>
<td>Anna</td>
<td>10.11</td>
<td>1.69</td>
<td>4.49</td>
<td>2.81</td>
</tr>
<tr>
<td></td>
<td>Adam</td>
<td>12.92</td>
<td>1.12</td>
<td>7.87</td>
<td>2.81</td>
</tr>
<tr>
<td></td>
<td>Renee</td>
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The child directed acts emerging for individual children at Bruntlee were spread across interactions with noticeable individual differences occurring in all but the individual interactions embedded in group teaching. Interestingly, Lyle's very high percentage of child directed acts occurs in two different interaction types at each observation.

The differences in the occurrence of child directed acts in interaction types may be explained by a combination of the way in which each child responded to the opportunities available in the situation and the kind of interactive teaching occurring.
Some of the different learning experiences to which the children had access have already been explored. They appear along with certain individual learner characteristics that have been described to account for much of the variation observed.

**SUMMARY OF TEACHER BEHAVIOUR IN TEACHER-CHILD INTERACTIONS**

The data indicated that more facilitative than other teaching acts occurred in both schools in the interactive teaching style that was demonstrated in all aspects of the curriculum. Most facilitative behaviour occurred when the teachers were assisting the children in individual teaching-learning situations supporting individual responses and fostering and extending independence in learning. A considerable percentage also appeared when teachers were working with small groups of children guiding their development and understanding of concepts and ideas.

Four categories, showing relationships, checking, trying and testing and rehearsing and repeating, accounted for the majority of facilitative teacher behaviour. At both observations there was a high percentage of facilitative behaviour in the first two categories as well as consistency of attention to rehearsing and repeating. A shift to less facilitative teacher behaviour in the trying and testing category was observed at Time 2 as the children were encouraged to process more information for themselves. There were low incidences of facilitative behaviour in the categories attending to errors and working at difficulties.

While both teachers had a way of teaching that provided remarkably similar access for children to facilitative behaviour, they carried out this intensive teaching in individualistic ways. The Kumin teacher made more use of the individual interactions for facilitative teaching in contrast to the teacher at Bruntlee, who used the group teaching situation more extensively. Differences emerged between the two teachers in the amount of facilitative behaviour appearing in some of the categories, in particular in checking and trying and testing. The Kumin teacher assisted children extensively in the former category while the Bruntlee teacher attended more to the latter.

Both teachers provided different opportunities for different children according to their perception of each child's needs. The variation in facilitative teacher behaviour directed towards individual children was marked at Bruntlee at both observations while at Kumin the delivery of facilitative teaching was more consistent across children and observations.
CHAPTER EIGHT

‘YOU LEARN BY TRYING TO THINK IN YOUR HEAD’

Anna 5.3 years*

When five year old Anna was asked about the ways that she thought children like her learned things she seemed to be suggesting that learning came from what you thought about in your head. Concern among many educators and educational researchers about didactic instruction at all stages of primary school leads to suggestions that the attention given to "over teaching" may limit the opportunities for children to engage in this kind of self-generated, self-monitored and self-constructed learning that five year old Anna seems to know about. However, if the focus is solely on the child and the role of teaching is underemphasized, opportunities for independent learning may be equally as limited.

In this research three questions were posed to uncover the phenomenon of independent learning and the kind of teaching that facilitates such learning. It is now possible to say something about the nature of the association between the active child as an independent learner in school and the role of the assisting adult.

INDEPENDENT LEARNING IN THE SCHOOL SETTING

Anna and the other children in this study were approaching much of their learning independently. They engaged in interesting, authentic tasks without requiring the teacher to be working with them all of the time. Through active involvement they expanded their own repertoires of learning. In their attempts to understand and negotiate meanings in individual ways, they were drawing on what they knew and controlled, working on different kinds of information, thinking through what they were doing for themselves, reaching and often checking their own solutions.

* Extract from informal interview in answer to the question "How do you learn?"
What difference does such independent learning make? While any inferences about the value of independent learning for new entrants must be somewhat speculative, it appears that there are both practical and theoretical reasons why "knowing how to generate and direct the processes of learning..." (see p.3) early in school is of value.

**Continuing learning**

Children who are independent learners can continue their learning even when the teacher is busy working with others. The children in this study were not dependent on an adult for most of their actions. They did not require the teacher to consistently tell them what to do or how to carry out each task. They proceeded using their own initiative, requesting help only when the complexity of the task was beyond their present capabilities. There was no pattern established of waiting for help, or of believing they could not carry out the tasks. An expectation that children could operate independently prevailed. By continuous encouragement to build on their own strengths and with support for their efforts, a momentum was established and maintained. One could almost say that the teachers required and expected children to engage in independent learning.

There were many instances of activities and interactions initiated by children, as well as situations initiated by the teachers, that allowed for opportunities for independent learning. Significantly, a considerable proportion of the tasks the children worked on were open-ended. They constructed their own responses (generating their own stories to write) and created their own products (painting individual pictures) without constraints imposed by the teacher or the task. They were not given preset activities where the answers to problems were previously determined. Thus, the learning opportunities they had access to can be clearly distinguished from mere "busy work" (such as colouring in geometric shapes on a worksheet). Pupils can work on tasks industriously and even productively but such activity may not necessarily be “engaging children's minds” (Katz & Chard, 1989). Access to learning experiences from across a wide-ranging curriculum, pitched at a level that was neither too limiting nor too daunting, enabled the children in this study to succeed in what they were doing, and to build a foundation that could support their ongoing success as learners (cf Clay, 1991b).

These findings stand in contrast to the limited opportunities for active constructive learning associated with the way teachers usually carry out instruction (Clark, 1991; Hughes, 1989; Desforges & Cockburn, 1987). Indeed, Clark suggested that most school beginners learn to become dependent on the teacher’s judgement and permission. She
identified rigid, fragmented timetables, inappropriate expectations of what children are capable of, tasks that are neither sufficiently meaningful or challenging and a teacher assuming responsibility for determining the correctness or acceptability of performance, as reasons for this dependent state.

**Extending learning**

There is further value in independent learning. Knowing how to work at one's own learning characterizes a state of independence. If engaging in independent learning means children are developing cognitive competencies that allows learning to be "self-extending" (Clay, 1991a), it seems important. The clearest evidence of this concept is provided by the way that Anna, as well as all the other children, approached varied tasks with a problem solving frame of mind. They were also beginning to process information in the course of their problem solving. This happened when they were reading novel texts, correcting errors and solving numeracy problems for themselves. McNaughton (1985) argued that active learning by young children from problem solving can promote the development of strategies and even increase effective independent learning. Both Clay (1991a) and McNaughton (1987) described the contribution of self-regulation (self-correction of performance) to independent learning for children in their first year of school. Successful beginning readers in their studies were spontaneously noticing and correcting their own mistakes. This kind of behaviour observed in reading acquisition was already emerging in the behaviour of these children, not only in reading but across all curriculum areas.

Bruner (1960) adds a further dimension. The advantage of independent learning he claimed, is that it not only allows children to extend their learning but it allows them to learn more easily as learning continues. A key aspect is the efficiency inherent in it. As the activity is the child's own the child is likely not only to be learning but also to be generalizing such self-regulation processes. The opportunities the children in this study had, through tasks initiated both by them and by their teachers, to link items and ideas, check on what they had done, work on and look for different ways of solving various kinds of problems, allowed them to build a simple network of strategies and to develop a growing ability to apply these strategies effectively. Thus, Anna and her peers could be expected to be generating and managing new learning by their own efforts, allowing future learning to proceed more easily.
This research provides refinement of a process that has figured prominently in the theories and the research of developmental psychologists and others from Piaget (1977), Bruner (1973) and Vygotsky (1978), through to Cazden (1991), Clay (1991a), Rogoff (1990) and Wood (1988). There is evidence from these classroom settings of children working on their own learning. The children appeared to be controlling some aspects of the underlying processes by monitoring, organizing and expanding ideas of different forms and complexity, all activities integral to effective learning (Resnick, 1989). This is a particularly significant issue if it is child activity of this kind, supported by a teacher acting in particular ways, that provides a basis for developing independent learning.

The identification and description of “quality” one-to-one interactions with an “adult expert” are a particular feature of this study. We now focus on ways that independent learning was supported and enhanced by particular teacher activity.

THE ROLE OF ACTIVE TEACHERS

Creating contexts for learning in which children are operating for some of the time as independent learners who are gradually assuming increasing control over their learning means “more not less competence on the part of teachers” (Glynn, 1984, p. 17). The ways this competence is manifested is central to understanding the teacher’s role in promoting independent learning. It is important if any clear distinctions are to be made between instruction as commonly defined and assisting children to engage in independent learning, that a number of general points are raised about aspects of the facilitation processes.

