TEACHER SUPPORT TO FOSTER CHANGE OVER TIME IN THE WRITING DEVELOPMENT OF SIX-YEAR OLD CHILDREN WITHIN THE CONTEXT OF THE READING RECOVERY PROGRAM

BY

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A Thesis submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements for the Degree of

MASTER OF EDUCATION

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THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES

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ACKNOWLEDGEMENTS

I would like to express my gratitude to the Reading Recovery teacher leaders, teachers and students who facilitated the observation of Reading Recovery lessons to allow this research to be conducted. As well, I would like to thank committee members, Dr. Bev Zakaluk and Dr. Irene Huggins for setting high standards, drawing my attention to detail, providing words of wisdom along the way, and persevering through my writing process. My most sincere appreciation goes to my advisor and guide, Dr. Stan Straw, for his expertise, patience and support throughout the entire process.

None of this would have been possible without support from my husband, Serg, and all of the Matczuk children and grandchildren, who have believed in me through thick and thin and have graciously granted me leave from family time to pursue my goal.

Abstract

This research examined the way that experienced Reading Recovery teachers foster change over time in the writing development of the lowest achieving, beginning writers in grade one. This was accomplished through a study of the level of support that teachers provided through both verbal and non-verbal cues.

Using teachers from schools with high and low Reading Recovery outcomes, the data was gathered over a series of six lessons conducted by ten Reading Recovery teachers; five from high and five from low outcome schools. The series of observed lessons spanned, on average, from 12 to 20 weeks. Each teacher was observed on six separate occasions totalling 60 observations in all.

Observations were analysed to determine the level of contingency support provided throughout the course of a child's program; methods of word-solving taught, prompted, and promoted by teachers; and opportunities for developing writing independence as measured by the amount of wait time provided before intervening. Additional observations were made about planning for instruction, the total amount of time provided for writing within daily lessons, and the stimuli used for composition.

The result is a profile of teachers from schools with highly successful outcomes and teachers from schools with less successful outcomes and a comparison of the two. Implications for instruction and for further research are included.

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CHAPTER 1

Nature of the Study

Writing is an essential component of every child's early literacy development. For most children in the first two years of school, classroom programs are able to provide the learning experiences necessary to build both fluent reading and effective writing. In fact " . . . most children learn to read fairly well . . . once exposed to formal instruction," (Snow, Burns & Griffen, 1998, p.17). Good first classroom teaching is sufficient in meeting the needs of the majority of children, especially "if individual needs and personal learning schedules are taken into account" (Clay, 1993, p. 1). Instructional efforts must be directed to those few children who are encountering difficulty, however. Some young children are faced with many hurdles in becoming literate regardless of the excellence of the prescribed curriculum or the quality of instruction. These learners are at risk.

Thus, for the lowest achieving children, an individualised literacy intervention program is warranted in order to develop successful literacy learners. Clay (1993) contends that, "To prevent literacy problems, observation of children's early interactions with print, and individual teaching for some children are recommended" (p. 6). Clay also asserts that "organising effectively for meeting individual needs in the first year of school is important, *especially* for children who are slow to move into the classroom program..." (Clay, 1993, p. 6). Clay (1993) believes that this small number of children who require special supplementary instruction can be identified at the beginning of grade one.

Reading Recovery, developed by Marie Clay, is one first grade intervention that has demonstrated positive results in numerous settings over many years (Clay, 1979,

1985; Clay & Watson, 1982; Pinnell, DeFord, & Lyons, 1988; Tuck & Clay, 1991; Glynn & Crooks, 1992; Lyons, 1998). Reading Recovery is a short-term early intervention that helps the lowest achieving first-grade children develop effective strategies for reading and writing to allow them to join the average band of their classroom cohorts. (Clay, 1993). The program is a supplement to regular classroom instruction.

"Reading Recovery is based on two assumptions. The first is that a programme for a child having difficulty learning to read should be based on a detailed observation of that child as a reader and a writer" (Clay 1993, p. 7). Reading Recovery teachers are trained to make careful observations about children's literacy development in both reading and writing. Classroom teachers make recommendations to the Reading Recovery teacher about the grade one students in the their classes who appear to be having difficulty. Those students are surveyed using the tasks in *An Observation Survey of Early Literacy Achievement* (Clay, 1983, 2002) to identify the lowest achieving children. The Reading Recovery teacher then makes a tentative summary about the competencies of each identified child in order to plan his or her individualised learning experiences.

The series of Reading Recovery lessons begins with a close observation of the child's ways of responding. Initially, the specialised instruction remains within the domain of the child's repertoire of "known" strategies. As well, daily lesson records are studied and perhaps discussed with Reading Recovery colleagues and other members of the school literacy team in post-lesson reflections. The Reading Recovery teacher looks for evidence of the child's strengths and plans the most beneficial learning moves for

each individual child. Clay (1993) states, "The programme will work out of these strengths and not waste time teaching anything already known" (p. 7). The Reading Recovery teacher thus has tremendous responsibility to ensure that she "selects the clearest, easiest, most memorable examples with which to establish a new response, skill, principle or procedure" (p. 8).

The "second assumption is that we need to know how children who become readers learn to read, how children who become writers learn to write" (Clay, 1993, p. 7). The understandings that teachers already have as experienced early years teachers, as well as the understandings that they gain during their Reading Recovery training year and in later professional development sessions put them in a "better position to help children who are having difficulty" (Clay, 1993).

The critical elements of the Reading Recovery program are

1. intensive, daily one-to-one instruction for thirty minutes for the first grade children who are most at risk for literacy failure;
2. a year long training course and continuing professional development through which educators learn and continue to explore proven, research-based theory and procedures;
3. research and evaluation to monitor results and provide support for participating educators and institutions.

Writing in the Reading Recovery Program

Within the context of every child's daily Reading Recovery lessons, neatly sandwiched between reading opportunities, is a writing component. During this writing time, the teacher supports the child as he or she composes and records a story. "The writing down of the child's orally composed messages can be shared by the teacher and child in interaction from the early learning stage" (Clay, 1993, p. 28). According to Lyons, Pinnell and DeFord (1993), "the writing portion of the lesson is highly scaffolded. At this time, teachers are cautioned to observe children closely, watch their eyes and behaviour so as to support the children in doing what they can for themselves, but always to be ready to do for the children that which they cannot do for themselves" (p. 123).

The Study

This study examined the way that experienced Reading Recovery teachers foster change over time in the writing development of the lowest achieving first grade children. This was accomplished through observations of the level of support (both verbal and non-verbal) that teachers provided during writing instruction. Teacher/pupil interactions were observed during the writing portion of the daily Reading Recovery lessons in schools that showed high student outcomes as well as teacher/pupil interactions in schools with low student outcomes.

Three specific areas were examined with teachers who had highly successful students and with teachers who had less successful students. These were: (1) the patterns of contingent support that teachers provided, (2) the word-solving strategies fostered by

teachers as they guided children in recording their daily messages, and (3) the opportunities provided for l developing writing independence. My purpose was to identify a pattern of effective teaching decisions made by Reading Recovery teachers in teaching writing to the lowest achieving children in Grade one.

Statement of the Problem

The purpose of this investigation was: (1) to develop a profile of the way Reading Recovery teachers effectively foster "the assembly of a working system" (Clay, 2001, p. 89) in young children as the children learn to write text, and (2) to examine some of the teaching and learning opportunities fostered by teachers from schools that have consistently demonstrated highly successful outcomes for many of the lowest achieving students. These goals were realised by studying the kinds of learning opportunities provided during instruction and by analysing the pattern of scaffolding that occurred in the tutorial context, as writing competence developed.

Specific Research Questions

Reading Recovery teachers seek to accelerate the progress of the lowest achieving children by selecting "the. . . most memorable sample with which to demonstrate a new principle . . ." (Clay, 1993). The study was designed to determine whether or not it is possible to identify instructional decisions that have positive effects on writing development. In particular, the study examined the degree of instructional support provided, the word-solving strategies demonstrated, and the opportunities Reading

Recovery teachers provided for developing writing independence as they sought to foster change in writing performance over time. Both verbal and non-verbal cues made by teachers over the 12 to 20 weeks of a child's Reading Recovery program were examined. The essential question was whether or not a pattern of effective teaching responses could be identified by analysing the cues given by teachers during the writing portion of the daily Reading Recovery lesson. This involved using teachers at work with students from schools that had in the past achieved highly positive outcomes in the Reading Recovery literacy intervention and students from schools that had achieved less positive outcomes.

Three specific areas were compared for teachers from schools with high student outcomes (HSO) and for teachers from schools with low student outcomes (LSO). The study was specifically designed to answer the following questions:

1. What are the patterns of contingent support that teachers provide students as they develop as writers? In what ways do teachers adjust the level of contingency support given to a particular child based on their observations of the child's current need?
2. What are the word-solving strategies fostered by teachers as they guide children in recording their daily message?
3. How does the frequency of opportunities for independent word-solving change over time as learners develop an understanding of how words form as they write?

The major purpose of this study was to uncover a pattern of effective instructional decisions made by Reading Recovery teachers in the teaching of writing to the lowest achieving first grade children.

Scope of the Study

This study examined the teaching responses of five teachers from schools with high outcomes for children in the Reading Recovery program and the responses of five teachers from schools with low outcomes. The teachers represented both urban and rural schools in four different school divisions in Manitoba. The teachers involved had received their initial Reading Recovery training from various Teacher Leaders and participated in the continuing professional support program. The children selected for this study had low scores on the writing tasks, *Hearing and Recording Sounds in Words* and *Writing Vocabulary* (Clay, 1983, 2002, pp. 97-119) upon entry to the Reading Recovery program. The raw scores of the students placed them in stanines one or two.

Significance of the Study

This study will be of interest to Reading Recovery teachers, Teacher Leaders, and trainers. By design, Reading Recovery teachers are supported in their training and receive continuing professional development from Teacher Leaders who, in turn, are supported by trainers.

Scaffolding is a term introduced by Wood, Bruner, and Ross (1976) that describes the process by which a tutor supports a learner in completing a task that the learner could

not complete on his or her own. Teacher Leaders help teachers learn how to scaffold the development of the reading and writing process for Reading Recovery students. In so doing, the Teacher Leaders are scaffolding the learning of the teachers. This multi-tiered scaffolding is at the core of the design of the Reading Recovery program.

In-Service Course for Teachers

The teacher training component of the Reading Recovery program has been described as "a dynamic and intensive professional development process for teachers" (Lyons, Pinnell and DeFord, 1993). It takes an entire school year and invariably alters teachers' views about literacy instruction for the lowest-achieving population of children.

Experienced early years' teachers, selected by their school division for training, participate for one full school year in an apprenticeship program that includes four half-day sessions in assessment training and a minimum of eighteen two and one half hour in-service sessions.

An essential component of the in-service and on-going professional development sessions is the observation of teaching. Guided discussion of two live Reading Recovery lessons, each taught by a member of the group is observed through a one-way glass. Discussion of the teaching within the context of Clay's theory on reading and writing development precedes and follows the demonstration lessons. The Teacher Leader guides discussion in which teachers "observe closely, developing the ability to notice minute shifts in children's behavior" (Clay, 1993, p. 9). "During Reading Recovery training a teacher is challenged if she seems to be wasting the learner's time, especially

when her peers notice that she is teaching something the child has already shown that he [or she] can do!" (p. 9).

Teachers receive a minimum of five on-site visits from their Teacher Leader during their training year. On these visits, Teacher Leaders observe individual teachers working with one or more of their Reading Recovery students. Discussion before and after the observation is based on the teaching decisions that have been planned and executed. If the child who has been making slow progress "has been dropping further and further behind his [or her] classmates" (Clay, 1993) then the teacher must "foster and support acceleration as [he or] she moves the child quickly through his [or her] programme, making superb decisions and wasting no unnecessary time" (Clay, 1993).

Another effort to improve the quality of the teaching includes exchange visits with colleagues from the same group. During these visits, the Reading Recovery teachers reflect on their instructional decisions during the lessons of individual children and tussle with their own understandings in relation to teaching.

In subsequent years, as long as the teachers continue to teach Reading Recovery as part of their teaching assignment, they attend a minimum of eight on-going professional development sessions. In addition, they receive at least one visit yearly from the Teacher Leader and continue to make and receive visits from colleagues.

Everyone involved in Reading Recovery reflects upon the verbal and non-verbal support provided to students during lessons. These reflections are carried out regularly not only by Reading Recovery teachers for themselves, but also as they teach for their colleagues behind the one-way glass. When the Teacher Leader confers either with the

individual or the group about observed teaching sessions, the support given is specifically about teaching decisions, based on the observations of the student's responses in the reading and writing tasks.

Reading Recovery: A guidebook for teachers in training (Clay, 1993) provides guidance in terms of "teaching for strategies" (Clay, 1993, pp. 39-43) in reading, but less specificity has been provided about how to support children in writing. For every story written, Clay (1993) points out that there are three ways to write new words

1. Sometimes you can analyse new words you want to write.
2. Sometimes you have to know how to spell a particular word.
3. Sometimes you have to 'make it like another word you know' which means get it by analogy with a common spelling pattern used in English. (p. 35)

In addition to an explanation of how to guide the child to compose a story, Clay gives a thorough explanation of teaching procedures in terms of how to support the child's analysis of the sounds of words. She calls this process "hearing and recording sounds in words" (Clay, 1993, pp. 32 –35). As well, some information about building and strengthening a child's writing vocabulary, and helping the child link known information to new has also been included (Clay, 1993).

Reading Recovery teachers need to have an understanding of how writing development changes uniquely over the course of each child's program, plus an understanding of where the child's needs dictate how they support learning next. A gradient of difficulty has been created in reading for the teacher through a book list that

has been carefully constructed by Reading Recovery trainers and Teacher Leaders. In teaching writing, however, the teachers must create their own gradient of difficulty. "The teaching has to provide a gradient of difficulty in the tasks such that learners have many opportunities to try to work at higher levels of complexity" (Clay 2001, p. 19). "Reading Recovery teachers must constantly ask themselves, 'What is this child learning?' . . . To promote accelerative teaching, teachers must continue to critically evaluate their own teaching and have opportunities for peer evaluation through live teaching sessions" (Watson, 1989, p. 8). Trainers, Teacher Leaders, and teachers are continuously endeavoring to achieve a deeper understanding of the type of support they must give in order to optimize children's learning. Clay's work is "research based" (Clay 1993, pp. 60-61) and she continues to reflect and revise the information she provides in accordance with the most recent research into both literacy learning and professional development.

As a Teacher Leader, I hope to be able to use this study of teacher support during the writing portion of the lesson to improve my own teaching practice with children and to strengthen the way I support Reading Recovery teachers during their professional development sessions and individual on-site visits. Dialogue with twelve other Reading Recovery Teacher Leaders in Manitoba is a regular occurrence, as is discussion with the network of many other Teacher Leaders across Canada. We are always interested in the studies conducted into Reading Recovery by each other, as well as studies carried out by researchers outside the field. In an effort to use the research to guide our understandings and reflections on teaching practices, we read widely about the studies being done in

early literacy in order to be current on what has been written, to be reflective of the implications on our teaching, and to use or discard study findings as we see fit.

Trainers are essential in the role of guiding Teacher Leaders' training and on-going professional development. Their expertise and knowledge supports Teacher Leaders as they observe, read, and discuss theoretical and practical aspects of the Reading Recovery literacy intervention program. At the local, provincial and national level I will be able to share with colleagues and examine the results, implications, and limitations of my study more deeply.

Glossary of Terms

Continuing Contact or On-going professional development	Two and one-half hour Professional Development sessions held 8 times a year for trained Reading Recovery Teachers conducted by Teacher Leaders [This always includes observation of 2 lessons through a one-way glass].
Discontinued	A Reading Recovery child who has successfully developed a processing system in reading and writing and can benefit from classroom instruction without supplementary individual support.
HSO	Teachers or students from schools with highly successful outcomes.
In-service sessions	Reading Recovery Teachers-in-Training meet with a Teacher

	Leader every other week for 2 ½ hours. This always includes observation of 2 lessons through a one-way [glass].
LSO	Teachers or students from schools with less successful outcomes.
Reading Recovery teacher	An experienced teacher who has completed the year long [in-service course] taught by a registered Teacher Leader.
Reading Recovery Teacher Leader	An experienced teacher who has completed the Diploma course for Teacher Leaders, a year of fulltime study at a recognized Training Institute in preparation for training Reading Recovery Teachers.
Reading Recovery trainer	A Reading Recovery trainer has primary responsibility for the training and continued professional support of Teacher Leaders.
Referred	A Reading Recovery child who has not developed a processing system after being in the program for a sufficient period of time and needs longer-term specialist support.

(Canadian Institute of Reading Recovery, 2000)

CHAPTER 2

Review of the Literature

This chapter reviews the literature on theory and research as it pertains to the writing development of young children; the nature of contingency, or tutorial support; the writing component in an effective early intervention; the principles of the Reading Recovery program; and studies of teacher effectiveness within the context of the writing portion of the Reading Recovery program.

Development of the Writing Process in Young Children

Writing is a complex, constructive activity, and the study of writing development is a complex business (Vygotsky, 1962). Foremost, the writing process itself is complex. Young writers must attend not only to shaping ideas for themselves and their audience, but must also pay attention to the physical act of writing, demands of structure and style, and to the technical elements, such as handwriting and spelling.

> Writing involves a complex series of actions. Children have to think of a message and hold it in the mind. Then they have to think of the first word and how to start it, remember each letter form and its features and manually reproduce the word letter by letter. Having written that first word (or an approximation), the child must go back to the whole message, retrieve it, and think of the next word. Through writing, children are

manipulating and using symbols, and in the process learning how written language works (Fountas & Pinnell, 1996, p. 14-15).

Bereiter (1978) suggests that ". . . there may be structurally distinct stages in writing development, as the developing writer outgrows one system and begins to employ a more complex one, which in turn is outgrown and supplanted by a yet more complex system" (p. 7).

Writing instruction can also be categorised. Scardamalia and Bereiter (1986, cited in Knudson, 1989) suggested four categories: (1) strategy instruction, which involves presenting writing to students as a cognitive process, (2) procedural facilitation, which involves helping students by providing them with external supports, (3) product-oriented instruction, which helps students gain a clear knowledge of goals to attain; and (4) inquiry learning, which help students through exploration and guided discovery (p. 92).

Reciprocity of Reading and Writing

An individual's knowledge about the reading and writing process have many common elements. Understanding one of them helps to understand the other — the relationship is reciprocal. The reciprocal relationship between reading and writing requires attention, as does the need for children to learn different strategies to enable them to read and comprehend a variety of texts, both narrative and expository, and to communicate in writing in appropriate styles for a variety of purposes.

The contribution of story reading and the importance of environmental print to young children's development of literacy is often cited (Teale & Sulzby, 1986). Knowledge of what children understand about reading is crucial to teaching them about the power of writing and about the reciprocity between the reading and writing process. "Readers can read without necessarily being writers or knowing a great deal about writing and how it's done. But writers must be readers, and this creates a kind of language and thinking behavior which is quite unique" (Cambourne, 1988). Many studies have acknowledged the impact of the reciprocity between reading and writing (Clay, 1982, 1998, 2001; DeFord, 1994; Teale & Sulzby, 1986; Tierney & Shanahan, 1996). Hurry (2002) reporting on Loban's finding stated that it was "concluded on the basis of a large longitudinal study across twelve grade levels that the relationship between reading and writing was 'so striking to be beyond question" (p. 16).

Bruner (1966) emphasises the importance of all knowledge being part of a reciprocal relationship "Knowledge in this sense is like a rope, each strand of which extends no more than a few inches along its length, all being intertwined to give a solidity to the whole" (p. 126). Clay cautions Reading Recovery teachers that the reciprocity does not occur spontaneously. It is the teacher who must "remember to direct the child to use what he [or she] knows in reading when he [or she] is writing and vice versa" (Clay, 1993, p. 11).

Clay (1975) points out that "in the child's early contact with written language, writing behaviours seem to play the role of organisers of reading behaviours.... [reading]

does appear to help the child to come to grips with learning to attend to the significant details of written language" (p. 3).

Observation of an emerging process requires an astute teacher, capable of linking the theory of a complicated process with overt student behaviour. The value of ensuring that teachers are trained to analyse young children's responses to print and diagnose their difficulties — from analysis of reading behaviours and from analysis of their attempts at writing has been shown (Clay, 1982; 1991; 2001; 2002). The importance of providing meaningful experiences with words to children's acquisition of their spelling as well as their usage and interpretation has been stressed (Adams, 1990). The contribution of 'rhyme, rhythm and repetition' to development of phonemic awareness in young children, and in sensitising them to discriminate the sounds and symbols of spoken and written language has also been demonstrated (Goswami & Bryant, 1990). However, the emphasis on phonics continues to be a source of controversy in the development of literacy and the teaching of reading.

Hearing and Recording the Sounds in Words

Vernon and Ferreiro (1999) have examined the development of phonological awareness through writing. They reported on the results of a study that examined the relationship between the development of phonological awareness and the development of writing in Spanish-speaking kindergarten students. The results demonstrated that phonological awareness develops throughout the child's year in kindergarten and that this

development is related to the children's writing development. In discussing the educational implications of their findings, they state,

> Direct systematic phonics instruction, segmental phonological awareness training, and the teaching of letter-sound correspondences may not be useful for all children, regardless of their developmental level. Those children who have already reached advanced levels ('invented spellers,'. . .) may benefit from it. However, children at less advanced levels of writing development may not be capable of grasping the information about phonemes and letter-sound matching, although they do analyse speech" (p. 412).

The instruction that children receive about not only hearing, but also recording the sounds in words facilitates the development of phonological awareness which, in turn, is strengthened through the development of the reading process.

"In writing [the child] must take cognizance of the sound structure of each word, dissect it, and reproduce it in alphabetical symbols, which he [or she] must have studied and memorized before. In the same deliberate way, he [or she] must put words in a certain sequence to form a sentence" (Vygotsky, 1962). Vernon and Ferreiro's work (1999) supports this.

> If teachers encourage [children] to write and to reflect on their writing, analysis of speech will take place. . . . If we retain a naïve view that considers an alphabetical writing system as a visual way to represent

> phonemes, making learners aware of these phonemes seems the only pertinent thing to do. But writing systems are much more complex than that. That is why the task of becoming literate cannot be reduced to the learning of a code (p. 412).

What does seem clear is that a balanced approach to literacy teaching requires a rich source of varied materials and a variety of experiences. Literacy processing develops when teachers provide young children with opportunities to read books of fiction and non-fiction and environmental print, and provide comprehensive programs that ensure that all children have many opportunities to write. The children acquire an appreciation of the sounds and symbols of the language, the sequential probabilities of words in sentences, and letters within words in written English. The majority of children will become literate in such an environment, however some children will require a carefully planned comprehensive intervention program.

Building a Writing Vocabulary

Children may experiment with writing messages from a very young age, and it does not take long before they begin to comprehend that there are conventions in written language. Their personal experiences handling books and in having stories read to them will have varying degrees of impact on young children's literacy development as will experiences watching significant and more knowing others engage in writing activities (Clay, 1991).

A study carried by Sara Robinson (1973, cited in Clay, 1975) of reading development between the ages of 6 ½ and 7 ½ found that her task, designed to measure a child's writing vocabulary, was a good predictor of a child's progress in reading development. Writing behaviour is a good indicator of children's knowledge of letters and of left to right sequencing. As Clay (2002) suggests, "Writing vocabulary is made up of known vocabulary plus the words that the child knows how to construct, and together those two groups of words are good indicators of future progress" (p. 25).

Word writing knowledge is an indicator of what part of the visual code children have learned to notice. When children are able to recall the way to write words, letter by letter, they must recall not only the configuration of the word but the exact details as well. A child's written message is thus a good indicator of what he or she is able to visually discriminate about print and to organise with their own hand and eye movements (Clay, 1982).

The letters, punctuation, and spaces that a child must be able to produce in order to record a message in writing represent a complex set of signs that are used in regular and irregular ways in written English. Some letters can be oriented in different ways and still represent the same letter. For example, when the letter "c" is slightly askew, it is still a "c". However, if it is rotated too much it may represent "n" or "u". The same cannot be said for the letter "o". Letters that are commonly confused such as "d", "b", "p" and "q" take great sophistication not only to discriminate, but to reproduce (Clay, 1975). Knowledge about the way print works is critical and complex for a child getting under way with literacy.

Eventually, children learn to write many words correctly and use them often. As speed of production increases, attention is freed to give more thought to new challenges (Clay, 2001). Bereiter and Scardamalia (1987) support this when they suggest that until children are able to produce some words with automaticity, the act of having to hold one word in mind while producing it may result in a type of short-term memory loss for what they intended their whole message to say or how they planned to say it (p. 102).

Smith (1982) proposes that when children are learning to write, the composition part of the process and the transcription part of the process may interfere with each other. He suggests that this interference occurs because the two processes are competing for the attention of the young writer. Without a sufficient bank of words that are well known and easily and quickly written down, the writer must direct a large portion of his or her cognitive processing to producing these words.

In considering how children build their bank of known words to be of use in reading, teachers must keep in mind that "one way of remembering a word in all its detail is to be able to write it" (Clay, 1993, p. 27).

Making Analogies

When a child is able to link something that is known to a new word that he or she wants to write, a form of classification is taking place. The child is "classing the two things as similar" (Clay, 1993, p. 50). Rather than learning new words as individual items, each as a separate and unique entity, it is more efficient and powerful to categorise and classify new items according to some system. According to Lyons (2003), the brain

naturally searches for patterns to categorise, organise, synthesise information, code it into memory, and then retrieve it (p. 22). Starting with a known word [can free a child's] brain to attend to the order and sequence of letters and sounds to make new words (p. 99).

Concepts About Print

At times we write in lists, at times we write randomly on a page, but if we want to convey a "story" or a "message" we need to start at the top of the page, move to the right, sweep back to left and continue on. This concept of print is evident in reading, but the young child must learn to control it in writing. Where to start on the page and which way to go may seem simple enough once it is learned, but in development is subject to considerable experimentation (Clay, 1991).

Contingency or Tutorial Support

> An individual's potential level is not limited by that individual's endowed ability but is raised exponentially by the quality of the social interaction in which the individual participates. The social interaction not only precedes an individual's development of higher mental functions, but the organisational features of the social context are also internalised and reflected in the individual's performance (Wertsch & Rogoff, 1984, cited in Gaffney & Anderson, 1991, p. 17).

Wood, Bruner, and Ross (1976) examined the nature of the tutorial process with young children. While their study directly concerned three, four, and five year olds, the results can be generalised to other tutorial situations. In their study they coined the term "scaffolding" which they used to describe "the 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" (Wood et al., 1976, p. 90).

Vygotsky's zone of proximal development refers to "the gap between what a given child can achieve alone; [his or her] 'potential development as determined by independent problem solving; and what [he or she] can achieve; through problem solving under adult guidance or in collaboration with more capable peers" (Wood & Wood, 1996, p.6). Vygotsky's definition does not identify the nature of the guidance to be provided, however Wood et al.(1996) proposed the concept of scaffolding to amplify Vygotsky's concept of support. Wood et al. suggested that the tutorial support "included recruitment of the child's interest in the task, establishing and maintaining an orientation towards task-relevant goals, highlighting critical features of the task that the child might overlook, demonstrating how to achieve goals and helping to control frustration" (p. 13).

Wood expanded this theory in order to "articulate much more carefully and to describe the dimensions of contingent tutoring" (Wood, 2003 p. 14). He has defined three dimensions of contingent tutoring: instructional contingency, domain contingency, and temporal contingency.

Instructional contingency. Instructional contingency refers to "how a tutor adjusts the amount of help offered, not only on the basis of the child's unaided task performance, but also on the basis of how the child responded to the tutor's previous attempts to help" (Wood, 2003, p. 14). Based on careful observation of what a child says and does, the tutor must make two decisions. The tutor must first decide whether or not the child was successful and then decide how to increase or decrease support for the child appropriately.

Domain contingency. Domain contingency "concerns the issue of what to focus on next in the time course of teaching" (Woods, 2003 p. 14-15). This is viewed as a multilayered requirement where the tutor may need to determine what to focus on in the next moment or the next day. These decisions depend upon how well the tutor is able to determine how much uncertainty a learner can manage at any given moment or point in the a child's learning sequence. "Maintaining a high success rate for all learners is a key demand constraining the definition of domain contingency" (p. 15).

Temporal contingency. Temporal contingency refers to the issue of "when" a tutor needs to intervene. Wood (2003) suggests that tutors must determine "how much time should I leave before I decide to intervene?" (p. 16). The answer to this query is determined by individual children and teachers' observations of their learning. While children vary in (a) the amount of time they wait before they decide they need some help,

(b) awareness of the fact that they need help, and (c) the ability to seek help appropriately; it takes an astute observer to know when to intervene.

While Wood (2003) concedes that "contingent tutoring is a description of an ideal that is almost impossible to achieve in practice because the complexities and the intellectual demands on the tutor are immense," he also points out that "contingency ...[is]... a serious issue when we are dealing with learners who are struggling" (p. 18).

Within the context of tutorial a teaching/learning situation, skilled teachers support children. Cazden (1992) has suggested that there are three levels of social assistance. The teacher may allow a child to discover without the teacher's help, may reveal to the child what needs to be done in order to be able to solve a problem, or, may tell the child the word or how to get the right answer. She cites the use of Elkonin boxes (1973, cited in Clay, 1993) during the writing component of a Reading Recovery lesson to support the child's analysis of the sounds in speech as an example of "revealing".

> For learners, the activity of having to slow pronunciation in order to match the finger action [required to fill the boxes] makes possible a new kind of attention to the sounds of their own speech. The teacher's language is directed to involving the child in the activity, in which the child will come to attend in a new way. Thus a teaching technique has been developed that successfully teaches phonemic awareness by revealing the sound structure to the child without explicitly telling the child linguistic labels or orthographic rules (Cazden, 1992, p. 307).

Cazden's position is that revealing can be more beneficial than telling for young children because information gained from telling is not often available for the child to use later, and telling a child how the written code works risks over-simplification of a very complex task.

Writing instruction can also be categorised. Scardamalia and Bereiter (1986, in Knudson, 1989) suggested four categories: (1) strategy instruction, which involves presenting writing to students as a cognitive process; (2) procedural facilitation, which involves helping students by providing them with external supports; (3) product-oriented instruction, which helps students gain a clear knowledge of goals to attain; and, (4) inquiry learning, which helps students through exploration and guided discovery.

Wood et al. (1976) were able to discern another quality of the tutorial relationship. They found that there was a positive quality that the tutor brought to the task by creating "an atmosphere of approval [such] that the children seemed eager to complete their constructions—often, seemingly, to show her as well as to reach the goal per se" (p. 93).

Lyons (1999) also noted the importance of the positivity and acceptance that a tutor must show the learner and noted that effective Reading Recovery teachers are able to demonstrate exactly such qualities. "[They] create an instruction environment that includes two major features to help the child feel positive and successful, both of which support and sustain attention. First, they teach the task. Second, they keep the task easy so that the child will feel successful and will attend to the process" (Lyons, 1999, p. 78).

According to Lyons (2003), expert teachers consistently demonstrate five particular qualities.

> They have a thorough understanding of reading and writing and they know how these process change over time in young children. They are able to assess children's progress and identify roadblocks to learning. They know how to provide a dynamic, flexible scaffold that assists children in mastering new competencies. . . . Expert teachers are reflective before, during and after the lesson and... they never stop working to make the children's experiences positive and rewarding. They understand that in order to learn, children must be attentive, active, and successful (p.168).

Gutman and Sulzby (2000) confirmed the significance of a scaffolded learning situation, particularly when children are learning a new task. They suggest that "what seems important is the right combination of structure, a warm and supportive environment, and positively motivated role models" (p.13).

When considering how literacy education needs to be structured for handicapped students, Rueda (1990) suggests that the role of the teacher can be one of the more important factors in stimulating the early development of writing ability. According to Hobsbaum, Peters, and Sylva (1996), the teacher's role in scaffolding literacy processes may be effective only in " one- to-one teaching situations because contingent responding requires a detailed understanding of the learner's history, the immediate task and the teaching strategies needed to move on" (p.24).

Clay (1993) is explicit in her instruction to teachers about the level of contingency support they provide children. She states that

> In early lessons the teacher's contribution to the production is high because she is creating the opportunities for the child to do what he [or she] can, write what he [or she] knows and learn something new. . . . There should be a gradual takeover by the child as writer and the teacher's contribution should change – to reminding, prompting, and facilitating the production by the child. . . . Towards the end of a child's programme the teacher's role shifts to monitoring the child's performance, anticipating and problem-solving difficulties, and teaching more by talking than by demonstration (p. 29).

Components of an Effective Early Literacy Intervention

Snow, Burns, and Griffin (1998) examined several interventions that had been thoroughly researched and found many common elements among those that were successful. The indicator of success was the extent to which "children achieve levels of literacy that will enable them to be successful through their school careers and beyond" (p.247). Their review identified a set of common characteristics in the programs. Three elements common to all of the successful interventions, the following being pertinent to this study.

1. Writing is an important feature of the intervention. However, the writing activity is not simply completed as support while engaging in invented spelling; it is typically conducted in a more systematic manner.
2. Each program includes carefully planned assessments that closely monitor the response of each child to the intervention.
3. Effective intervention programs pay close attention to the preparation and supervision of the teachers or tutors (pp. 272 - 273).

While Snow and her colleagues reviewed research that criticised the Reading Recovery program for using measures of success designed by Clay herself and for the lack of a control group in the original research, they acknowledged that the efficacy of the intervention could not be denied. The reviewers suggested that the one lesson that other intervention programs needed to learn from Reading Recovery was that "in order to approach reading instruction with a deep and principled understanding of the reading process and its implications for instruction, teachers need opportunities for sustained professional development" (p. 258).

Hurry (2000) echoes these findings on professional development. In a review of research evidence to establish the key elements of a successful literacy intervention for children who were making a slow start in reading and writing in their first years at school, her findings revealed that "Most successful interventions for poor readers, both with a narrow or a broad curriculum, include writing" (p.16). She also concluded that "one-to-one intervention is more reliable than group programmes. There is very limited evidence of the effectiveness of group level intervention, though some examples have

significantly improved children's reading progress" (p.26). Additionally, "teachers tend to produce larger reading gains in their pupils than classroom assistants and can deliver more flexible reading programs" (p.26). Hurry suggests that there is a "need for training and ongoing professional development and [a] need to ensure that implementation faithfully reflects intervention guidelines. . . . Reading Recovery has a clear and effective model for systems management" (p. 27).

Thus the Reading Recovery program possesses many key elements characteristic of effective early intervention programs including: (a) systematic writing, (b) ongoing assessment to inform instruction, and (c) attention to professional development.

Principles of the Reading Recovery Program

The premise that early intervention for children who are experiencing literacy difficulties is a way to prevent later school failure is a key principle of the Reading Recovery program. This is supported by longitudinal research which demonstrates that children who fall behind in grade one tend to remain below grade level throughout their school years (Juel, 1988; Rowe, 1997). The gap between the average band of literacy learners and the lowest band unfortunately increases over time. The aim of Reading Recovery is to close that gap early on in a child's life at a point that is critical to literacy development.

The Reading Recovery program was designed and evaluated by Marie Clay in New Zealand (Clay, 1979, 1982, 1985). Its efficacy as an early intervention program has been replicated and documented in numerous settings (Clay, 1979, 1985; Clay & Watson,

1982; Pinnell, DeFord, & Lyons, 1988; Tuck & Clay, 1991; Glynn & Crooks, 1992; Lyons, 1998). Through Clay's longitudinal research study (1966, cited in Clay, 1993) with a random sample of children in their first year at school, a trajectory of normal literacy acquisition in New Zealand was developed. The Reading Recovery intervention was developed based on the premise that an optimal intervention could be provided at some point where failure could be predicted with minimal error. The intervention would lead to changes in the interactions of these individuals with their environment and in social contexts. Reading Recovery was thus the result of Clay (1993) asking the question, "What is possible for children who are having difficulty getting on the path to literacy?" (p. 60) Clay believed that if teachers were able to observe and support the reading and writing development of children at the beginning of their schooling and to identify those individuals who were at risk of falling behind their peers, then teaching procedures could be developed to make a difference.