Responsiveness to children

Clear images of how teachers perceived children as learners emerge from the examples in this research. Each child seemed to be following a personal agenda determined in part by background factors exclusive to that child, and the teachers took their cues for attempts at facilitative behaviour from that. The teachers were involved in helping to meld curriculum goals through children’s agendas, by the contexts they created. They showed an adaptability to new children with different backgrounds, and deftness in their responses to individual learners. There was encouragement for children to use their initiative combined with the sure knowledge that the teacher would be available to support that initiative and unlikely to compromise it by taking over. The teachers showed
a respect for the child's ability to achieve personal goals. Both of them had developed a way of reacting to the child's responses to learning with openness. The ambience that was established encouraged children to participate freely and to approach the teachers readily.

The teachers were creating within the classroom a flexible environment in which they were "discerning observers of children trying to learn and of the learning process" (cf Clay, 1991a). Working from the child's present actions and responding to very different starting points, they acknowledged and sought to make use of what each individual child knew and did. They were judged to be closely observing how children were responding, by listening carefully to what they were saying, and watching how they went about different curriculum tasks, trying to gain insights into their thinking and levels of understanding. Both appeared to have a common set of goals to be achieved with school beginners but carried these out with individual interpretations and style.

The nature of the responsiveness of the two teachers reflected a compatibility with the child's interests, knowledge and point of view. This mutual understanding achieved between people in communication has been referred to as "intersubjectivity" by Trevarthen (1974) and others. Establishing intersubjectivity is an essential starting point in promoting effective learning for through shared understanding children can internalize and construct their own understandings (McNaughton, 1991b; Rogoff, 1990).

The shared activity observed was reflective of a significantly different kind of relationship between teacher and child with regard to knowledge and understanding than has been portrayed in many classrooms (Chapter Two). It was the kind of responsiveness that allowed all the children to develop as independent learners and for one of the target children to nearly catch up with the rest of the group after having been well behind at the start. This finding appears to add support to the position held by Clay (1991a), McNaughton (1991a) and Wood (1988), that teaching contingent on children's responses and reflecting shared understandings helps children to build a processing system that allows them to direct their own processes of learning.

**Effective individual teaching in classrooms**

Ongoing monitoring of children's progress provided a foundation for the teachers' decisions to help each child move in appropriate directions. They had to make judgements about what they would do with a child's initiated activity, using their skills in
organizing the enthusiasm that each child brought or developed. They were making split second decisions choosing the facilitative style suited to individual children yet still consistent with the curriculum requirements of the whole class of new entrants.

As they interacted with individual children in various situations they were looking for opportunities to help each child to find relationships in information, ideas or objects ("How do you know if they belong or not?"). They were getting them to monitor their own actions and responses where they saw the need for that ("How can you check?"). As appropriate, they were encouraging children to be trying and testing, to actively search and check hypotheses in their early attempts to engage in literacy, numeracy, nature and social studies, art and craft ("Read it again and see what you need"). Sometimes the teachers were drawing the learners' attention to errors that arose from their own performance, helping them to identify and deal constructively with these mismatches by using them to remind the children about what they had already done and knew ("Have a look here"). When difficulties arose from the activities they were engaged in children were assisted to actively work at overcoming these ("Let's think why that doesn't work first"). Teachers also encouraged rehearsing of what were judged to be emergent behaviours, ("Write this part now"), and repeating certain activities to help the children to get better at them ("Choose your favourite book to read again").

While the two teachers were interpreted as having a similar general idea of how new entrant children should be worked with, they were observed at times to foster the learning and understanding of children in different ways. For example, a style of questioning used by one coaxed the children to think as much as possible for themselves by turning things back to them for further reflection, getting them to elaborate and extend their responses, and asking for reasons while acknowledging her emphasis to them ("You're doing good thinking"). A variation in style of questioning and comment developed by the other teacher focussed at times on helping the children understand concepts and ideas by eliciting responses with leading questions. Prompting them to make links with everyday experiences was combined with explaining and summarising how things worked, and with possible reasons for what was happening ("They're sad because their baby bird died").

The data confirms that both teachers showed differential treatment of each new entrant at each observation. In addition, changes between observations for individuals arose at least in part from teachers' perceptions of individual needs. The increase in the amount of child directed acts that brought some individuals from a relatively low to an average or above average level of performance between observations is evidence of the
effectiveness of a learning environment in which each teacher played a key role in creating opportunities that fostered independent learning. While it could be possible that some of the changes might be accounted for merely as a function of time, regardless of teacher behaviour, this would seem unlikely to be the sole explanation. The responsive approach by sensitive teachers in intensive teaching encounters which focussed on the needs of learners was deemed to be critical for fostering independent learning.

Direct and obvious connections between specific examples of what is here called teachers' facilitative behaviour and examples of a child's independent learning (child directed acts) were not able to be identified on any consistent basis by transcript analysis. The relationship between teacher behaviour and a child's response might best be described as a symbiotic one. Teachers' facilitative teaching moves set the tone for independent behaviour and it was to that tone that children most often responded rather than to a particular teaching act (see Chapter Seven for illustrative examples). One of the implications of this finding for inservice work is that there are unlikely to be any particular forms, or set sequences, or patterns of words, or questions, that will be effective in fostering independent learning. Based on the evidence of this study two important prerequisites are effective management skills and what are here called systems factors.

**Managing the classroom environment**

A sharpened awareness of the importance of the teachers' organization and management skills emerges from these observations. The teachers had created and sustained an environment to enhance the opportunities children had for independent learning. These opportunities occurred through a style of teaching incorporating facilitative moves in one-to-one teaching interactions and small group teaching, and in the way the settings were arranged and operated to allow opportunities for the children to work on their own for a considerable proportion of the time.

Several levels of management were involved. While there was variation in the two classrooms both were prepared and operated in a way that acknowledged the presence of a wide range of learners with different needs. Children had access to a diversity of tasks and materials that spanned all curriculum areas and provided a wide range of experiences (Appendix A.7). They could and were specifically encouraged to engage in activities that allowed them to build on their current competencies such as reading increasingly difficult short books matched to their current level of ability, and, from the
first week of school, creating their own stories in writing. The many tasks and activities available provided opportunities for developing children's current knowledge and understanding. They often involved new concepts, such as when working with mathematics equipment (e.g., scales), or watching and talking about how snails move. The kind of literacy, numeracy, social and natural science and constructive activities offered, allowed and in various ways directed, encouraged and persuaded children to look for links between things, to monitor, to problem solve on meaningful tasks, to work on fixing up errors and to practise familiar tasks.

These teachers had a responsibility for children's learning in each curriculum area and goals which had to be achieved. This was not perceived as a rigid, predetermined set of skills that had to be mastered. The teachers were not constrained by a curriculum dominated by workbooks or "ditto" sheets. Nor did publishers dictate the teaching programme by the materials they offered. Rather, the two teachers fostered the development of skills and strategies through access to a diversity of activities that allowed for open-ended responses by each child. They did this within a responsive context in which they arranged for frequent access to individual children in different organizational situations; one-to-one settings, informal groupings or small group teaching. The range of opportunities available in these settings appeared to maximise different children's attempts to be independent.

**Systems factors**

Effective individual teaching of new entrant children in a setting where the composition (in terms of numbers and length of time at school) of the class is changing often and where the nature and level of the preschool experiences of each new entrant class member differs, seems difficult to contemplate for some educators. Critics of the difficulties that arose in the U.K. over the implementation of the Plowden Report (1967) suggest that focussing on individual child needs proved at that time to be very difficult if not impossible in the U.K. primary school classroom. This difficulty was also experienced by teachers in other countries (Chapter Two).

The generation of a number of child directed acts signifying independent learning in both observation periods for both schools suggests that there may be factors conducive to this phenomenon at least among good teachers of new entrants in Auckland primary schools. One of these factors discussed earlier is common to all primary schools in New Zealand (Chapter Four). Each child has a right to enter primary education on or near his
or her fifth birthday. There are therefore theoretically about 200 (40 weeks x 5 days) different entry points for individual children throughout the school year. New Zealand teachers appear to have become used to organizing and managing new entrant classes to provide individual attention for children who are obviously different in a number of ways. Those who do it well provide opportunities for individual children to practise the skills and use the knowledge they bring with them while working alone or in the company of other children, with their teacher acting in ways that suggest they have the different needs and circumstances of each child in mind. That situation is well illustrated in the data from this study. A further influence in New Zealand schools may be the impact of attention to individual children in Reading Recovery, a daily, individual tutorial programme designed for six year olds finding early literacy learning troublesome. As a system intervention, it has operated in schools nationally since 1983, supplementary to classroom programmes. Most teachers would have some awareness of the effectiveness of individual teaching in this context.

Associated with the practical situations regarding school entry and possible influence of an early intervention programme appears to be a philosophy or set of attitudes that may have something to do with the range of alternative means the teachers saw for encouraging independent learning. The relative consistency of the teaching styles of these two teachers when facilitating independent learning could reflect a common set of attitudes about, and general procedures for encouraging, independent acts in children. The differences they showed may reflect a flexibility associated with a self-confidence that allowed for teacher/child differences in background and in ways of responding to each other. There were, however, insufficient data across a wide enough sample of children to allow for any valid conclusions about reasons for similarities and differences between teachers. Interviews with the teachers might have provided useful data on this matter.