"Although no thought was given to Vygotsky's theories during ... program development, it is possible to interpret features of Reading Recovery in Vygotskian terms" (Clay & Cazden, 1990). The teacher observes behaviors and tentatively theorizes on the unseen mental processing that the child is acting upon in both reading and writing. Through verbal and non-verbal cues, the teacher then acts as a "scaffold" (Wood et al., 1976) to support the learners in their next steps. This support is gauged to allow for successful problem solving within the child's zone of proximal development. "The only good kind of instruction is that which marches ahead of development and leads it;

[instruction] must be aimed not so much at the ripe as at the ripening function" (Vygotsky, 1962, cited in Clay & Cazden, 1990).

Program Goals for Children

The program goals for the children in Reading Recovery are first to assist those children who are at risk of failure to catch up to their peers in a very short amount of time (twelve to twenty weeks, on average). A second goal is for the children to continue to benefit from classroom programs to improve their reading and writing every time they read and write. In Clay's words, "Teachers aim to produce independent readers whose reading and writing improve whenever they read and write" (Clay, 1993, p. 43). Independence is partly the result of the teacher upholding the principle that "she [or he] must never do for the child what he [or she] could do for him [or her] self. She encourages and reinforces independent operating, and problem detection, and problem-solving" (Clay, 1993, p. 58).

Writing

The specific "purpose of the writing component of the Reading Recovery lesson is to learn how to write messages and stories, to be ready after a rather brief series of special lessons to blossom out and write bigger and better stories. In the ideal case we teach children 'how to do things' so that they will forever extend their own competencies" (Clay, 2002, p. 24). Clay suggests that "the novice writer learns to compose messages or stories in his [or her] own words and language structures, then

engages in ways to record it" (Clay, 1993b, p. 28). This, in short, implies that the child will learn about the composing process and the transcription process throughout the course of the intervention.

In observing the children at the end of their Reading Recovery program, Clay (1993, p. 59) contends that their writing progress should indicate that "he [or she] can write a couple of sentences for his [or her] story, requiring only one or two words from the teacher". Further, there should be a large number of words that the child can write fluently and independently, and the child should have developed a strategy of moving from sounds to letters. The rate at which these skills are mastered is determined by the teacher's instructional decisions.

The Professional Development Component

Using teachers who receive special training, rather than paraprofessionals or untrained teachers, has been documented as a factor in the success of an early intervention (Slavin, Kurweit & Wasik, 1992; Snow et al. 1998; Hurry, 2000). Clay acknowledges that "Reading Recovery teachers need special training to make superbly sensitive decisions about how to interact with the responses of the hard-to-teach child" (Clay, 1993, p. 1). The successful outcomes for Reading Recovery were compared to other prevention early intervention strategies by Slavin, et al. (1992) for their effect size and long-term effects. They attributed positive program effects to the teachers' professional development including their year of training. "The immediate reading

outcomes for all forms of tutoring are very positive, but the largest and longest-lasting effects have been found for the three programs that use teachers as tutors" (p. 14).

Teachers, nevertheless, need opportunities to gain experience in order to understand the ways in which their teaching must change over time. According to Clay (2002), the teacher's role changes from "close monitoring and intervention" very early in the child's program to the "teacher acting as a prompt or 'memory amplifier' to [being] 'essentially reactive' towards the end of the child's program" (p.76).

The Positive Outcomes of the Reading Recovery Program

When working with the lowest achieving portion of the grade one population (approximately the bottom 20%), Reading Recovery teachers are able to support students in two ways, the first being that most of the children who were taken into the program were able to discontinue daily tutoring and return successfully to their classrooms, able to benefit from classroom instruction along with average children, and the second being that the remainder of those children in Reading Recovery were identified early in their school experience as needing long-term specialist help (Clay, 1993). Clay's research (1978, cited in Clay, 1993 p. 65) showed that these children made very good progress, but not to a level of proficiency that they would be able to sustain in the classroom without additional support. Children who left the school before completing their program represent a very small number, as do those who make progress but are unable to continue in Reading Recovery for a variety of reasons.

Positive results for the lowest achieving children who have the benefit of a Reading Recovery program have been replicated in numerous settings with a wide variety of populations (Clay, 1979, 1985; Clay & Watson, 1982; Tuck & Clay, 1991; Glynn & Crooks, 1992; Pinnell et al., 1988). The program operates in a variety of international educational systems in New Zealand, the United States, Australia, Canada, England, Bermuda, Anguilla, and Jersey. The program has changed the literacy learning for "more than one million" American children since 1984 (Reading Recovery Council of North America, 2002) and also touched the lives of more than 13,000 Canadian children in the 2000-2001 school year alone, including over 2,000 children in the Manitoba education system (Canadian Institute of Reading Recovery, 2002).

The Teacher Leaders who provide the professional development for Reading Recovery teachers look for ways to foster growth in observational skills and the provision of appropriate scaffolding as well as in the growth of Reading Recovery teachers. The data collected annually (Canadian Institute of Reading Recovery, 2000) is fodder for reflection on ways to improve the implementation of Reading Recovery and to improve the quality of daily instruction.

Effective Contingency Support in Reading Recovery

Clay (2002) reminds teachers that children must be active participants in their learning, initiating actions and solving words in writing as much as they are able to manage. The role of the teacher is critical as a support and a guide. Clay (2002) suggests that:

> Every interaction in the daily writing segment is a teaching move — not a memory task, nor a practice attempt, nor an analysis of sounds, but carefully determined and astutely delivered teaching with a target that involves learning how to do something, do it better, do it faster, link it up to something, and prepare it for future independent use (p. 32).

Rodgers (1998) examined the nature of talk during one teacher's Reading Recovery lessons with two students. Her analysis revealed that the teacher provided three kinds of scaffolds within the interactions: continuous and mended scaffolds, misleading scaffolds, and helpful scaffolds. She concluded that the presence of scaffolds alone was not sufficient to account for the differences in student progress in reading, and that the students who made slower progress received fewer demonstrations of critical literacy behaviors by the teacher.

Bruster (1992) studied four students and analysed teacher-student dialogue in order to establish the existence of scaffolded instruction and then to establish the categories represented. She found that eight categories of scaffolding emerged that complied with Halliday's (1975) categories for natural language learning and paralleled Bruner's (1966) benchmarks for cognitive growth (p. 1).

Lyons, Pinnell, and DeFord (1993) conducted a large study of the efficacy of early intervention programs in the United States. Four intervention programs were studied: *Reading Recovery*, *Reading Success* (a program with similar practices to Reading Recovery but all teacher training was completed in two weeks), *Direct*

Instruction Skills Plan (an individual program with a focus on individual skills), and *Reading and Writing Group* (a group intervention). Each program was compared to a control group within the school. Their findings were that Reading Recovery was the only group for which the mean treatment effect was significant on all measures, and it was the only treatment with lasting effect. The Reading Recovery children performed significantly better than an equivalent control group and those receiving the three other interventions.

As part of this larger study, Reading Recovery lessons were analysed for time and content. Teachers were categorised into two groups: those with high student outcomes and those with low student outcomes, based on the level of text reading when students were released from the program. Lyons, et al. (1993) found that teachers with higher student outcomes spent more time on writing and less time on reading early in the children's program. Lessons later in the children's program showed an increase in reading time so that reading surpassed writing time. Lyons and her colleagues concluded that the writing experience in early lessons for low achieving children was significantly important.

Lessons were also analysed for prompting and reinforcing statements made by teachers. The high outcome students had a balance between teaching prompts directed at text level strategies versus prompts at the letter and word level. "Teachers with higher student outcomes tended to focus on text-level strategies the majority of the time but also gave attention to letters and words. Teachers with lower student outcomes focussed primarily on letters, words and visual information and less in text level strategies" (p. 74).

In a study conducted by DeFord, White, and Williams (1991, cited in Lyons et al., 1993), the interactions of two teachers with high and two teachers with low student outcomes were analysed during the writing segment of Reading Recovery lessons. For this study high and low outcomes were determined by gains made in text reading and by performance in the *Hearing and Recording Sounds in Words* task (Clay, 1993). Teacher and student responses were examined for two main aspects. First, the prompts used, and resulting actions initiated including how students responded to teacher prompts and actions, and second, whether there were any differences in teacher/student interactions with high and low achieving students when sentences were generated and written.

The results of the analyses were that regardless of student outcome, the number of teacher prompts and actions were similar. One important difference was that high outcome students initiated actions more often. DeFord et al. (1991,cited in Lyons et al., 1993) concluded that "teachers of higher-outcome children foster independent actions within the writing component of the lesson" (p. 138). The issue of independence as a determiner of success is once again evident.

Several other teaching characteristics emerged from this study (DeFord et al., 1991). Investigators found that while teachers of high outcome children prompt their students not only to write stories based on personal experience, they also prompt them to write stories based on what they have just read. Mott's (1994) study also revealed that children are influenced by teacher directed stimuli for story generation.

DeFord and her colleagues (1991) also found that teachers of high outcome students prompted them to use the working page of their writing books as a way to solve

new words, or to write words or letters fluently. The primary solving strategy was "to have the children say the word slowly, to reread and to check on their work, to identify a sound or sounds they had heard, and to write in their texts" (p. 139). DeFord et al. concluded that these teachers were not supporting the child to independently initiate analysis of sounds and record them in words, but continually reminded them to take this action. In a similar vain, Walters (1996) conducted a study to determine if the amount of learning activity during the writing portion of Reading Recovery lessons was related to reading achievement and the acceleration rates of Reading Recovery children. This study of 100 students yielded two findings: That there was a significant relationship between writing practice page entries per lesson and end-of-year text reading levels, and that there was a significant relationship between the number of entries and their acceleration rate.

In contrast, DeFord et al. (1991) observed that the teachers of low outcome students in their study did more *for* the children such as saying words slowly for them, generating the next word in the sentence, rereading words for them and writing letters and words on the practice page. Teachers of high outcome students, on the other hand, confirmed student responses more often. It was also noted that low-outcome students tended to "spell" the words they wanted to used in writing more frequently than to use the strategy of saying words slowly. Lyons and her colleagues (1993) pointed out that "Spelling words is a very different task, one not intended to be used in Reading Recovery lessons. It places a greater emphasis on memory than on problem-solving strategies" (p. 140).

The word-solving strategy stressed by the teachers of high-outcome students when completing the *Hearing and Recording Sounds in Words* task in the DeFord et al (1991) study, seems to contradict more recent research carried out by Lyons (1999), Askew (1999), and supported by Clay (2001), which indicates that the most efficient way of solving new words is to link the new with some aspect of the word that is already known. " What we do know is that when a child has an independent strategy for working out new words by using knowledge he [or she] already possesses, he [or she] has the power to push his own knowledge further and to gain more independence in the writing task" (Clay & Watson, 1982).

Anderson's (1997) examination of the ways Reading Recovery students generalized or reconstructed new understandings in a classroom setting confirmed that the scaffolded interactions in writing within the context of the Reading Recovery lessons led students to flourish as writers in the classroom environment.

Conclusion

This literature and research review has demonstrated that educators are cognizant of the fact that it is critical for young children to engage in writing. Writing development occurs very early in a child's life and is supported by opportunities to write with teacher support. It is also evident that writing facility supports reading development, and vice-versa.

For those working in one-to-one situations, research has demonstrated on both a theoretical and a practical level that skillful tutors are able to scaffold learning

opportunities in such a way that the experience is within the learner's zone of proximal development. As well, it has been shown that teacher/student interaction provides a positive experience, cognitively and emotionally, for the child.

It is also clear that teachers must be supported in their endeavors through consistent professional development provided by leaders who are able to scaffold teacher learning in a skillful way. Research into effective early literacy intervention has thus explicitly stated that program effectiveness is, in part, a result of having students engage in writing and providing a professional development component for the teachers who serve as tutors.

Reading Recovery encompasses all of the research elements that are essential to successful intervention. The Reading Recovery intervention has also demonstrated consistent, successful outcomes for children in many educational systems around the world, but most relevantly within the Canadian (and Manitoba) context when success is measured by learning gains and long-term lasting effects.

In a practical sense, research to date has already focussed on teacher-student interactions during the writing portion of a Reading Recovery lesson. This has provided some understanding of the characteristics of effective tutoring in writing.

This study adds to previous research findings, however, because it parsed the teacher talk into individual teaching statements in order to investigate what constitutes effective teacher support. All parts of the writing lesson were observed from the generation of the story to its completion, with a particular focus on recording the story. As well, a scale of contingency support developed by Wood (2002) was used in the data

analysis. This scale has not previously been widely applied in the Reading Recovery context. A somewhat larger sample size than used by DeFord et al. (1991) was used in order to examine more fully what strategies teachers in schools with high student outcomes prompt most frequently. In an effort to document the opportunities that Reading Recovery teachers used to help develop writing independence when solving the production of new words, only interactions in which students solved the words independently, jointly and those accounted for by the teacher were used. The amount of wait time that the teacher allowed the child in formulating a response before offering support was also examined.

This study, therefore, adds to previous research findings. It (a) provides an alternative perspective for classifying tutorial support within the Reading Recovery context; (b) closely examines word-solving strategies prompted by Reading Recovery teachers; and (c) investigates the opportunities students have to initiate word problem solving strategies independently.

CHAPTER 3

Methodology

This study compared teaching responses during the writing segment of the Reading Recovery lesson using teacher observations in schools with high and low outcomes. The overall goal of the study was to examine the ways in which teachers support the writing development of beginning readers in terms of the degree of instructional support provided, the word-solving strategies demonstrated, and the opportunities afforded for developing writing independence. The ultimate purpose being to improve writing instruction.

Procedure

The data for this study was gathered over a series of lessons conducted by ten Reading Recovery teachers, five from high, and five from low outcomes schools in the 2002-2003 school year. Each teacher was observed on six separate occasions of a series of lessons that spanned, on average, from 12 to 20 weeks.

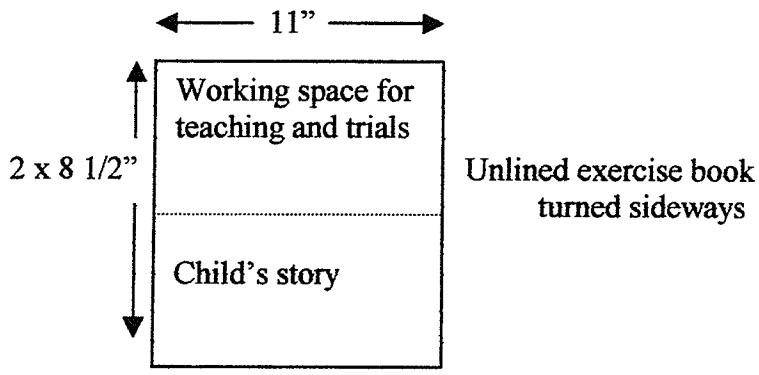
Schools were selected based on their discontinuing and referral rates for the 2001-2002 school year as determined by the data submitted annually to the Canadian Institute of Reading Recovery. Schools with high outcomes (HSO) were those that had a high percentage of children able to discontinue daily tutoring. Schools with low outcomes were those with a lower percentage of children who were able to discontinue daily tutoring. The term "discontinue" implies that the students achieved an instructional text reading level comparable to that expected at the end of the year for average students at their grade level, as well as scores on the other tasks of *An Observation Survey of Early*

Literacy Achievement (Clay, 1993, 2002) at stanine five or better. This procedure for participant selection is consistent with the method used by Lyons, Pinnell, and DeFord (1993) and by Lyons (2003) in selecting participants for their studies of teacher support.

The superintendents from four selected school divisions were asked for permission to conduct the study in their schools. Following the approval of the central administration, school principals and teachers also were invited to participate. In addition, written consent for participation was granted by the parents of the students and the students themselves.

Each of the teachers selected one of his or her Reading Recovery students whose entry scores indicated an instructional text reading level of zero based on the oral reading of texts included in the *Canadian Reading Recovery Booklist* (CIRR, 1998). A second consideration was that scores on the tasks from *An Observation Survey of Early Literacy Achievement* (Clay, 1993, 2002) were at stanine one or two.

The writing portion of the Reading Recovery lessons was observed six times at three distinct phases; two observations at the early part of the child's program, two lesson observations at the middle part of the child's program, and two lesson observations at the latter part of the child's series of lessons. The lessons were audiotaped and field notes were taken to include non-verbal cues given by the teacher. Transcripts of the tapes were made for in-depth examination. Additionally, photocopies were made of each child's story and writing work page as it appeared on the day the observation was made. These artifacts were used to substantiate the evidence found in the transcripts. A sample of the writing book (Clay, 1993, p. 28) is shown below.



Prior to each observation, teachers were asked what areas of the writing process they would be trying to strengthen during their lesson. As well, at the end of the lesson, the teachers were asked whether they felt that the lesson unfolded in a typical way and whether or not they felt they had been able to take advantage of opportunities for supporting writing development.

Location

The schools selected represented eight urban schools (within the city limits of Greater Winnipeg), and three rural schools (outside of Winnipeg city limits). The schools had Reading Recovery teachers whose experience in their roles ranged from two to eight years. Six of the teachers served as classroom teachers when not fulfilling the role of Reading Recovery teacher, and four served as resource teachers within the school. In order to ensure that there were no external factors impacting the teachers' selection of students, the schools selected had a level of implementation of the Reading Recovery program that met the needs of all of the lowest achieving children (i.e. all of the children who needed the intervention were able to receive help, generally 20% of the population).

Additionally, the schools were not exceptional in terms of their population (heavily weighted with either high or low needs students).

All observations took place in the area and during the time regularly set aside for the Reading Recovery teacher to do this work.

Participants

Ten Reading Recovery teachers, five teachers from schools with higher outcomes and five teachers from schools with lower outcomes, participated in the study. The determination of whether schools had higher- or lower- student outcomes was determined by the data gathered at the end of 2001-2002 school year by the Teacher Leaders in Manitoba and the Western Canadian Institute of Reading Recovery. Participation in the study was voluntary.

The teachers were familiar with having Reading Recovery Teacher Leaders observe as they taught lessons. Some of the teachers may have perceived me to be in a position of authority, but the role of the Teacher Leader is not an evaluative one. Other teachers did not connect me with Reading Recovery, and saw the process strictly as a study approved by the University of Manitoba.

For most of the children, I was a new adult and they were in no way familiar with me. Reading Recovery teachers frequently introduced me as another "teacher" or their "friend" and the children were free to engage in conversation. To protect their personal identity, the names of school divisions, schools, teachers and students were not used.