AN INTERACTIVE VIEW OF TEACHING AND LEARNING

The conceptualization of independent learning in this study was developed from a general theory of active learners assisted by active teachers. The independent learning emerging early in school involved a child constructing learning through his or her own endeavours and a particular kind of involvement of a teacher as facilitator who was supporting and focussing aspects of the child's activity.
A different way of teaching

A way of teaching emerges from this research that has features which distinguish it from instruction as commonly defined. It is not instruction in either sense referred to by Katz and Chard (1989). They distinguish the term direct (didactic) instruction, which applies to whole class or ability groups, from the term systematic instruction, defined as “an approach to teaching individual children a progression of interrelated subskills” (p. 10). Both these kinds of instruction are likely to arise from and follow the teacher’s predetermined agenda.

The teaching observed in this study is best described as representing an interactive view of teaching and learning. The view of the child as a constructive learner is integrated with the role of the assisting adult, in this instance, a classroom teacher. In the tradition of Vygotsky and Bruner, the children moved from being supported to participate just beyond their present competence, to internalize activities shared with the teacher, and, as a result, to advance their capabilities for independently managing problem solving.

The main thrust is that of assisting children to get ahead in each curriculum area predominantly, but not solely, by their own actions. Parallels can be drawn with what has been observed in Reading Recovery (Clay, 1993b) for children experiencing difficulty in early literacy learning. In that programme, while children are active in constructing their action systems the teacher plays a very active role in assisting learning. An important difference is that in the present study the interdependence of child and teacher activity was achieved in different settings with classes of children.

The nature of facilitative interactions

A number of steps particular to the kind of individual interactions in this study can be identified:

(a) the teacher provides a setting in which each child’s response provides clues to his or her current status in a particular curriculum area

(b) the teacher explores this status further to verify the initial judgement

(c) conversation arises out of an individual task initiated by the teacher or child
questions, statements or actions in "shared activity" between child and teacher relate to the task being carried out, or solving the problems being met, with the teacher working from the child's responses.

The interactions had the following in common but with a different emphasis on particular elements at various times. The teachers were encouraging children to reflect on what they had done and to try to finish, or think back to what they did yesterday, the other day, or before that. They helped children to remember a bit of knowledge, or to compare it with what they knew. Often they asked open questions that stimulated thinking or reflection, or left the child free to think. They used leading questions, that is, asked with a hint of the answer in the question. Sometimes they were asking for reasons for responses or decisions to check hypotheses. They encouraged listening to what the teacher said or articulated (e.g., slowly saying a word to write); gave stronger and stronger hints about how to complete a task; or asked them to watch (e.g., writing a difficult word). They consistently praised accomplishments and acknowledged appropriate responses. They attended to form (detail) by showing a letter or pattern in mathematics or, after asking children to try something, pointing out when it was wrong. They helped find what was needed; a word or letter, or some missing part of a pattern. And all the time, they were making judgements about the kind of teaching, encouragement, or level of independence an individual could handle or needed.

The effectiveness of this graduated assistance stemming from shared activity with an active interacting expert, described as scaffolding, was confirmed in the study by Wood, Bruner and Ross (1976). What is important in this kind of interaction is that the teacher has to anticipate what the child might find difficult or not understand and tailor her intervention accordingly (but of course she risks developing or inducing dependence because of an ill-timed or unnecessary intervention). With the child's growing competence, scaffolding requires continual revisions. As Palincsar (1986) pointed out, the support provided not only has to be regulated but also has to be provisional.

There are important differences between the kinds of help that can take place within the concept of scaffolding. Two levels of assistance, in the form of facilitative behaviour, can be identified in the interactions observed in this study. The first was the way teachers assisted with particular tasks (such as helping children to learn to write their name correctly or tie shoelaces) in order for the child to be able to eventually carry out that particular task alone. The second was at a different level. It concerned the way teachers helped children acquire and develop early literacy and numeracy strategies (for example, guiding and supporting them while they were composing and writing stories; or
questioning them while they were using equipment to develop understanding of mathematical concepts). The first example focusses on working towards helping a child to eventually complete a specific task on his or her own. The second example has much wider implications. It is concerned with facilitating the development of ongoing processing. Teachers were "activating problem solving in the child" (Wood, 1989, p.60) thus helping children to reach levels of competence higher than they would have been able to alone. In arguing that the concept of the zone of proximal development is considerably more important theoretically than the notion of scaffolding, Wood highlights the importance of the learner not only carrying out a task but gaining an inner network of strategies, that allows for the generation of new learning. It seems important to distinguish between what is being achieved when discussing scaffolded instruction and to note its limitations in accounting for the inner network of strategies.

Teaching in interactions where the teacher finds out and makes a judgement about the level of knowledge that the child brings and checks it with the knowledge that is required to see what needs to be done, is different from teaching which follows a teacher's prespecified agenda. It could be argued that the more teaching follows the child's agenda the more appropriate it should be for that child's learning. It could however be uneconomic in terms of learning if the behaviours teachers fostered were not promoting "valid and useful" early learning strategies.

An approach to teaching that appears to facilitate independent learning has been illustrated by two classroom teachers who had worked out how to do this in different ways, guided by their knowledge and understanding of children and learning. An interesting question is why did these New Zealand teachers work in these ways with children without having studied Vygotsky's concept of the zone of proximal development or Bruner's notion of scaffolding? This question is one for future investigation since one of the limitations of this study was that the teachers were not interviewed about their views of teaching and the theoretical assumptions from which they were working. Further, there were no discussions with the teachers about their reaction to, and interpretation of, the observation records of the interactions or examples of children's independent learning. Such reflection by the teachers would be likely to provide insights into their teaching practice, and also perhaps, deepen their conceptions of it.
IMPLICATIONS FOR FUTURE RESEARCH

Observation techniques have been successful in the study of interaction (and other areas) in identifying stable phenomena (Bakeman & Gottman, 1986). Patterns have been discovered leading to plausible and testable explanations for the observed phenomena. Critics of this methodology claim that the effort to get objective evidence means that only those readily defined, easily observable behaviours are recorded. It is also claimed that many behaviours which are definable by teachers in the overall classroom situation are very difficult to analyse down to the discrete level required for observing. A further criticism is that there is a weakness in the methodology for although there might be a gain in accuracy in the objective collection of data by these methods, the interpretation of these data may be difficult.

The present study attempted to overcome these criticisms by adopting a definition of independent learning based on practice and theory. Working from this definition, child directed acts and facilitative teacher actions associated with such activity were identified. These originated in part from an analysis of the research literature that ranged from what was represented as a widespread concern about didactic instruction in primary schools, to more specific studies by developmental psychologists on the nature of children's learning prior to and then as new entrants to primary education. The concepts and ideas about independent learning that contributed to the theoretical underpinning of this research were supplemented and defined by observation prior to the commencement of the study in new entrant classrooms where there was evidence of a kind of teaching and learning discussed in the literature.

Both a quantitative and qualitative approach to the data were used. The overall nature and details of the child directed acts and interactions were illustrated by numerous examples from the observation records (Chapters Five, Six and Seven). In an attempt to overcome some of the problems inherent in the percentage agreement statistics commonly used for observational research, inter-observer agreement was coded using Cohen's kappa, an agreement statistic that corrects for chance (Bakeman & Gottman, 1986).

This research provides insights into the phenomenon of independent learning and associated facilitative teacher behaviours in new entrant classrooms. The appeal of independent learning is that it may influence children's opportunities to be successful learners in the sense of developing an inner network of strategies that allows for the generation of new learning. To establish the validity of any claims for the desirability of
independent learning there is a need for comparative studies with high quality didactic instruction, to test out the relationship of such teaching styles to learning outcomes.

Further, comparative studies are needed that analyse the classroom practice of a larger number of new entrant teachers to compare the incidence (if any) of independent learning in their classrooms with the two in this study, and to examine the nature of the organization and management procedures used to facilitate this kind of learning. Such a study would need to include a larger sample of school beginners to observe the range of differences among children entering school. It is possible that a wider variety of behaviours associated with such learning may be exhibited as children learn more from their own and from teacher behaviour about how to learn for themselves. Thus, describing change over time for particular children and for children of different ages would increase understanding of the phenomenon.

It would be of interest to undertake further indepth explorations of teacher-child interactions across a wider group of teachers involving different age groups. The kind of questions that teachers are asking as they create opportunities for children to contribute to their own learning and the way they respond to the children’s initiatives have been described in this research. They provide some guidance on the kind of interactions that occurred and what teachers were doing. Do other teachers work in this way? If so, how have they developed this style of teaching? Of special interest in investigating a greater number of teaching-learning interactions would be study of the kind of encouragement (or praise) used by teachers. Tharp and Gallimore (1988) claim that initially a “rich diet of teacher praise” (p. 32) is necessary to assist young children to develop new relationships among functions. It appeared from the observations in this research that these two teachers used a maximum of encouragement as they worked alongside children, not only for successful learning encounters but also for children’s problem solving attempts. Uncovering if possible, whether this is a critical variable in the facilitation of independent learning may throw further light on how best to foster children’s self-learning.

At the beginning of this research an intervention phase was proposed. It became obvious from the pilot study that a search to uncover the phenomenon of independent learning and associated facilitative teacher actions was a demanding task in itself. It became the sole focus of the investigation. Now it would be possible to carry out an intervention study. This should allow teachers to effectively test the effects of such learning in early schooling. If teachers are able to better arrange to work with children in order to create increased opportunities for them to learn how to learn, they need to have a reason or a theoretical basis for making particular teaching decisions. They need to
know how children can learn and how they can further their own learning. If these essential characteristics and processes involved in such learning are identified and explained, it would allow teachers and researchers to work through to a theoretical basis for independent learning and facilitative teaching.

This study offers a beginning. The detail of the teacher-child interactions creates a vivid impression of what children and teachers were doing. These teachers did not follow a specific set of rules or procedures. Nor did they carry out their teaching in the same way although the outcomes were similar. Thus, the study is not providing other teachers with a structure to follow, but examples they can test against their own experience and setting and reflect upon their relevance as they set up environments for new entrant children.

A Maori saying introduced the study:

Nau te rourou Naku te rourou Ka ngawari aki ngamahi
With your expertise and mine the task will be easier.

These words capture the essence of what occurred in these two classrooms. Learning came from the collaborative efforts of teacher and child, for the independent learning observed to occur so early in schooling was the outcome of the activity of the child and the activity of the teacher. An important task for both researcher and practitioner is to search for greater understanding of the nature and the effects of children's independent learning, and the interactive teaching that may promote and support it, to test out the long term usefulness of the notion and then to explore the ways it might be enhanced.
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APPENDICES

Appendix A.1  Field observation record sheet
Appendix A.2  Type of episodes of activity with starting and ending moves
Appendix A.3  Type of teacher-child episodes with starting and ending moves
Appendix A.4  Type of peer interaction episodes with starting and ending moves
Appendix A.5  Organisational settings
Appendix A.6  Classification of curriculum areas
Appendix A.7  Range of tasks
Appendix B.1  Examples of coded teacher behaviour
Appendix B.2  Example of extended activity episode
Appendix B.3  Example of extended teacher-child interaction episode: reading
Appendix B.4  Example extended teacher-child interaction episode: mathematics
Appendix B.5  Example small group teaching episode: introduction to a new book
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Appendix B.7  Tasks for coder agreement: teacher behaviour
Appendix B.8  Agreement Sheet: CDA in Episodes
Appendix B.9  Agreement Sheet: Categorising CDAs
Appendix B.10 Analysis of teacher behaviour
Appendix C.1  Assessments on entry to school (5.0) for four studies
Appendix C.2  Assessments after three months at school (5.3) for two studies
Appendix C.3  Assessment results at entry and after three months for each school
Appendix C.4  Range of scores across assessment results at entry and after three months for each school
Appendix C.5  Test results at entry and after three months for all children
Appendix C.6  Percentage of all episodes in each curriculum area with child directed acts
### APPENDIX A.1
### FIELD OBSERVATION RECORD SHEET

**EPISODE**

<table>
<thead>
<tr>
<th>START</th>
<th>TYPE</th>
</tr>
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<tbody>
<tr>
<td>END</td>
<td>SETTING 1 2 3 4 5 6</td>
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</tbody>
</table>

Classification: Child

Child Location: Materials

Date: 

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## APPENDIX A.2

### Type of episodes of activity with starting and ending moves

<table>
<thead>
<tr>
<th>Type of episode</th>
<th>Starting move</th>
<th>End</th>
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<tbody>
<tr>
<td><strong>Child Initiated activity</strong></td>
<td></td>
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<tr>
<td>A open ended choice</td>
<td>1 Teacher gives open ended choice to child</td>
<td>The activity is completed when:</td>
</tr>
<tr>
<td>all the activities available in the environment</td>
<td>You can go and choose</td>
<td>the target child moves to a different task.</td>
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<td></td>
<td>i) to class</td>
<td>the type of episode changes</td>
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<td></td>
<td>ii) to individual child</td>
<td>(i.e., to interaction) [not to be confused</td>
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<td></td>
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<td>with a temporary change - the activity</td>
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<td></td>
<td>2 Child selects</td>
<td>may continue]</td>
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<td></td>
<td>i) purposeful engagement</td>
<td>another child interrupts the activity and</td>
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<td></td>
<td>in an activity</td>
<td>it is not completed</td>
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<td>ii) incidental engagement in an activity</td>
<td>other children leave the activity so</td>
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<td>(e.g., as passing by)</td>
<td>target child ceases involvement</td>
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<td>3 Child changes to new activity</td>
<td>the teacher calls for the class to stop</td>
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<td>i) of own volition</td>
<td>(excluding a brief interruption)</td>
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<td>ii) after suggestion by the teacher or</td>
<td>playtime, lunchtime or homework</td>
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<td>by another child</td>
<td>intervene</td>
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<td>scheduled observation time is over</td>
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<td>B limited choice</td>
<td>4 Peer initiated</td>
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<tr>
<td>a limited range of activities available to choose from</td>
<td>Target child accepts invitation to join in</td>
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<td>(i.e., 3 or less)</td>
<td>an activity</td>
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<td>i) verbal</td>
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<td>ii) nonverbal</td>
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<tr>
<td>C choice from activities which the teacher has specifically suggested</td>
<td>5 Vicarious</td>
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<td>(i.e., usually related to a theme or unit of interest)</td>
<td>Observation of another child engaged</td>
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<td></td>
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<td>in an activity</td>
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<td>6 Teacher assigns an activity (non-specific)</td>
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<td>i) go to the library</td>
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<td>ii) work in the maths area</td>
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<td>7 Teacher sets a specific activity</td>
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<td>i) open</td>
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<td>ii) limited</td>
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## APPENDIX A.3

**Type of teacher-child episodes with starting and ending moves**

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<tr>
<th>Type of episode</th>
<th>Starting move</th>
<th>End</th>
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<tbody>
<tr>
<td><strong>Teacher start</strong></td>
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<tr>
<td>I Individual (I)</td>
<td>1 Teacher (verbal)</td>
<td>An interaction is concluded when:</td>
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<td>• Let me help you</td>
<td>the teacher is drawn away or leaves</td>
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<td>• Come now please</td>
<td>and does not return</td>
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<td></td>
<td>Teacher (nonverbal)</td>
<td>the target child moves away</td>
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<td>• Beckons child to her</td>
<td>there is no response to the initiation</td>
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<tr>
<td>I a. Individual in group teaching (embedded: E)</td>
<td>2 Teacher directs attention to target child in group teaching</td>
<td>the type of episode changes</td>
</tr>
<tr>
<td>II Individual in informal group (additional participant(s): Gp)</td>
<td>3 Teacher to target child (verbal: nonverbal) Teacher to nontarget child (verbal: nonverbal) (This move responded to by target child)</td>
<td>another child interrupts and the interchange ceases</td>
</tr>
<tr>
<td>III Small group teaching: child present but teacher does not originate participation with child individually (GpT) (see E below)</td>
<td>4 Teacher sets up the group</td>
<td>the teacher calls for the class to stop (excluding a brief interruption)</td>
</tr>
<tr>
<td><strong>Child start</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Individual (I)</td>
<td>5 Child (verbal)</td>
<td>scheduled observation time is over</td>
</tr>
<tr>
<td></td>
<td>• I need to write cooking</td>
<td>there has been no conversation for more than 15 seconds</td>
</tr>
<tr>
<td></td>
<td>Child (nonverbal)</td>
<td>in group teaching the teacher turns from target child to group or another child</td>
</tr>
<tr>
<td></td>
<td>• Picks up book to read to teacher</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Approaches target child</td>
<td></td>
</tr>
<tr>
<td>V Individual in group teaching (embedded: E)</td>
<td>6 Other child (verbal)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Look at my cut-ups (to target child)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other child (nonverbal)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• points to book</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(This move responded to by target child)</td>
<td></td>
</tr>
<tr>
<td>VI Individual in informal group (additional participant(s): Gp)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX A.4

### Type of peer interaction episodes with starting and ending moves

<table>
<thead>
<tr>
<th>Type of episode</th>
<th>Starting move</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child start</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| I Target child — other child interaction: individual | 1 Child (verbal)  
• Is this Barnaby?  
Child (nonverbal)  
• gives child a puzzle |     |
| II Target child — other child interaction: additional participant(s) | 2 Child (verbal)  
• Can I work here?  
Child (nonverbal)  
• shares a library book |     |
| III Other child — target child interaction: individual | 3 Other child to different child (verbal)  
• Come and work on this building with us  
Other child to different child (nonverbal)  
• beckons child over  
(Move responded to verbally or nonverbally by target child or not responded to) |     |
| IV Other child — target child interaction additional participant(s) | 4 Other child (verbal)  
• Shall I make you a lid?  
Other child (nonverbal)  
• Shows writing work to peer  
(Move responded to verbally or nonverbally by other child or not responded to) |     |