Participant Observer

I have been a Teacher Leader in Manitoba for the past five years. Prior to that time I acted as a Reading Recovery teacher and classroom teacher and was a colleague to two of the teachers who were observed.

Fifteen of the last twenty-four years of my experience has been as an early years teacher in multi-grade classrooms in one school division. I had worked with some of the participants in various capacities prior to this study. Involvement on Early Years' committees, divisional early years' literacy and professional development teams, the local teachers' association, the Manitoba Reading Association, as well as numerous presentations and in-service sessions have allowed me to become familiar with many teachers in the region. Due to previous contact with teachers, a trusting relationship had already been established.

Data Sources

Sessions were observed and audiotaped. The audiotapes were transcribed into a written format and teacher talk was parsed into individual teaching statements in order to investigate the presence and nature of instructional scaffolding. An individual teaching statement was considered to be one phrase or statement used to teach, prompt, support or praise the child. Field notes regarding non-verbal prompts were added. Information that was relevant to the analysis from the students' writing samples was also added, as required. The data collected was categorised by myself and by another Teacher Leader after which time we collaborated on our findings.

Data Analysis

The data was analysed from three perspectives. First, a scale of contingency support developed by Wood (2002) was used. Each teacher comment was categorised to analyse the level of support provided by each teacher during early, middle, and latter lessons. The pattern of contingency support provided at the early stages in the children's program was compared for teachers from highly successful schools and those from less successful schools. Similarly the two groups of teachers were also compared at the middle and late stages of each child's program. The levels of support outlined by Wood (2003) are (from least to most supportive) as shown below:

1. General verbal intervention:

   Praise, confirmation e.g. "good boy" or "What's wrong?" "umm"

2. Specific verbal intervention:

   Relating to the actual text- repeating, prompting, drawing attention to a word or word part, e.g. "You've got the first three letters right." "Can you make a capital N?"

3. Specific verbal intervention plus non-verbal indicators:

   Non-verbal action e.g. covering errors; using plastic letters or putting strong oral emphasis on a sound or syllable.

4. Preparation for next action:

   Draws one box for every sound or every letter, directs child to write letter in box or on practice page; tells child the letter, reminds

child of next word to write, for example, "Write M in here." or invites the child to choose between two possibilities.

5. Demonstrates action:

   Writes letter or word for child, demonstrates or models an action or tells the child the answer.

Each conversational turn taken by the teacher was classified by Wood's (2003) system and then the frequency for each classification was determined. The frequency of the supportive moves made by HSO and LSO teachers was segregated by stage in program. Using a Pearson co-efficient, the F-ratio for $p < .05$ was calculated to determine the statistical significance of the differences between the two groups.

Based on Wood's (2003) theory of contingency support, it was my hypothesis that the more successful teachers would provide a higher level of support for the children in the early stages and gradually shift to low levels of support as theys progressed. Furthermore, I hypothesized that the teachers would move up and down two or three levels of support in a sequential order. It was my hypothesis that less successful teachers would be likely to demonstrate a cluster of levels of support that did not change significantly throughout the child's program. As well, less successful teachers would be less likely to move up and down the scale sequentially, but rather they would exhibit a more random pattern of support.

The second analytical perspective was to examine the teaching statements to determine what word-solving strategies were being fostered by the teachers as suggested by Clay (1993). The ways of solving each word may include:

1. The child knows the word.
2. The child uses what he or she knows about one word to write a new word.
3. The child solves by saying a word slowly, listening for the phonemes and recording with appropriate graphemes, with or without the use of Elkonin boxes (Clay, 1993 p. 32-35).
4. The child knows part of the word and solves the rest using knowledge of another word or word part to solve the remainder.
5. The child solves part of the word by knowing part of the word and solves the remainder by using another word he [or she] knows to write something new.
6. The child knows part of the word and the teacher contributes the remainder.
7. The child solves part of the word by using another known word and hears and records the remaining phonemes.
8. The child solves part of the word by using what is known about another word and the teacher contributes the remainder.
9. The child solves part of the word by analysing and recording the phonemes in the word and the teacher contributes the remainder.
10. The child knows part of the word, then uses another related word to solve part of the word and finally hears and records some of the sounds in the word.

11. The teacher writes the word for the child.

Reading Recovery teachers are very familiar with these particular word-solving strategies that need to be nurtured in writing. The data was compared from teacher to teacher at early, middle, and late stages in their programs and evaluated for each category for each individual teacher over the total period of a child's program (from 12 to 20 weeks).

It was my hypothesis that teachers from schools with highly successful outcomes (HSO) begin by teaching children how to use what they know in order to add to their repertoire of known words. They would tend to present new knowledge by relating it to previous knowledge. Teachers from less successful schools (LSO) would tend to prompt children to solve each word as something new and unrelated to previous knowledge. As well, I believed that LSO teachers would use the word-solving strategy of hearing and recording the sounds in words, letter by letter, far more frequently.

The analytical perspective of the data examined opportunities for the child to make decisions about solving words. Clay (2002) pointed out that the teacher strives to "increase the initiation by the child and to avoid participating in ways which make the child pull back" (p. 27). The transcription of each word in the child's story was therefore examined to determine whether the child recorded the words independently, recorded the word as a joint construction with the teacher, or the teacher recorded the entire word for the child. As well, the amount of time a teacher waited before stepping in to support the learner in co-constructing a word was also analysed.

DeFord's (1993) study of writing included a count of opportunities for independent solving, joint construction and teacher construction on a word by word basis. In reporting on Rowe's 1986 study, Cazden (1987, p. 22) suggested that the teacher's conversation with the child impacts on the actions taken by students to solve words independently. Rowe (1986) stated that when teachers wait for three seconds or more to respond to students, especially after a student response, "there are pronounced changes in student use of language and logic as well as in student and teacher attitudes and expectations" (cited in Cazden, 1987, p. 22).

With these findings in mind, each constructed word was analysed for:

1. Independent construction by the child, or
2. Shared construction between teacher and child occurring in 2 seconds or less after the word to be solved was identified, or
3. Shared construction between teacher and child occurring in 3 seconds or more after the word to be solved was identified, or
4. Teacher construction.

. These results were also evaluated from child to child and over the total period of the child's intervention program.

It was my hypothesis for this third perspective of data analysis that the teachers from HSO schools would allow the students to construct as many words as possible independently, and that while their involvement in actually writing words and in sharing the task with the child would be high early in a child's program, this involvement

would gradually be reduced so that the child controlled most of the written product in lessons late in the program. Additionally, HSO teachers would not make decisions hastily about whether or not to support the child. As Rowe (1986, cited in Cazden, 1987) had found, HSO teachers would allow a wait time of at least three seconds for the child to decide if and how to proceed on his or her own. It was also my belief that teachers from less successful schools would demonstrate a pattern of word-construction decisions that essentially remained the same throughout the course of the child's program and that those teachers would not wait as long for the child to take the initiative in constructing words independently.

Summary of Methods

The purpose of this study was to look for patterns in the way that teachers from high outcome schools compared to those from low outcome schools responded to students in the writing segment of Reading Recovery lessons. By comparing teaching actions in early, middle and later lessons, and then examining how the teachers changed their teaching actions across the series of lessons, it was my contention that different patterns of responding would begin to emerge.

Ultimately, my goal was to create a profile of effective contingency supports to facilitate writing development for low achieving students in the Reading Recovery program. This was accomplished by establishing how teachers from schools with high outcomes teach, what they teach for, and the amount of independence they allow their students to develop as they foster writing development over time.

CHAPTER 4

Data Analysis and Discussion

The analysis of the data gathered in this study is divided into three sections. Each section outlines the data collected in response to the original three research questions plus relevant observations. The questions deal with (1) the level of instructional contingency support, (2) the word-solving strategies prompted by the teacher, and (3) the opportunities provided for independent problem solving . Within each of these questions, the analysis is guided by notable differences between teachers from schools with highly successful outcomes (HSO) and those from schools with less successful outcomes (LSO), examined first across the duration of the intervention and second by stages (early, middle, and toward the end). The following two questions in each section:

1. Throughout the course of a child's program, what are the patterns of contingency support provided by teachers from schools with highly successful outcomes compared to the patterns of contingency support provided by teachers from schools with less successful outcomes?
2. How do the patterns for teachers from schools with highly successful outcomes and those from schools with less successful outcomes compare at each of the stages (early, middle and late) of the Reading Recovery intervention?

The first section analyses the level of instructional contingency support provided by the teachers using the Wood (2003) contingency scale. Both verbal and non-verbal

responses that support writing development have been analysed first according to overall level, and then categorised according to those made early, those made in the middle, and those made late in the child's program. At issue is whether at each of these stages there are different support patterns for teachers from schools with highly successful outcomes and those from schools with less successful outcomes.

The second section of this chapter examines the word-solving strategies fostered by teachers as they guide children in recording a daily message. As outlined in Chapter Three, the strategies used to solve words have been sorted into eleven categories. Each of the eleven categories is exemplified with a sample from the data collected, and then all methods are classified into independent, single strategy word-solving, multiple strategy word-solving, or teacher written.

The third section of this chapter examines the frequency with which opportunities are provided for practising word-solving and learning more about word-solving with teacher support through the co-construction of words. How teachers wait for varying amounts of time before they offer support was examined closely.

As the study proceeded, new questions about writing instruction emerged from the data. These are dealt with in section four. The three supplementary queries that follow became evident in differences between teachers from HSO and LSO schools.

1. Does the teacher have a specific writing strategy that she plans to strengthen or emphasise during the writing lesson and does she follow the plan?

2. How does the teacher initiate conversation to develop the composition for each particular story?
3. How much time (in minutes) do HSO and LSO teachers actually devote to the writing portion of the Reading Recovery lesson at various points throughout a child's program?

Section One: Levels of Contingency Support

This section examines the levels of instructional contingency support demonstrated by the teachers from HSO and LSO schools. Audiotapes and field notes for each of five HSO teachers and five LSO teachers were transcribed. For each teacher, transcripts were made of two lessons from the early portion of one child's Reading Recovery program, two lessons from the middle of the child's program and two lessons late in the child's program. Each teaching move in the interaction between teacher and child after a story had been decided upon, both verbal and non-verbal, was then analysed using Wood's Scale of Contingency Support (Wood, 2003).

Level 1 of the scale is called "general verbal intervention" which "...signal(s) the current state of activity, but is not trying to provide a distinct goal or objective to the child; it's not reducing the degrees of freedom by very much" (Wood, 2003, p. 12). An example of an interaction where the teacher's responses are all at level 1 is as follows:

Child: (rereading what she has written) I made a book with a pig in.... I-N...

Teacher: Good for you!

Child: I made a book with a pig in .... it....I-T!

Teacher: I think we need to stop there.

Child: period

Teacher: Can you read your story to me?

Level 2 of the scale is called "specific verbal intervention". "The hallmark of a specific verbal intervention is that you start to specify some action or something to pay attention to [or to] be searched for" (Wood, 2003, p. 12). An example of an interaction where the teacher's response is at level 2 is as follows:

Child: (trying to write the word "silly") sill....y

Teacher: Oh, it ends like another word you know

Child: I know! It's like happy. E?

Teacher: It sounds like E, but it looks like ...

Child: Y!

Teacher: Good for you, you used another word you knew to help you.

Level 3 of the scale is called "specific intervention and nonverbal information. "This is where the tutor adds some nonverbal intervention to what he or she says to the learner," (Woods, 2003, p. 13). An example of an interaction where the teacher's response is at level 3 is most clearly illustrated when the teacher, using Elkonin boxes, draws one box for every sound in a word as follows:

Child: (trying to write the word "jump") I like to .... jump

Teacher: OK, let's try that word up here (indicating the working page).

Child: j....j...j

Teacher: Can you say that word slowly? (as she draws four boxes with her pencil)

Child: j...uuuuuu....mmmmm...p

Teacher: Wow, good job! Now say it slowly and push the counters into these boxes.

Level 4 of the scale is "prepares for next action" and is " essentially the same as a closed question.... is it A or is it B? ....offering the learner two alternatives to choose from," (Wood, 2003, p. 13). A sample of level four support it as follows:

Child: (working on the word "popped"). I know pop, but I need to put the ending on.

Teacher: What do you think?

Child: popp....ed I hear T, it says /t/

Teacher: Do you think it's T like hot or E-D like looked?

Child: E-D

Level 5 on the scale offers the highest level of support by " demonstrating or modelling what it is that should be done next in order to achieve success." There are no degrees of freedom for the learner, as the correct response is laid out before him or her (Wood, 2003, p. 13). A sample of a teacher initially offering level four support and then moving to level five support when the learner falters is as follows:

Child: (writing the word "case") case

Teacher: Say it slowly, what can you hear?

Child: C-K

Teacher: It's just one of them.

Child: Oh, CK

Teacher: Which one, the C or the K?

Child: K

Teacher: It's the other one, C.

Child: (laughs) Oh!

Results for HSO Schools

The first step in the analysis was to total the responses of teachers from schools with highly successful outcomes for each level of support at each stage of the program. These totals and an indication of significant differences (indicated by a Pearson co-efficient or F-ratio) and are outlined in Table 1.

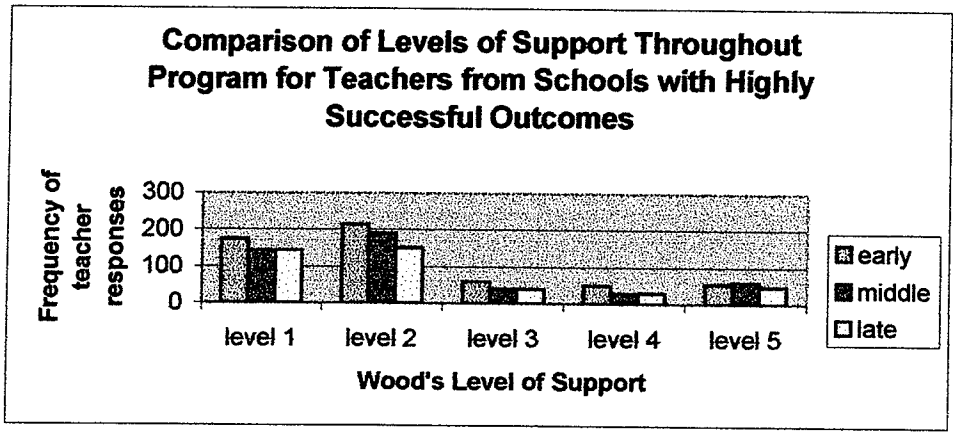
As illustrated, the results indicate that the majority of the support from these HSO teachers was at a low level, level one or level two throughout the course of the child's program. While there were examples of higher levels of support as well, these were less common.

Table 1

Total Number of Responses at Each Level of Support for Teachers from Schools with Highly Successful Outcomes

	← low to high level support →				
Stage in Program	level 1	level 2	level 3	level 4	level 5
Early	175	214	60	50	55
Middle	144	191	40	29	61
Late	144	151	41	31	47

Figure 1. Level of instructional contingency for HSO teachers



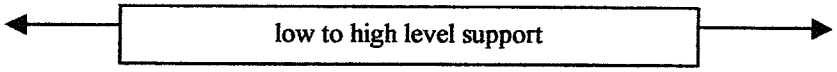
Results for LSO Schools

Teachers from schools with less successful outcomes frequently provided many examples of low level support to the children throughout the course of the Reading Recovery program, but often provided a high level of support as well. A high level of support was particularly evident in the early stages of the children's programs, although

there were relatively high levels of level 2 supports late in the program. This is illustrated in Table 2 and Figure 2.

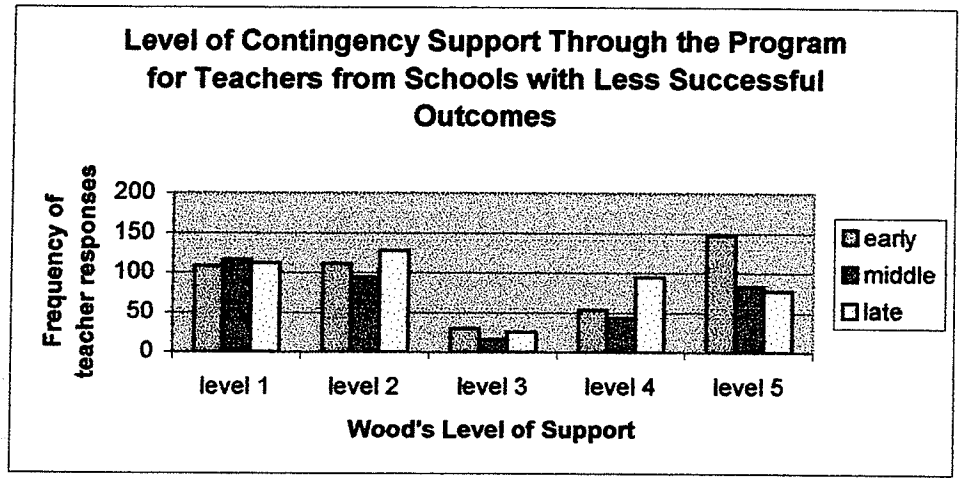
Table 2

Total Number of Responses at Each Level of Support for Teachers from Schools with Less Successful Outcomes



Stage in Program	level 1	level 2	level 3	level 4	level 5
Early	108	111	29	53	147
Middle	116	95	16	44	83
Late	112	127	25	95	77

Figure 2. Level of instructional contingency for LSO teachers



Summary of Findings for Level of Contingency Support

Early stages. When comparing the level of contingency support provided by teachers from HSO and LSO schools to children early in their series of lessons, it is evident from a perusal of both Table 3 and Figure 3 that teachers from HSO schools provided more support at a low level and less support at a high level. This would suggest that teachers from HSO schools encourage and support students in doing what they can as independently as possible early in the intervention, providing some support, but limiting that support to demonstrating and telling.

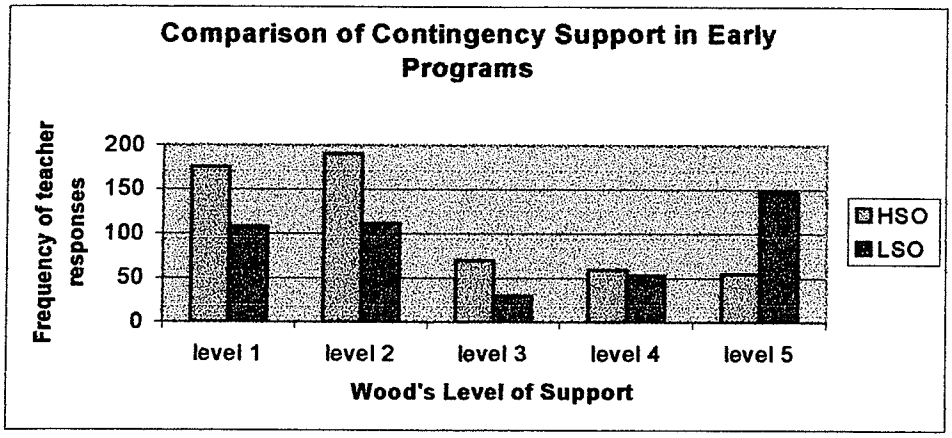
Table 3

Total Number of Responses Early in a Child's Program for HSO and LSO Teachers

		← low to high level support →				
		level 1	level 2	level 3	level 4	level 5
Early	High Progress	175	190	70	59	55
	Low Progress	108	111	29	53	147
F- ratio * indicates significance		9.521 (sig .015)*	7.355 (sig .027)*	3.037 (sig .120)	.123 (sig .735)	8.407 (sig .020)*

$p<.05$

Figure 3. Instructional contingency support for HSO and LSO teachers early in child's program based on total number of responses



Middle stages. At the middle stage, teacher support continued in a similar pattern, with teachers from HSO schools providing more support at levels one, two and three, differences at level 2 being statistically different ($F=12.479$, $p=.008$), while teachers from LSO schools provided more support at level five, as shown in both Table 4 and Figure 4.

Table 4

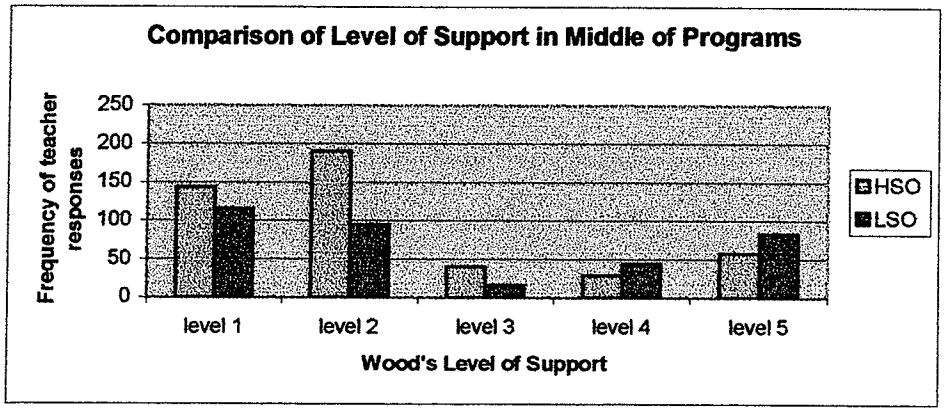
Total Number of Responses at Each Level of Support in the Middle of a Child's Program for HSO and LSO Teachers

low to high level support

		level 1	level 2	level 3	level 4	level 5
Middle	High Progress	144	191	40	29	58
	Low Progress	116	95	16	44	83
F-ratio *indicates significance		1.009 (sig.345)	12.479 (sig.008)*	2.318 (sig.166)	.693 (sig.429)	.774 (sig.405)

$p<.05$

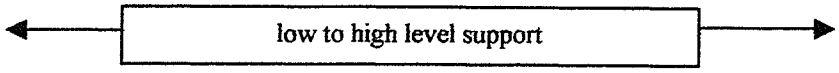
Figure 4. Instructional contingency support for HSO and LSO teachers in the middle of a child's program based on total number of responses



Late stages. Late in children's programs, the HSO teachers provided more contingency support at low levels, while the LSO teachers provided significantly more contingency support at high levels ($F = 24.611$, $p = .001$).

Table 5

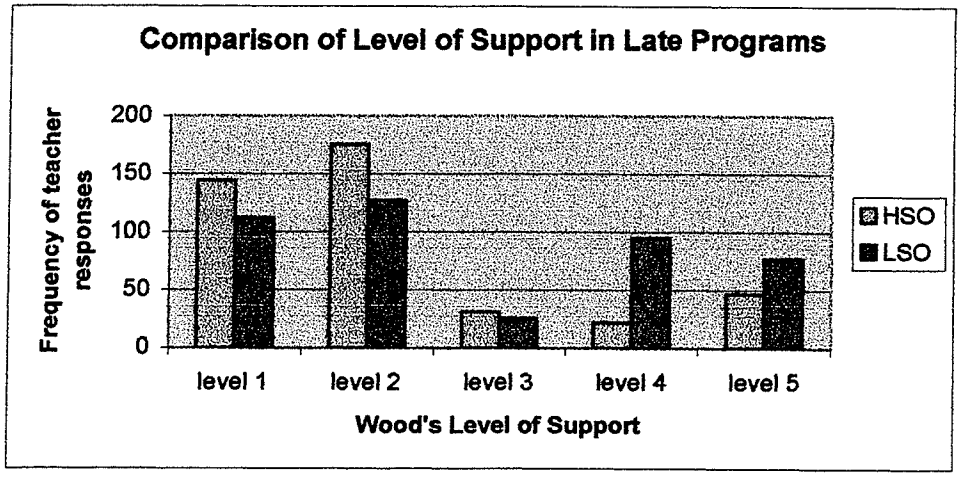
Total Number of Responses at Each Level of Support Late in Child's Program for HSO and LSO teachers



		level 1	level 2	level 3	level 4	level 5
Late	High Progress	144	175	31	22	47
	Low Progress	112	127	25	95	77
F-ratio * indicates significance		2.214 (sig .175)	.980 (sig .351)	.545 (sig .481)	24.611 (sig .001)*	2.153 (sig .180)

$p<.05$

Figure 5. Instructional contingency support for HSO and LSO teachers late in a child's program based on total number of responses



Summary of Section One

Teachers in HSO schools. When looking at the level of contingency support provided by HSO teachers throughout the program, low levels of support were frequently provided. The HSO teachers seemed to encourage and praise the children for problem solving on their own, particularly at the very early stages of the intervention. However, support at levels three, four, and five was considerably lower throughout the program, so that at no point did the HSO teachers seem to increase the level of support. Instructions—telling the child, demonstrating, or giving them the answer, which would be rated as support at level 5, remained fairly constant with only a slight rise in the middle portion of the child's program.

Teachers in LSO schools. LSO teachers, on the other hand, showed that they frequently provided support at low levels throughout the program, but also maintained high support levels throughout the entire program. A moderate level of support was not often provided. In fact, support at level three appeared to be much less frequent than at any other level. Level 3 supports occur at the point at which a teacher prompts and leads the child into a particular way of thinking. At levels 4 and 5, it would seem that teachers from LSO schools, compared to those from HSO schools, included considerable telling, demonstrating and modelling for students early in their programs and relative to teachers in HSO schools, continued level 5 support late into the intervention.

When comparing the two groups at the early stages of the child's program, there were distinct differences. HSO teachers gave considerably more low level support at

early stages of the child's programs, while LSO teachers gave considerably more high level support early in the intervention.

In the middle parts of the program, these patterns were similar, but they were somewhat diminished in terms of LSO teachers, who continued to provide a high level of support.

Late in the children's program, compared to the HSO teachers once again, the LSO teachers increased their level of support.

Thus, in answer to the question, "What are the patterns of contingency support that teachers provide during the writing process", it would seem that once a pattern of level of support was established, there was really very little change throughout the course of any one program, for either HSO or LSO teachers.

Section Two: Methods of Word-Solving

Eleven strategies for word-solving were taught, prompted and promoted by the teachers involved in the study. Only those methods observed have been included in this classification system. The methods observed follow.

Method 1: Known word. In this procedure, the teacher or the student initiates the use of a word the child already knows. The target word to be solved was "and". A sample interaction between student and teacher was as follows:

Child: My mom *and* ... I know that word

Teacher: mmmm

Child: *and* (writes the word).

Method 2: Analogy. To help students use this strategy, the teacher or the student initiates the use of something the child knows in order to write something new. The target word to be solved was "bee". A sample interaction between student and teacher follows:

Teacher: What do you know that would help you write *bee*?

Child: hmmmm, *we* or *see*?

Teacher: You know *see*, that will help you write *bee*.

Child: B-E-E (as she writes)? Is that right?

Teacher: You've got it.

Method 3: Hearing and recording sounds in words. Instructions in the case of this strategy take place when the teacher or the student initiates the use of the phonemic analysis of a word and its associated graphemes. The target word to be solved was " from". A sample interaction between student and teacher is provided.

Child: I got them *from....from*

Teacher: Say it slowly.

Child: fffffrrrrroooooommmmm

Teacher: (draws one box for every sound and provides counters for the child to slide into the boxes, one at a time) What can you hear?

Child: *M*

Teacher: Where would you put it?

Child: in the last box.

Child: fffffrroooooom, F, I hear F here (indicating the first box)

Teacher: What else can you hear?

Child: ffffrrrrrroooooom, rrrrrrrr

Teacher: How would you write it? (child writes 'r' on working page) Where would you put it? (child indicates the second box and writes it in)

Child: fffrroooooo....O! O!

Teacher: There you go!

Method 4: Known word and hearing and recording sounds in words. The word to be solved was "going". The following excerpt is a sample interaction between student and teacher.

Teacher: going.... going..... You know something about that.

Child: *go* (writes go)

Teacher: Say it again.

Child: *going*

Teacher: What do you hear at the end?

Child: *go* .... iiiiiing.... ing

Teacher: How would you write it?

Child: I..... NG

Teacher: Where would you put it?

Child: At the end, right on the end..... *go*....ing

Method 5: Known word and analogy. In this instructional strategy, the teacher or the student initiates the use of a word the child knows plus the use of that knowledge to get to something new. The word to be solved was "smoke". A sample interaction between student and teacher occurred.

Child: ...the same smoke

Teacher: hmmmm

Child: It starts like small.

Teacher: OK

Child: (writes SM) .... *oke*, Coke!

Teacher: (laughing) Well?

Child: (writing) oke....*smoke.*

Method 6: Analogy and hearing and recording sounds in words. In this strategy the teacher or the student initiates the use of something the child knows in order to write something new, plus adds phonemic and graphemic analysis. The target word to be solved was "that". A sample interaction between student and teacher was as follows:

Teacher: that....What do you know?

Child: I don't know

Teacher: You know the... say *the* and then say *that*

Child: the ... that

Teacher: They start the same.

Child: TH

Teacher: What do you hear at the end of the word?

Child: th aaaaaaat..... a! (writes A) t (writes T)

Method 7: Known word plus teacher contribution. In this procedure, the teacher or the student initiates the use of a known word plus the teacher contributes to the word construction by writing the rest of the word, or by telling the child how to write the rest of the word. The word to be solved was "coming". A sample interaction between student and teacher follows:

Child: is coming...

Teacher: coming....

Child: I know, I know... come and ing

Teacher: hmmm

Child: (writes comeing). There.

Teacher: Good work, this time there is no E. (Puts tape over the letter E.)

Method 8: Analogy plus teacher contribution. In this instructional strategy the teacher or the student initiates the use of something the child knows to write something new plus the teacher contributes by writing the rest of the word or by telling the child how to write the rest of the word. The word to be solved was "kids". A sample interaction between student and teacher follows:

Teacher: Some kids....kids

Child: I don't know

Teacher: You know hid.

Child: (writes cid) cids.... (adds S)

Teacher: Great, you've almost got it. This time you need a K.

Method 9: Hearing and recording sounds in words plus teacher contribution. In this instructional strategy the teacher or the student initiates the use of the phonemic analysis of the word and its associated graphemes, plus the teacher writes the remainder of the word or tells the child how to complete it. The word to be solved was " broken". A sample interaction between student and teacher follows:

Teacher: You say 'broken' slowly

Child: brrrrooooooken

Teacher: What can you hear?

Child: nnnnn

Teacher: Where are you going to write it?

Child: Points to last Elkonin box and writes N

Teacher: Say it again. What can you hear?

Child: broooooooken

Teacher: What did you hear?

Child: O

Teacher: Where will you write it?

Child: I don't know.

Teacher: Put it here (pointing to the correct box). Can you hear anything else? How do you think it starts?

Child: I don't know.

Teacher: I'll help you. (Completes the word.)

Method 10: Known word plus analogy plus hearing and recording sounds in words. In this method the teacher or the student initiates the use of a word the child knows, plus the use of something the child knows to get to something new, plus the phonemic analysis of part of the word with appropriate graphemes. The target word to be solved was "missed". A sample interaction between student and teacher that occurred follows:

Child: missed

Teacher: Ok, you know how to write *miss*

Child: Miss?

Teacher: Yes, stop. You know how to write miss. You know how to write it, so we need missed (child writes MIS).

Child: I have to put another S?

Teacher: Ummmmhmmmmm, now you know how to write miss and we need missed.

Child: T?

Teacher: Well, there are two letters that we can add to the end of a word that sometimes sound like a *T* but they look different. Like if we wanted to write the word looked, what would we put at the end? Look.....looked.

Child: ED?

Teacher: So you have miss ... but you need missed. It's the same. What can we put on the to make it say missed?

Child: ED. (Child adds the correct ending.)

Method 11: Teacher written. In this method the teacher writes the word for the child. The target word to be solved was "Calgary". A sample interaction between student and teacher follows:

Child: My uncle is going to Calgary.

Teacher: hmmmmm

Child: Calgary

Teacher: I'll do that one for you.

Observed methods of Solving

A summary of all methods of word-solving observed is presented in Table 6.

Table 6

Methods of Word Solving Categorised

Independently Solved Words	**Single Approaches to Word-Solving**	**Multiple Approaches to Word-Solving**	**No Student Input to Word-Solving**
Method 1: Known word	Method 2: Analogy	Method 4: Known word and Hearing and recording sounds in words	Method 11: Teacher written
	Method 3: Hearing and Recording Sounds in Words	Method 5: Known word and analogy	
	Method 7: Known word plus teacher	Method 6: Analogy and Hearing and Recording Sounds in words	
	Method 8: Analogy plus teacher	Method 10: Known word plus analogy plus Hearing and Recording sound in words	
	Method 9: Hearing and Recording Sound in Words plus teacher		

A summary of the percentages of words per story for each of the methods of solving prompted by the teachers over the sixty lessons observed is outlined in Table 7. The results indicate the average percentage of words per story prompted by a particular method or instructional strategy.

Table 7

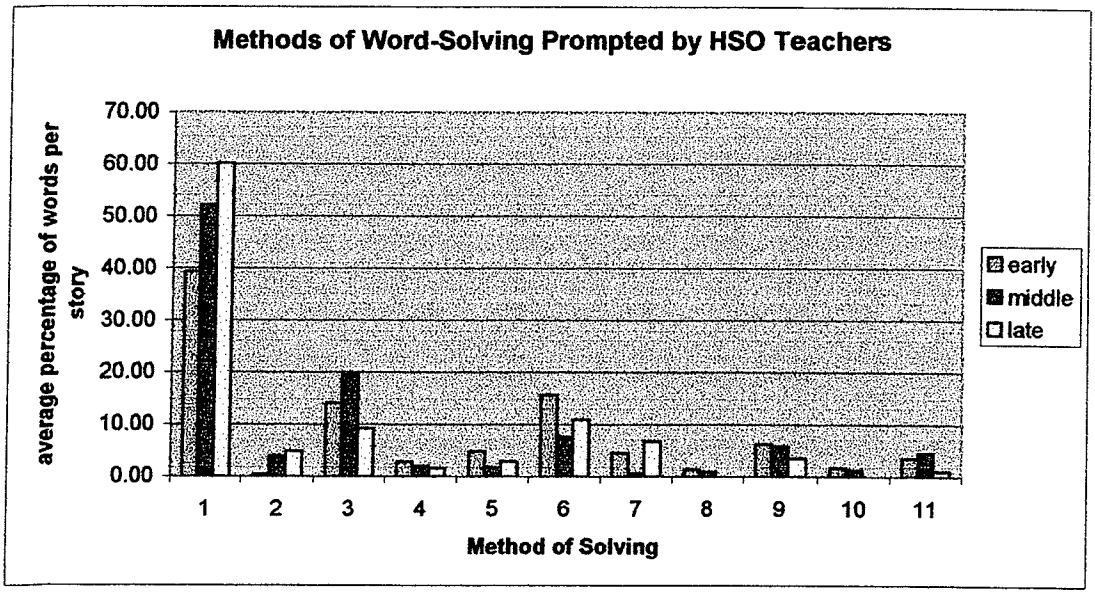
Percentages of Words Per Story Solved by Each Method by Stage (Early, Middle, Late)

	Known Word	Analogy	Hearing and Recording Sounds in Words	Known Word & Hearing and Recording Sounds in Words	Known Word and Analogy	Analogy and Hearing and Recording Sounds in Words	Known Word Plus Teacher	Analogy Plus Teacher	Hearing and Recording Sounds in Words Plus Teacher	Known Word & Analogy & Hearing and Recording Sounds in Words	Teacher written
Method	1	2	3	4	5	6	7	8	9	10	11
HSO early	39.38	0.33	14.08	2.75	4.88	15.65	4.50	1.33	6.27	1.67	3.50
HSO middle	52.07	3.86	19.53	1.96	1.78	7.55	0.71	0.91	5.79	1.25	4.57
HSO late	60.20	4.82	9.28	1.60	2.87	10.96	6.76	0.00	3.57	0.00	1.11
LSO early	55.09	0.00	11.88	0.00	1.23	0.00	0.92	2.22	23.08	0.00	5.56
LSO middle	63.32	3.23	9.37	0.00	1.01	5.60	3.42	0.00	9.86	0.00	4.20
LSO late	61.61	2.39	13.68	1.79	2.70	2.68	2.51	0.00	11.39	0.00	1.25

The interpretation of findings illustrated in Table 6 is divided according to procedures used with high and low outcome schools, as illustrated in Figures 6 and 7 which follow.

Teachers in HSO schools. The methods of solving by HSO teachers throughout the series of Reading Recovery lessons are illustrated in Figure 6. In all cases, at every point in children's programs, most words written in a story were written independently by the children. That is, the children in HSO schools composed stories that contained many words that they were able to write without the assistance of the teacher.