---

**An interaction is concluded when:**

- the teacher is drawn away or leaves and does not return
- the target child moves away
- there is no response to the initiation
- the type of episode changes
- another child interrupts and the interchange ceases
- there has been no conversation for more than 15 seconds
- the teacher calls for the class to stop (excluding a brief interruption)
- playtime, lunchtime or hometime intervene
- scheduled observation time is over
### APPENDIX A.5

#### ORGANISATIONAL SETTINGS

<table>
<thead>
<tr>
<th>CODE</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Teacher-child alone (one-to-one) where the teacher and target child are working/talking together with no others involved (e.g., the teacher calls a child over to talk to her; works with a child on a task such as writing a story; or comes to see a child's work)</td>
</tr>
<tr>
<td>B</td>
<td>Child working alone where the target child is working completely alone on an activity separate from other children (e.g., painting a picture, reading a book alone)</td>
</tr>
<tr>
<td>C</td>
<td>Individual within an informal group setting</td>
</tr>
<tr>
<td>i)</td>
<td>similar task to others where a target child is engaged in individual activity within a group setting undertaking the same kind of task (e.g., writing own story with others writing their own stories)</td>
</tr>
<tr>
<td>ii)</td>
<td>individual task where the child is engaged in individual activity within a group setting but in a different task (e.g., reading a book when peers are drawing)</td>
</tr>
<tr>
<td>D</td>
<td>Small group teaching where the teacher has gathered a small group together for group instruction</td>
</tr>
<tr>
<td>E</td>
<td>Incidental</td>
</tr>
<tr>
<td>i)</td>
<td>teacher arranged (e.g., the teacher calls a target child over to her while she is working with others; or, the teacher suggests a target child sit near her)</td>
</tr>
<tr>
<td>ii)</td>
<td>casual (e.g., a target child provides some help for a construction as he goes by; or offers the spelling of a word etc. or interrupts)</td>
</tr>
</tbody>
</table>
## APPENDIX A.6

### CLASSIFICATION OF CURRICULUM AREAS

<table>
<thead>
<tr>
<th>CODE</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1    | Choosing time; Developmental period; Theme based activities  
  - science  
  - nature study  
  - social studies  
  - health  
  - drama  
  - music  
  - literacy & numeracy activities |
| 2    | Reading and language |
| 3    | Mathematics |
| 4    | Written language  
  (story writing) |
| 5    | Art, craft, construction, sewing |
### APPENDIX A.7

**RANGE OF TASKS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alphabet activities — magnetic letters etc.</td>
</tr>
<tr>
<td>2</td>
<td>Building blocks, Lego</td>
</tr>
<tr>
<td>3</td>
<td>Carpentry</td>
</tr>
<tr>
<td>4</td>
<td>Colouring in</td>
</tr>
<tr>
<td>5</td>
<td>Constructing</td>
</tr>
<tr>
<td>6</td>
<td>Cooking</td>
</tr>
<tr>
<td>7</td>
<td>Cutting and/or Pasting</td>
</tr>
<tr>
<td>8</td>
<td>Dance/ movement, outdoor games, skipping</td>
</tr>
<tr>
<td>9</td>
<td>Drawing</td>
</tr>
<tr>
<td>10</td>
<td>Experimenting</td>
</tr>
<tr>
<td>11</td>
<td>Fantasy - role playing</td>
</tr>
<tr>
<td>12</td>
<td>Gardening</td>
</tr>
<tr>
<td>13</td>
<td>Home Area</td>
</tr>
<tr>
<td>14</td>
<td>Listening — to tape, record, using a listening post</td>
</tr>
<tr>
<td>15</td>
<td>Making (craft) — box modelling, collage</td>
</tr>
<tr>
<td>16</td>
<td>Mathematics activity — using equipment classified as maths (including jigsaws)</td>
</tr>
<tr>
<td>17</td>
<td>Manipulating/matching/sorting — cards, puzzles (excluding maths equipment)</td>
</tr>
<tr>
<td>18</td>
<td>Modelling — clay, dough, plasticine</td>
</tr>
<tr>
<td>19</td>
<td>Nature Study</td>
</tr>
<tr>
<td>20</td>
<td>Painting</td>
</tr>
<tr>
<td>21</td>
<td>Playing musical instruments/singing</td>
</tr>
<tr>
<td>22</td>
<td>Printing (form)</td>
</tr>
<tr>
<td>23</td>
<td>Puppetry</td>
</tr>
<tr>
<td>24</td>
<td>Reading</td>
</tr>
<tr>
<td></td>
<td>a. material from instructional programme</td>
</tr>
<tr>
<td></td>
<td>b. material from book corner (library) etc. or own writing</td>
</tr>
<tr>
<td></td>
<td>c. activity combining reading and writing</td>
</tr>
<tr>
<td>25</td>
<td>Sand exploration</td>
</tr>
<tr>
<td>26</td>
<td>Science — planets etc.</td>
</tr>
<tr>
<td>27</td>
<td>Sewing</td>
</tr>
<tr>
<td>28</td>
<td>Shopping</td>
</tr>
<tr>
<td>29</td>
<td>Talking — oral interchange (no materials, equipment)</td>
</tr>
<tr>
<td>30</td>
<td>Vehicle play (cars, trains)</td>
</tr>
<tr>
<td>31</td>
<td>Viewing — overhead projector, slides, filmstrip, video</td>
</tr>
<tr>
<td>32</td>
<td>Water exploration</td>
</tr>
<tr>
<td>33</td>
<td>Writing</td>
</tr>
<tr>
<td></td>
<td>a. creative (using words etc.)</td>
</tr>
<tr>
<td></td>
<td>b. exploratory (using letters only)</td>
</tr>
<tr>
<td></td>
<td>c. name</td>
</tr>
<tr>
<td>34</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>e.g., being taught how to tie shoelaces, taking shoes off, throwing dough, waiting for teacher, wandering around, tidying up.</td>
</tr>
</tbody>
</table>
APPENDIX B.1

EXAMPLES OF CODED TEACHER BEHAVIOUR

(See Chapter Five for code)

Facilitative and other teacher moves

[The teacher was helping Rachael write a story on a piece of paper to go with the picture she had drawn. It was about snails - an outcome of watching live snails in science. The story (sentence) had been composed aloud. Rachael had written 'the'.]

Teacher: [read] The /s/... [articulated first letter of the next word snails] I (3)
Rachael: Snake.
Teacher: Snails. [pause] Snails. [said very slowly] I (4) What...? I (3)
Rachael: Snails. [wrote 's']
Teacher: Good girl. You did the 's'. I (3) Pass me your pencil. I (0)
Rachael: [Does so]
Teacher: Snails I (3) [says word slowly. Picks up a piece of paper] Now, you've already got the 's' there haven't you, so you'll start... [writes 'n'] I (6)
Rachael: 'H'
Teacher: 'N' it is. I (4)
Rachael: 'N' [repeats]
Teacher: [writes rest of word 'snails' on the paper for Rachael to write, saying slowly] I (6)
Rachael: [writes word into her story]
Teacher: You read what you've written. I (6)
Rachael: [reads] The snails.
Teacher: Right. The snails... I (6) [pause]... keep going... the snails ... [pause] I (3)
Rachael: Is...
Teacher: The snails... is... I (3)
Rachael: [writes 'is' in her story]
Teacher: The snail is...? I (3) [teacher reads snail for snails]
Rachael: Hiding. [smiles]
Teacher: Hiding. [says slowly] Hiding's going to start with? Hiding [says word slowly stressing the 'h'] I (3)

Rachael: 'H'

Teacher: Good girl! [sounds surprised] You write it down. I (3) Leave a space. I (3)

Rachael: [writes 'h'] I don't know what comes next.

Teacher: I'll show you. I (6) [writes word while explaining]. After the 'h' comes 'i', then 'd', then 'ing', hiding. I (6) You've already got the 'h'. I (6)

Rachael: [copies the word in to her story but writes 'hibing']

Teacher: [reads] The snail is hiding ...? I (3) [ignores error]

Rachael: In. [writes 'in']

Teacher: [reads] The snail... I (6) You read it, love. I (6)

Rachael: [reads] The snail is hiding in ... [looks at teacher and smiles]

Teacher: [waits] Come on. Hurry up! I (0) [laughs] The bell's rung! I (0) [laughs again] [reads] The snail is hiding in... [pause] in what? In...? I (3)

Rachael: Bushes.