Figure 6. Average Percent of Each Method of Word-Solving Prompted per Story by HSO Teachers Throughout a Child's Program



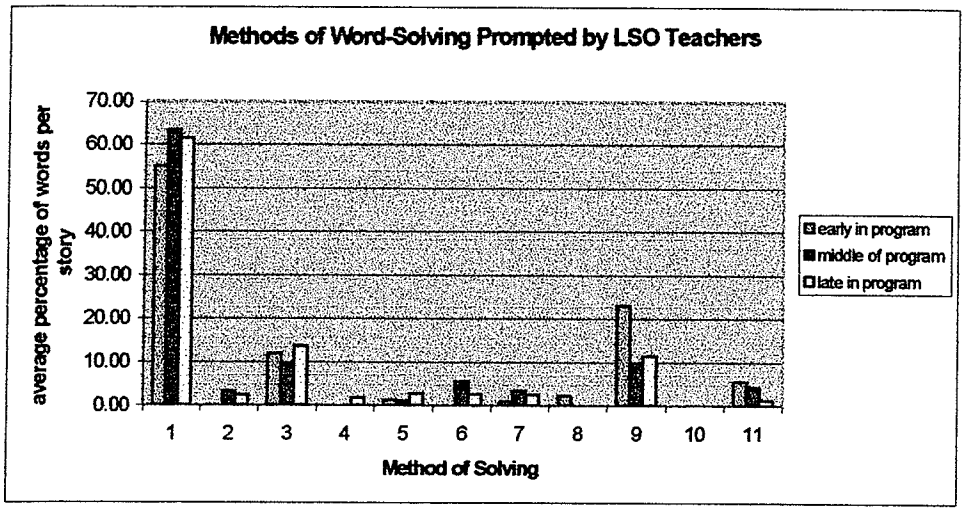
Further, in HSO schools the proportion of words written independently increased over the course of their program. Early in the program those words were one, two and three letters words such as: *I, a, is, so, it, is, my, the, in, and,* and *to.* Later in the program the words written independently were much more varied and included: *some, love, have, looking, was, little, yellow.*

In addition, it is evident that the number of words that teachers in HSO schools wrote for the children decreased over the time of the intervention. Some words were written by the teacher because they were deemed to be too difficult, or were words that the child would use only occasionally such as *Calgary, Christmas,* and *Sean.*

Virtually every method of word-solving was prompted at some point in the thirty lessons observed in HSO schools.

Teachers from LSO schools. Figure 7 presents the findings from LSO schools.

Figure 7. Average Percent of Each Method of Word-Solving Prompted Per Story by LSO Teachers Throughout a Child's Program



As illustrated above, the method of word-solving prompted by LSO teachers at all points in the program involved some form of hearing and recording sounds in words either as the single method of word-solving or in combination with other methods. Teachers did not lead the children to solve by making an analogy, using what they know about one word to write a similar word, until the middle and late portion of the child's program.

The children with teachers from LSO schools also wrote the largest proportion of words in every story independently. That proportion increased at the middle portion of the children's program and then decreased again slightly towards the end of the intervention. As well, the number of words written by the teacher decreased over the course of the children's programs, in a manner similar to what occurred in the HSO schools. Early in the program those words were one, two and three letters words such as: *the, is, a, I, and, to, it, in.* Later in the program the words written independently were of similar length and complexity: *I'm, on, fun, with, did, not, at, my.*

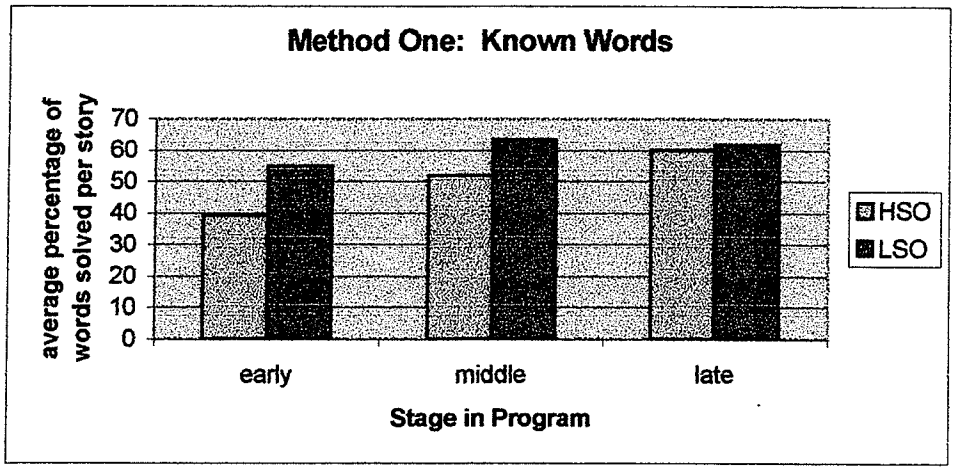
Two methods of word-solving dominated the prompting of teachers from LSO schools, hearing and recording sounds in words, and hearing and recording sounds in words with teacher contribution.

Three methods of solving were rarely, if ever, prompted by LSO teachers. Methods 4, 8 and 10 which all involve multiple word-solving strategies for a single word, were not observed as methods prompted by LSO teachers.

Comparison of Methods of Solving for HSO and LSO Teachers

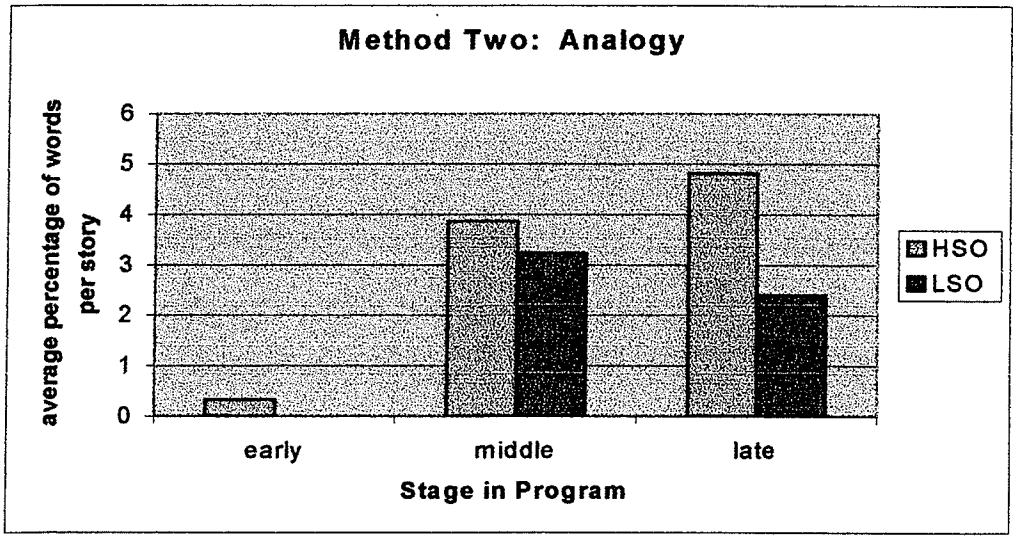
In order to examine the differences between the HSO and LSO teachers, more closely, charts of each method of solving prompted over the course of an entire program were prepared, as shown in Figure 8.

Figure 8. Solving words by method one: Using known words



As shown above, both HSO and LSO teachers encouraged students to write the words they knew throughout the course of the child's program.

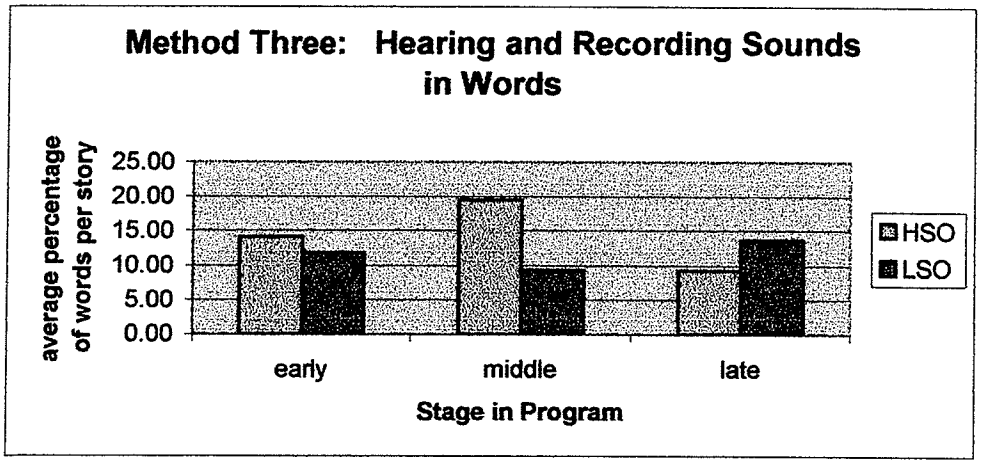
Figure 9. Solving words by method two: Analogy



There were significant differences between HSO and LSO teachers when using what one knows to write a new word (making an analogy) was considered. HSO teachers

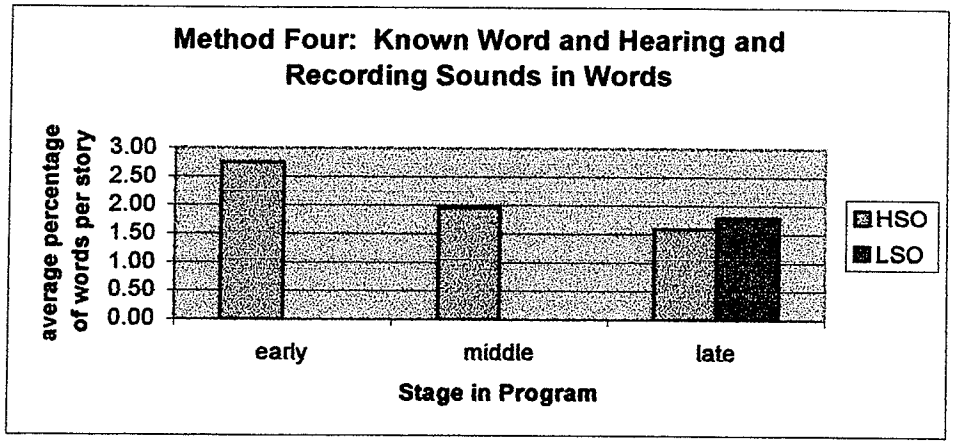
prompted this type of word-solving throughout the intervention, with more word-solving by analogy at middle and late stages. Compared to teachers from HSO schools, LSO teachers did not prompt word-solving by analogy in early lessons, but increased this type of prompt in middle and late portions of the program, although not to the extent that HSO teachers did.

Figure 10. Solving words by method three: Hearing and recording sounds in words



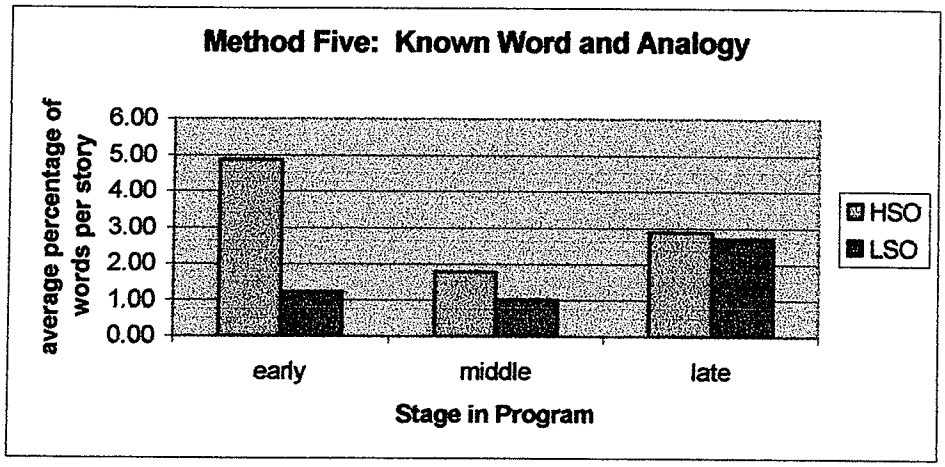
Both groups of teachers prompted the children to word-solve through the use of phoneme/grapheme correspondence throughout the course of the intervention. HSO teachers prompted this word-solving procedure more than LSO teachers in the middle of the children's program, but less than LSO teachers toward the end as illustrated in Figure 10.

Figure 11. Solving words by method four: Known word plus sound/symbol correspondence



HSO teachers prompted for the use of known words plus the sound/symbol correspondence throughout the intervention. In contrast, LSO teachers prompted the use of method five only in the late program stages.

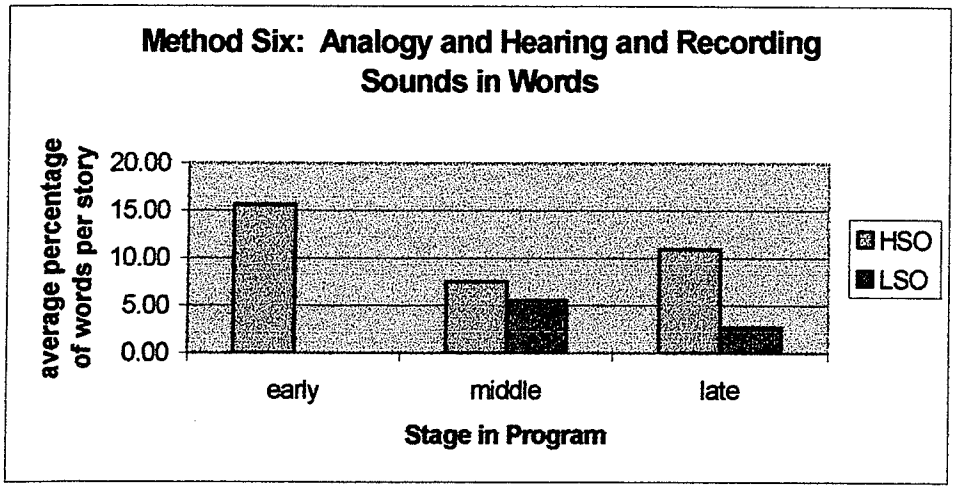
Figure 12. Solving words by method five: Known word and analogy



Both groups of teachers prompted children to solve words partly through the use of a known word and partly through the use of what they already knew to write the new word. HSO teachers prompted in this way more in the early stages of a child's program, but as the children moved into middle and late stages of the intervention, the differences between HSO and LSO teachers decreased.

There were, however, differences in the use of method six (using both analogy and the sound/symbol correspondence) between teachers in HSO and LSO schools, as illustrated in Figure 13.

Figure 13. Solving words by method six: Analogy plus sound/symbol correspondence

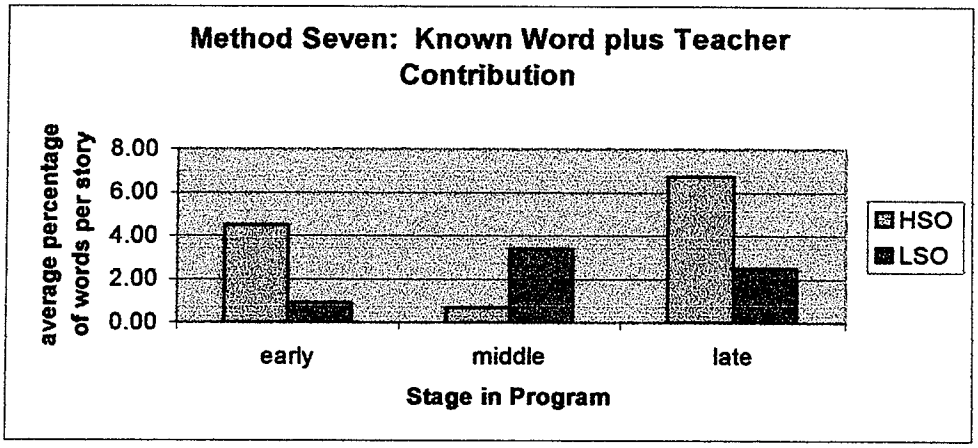


There were differences between the two groups of teachers when two strategies for word-solving were promoted. HSO teachers prompted throughout the course of the intervention, inviting students sto think about what they knew and to solve the rest of the word through phonemic analysis. Teachers from HSO schools began prompting the use of method six early in the child's program, but those in LSO schools only began

instruction in this word-solving strategy mid-way through and to a lesser extent late in the intervention.

The use of known words plus contributions by the teacher seemed to be employed late in the intervention by HSO teachers, as shown in Figure 14.

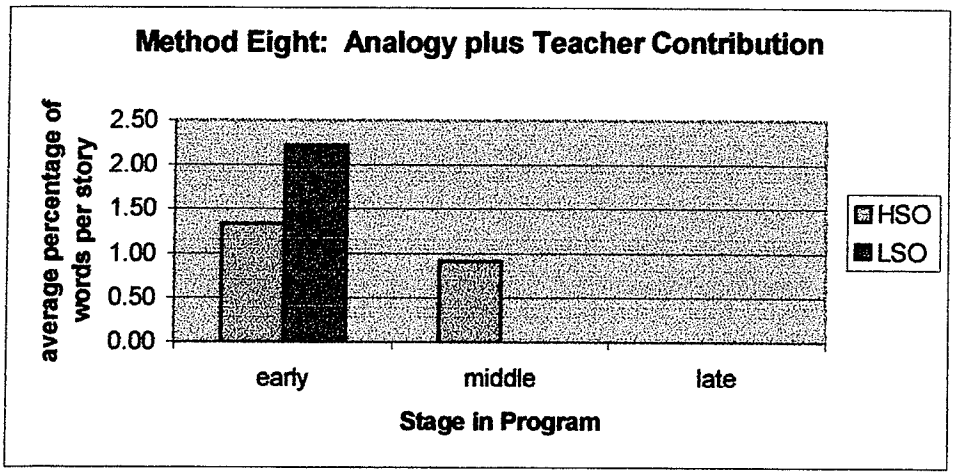
Figure 14. Solving words by method seven: Known word plus teacher contribution



In both early and late stages of the child's program, HSO teachers prompted the children to write part of the word using what they knew and then supported the child by writing or telling the child how to write the remainder of the word. LSO teachers also taught students to word-solve by this procedure, but compared to the middle portion, to a lesser extent at early and late stages.

As shown in Figure 15, the use of analogy plus teacher contribution was used often by LSO school teachers early in the program.