Teacher: In the bushes. Right. In bushes? In bushes. All right. I (3) Bushes is going to start with? Bushes [says word slowly stressing the 'b'] bushes. I (3) You say bushes. Bushes. I (3)

Rachael: [smiles]

Teacher: [writes 'bushes'] There we are. I (6) Bushes starts with a 'b'. I (3)

Rachael: [laughs delightedly]

Teacher: [laughs also] Bushes. There we are. I (6) Don't forget to leave a space. I (3)

Rachael: [copies 'bushes' into her story] There! [puts a fullstop]

Teacher: [looks at Rachael's work] Oh good! I (6) The fullstop too! I (3) Read the whole thing now, Rachael. I (6)

Rachael: [read and pointed] The snail is hiding in the bushes.

Teacher: Good girl. I (6) The snail ... I (6) When you come back inside, when you come in from play I (0) you can get the paste and paste that on there, like that. I (0) [shows child where to put story on her picture]

Rachael: Yeah.

Teacher: 'Cause I won't have time to staple it. I (0) You paste it yourself. I (0)
Other teacher moves

Examples of behaviour coded as other sometimes comprised all the teacher moves in an interaction as follows.

[The children were drawing pictures with crayon ready to cover with dye.]

Teacher: Excuse me. I (0) Now I have a question to ask. I (0) Who did this? [pointing to the crayon scribble on the table] I (0) [no response] Well, what are you going to do about it? I (0) [pausing] Well you'll have to get it off somehow. You'll have to work out how to do it. It's your problem. I (0)

Amber: Yes it is Mrs Sengler. [nodding]

[While painting segments of a caterpillar's body to use to act out a play the children had wasted paint by painting on the newspaper on the table.]

Teacher: You know, all that paint would have painted another one for us. I (0) Now we've run out. [pauses] Oh dear! I (0) [long pause]. We'll hang these [paintings] up to dry. I (0) Wash the brushes as well. I (0)

Renee: Yes, Mrs Sengler.

Teacher: You've got good common sense. You don't need to do silly things. I (0)
EXAMPLE OF EXTENDED ACTIVITY EPISODE

This activity episode lasted for the full ten minute observation.

The child's reading is recorded. The text is in brackets where it differs.

[Lyle's reading group had been sent off to read by themselves. They were choosing books from the boxes of familiar books in the library area [books that had been introduced and read previously]. Lyle had selected five books which he put on the spare chair beside him.]

Lyle: [opened the Nursery Rhyme Book] Yeah! That's the one [aloud to himself as he turned the first pages over. He turned back to the beginning and began reading aloud]

One two three four five,
Once I caught a fish alive.
Six seven eight nine ten,
Then I let it go again.
Why did you let it go?
'Cause he (it) bit my finger so.
Which little finger did he (it) bite?
This little finger on my right.
Ha! Ha! Serves you right!
Don't you know that fish can bite?

[closed book, put it down and picked up "The Lazy Pig" and began reading]

The Lazy Pig
The lazy (sun) pig (is) oh! oops!
[reread correcting errors i.e., self correction, SC]

The sun is up.
Wake up! Wake up!
said the sun
early in the morning.
Cock-a-doodle do
Cock-a- doodle do
Wake up W... (said) said [SC] the cock
early in the morning.
Moo (l) I [SC] am up said the cow.
Moo moo I am up.
I am up (asleep) said the pig. [pause]
I don't know that word. What does that word say? [to researcher]
I don't know that word. [paused, began reading again]

I am up (asleep) said the pig.
The lazy pig.
Breakfast said the farmer.
Come to breakfast.
Wake up lazy pig. Here I come.
I am up. I am up.
said the lazy pig.
I am hungry.
[closed book and put it down]
[picked up “On a Chair”; began reading]

On a chair
On a chair
Look!
Where?
Over there!
One little monkey
Sitting (on) a chair.
Look!
Where?
Over there!
Two little [pause] monkeys
Sitting (on) a chair.
Look!
Where?
Over there!
Three little monkeys
On (off) a (the) chair
[paused, reread]
On (off) a (the) chair
On (off) [went back further and reread]
Three little monkeys
On, up on (off) the chair
[couldn't sort it out, sighed and closed the book]
[picked up “The Monsters' Party”] Ahh! [smiling] I know that!
[read aloud]
The Monsters' Party
What can this little monster do?
It can play (sing) [long pause]
That's what it can do.
What can this little monster do?
It can dance.
That's what it can do.

What can this little monster do?
It can fly.
That's what it can do.

What can I do
I can't play (sing).
I can't dance.
I can't fly.
But (-) I can jump in the jelly
like a kangaroo
That's what I can do.

[closed book and put it down with a thud]
[picked up "Dan the Flying Man", read the title aloud]

Dan the Flying Man [pointing accurately]

[began reading the text]
Dan (I am) Dan
the flying man.
Catch me, catch me
If you can!

Over a house
And over a crane,
Over a bridge
And over a train,
Over flowers,
Over trees,
Over mountains,
Over seas,
I am Dan
the flying man.
Catch me, catch me
If you can.

All of (the) the [SC] people
ran and ran.
They caught Dan
the flying man.

[stopped reading — lay back on the cushions that were in the library area;
looked back in the box; got out "Sticking Plaster" and "Sing a Song of Sixpence"]
[started to read "Sticking Plaster"]

Sticking Plaster [pointing accurately]

Peter is going
to the shop
for Mother.

Look Peter!
Look where
you are going!

Look where
are (you) you (are) going!

Oh! oh! oh!

Peter is up.
Peter is crying
and crying.

Peter is (went) home
to Mother.

I am bleeding
said Peter.

Oh Peter said Mother...

End of 10 minute episode.
APPENDIX B.3

EXAMPLE OF EXTENDED TEACHER-CHILD INTERACTION EPISODE: READING

Complete interactions are provided to illustrate the amount of sustained child behaviour and the type and length of interactions that occurred.

[The teacher had just completed taking a group reading lesson using 'The Bear Family'. They had discussed and read the book together with her. She then gave out a book to each child and asked them to read it by themselves. The teacher was sitting beside Toby listening to him read while the other children read nearby (i.e., first reading of a new book).]

Toby: [began reading by himself]
Here is Father Bear.

Text: *Here is Father Bear.*

Toby: Mother [SC*] is Mother Bear.

Text: *Here is Mother Bear.*

Toby: Bill...

Text: *Here...*

Teacher: Ooh! Is that Bill?

Toby: [shook head] Bill...

Text: Here is Bill Bear.

Teacher: No, start from this place. [pointed to beginning of sentence]

Toby: Here is Bill Bear.

Text: *Here is Bill Bear.*

Teacher: Right!

Toby: Peter [SC] is Peter Bear.

Text: *Here is Peter Bear.*

Toby: Sally, Ooh! Here [SC] is Sally Bear.

Text: *Here is Sally Bear.*

Toby: Here Oh! Here is Baby Bear.

Text: *Here is Baby Bear.*

Toby: [read from right to left] Here is...

Text: Bill Bear is here.
Toby: Is here, ooh, here
Bill Bear is here.
[read right to left]

Teacher: Hang on! Start this way.
[pointed to left hand side of page]

Toby: Umm [read]
Bill Bear is here.

Text: Bill Bear is here.

Teacher: Who is this?
Toby: Baby Bear is here.

Text: Peter Bear is here.

Teacher: What's his name?
Toby: [no response]

Teacher: Peter.
Toby: This isn't a long story!

Teacher: No! it's not!
Toby: This is easy!

Teacher: Way you go then.
Toby: [read] Here Father [SC] Bear is here.

Text: Father Bear is here.

Toby: Mother Bear is here.

Text: Mother Bear is here.

Toby: Uhh! Mother Bear is here.

Text: Bill Bear is here.

Teacher: What was his name? Can you remember his name?

Toby: [read] Bill Bear is here.

Text: Bill Bear is here.

Toby: Baby Bear is here.

Text: Peter Bear is here.

Teacher: Uh! Uh! What's his name?
Toby: Oh! Peter. [read correctly]
Peter Bear is here.

Text: Peter Bear is here.

Toby: Sally Bear is here.
Text:  *Sally Bear is here.*

Toby:  Baby Bear is here.

Text:  *Baby Bear is here.*

[end of the story]

Toby:  [closed the book]

Teacher:  [smiled and left]

* SC = self corrected own error spontaneously.
EXAMPLE OF EXTENDED TEACHER-CHILD INTERACTION EPISODE: MATHEMATICS

[Anna was engaged in a mathematics activity. She was making sets of four with counters and labelling them with numeral cards. The teacher was moving around the small group of children working with each one in turn individually.]