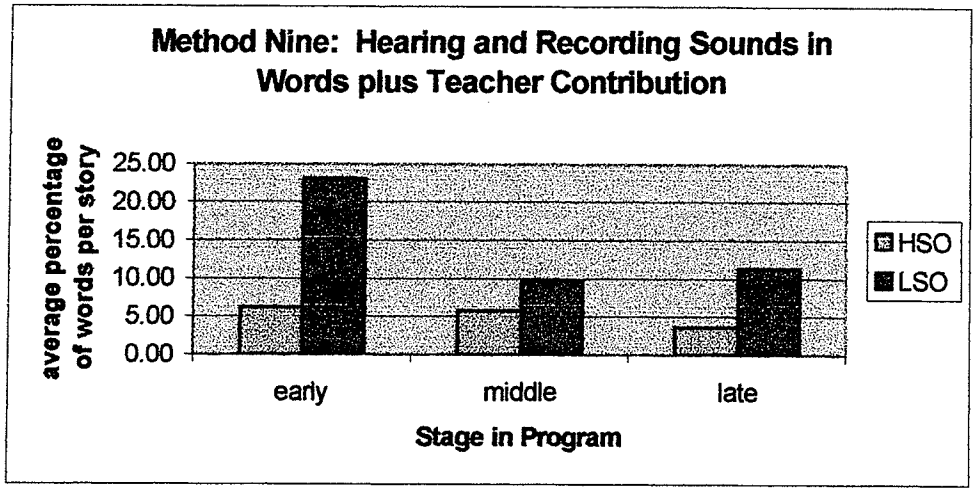
Figure 15. Solving words by method eight: Analogy plus teacher contribution



HSO teachers prompted somewhat in this way in the early and middle stages of the intervention. Neither group prompted the use of this strategy for word-solving late in the children's programs, however.

While teachers in LSO schools seemed to use both listening for sounds and using the graphemic representation of that sound plus teacher input as prompts early in the writing intervention, the input of teachers from HSO schools remained relatively similar during the early and middle stages, dropping off at the end, as shown in Figure 16.

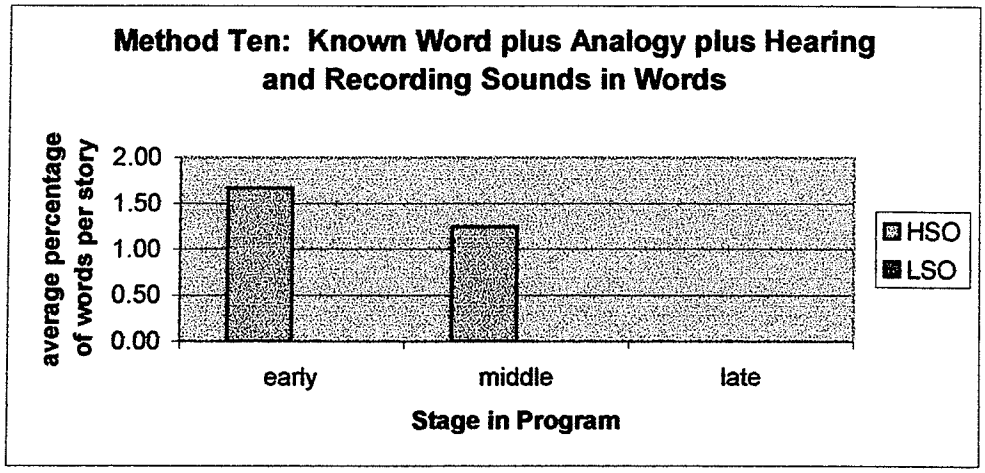
Figure 16. Solving words by method nine: Sound/symbol correspondence plus teacher contribution



There appeared to be differences between the two groups in the use of this combined approach to word-solving (phoneme/grapheme correspondence plus teacher input). LSO teachers prompted more frequently than HSO teachers at all stages of the children's programs, but particularly at the early stage, as suggested in Figure 16.

Method 10, solving words by using a combination of analogy plus sound/symbol correspondence was not used frequently by teachers from HSO schools. (Refer to Figure 17.)

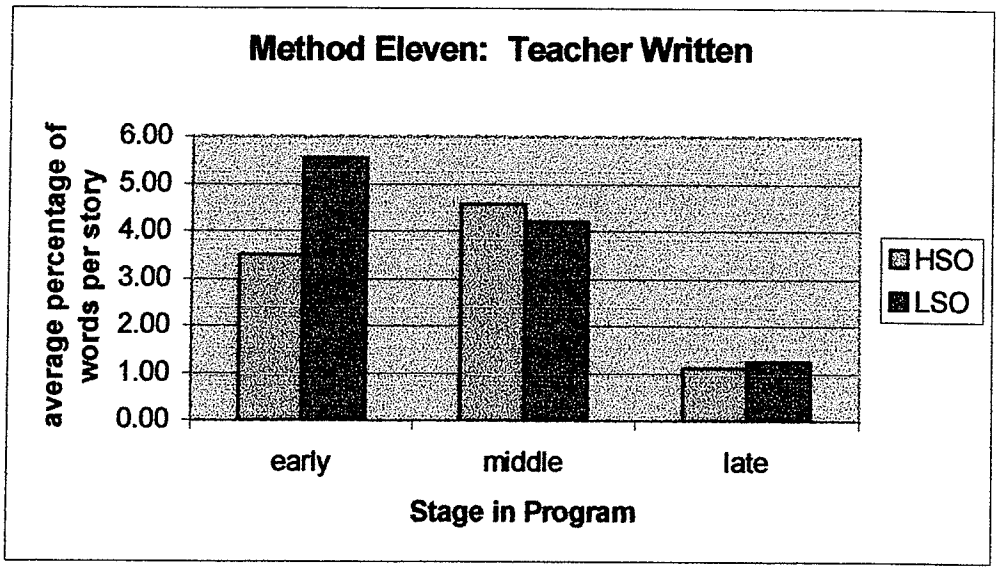
Figure 17. Solving words by method ten: Known word, plus analogy, plus sound/symbol correspondence.



This combined approach to word-solving, using a word plus analogy, plus sound/symbol correspondence, was only used by HSO teachers in the early and middle stages of the intervention. This multi-level strategy was not frequently used by HSO teachers. As illustrated in Figure 17, LSO teachers never used this method of word-solving at any stage of the programs.

Figure 18 shows teacher input into word-solving, which follows, shows teacher input into word-solving.

Figure 18. Solving words by method eleven: Teacher written



As shown in the previous section on lesson analysis, in which all teachers provided level 5 contingency support (essentially telling, Wood, 2003), both HSO and LSO teachers wrote words for children at all stages. While LSO teachers contributed slightly more at early stages, both HSO and LSO teachers had substantially reduced the number of words written by the teacher late in the children's programs.

Summary of Section Two: Word Solving Strategies

Teachers from HSO schools. Teachers from schools with highly successful outcomes were able to increase the number of words that the child wrote independently across the duration of the program. Writing independence increased dramatically from 39.38% to 61.61% of the words written from the early to late stages of the program. Method three, hearing and recording sounds in words, was also favoured by HSO teachers. Method six, which combines the use of analogy plus hearing and recording

teachers. Method six, which combines the use of analogy plus hearing and recording sounds, was also a common word-solving strategy implemented by HSO teachers, particularly early in the program. Method eleven, in which the teacher writes words deemed too difficult for the child was observed throughout both conditions, however, HSO teachers provided teacher written supports all the way through the intervention. However, writing the word for the child was more frequent in early and middle stages rather than late in the program. Method two, where the child is supported in making an analogy, was rarely prompted by HSO teachers early in the intervention, but came into play as a method of word-solving during the middle and late stages. Every method of word-solving, including the use of multiple strategies for solving a given word, was observed at some point during programs taught by HSO teachers.

Teachers from LSO schools. The data analysis for LSO teachers also revealed that students could write an increasing number of words students independently as the program progressed. Compared to students in HSO schools, students in LSO schools were less likely to be prompted to do so. Method three, hearing and recording sounds in words, was a favoured LSO procedure for teaching word-solving. Having students say the word, listen for individual sounds and provide the corresponding grapheme was strongly promoted throughout the course of LSO programs, with a slight increase during the middle portion of the intervention. Method nine, hearing and recording sounds in words plus word-solving contributions by the teacher, was particularly strong in the early stages of LSO programs and continued throughout. The use of multiple word-solving strategies and strategies involving the use of analogy only accounted for word-solving in

solve did not occur at all (0%) in the early stages in LSO schools, and only sometimes during the middle and late stages (15.65%). Method eight (analogy plus teacher contribution) and Method ten (use of a known word plus an analogy, plus hearing and recording sounds in words) was never observed with LSO teachers. The phonemic analysis of words was a favoured word-solving strategy fostered by both groups of teachers throughout the course of the entire program, accounting for from 9.28% to 23.08% of the words written in any one story.

Section Three: Opportunities for Word Solving

Transcripts of the interaction between the teacher and child were analysed for each word that was solved. If the child solved a word in the story that he or she had composed without any assistance from the teacher, the word was noted as "solved independently". If the teacher wrote the word for the child, then the word was noted as "teacher written". When neither student nor teacher moved to write a word, the word was considered to be co-constructed. When words were constructed jointly with either verbal or non-verbal support from the teacher, the time was noted from the point at which the word to be written was identified, to the point where support was either offered by the teacher or requested by the child. Requests from the child were rarely made. Words were then categorised as those that were constructed within a two-second interval or less (2/60th of a minute) and those that were constructed after a three second wait or more (3/60th of a minute).

Table 8 shows the average number of words per story together with program stage (early, middle, or late) and wait time.

Table 8:

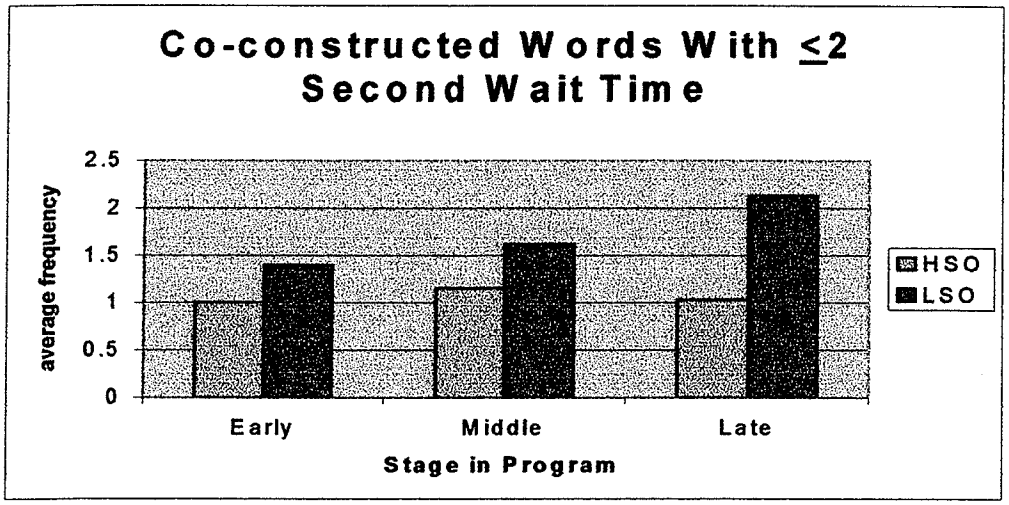
Average Number of Words Per Story Constructed by Student and Teacher

		independently written	teacher written	co-constructed <2 sec	co-constructed >3 sec
Early	high	3.3	0.1	1	3.1
Early	low	5.00	0.35	1.40	1.14
Middle	high	4.35	0.40	1.15	3.25
Middle	low	5.20	0.32	1.62	1.00
Late	high	5.47	0.33	1.03	3.33
Late	low	5.28	0.30	2.13	0.82
all		5.26	0.3	2.13	1.08

The following observations were made. Opportunities for children to learn more about constructing words occurred when teachers provided contingency support. The level of contingency support was discussed in Section One, however, another aspect was also observed. When teachers waited for a student to begin to respond, rather than stepping in to support problem solving, the student frequently began to initiate problem solving independently. When neither student nor teacher moved to write a word, the word was considered to be co-constructed. The time that elapsed between the point where the word to be solved was identified and construction began was measured.

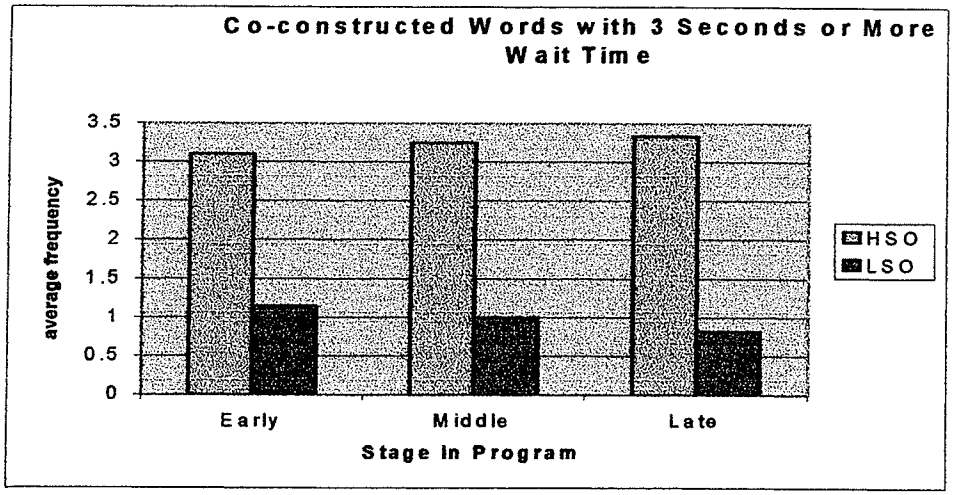
Responses were then classified as occurring within two seconds or less or three seconds or more. Those results are summarised in Figures 19 and 20

Figure 19. Average frequency of words constructed by teacher and child with two seconds or less elapsing



LSO teachers responded to support the construction of words in two seconds or less more frequently than HSO teachers at every stage of the interventions. Further, for teachers in LSO schools, the frequency of these rapid responses increased very slightly in the late program stages.

Figure 20. Average frequency of words constructed by teacher and child with three seconds or more elapsing



A consistent pattern demonstrated by HSO teachers who waited three seconds or more at each stage of the intervention is evident from an examination of Figure 20. It is also evident that longer wait times occurred with greater frequency with HSO teachers than with LSO teachers.

Summary of Section Three: Opportunities for Word Solving

The opportunities for children to write words independently and the opportunities for teachers to write words for children have already been discussed in the previous section. However, when the incidence of co-constructed words was examined, there was a marked difference between HSO and LSO teachers.

While teachers from both HSO and LSO schools were all observed waiting two seconds or less before stepping in to help the child word-solve at every point in the program, early middle and late, teachers from HSO schools maintained approximately the

same frequency of that response. LSO teachers, on the other hand, increased the frequency with which they stepped in quickly to support the students as the programs progressed.

When considering co-construction in which the teacher waits three seconds or more before offering support, it is clear that the HSO teachers intervened only reluctantly on average three times per story at all stages of the intervention, early, middle, and late. In contrast, LSO teachers waited out students only once per story on average across the entire program, not only at the early and middle stages, but also at late stages. LSO teacher seemed to rush to help. Rushing to help seems counter-productive in that, compared to LSO students, HSO students had two more opportunities every day to consider how they would construct a word for themselves. This pattern of wait time is also reflected in the words written independently, as HSO children frequently decided that they did not need help from the teacher and wrote words independently.

Section Four: Additional Observations

Planning for Teaching

Planning for teaching is an element that evolves as the result of Reading Recovery teachers looking at lesson records for evidence of the child's strengths and considering the next, most beneficial instructional move for each individual child. Prior to each observation, teachers were asked what they had planned or thought about as an instructional emphasis for the writing portion of the lesson. After the lesson, the teachers were asked how they felt the lesson had gone. Field notes confirmed or refuted whether

the planned instructional goals had been achieved. Five categories of teacher plans emerged: a strategic level plan that was followed; a strategic level plan that was not followed; an item level plan that was followed; an item level plan that was not followed; and no plan.

The teachers had sometimes planned to strengthen or emphasise a particular strategy that would support writing development. This plan was followed at times and not followed at other times. An example of a plan at a strategic level that one teacher proposed was "... to make sure the child consistently said words slowly for [him/herself] in order to hear more of the consonant framework of the words he [or she] want[ed] to solve." The teachers were often able to reflect upon whether or not they had followed this plan.

Teachers also sometimes established a plan that would strengthen or emphasise a particular "item of knowledge." That is, they planned to focus on one or more particular letter or letters or words that would not necessarily have any generative value. One of the teachers had planned "to really get [the child] writing the letters 'b' and 'd' the right way." Once again, this type of plan was sometimes carried out and at other times not. The teachers were always able to reflect upon whether or not they had followed their plan.

There were also examples of times that the teachers had no specific plan in mind prior to the lesson. When asked what they had planned, responses varied, but were typified by the response, "I'll just wait and see what comes up. You know, I'll just follow the child."

A summary of teacher planning results is presented in Table 9. Over the course of thirty observations of HSO teacher and thirty observations of LSO teachers it was clear that HSO teachers frequently had planned to look for opportunities to strengthen the child's writing development and were usually able to carry out their plan. It is also evident that LSO teachers frequently had not planned. On the occasions that a plan was established, whether it be at a strategic or knowledge level, it was not followed as frequently as was the case for teachers in HSO schools.

Table 9:

Frequency Table For Planning

	Strategic level plan that was followed	Strategic level plan that was not followed	Item level plan that was followed	Item level plan that was not followed	no plan
Lessons of Teachers from Schools with HSO n = 30	21	2	2	0	5
Lessons of Teachers from Schools with LSO n = 30	2	4	4	2	18

Stimuli for Composing

In considering the opportunities that young writers have to solve words, it must not be forgotten that without adequate opportunities in the composed text, there is little opportunity for the child to solve new words. Reading Recovery teachers seek to shape

children's compositions that have come about from a "short, but genuine conversation" (Clay, 1993 p. 29). Teachers may choose to guide the child to write about a personal experience, retell a story, or compose a story about an experience that the teacher and child had shared. DeFord et al (1991) found that teachers with higher outcome students prompted them to write stories not only about personal experiences, but also about books they had read. The results in this data suggest that both HSO and LSO teachers used both personal experiences and books as stimuli for writing. In this study, however, HSO teachers relied on the child's personal experiences more frequently, while LSO teachers were only slightly more likely to use personal experiences rather than story retelling, as illustrated in Table 10.