Teacher: Anna, can you think of anything about four?
Anna: Yes. Umm... because...
Teacher: Now where's your four? Does that say four? [looking at the set of three]
Anna: Yes. [pointing to the numeral card underneath]
Teacher: That says four, yes. Have you got the right number of counters?
Anna: Umm I've got ...Oh! [looked surprised]
Teacher: What's happened to yours? [smiling]
Anna: I haven't got enough.
Teacher: So what can you do to fix it?
Anna: Get one more.
Teacher: All right. Why do you need to get one more?
Anna: Because it...
[another child tried to interrupt and respond]
Anna: Because umm... because there's ...
Teacher: Right. What can you think about four? [pause] What can you tell me about four and two?
Anna: Because four's older than two.
Teacher: Over than two or did you say older?
Anna: Older. [firmly]
Teacher: Four's older than two! [smiled]
Teacher: How much more than two is it? You're doing good thinking. Good girl. How much more is it than two?
Anna: Because it has two, umm, counters.
Teacher: Mmm... [nodded]
Anna: And four has four counters.
Teacher: Okay. Can you make two?

Anna: [did so]

Teacher: How can you make that two, how can you make that two say four?
     What do you have to do?

Anna: You have to do this. [got two counters]

Teacher: How many extras did you get?

Anna: Two.

Teacher: That's right. Good girl. So you had to get two more to make it say four. Very clever girl!

Anna: [smiled broadly]
EXAMPLE OF SMALL GROUP TEACHING EPISODE:
INTRODUCTION TO A NEW BOOK

Teacher: This one is about Cuckoo. [teacher held up book so children could see]
Cuckoos...are very naughty birds. Cuckoos are VERY bad birds. Do you know why?

Chorus: Why? Why?

Teacher: Cuckoos don't look after their babies. [read title] Cuckoo in the Nest.
Cuckoos don't look...Wait, [children wanted to read] wait, wait wait wait. They don't look after their babies. They lay their eggs and they just fly away! And they leave them. Be quiet Nicola — you're talking. Here's the cuckoo. The lazy cuckoo! [pointed to picture on cover] She zoomed down there into their little nest. This nest belongs to Mother and Father bird. Lazy old cuckoo has flown down there, laid her great big egg in the nest and just - gone away. And we all know that mother birds have to sit on top of eggs. We know they have to sit on top of eggs to keep them...

Chorus: Warm.

Teacher: Warm.

Bob: Father birds have to get food.

Teacher: Get the food. Right. The father birds have to get the food and they sit on them sometimes too. They have turns! But here's a lazy cuckoo. She's not even going to look after her babies — she's not a good mother. Would your mother do that?

Chorus: No.

Teacher: Would your mother fly away and leave you for someone else to look after?

Chorus: No.

Teacher: Noooo! Never, never, never. You always know the cuckoo 'cause it's much bigger. Much bigger than mother bird. [holding up picture in book] [opened book - paused]

Chorus: Here is... No!... Mother...

Teacher: You can read...

Chorus: Bird.

Teacher: Here is Mother bird. Why do you think she's flying away?... Why do you think she's going... That's her own little egg. [pointing] Why do you think she's flying off? She's flying off to?... [pause] Well, she has to go and get
some food sometimes... She can't just sit on the nest — she can't just sit on the nest all of the time and eat nothing. She's got to go off and find...

Toni: 'Cause the cuckoo's coming.

Teacher: No, she doesn't know the cuckoo's coming. She doesn't know the cuckoo's coming at all. She's going off because she needs food. When your mum needs food she goes to the supermarket. When ba.. mother bird needs food she goes and looks around for...

Nadine: Worms. [softly]

Teacher: Caterpillars and worms and beetles! All those sorts of things. Right, would anyone like to read this page?

Lyle: [put hand up]

Teacher: Right Lyle.

Lyle: [read] Here is Mother Bird. Mother bird is hungry.

Teacher: Good! She's hungry. That's why she's going off. She's hungry! She wants to go off and get the food. And while she's gone who comes?

Sarah: [trying to read text] Here is...

Teacher: You read it on your own. [to child] Here comes... [read]

Lyle: Cuckoo!

Teacher: Cuckoo. I'll write cuckoo up here. [wrote word on blackboard] [child looking closely at blackboard]

Teacher: If I want to write cuckoo how will I start it? Cuckoo. C..uckoo. What shall I use?

Chorus: [including Lyle] 'C' [saying letter name]

Teacher: 'C', right 'c'. [wrote cuckoo] Cuckoo. Starts with a ...?

Chorus: 'C'

Teacher: Can you tell me any other word you know that starts with 'c'?

Nadine: Cat.

Teacher: Good girl Nicky. [wrote cat up] And also...?

Matua: Come.

Teacher: 'Come'. Good boy. 'Come' is the one I was thinking about. [wrote 'come'] [read and pointed to words slowly] 'Cuckoo, cat, come'. Say them with me.

Teacher & chorus: [including Lyle] Cuckoo, cat, come. Right. [turned back to the book] Here comes...

Chorus: Cuckoo.
Teacher: Cuckoo. Oh, oh! What's that cuckoo going to do?
Lyle: Going to lay an egg.
Teacher: That's exactly what she's doing. She's sitting on the nest and she's...laying the egg. I'll read it to you. [teacher read] Cuckoo is on the nest. Cuckoo is laying an... [pause]
Matua: Egg.
Teacher: An egg. Cuckoo is laying an egg. [Lyle watching Teacher closely while reading]
Lyle: Here comes... Cuckoo...
Teacher: Who comes? Look at the picture.
Teacher & chorus: Here comes Mother bird. Here comes Father bird. [Lyle joined in from 'Mother' onwards]
Teacher: Now I want to ask you something. Do you think they know the cuckoo's been in putting an egg in their nest.
Chorus: Yeah, No!
Teacher: What will they do about it?
Lyle: Put it out.
Teacher: I'll tell you what they're going to do...

Time [episode continued]
APPENDIX B.6

TASKS FOR CODER AGREEMENT:
CHILD BEHAVIOUR

Instructions for Coders

TASK ONE

Identifying episodes with child directed acts

Each written transcript of a ten minute observation sample is divided into episodes which form the unit of analysis. Episodes are clearly defined by heading slips that contain identifying information, consecutive numbering, that is 1, 2, etc. and by a black dividing line. (The exception is continuous episodes which are marked continuation and are identified by the original episode number.) Nonepisodes are indicated by vertical broken lines and are marked nonepisode. The coders will be identifying episodes that contain directed acts from those that do not.

Procedure

1. For each episode identify from the heading slip the classification of the task (classification) and the materials being used (materials). Study the photograph if one is available.

2. Read each numbered episode from the beginning (including the introductory statement) taking into account the preceding episodes (unless it is the start of an Observation Sample) and any field notes recorded in the right hand margin. Using the six categories of child directed acts identify any instance of child behaviour which has any of the identifying features of any category. This will be known as a child directed act. (Take careful account of "continued" episodes.) As soon as one example of behaviour is identified as a child directed act indicate this on the Agreement Sheet CDA in Episodes (Appendix B.8) for that episode (i.e., Yes). Move immediately to the next episode. (It is not necessary to continue to read this episode. One child directed act is sufficient identification.) If there are no instances of behaviour in the whole episode that fit any of the categories of child directed acts mark the Agreement Sheet accordingly (i.e., No). Move on to the next episode. Proceed as above.
TASK TWO

Coding behaviours into categories of child directed acts

Instances of behaviour (child moves) in activities or interactions that contained identifying features indicating a child directed act will form the unit of analysis. The unit is indicated by underlining. The coders will therefore be categorizing identified child directed acts into one of the six distinct categories.

The temporal sequence

Any child directed act will need to be categorized in relation to the complete transcript up to the point where the unit of analysis begins. The context of occurrence involves the situations in which the behaviours occur and the order in which they happen. While these contexts themselves will not all be specifically categorized it is important they be taken into account in order for the coder to be able to interpret the behaviours within the ongoing situation. The advantage of having sustained observed data over a period of time should be capitalised on to recreate as much of the context of occurrence as possible.

Procedure

Child directed acts: within activities

1. Identify the target child. Study the photograph if available. Read the transcript from the beginning identifying each new episode (identified with numberals 1, 2 etc.) and the classification of the activity (e.g., sewing, mathematics), up to the point where the first marked instances of behaviour occur.

2. Taking into account the preceding activities and interactions categorize all the underlined child behaviour according to one of the six categories of child directed acts. (Note that the instances of behaviours in activities tend to be fairly long descriptions.) Record on the Agreement Sheet: Categorizing CDAs (Appendix B.9).

3. In an episode there may be more than one set of underlined behaviour identified as a child directed act. Each one is identified in alphabetic sequence (upper case letters). They should be categorized separately with all preceding context taken into account.

Child directed acts: within interactions

1. As for 1. above (omitting the photograph).

2. Taking into account the preceding activities and interactions, paying particular attention to the dialogue in the interaction, categorize the underlined behaviour according to one of the six
categories of child directed acts. (The instances of behaviour in interactions tend to be one or more brief verbal statements, therefore there is much less behaviour to be categorized than in activities.)

3. When there is more than one set of behaviour indicating a child directed act each one is identified by alphabetic sequence (lower case letters) and should be categorized separately with all preceding context taken into account.
APPENDIX B.7

TASKS FOR CODER AGREEMENT: TEACHER BEHAVIOUR

Instructions for Coders

TASK ONE

Recording types of teacher-child interactions

Each episode of teacher-child interaction identified in the written record of the ten minute behaviour observation sample is one unit of analysis. These episodes are clearly marked. They are headed with an identification slip that includes details about the child, setting, type of interaction, etc.

(See Appendix A.5.)

The episodes of teacher-child interactions were coded into two types with subgroups. These were classified by the first coding scheme. The coders will be identifying teacher-child episodes of interaction for analysis that have been coded as:

(a) individual interactions (one-to-one situations with the teacher and a target child alone) (I)

(b) individual interactions in small group teaching (one-to-one interactions with a target child embedded within small group teaching) (E)

(c) individual interactions in an informal group (interactions occurring when the teacher is interacting in an informal situation with a target child and other children) (Gp)

(d) small group teaching (interactions occurring in situations initiated by the teacher for group instruction without specific attention to a target child) (Gp T).

(See Appendix A.3)

Procedure

1. Identify the first teacher-child interaction from the heading slip.

2. Record the details of the episode on the form (Analysis of Teacher Behaviour: Appendix B.10)

   a) ten minute observation sample code

   b) episode number
c) classification of episode (according to the types detailed above).

Note for coders:
A one-to-one interaction with a target child may occur within an episode classified as group teaching as described above. Embedded interactions are recorded on a new line. The continued recording of the group teaching interaction starts on a new line and is marked “continued”. More than one embedded interaction may occur in an episode of group teaching.

Task Two is carried out concurrently.

**TASK TWO**

**Coding teacher moves**

Teacher behaviour described as teaching moves will form one unit of analysis. Each teacher turn in the interaction will be analysed according to moves. A move may consist of a single word, a part of a sentence, a sentence or a series of remarks. The boundaries between teacher moves are defined by a shift from one idea or part idea to another. (See Chapter Five, p.97.) The end of a move is indicated by a vertical line.

The intention is to identify facilitative teacher moves which may promote and support independent learning. Moves which relate to creating opportunities that could assist the child by focussing on the kinds of behaviours included in the six categories of independent learning will be coded as facilitative teacher moves. All remaining teacher moves will be coded as other teacher moves. (See Chapter Five, p.96.)

The question to ask is “Is the teacher move focussed on behaviour (processing, thinking or action) related to one of the six categories?” In the following example the teaching involves two categories of behaviour.

[A little storybook was being introduced to a small group of children. They were subsequently going to read it alone. The teacher held the little book up so all children could see the pictures.]

Teacher: What does Bill like to play? I (3)
Marcel: He likes to play soccer because he’s got soccer boots.
Teacher: Yes he has. Indeed. I (1)
Toby: No! He’s going to play rugby!
Kim: Look at...
Teacher: Oh! Rugby! I (1) How do you know it is rugby? I (1)
Toby: Course it's rugby, because that ball is on the ground. [pointing to the oval rugby ball in the picture]

Teacher: Okay! I (1) [smiling]...

Each teacher move in the above interaction fits one or more of the six categories of facilitative teacher behaviour.

**Procedure**

1. Read as much of the prior record as is required to obtain information about the context related to the interaction. Study the photograph if one is available.

2. Study the first teacher moves marked. Either code it into a category (i.e., facilitative behaviour) by placing the category numeral into a circle on the Analysis of Teacher Behaviour form Appendix B.10 or, if the move does not fit a category (i.e., other behaviour) place an 0 in the circle. Each circle will indicate a teacher move). Continue analysing and recording each move in sequence.

3. If a child directed act has been recorded in the interaction indicate where it began with c. If unrelated to the teacher move, place an o above the c. If the child directed act continued indicate with an arrow  →  . Move on to the next teacher-child interaction. Proceed from Task One as above.

**Details for coders**

1. All questions, statements, comments and nonverbal behaviour are included in the coding.

2. Immediate repetitions are coded as part of the original move.

3. The categories cover all behaviour that occurs within the classroom so may include behaviour not related to academic matters.

4. The teacher behaviour in a ten minute observation sample is identified within the child's observation. A new sheet is used for every observation sample.
### APPENDIX B.8

**Agreement Sheet**  
**CDA in Episodes**

<table>
<thead>
<tr>
<th>Date</th>
<th>Child/School</th>
<th>Observation</th>
<th>Sample</th>
<th>Episode</th>
<th>Occurrence</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Child/School</td>
<td>Observation</td>
<td>Sample</td>
<td>Episode</td>
<td>Occurrence</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Coder**  
**Date**
### APPENDIX B.9

**Agreement Sheet**  
**Categorising CDAs**

<table>
<thead>
<tr>
<th>CDA</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Child/School Observation Sample</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CDA</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Child/School Observation Sample</td>
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</tbody>
</table>
## APPENDIX B.10

Analysis of teacher behaviour

<table>
<thead>
<tr>
<th>10m</th>
<th>Ep</th>
<th>C</th>
<th>F</th>
<th>O</th>
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<tbody>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>I</th>
<th>1</th>
<th>4</th>
<th>CDA’s</th>
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</thead>
<tbody>
<tr>
<td>E</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Gp</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Gp T</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
**APPENDIX C.1**

Assessments on entry to school (5.0) for four studies

<table>
<thead>
<tr>
<th>Concepts About Print</th>
<th>Letter Identification</th>
<th>Writing Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay '85 (n=72)</td>
<td>7.24</td>
<td>15.48</td>
</tr>
<tr>
<td>Naider '85 (n=16)</td>
<td>6.75</td>
<td>13.62</td>
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<tr>
<td>McNaughton and Ka'ai '90 (n=16)</td>
<td>8.06</td>
<td>15.19</td>
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<tr>
<td>Watson '93 (n=8)</td>
<td>8.63</td>
<td>18.13</td>
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**APPENDIX C.2**

Assessments after three months at school (5.3) for two studies

<table>
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<tr>
<th>Concepts About Print</th>
<th>Letter Identification</th>
<th>Writing Vocabulary</th>
<th>Word Test</th>
</tr>
</thead>
<tbody>
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<td>13.06</td>
<td>32.25</td>
<td>9.06</td>
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<tr>
<td>Watson '93 (n=8)</td>
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### APPENDIX C.3

Assessment results at entry and after three months for each school

<table>
<thead>
<tr>
<th>School</th>
<th>Observation time</th>
<th>Average age</th>
<th>Concepts About Print</th>
<th>Letter Identification</th>
<th>Writing Vocabulary</th>
<th>Record of Oral Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurnin</td>
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<td>5.0</td>
<td>9.50</td>
<td>26.76</td>
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<td>Bruntlee</td>
<td>1</td>
<td>5.0</td>
<td>7.75</td>
<td>9.50</td>
<td>2.00</td>
<td>15.75</td>
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<td>Kurnin</td>
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<td>25.75</td>
</tr>
<tr>
<td>Bruntlee</td>
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<td>5.3</td>
<td>14.00</td>
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### APPENDIX C.4

Range of scores across assessment results at entry and after three months for each school

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<thead>
<tr>
<th>School</th>
<th>Observation time</th>
<th>Average age</th>
<th>Concepts About Print</th>
<th>Letter Identification</th>
<th>Writing Vocabulary</th>
<th>Record of Oral Language</th>
</tr>
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<tbody>
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<td>2-14</td>
<td>0-42</td>
<td>0-3</td>
<td>4.31</td>
</tr>
<tr>
<td>Bruntlee</td>
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<td>5.0</td>
<td>4-15</td>
<td>0-31</td>
<td>0-5</td>
<td>6.22</td>
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<tr>
<td>Kurnin</td>
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<td>5.3</td>
<td>3-16</td>
<td>4-51</td>
<td>0-19</td>
<td>6-36</td>
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<tr>
<td>Bruntlee</td>
<td>2</td>
<td>5.3</td>
<td>11-19</td>
<td>15-45</td>
<td>4-22</td>
<td>10-31</td>
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</table>
APPENDIX C.5

Test results at entry and after three months for all children

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<th>Letter Identification</th>
<th>Writing Vocabulary</th>
<th>Record of Oral Language</th>
</tr>
</thead>
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<td>5.0 5.3</td>
<td>5.0 5.3</td>
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<td>Kurnin</td>
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<tr>
<td>Anna</td>
<td>12 16</td>
<td>24 42</td>
<td>1 5</td>
<td>19 26</td>
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<td>0 4</td>
<td>0 0</td>
<td>5 6</td>
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<td>2 37</td>
<td>1 15</td>
<td>21 31</td>
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<td>31 45</td>
<td>5 22</td>
<td>22 31</td>
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APPENDIX C.6

Percentage of all episodes in each curriculum area with child directed acts

<table>
<thead>
<tr>
<th>Episode type</th>
<th>Observation time</th>
<th>Choosing time/Theme-based activities</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Written language</th>
<th>Art/craft/construction</th>
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<tbody>
<tr>
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