Table 10

Frequency of Stimuli for Composing Used by HSO and LSO Teachers

	Child's Personal Experience	A Story the Child had Read	An Experience Teacher and Child had Shared
HSO teachers	24	5	1
LSO teachers	15	12	3

Use of Time

Within the framework of a 30-minute Reading Recovery lesson, the writing portion of the lesson is preceded and followed by reading continuous texts. As seen in Table 10, when time spent on writing instruction was analysed, the mean amount of time for both HSO and LSO teachers was very close to 10 minutes, representing about one-

third of a Reading Recovery lesson. However, standard deviations reveal a significant difference between the two groups. Writing instruction time for HSO teachers varied from between 6.6 and 12.9 minutes, 68% of the time. On the other hand, LSO teachers varied writing instruction time from between 4.9 and 16.5 minutes, 68% of the time. There was thus much greater variation in the amount of time devoted to writing instruction on the part of LSO teachers as illustrated in Table 11.

Table 11:

Use of Time Within the Writing Portion of the Reading Recovery Lesson

	Time (in minutes) devoted to story writing per lesson	Total Number of Words in the Conversation between teacher and child during writing	Percentage of the turns taken devoted to composing and to solving
HSO teachers	mean: 9.9 minutes standard deviation:3.3 min range:6.5 min to 15.0 min	mean:941.7 words standard deviation:214.6	mean: 13.92% standard deviation:6.23%
LSO teachers	mean:10.7 minutes standard deviation:5.8 min range:5 min to 22.5 min	mean:1203.8 words standard deviation:533.6	mean: 14.10% standard deviation:6.17%

Within the writing portion of the lesson, the amount of talk, most of which was dominated by the teacher, also varied. HSO teachers engaged in conversations that averaged 941.7 words, with a standard deviation of 214.6. LSO teachers engaged in conversations that averaged 1203.8 words, with a standard deviation of 533.6. Thus there

was a far greater range for LSO teachers. The interaction between teacher and child was either very brief or very lengthy. This is illustrated in Figures 21 and 22.

*Figure 21.*Total number of words in conversational interaction during the writing portion for HSO teachers

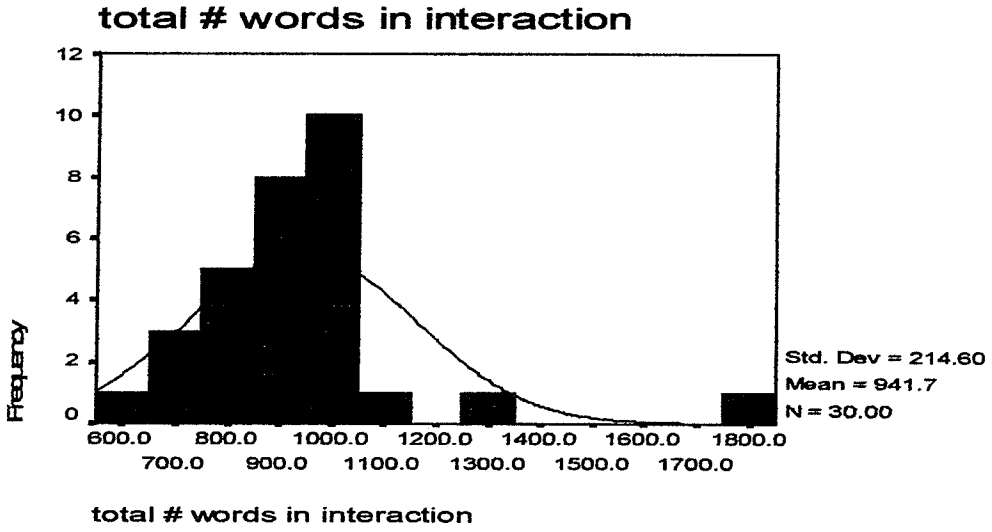
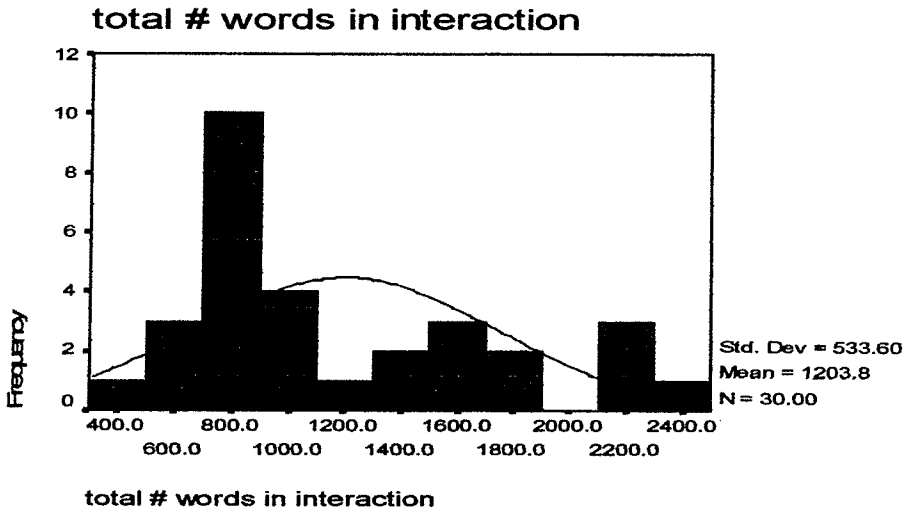


Figure 22. Total number of words in conversational interaction during the writing portion for LSO teachers



HSO teachers devoted 13.92% of the interaction to composing with a standard deviation of 6.23. LSO teachers devoted 14.10% of student interactions to composing with a standard deviation of 6.17. When the portion of the conversation devoted to composition is considered, it is clear that HSO and LSO teacher devoted similar amounts of time to the composing process, leaving the remainder of the time for conversation about word-solving.

CHAPTER 5

Results and Discussion

The purpose of this study was to uncover a pattern of effective teaching decisions made by Reading Recovery teachers in the writing section of the Reading Recovery lesson. Three aspects of tutorial support were examined: (1) the level of support provided by the teachers, in keeping with Wood's (2003) concept of instructional contingency; (2) the strategies for word-solving prompted by teachers, aligned to Wood's (2003) concept of domain contingency; and (3) the opportunities for students to initiate independent and co-operative word-solving before teachers intervened, as suggested by Wood's (2003) concept of temporal contingency. As a result of the observations, three other factors related to instructional success emerged: (1) the degree of instructional planning devoted to writing, (2) the nature of composing stimulus, and (3) the relationship between the amount of time and amount of talk involved in the tutorial dialogue.

Major Findings

Contingency Support

1. Teachers from HSO schools offered low level support (general and specific verbal intervention) throughout the child's program. Teachers from LSO schools, on the other hand, offered both low and high levels of support, including support at level 5 (demonstrating and modelling) across the entire program. Level 5 support continued even late in the program.

2. Teachers from HSO schools encouraged and provided students opportunities for problems solving even early in the program.

Word-Solving

1. While students in HSO schools could write fewer words than students in LSO schools at the beginning of the program, students in both schools were able to write approximately the same number of words at the end of their program.
2. Teachers in both conditions wrote words for students at approximately the same rate at the end of the program.
3. Analogy, as a word-solving strategy, was rarely used in LSO schools.
4. Listening for and recording sounds in words was the most frequently used word-solving strategy in both conditions.

Opportunities for Word Solving

1. Teachers from LSO schools consistently intervened more quickly throughout the course of lessons than did their counterparts in HSO schools.

Additional

1. Teachers in LSO schools seemed to plan less than teachers in HSO schools.

2. Both sets of teachers used both personal experience and story retelling to prompt writing, but HSO teachers used personal experiences more frequently than LSO teachers.
3. Compared to HSO schools, there was more variation across time spent on writing in LSO schools and more variation in the amount of talk that occurred in lessons.

Summary and Discussion

Level of Contingency Support

The high frequency with which low level contingency support was provided to Reading Recovery students early in the intervention is evidence that teachers from both high and low successful outcome schools supported learners to do what they were able to do independently. The total frequency of teacher responses at levels one and two over the course of the two early program observations of five teachers from schools with high success was 389, and for five teachers from schools with less successful outcomes, 219. In the middle portion of the children's programs, the total frequency of teacher responses at levels one and two over the course of two observations was 335 for teachers from high success schools, and 211 for teachers from schools with less success. At the later stages of the intervention, the total frequency of teacher responses at levels one and two over the course of two observations was 295 for teachers from schools with high success, and 239 for teachers from schools with less success. These results suggest that in order to develop

independence, it is more effective to provide low levels of support to students, regardless of the program.

A high level of support, at levels four and five, was evident in 105 of the responses for teachers from schools with highly successful outcomes early in children's programs, compared to 200 of the responses for teachers from schools with less successful outcomes. At mid-point, teachers from schools with highly successful outcomes provided a high level of support in 90 responses and teachers from schools with less successful outcomes provided a high level of support in 127 responses. At the late stages of the intervention, teachers from schools with highly successful outcomes provided a high level of support in 78 responses while teachers from schools with less successful outcomes provided a high level of support in 172 responses.

This finding did not support my hypothesis that teachers from schools with highly successful outcomes would alter their levels of support as the children moved through the program. Once the response pattern was established, it seemed to remain the same throughout the program. However, this finding does support the hypothesis that teachers from schools with less successful outcomes would demonstrate a cluster of levels of support that did not change significantly throughout the children's program. The data demonstrates that the support provided by teachers from LSO schools clustered between frequent low level support and frequent high level support.

Three factors may have contributed to the clusters of levels of support at the low and high end of the scale for teachers from schools with less successful outcomes. First, these teachers frequently did not plan lessons at a strategic level. Second, these teachers

had either very little or a great deal to say over the course of the writing portion of the lesson which averaged 10.7 minutes. Without a focus for teaching, the teachers were either unsure of what to say, or provided too many teaching points throughout the writing lesson. Third, the children in this study had come into Reading Recovery in the second half of their grade one year. The children may have had more confusions and gaps in knowledge than would students who knew very little at the beginning of the school year. As a result, students may have been more difficult to observe and their writing behaviours may have been more complex and difficult to assess on an ongoing basis. Confounded by the complexity of classroom instruction in the second half of the school year, Reading Recovery teachers may face more challenges in supporting writing development in the second term..

The teachers' philosophical stance on the teaching of writing was not established in this study. Their theoretical understandings may also have influenced their ability to know when to support a process under development. If the teachers did not have a secure understanding of what they were teaching for, the writing portion of the lesson may have been seen as a "time to write a couple of sentences" rather than a "time to develop writing as a process and solve words."

Word-Solving Strategies

Independence. Throughout the course of all of the programs, the percentage of words per story written independently by the children constituted the largest portion of words written. For the students from schools with highly successful outcomes, this ranged from 39.38% early in their program, to 52.07% in the middle of the program, and

to 60.2% in the late stages. For students from schools with less successful outcomes, the percentage of words written independently ranged from 55.09% early in the program, to 63.32% in the middle of the program, and to 61.61% late in the program. Thus independent word-solving ability increased as a function of program duration.

Hearing and recording sounds. The other methods of word-solving taught, prompted and promoted by teachers showed that any method that involved an analysis of the phonemes of the word and linking the sounds to corresponding graphemes was favoured by all of the teachers. In the early stages of the program this, used alone or in combination, accounted for 42.42% of the words written for students from schools with highly successful outcomes. For students from schools with less successful outcomes, making sound/symbol associations accounted for 34.96% of the words written early in the program.

In the middle stages, children from schools with highly successful outcomes had shifted to solving 35.98% of the words in this way, while at mid-point children from schools with less successful outcomes were solving 24.84% of their words using sound/symbol correspondences.

By the late stages of the program, the percentage of words solved using hearing and recording sounds in words alone, or in combination accounted for 25.41% of the words solved for children from schools with highly successful outcomes and to 29.54% for children from schools with less successful outcomes. This decreasing reliance on hearing sounds in words for word-solving across the duration of the program for both HSO and LSO schools suggests that students had begun to generalise some spelling

patterns. The students had learned the procedure and were able to apply spelling patterns to larger portions of the words they wanted to solve.

Teacher assistance. Teachers from schools with highly successful outcomes wrote or contributed to the construction of 15.6% of the words early in the program, 11.98% of words in the middle of the program and 11.44% of words late in the program. Teachers from schools with less successful outcomes wrote or contributed to the construction of 31.78% of the words written early in the program, 17.48% of the words in the middle of the program, and 15.15% of the words in the late stages of the program. At all stages, teachers from schools with less successful outcomes contributed to the production of words more frequently than did teachers from schools with highly successful outcomes.

Multiple word-solving strategies. It was evident as well, that teachers from schools with highly successful outcomes prompted multiple methods of solving individuals words, while teachers from schools with less successful outcomes were less comfortable providing this type of guidance, relying instead on a single approach to word-solving, usually phonemic analysis.

Summary of word-solving. This data suggests that the use of hearing and recording sounds in words is the dominant method of word-solving for all teachers. This does not support my original hypothesis that teachers from schools with highly successful outcomes would favour the use of analogies to word-solve, but does support my original hypothesis about teachers from schools with less successful outcomes. The level of teacher assistance, however, correlates with the data, suggesting that teachers from

schools with less successful outcomes provide high levels of support throughout the course of the children's programs. This level of assistance is perhaps too high. Providing more wait time, especially as the program proceeds, may be in order.

These results may exemplify teachers' theoretical stance of how we write words. The heavy domination of phonemic analysis for word-solving may reflect this stance, however, this study did not survey teachers about their beliefs prior to the observations to confirm or disprove this point.

Fostering Independence Through Opportunities for Word-Solving

Words that were co-constructed by the teacher and child together give a deeper understanding of opportunities for learning. A third category emerged when the results of the analysis of words written independently and words written by the teacher were eliminated from the frequency counts. Words that were approached as a problem-solving activity and co-constructed with the teacher and student working together, accounted for nine of the eleven categories for assisting word construction. Further, when the teacher waited for two seconds or less, as Rowe (in Shwartz & Klein, 1997) documented, the student does not have the opportunity to initiate word-solving. However, when the wait time is increased to three seconds or more, extended opportunities are provided for students to make a move to problem-solve the construction of words, with the result that children are more likely to solve words independently.

Thus, when considering opportunities for initiating independent word-solving, the amount of time the teacher waits for the child to solve before they jump in and suggest a strategy must be considered.

Both groups of teachers demonstrated examples of waiting two seconds or less before deciding to offer support. However, the LSO teachers consistently and increasingly were quick to support the child's word solving to a greater degree than the HSO teachers. While these differences may suggest that the teachers knew their students so well that they could anticipate that the child might becomes frustrated in solving particular words, it may also suggest that the teachers were confused about what the students actually knew about word-solving.

Conclusion

Profile of HSO Teachers

Teachers from schools with highly successful outcomes regularly planned for the writing portion of the Reading Recovery lesson. Their plans were frequently geared toward helping students strengthen and expand their method of word construction. The plan was usually followed. In contrast to teachers from LSO schools, teachers from HSO schools consistently used ten minutes or more of the daily, thirty-minute lesson for writing instruction, suggesting that they valued the reciprocal relationship between reading and writing.

The conversation between the teacher and child during the ten minute writing portion of a Reading Recovery lessons in HSO schools was about 900 words long, plus or

minus 200 words, with 13.9% of the total time devoted to the composing part of the writing process. This was consistent throughout the series of lessons, suggesting that this amount of teacher talk is neither too much nor too little to help the child understand more about the writing process. The HSO teachers most often used the children's personal experiences as a stimulus for composing.

The HSO teachers provided contingency support at a relatively low level throughout the course of the child's program. At times, the HSO teachers demonstrated, told or modelled an action, but this was not a primary feature of the support they provided. Rather, offering support was something that happened in small doses, suggesting that HSO teachers focussed on one or two new things daily throughout the course of a child's program. Teachers from HSO schools also promoted multiple ways of thinking about a word in order to construct it.

Throughout the course of the intervention, HSO teachers wrote words for the child that they believed to be too difficult for him or her to solve at any given point in the program.

Waiting for three seconds or more as the students either pondered a strategy for word-solving or were able to solve the word independently was a regular occurrence for HSO teachers throughout the intervention. While HSO teachers did step in quickly for some words, it appeared that this was a deliberate move, based on what they knew about the child. All five of the children from the high successful outcome schools involved in this study were discontinued from the Reading Recovery program, having made

sufficient gains in both reading and writing to be able to benefit from classroom instruction without the need for further tutorial support.

Profile of LSO Teachers

Teachers from schools with less successful outcomes often did not plan for the writing portion of the Reading Recovery lesson. The plans that were made were frequently geared toward teaching the child a single item of knowledge that had limited generative value. LSO teachers devoted, on average, ten minutes of the daily thirty-minute Reading Recovery lesson to writing instruction, but writing time varied widely, from 5 to 23.5 minutes.

The conversation between the teacher and child during the ten minute writing portion in LSO schools was about 1000 words long, plus or minutes 600 words, with 14.1% of the time devoted to the composing part of the writing process. The teachers varied the stimulus for composing, sometimes using the child's personal experiences and sometimes using a story the child had read.

The LSO teachers provided contingency support at both low and high levels throughout the course of the child's program. They frequently allowed the child to solve words independently or demonstrated, told, or modelled an action. This pattern was consistent throughout each child's program.

Many opportunities were available for the children taught by LSO teachers to write words independently, but hearing and recording sounds in words with or without some contribution from the teacher was the most favoured solving word-strategy

promoted. Throughout the course of the child's program, LSO teachers occasionally wrote words for the children that they believed to be too difficult, particularly at the early and middle stages of the child's program.

Waiting for the student to initiate some sort of word-solving strategy was less evident in the instruction of LSO teachers. Throughout the course of the intervention they infrequently waited for three seconds or more as the child either pondered a word-solving strategy to initiate, or solved the word independently. LSO teachers frequently stepped in quickly to co-construct words with children. This did not appear to be a contemplated move, but rather, a habitual way of responding. The children all made gains in writing, and four of the five were able to work within a regular classroom program without tutorial support by the end of the school year. One child was identified as needing further, long-term support.

Implications for Instruction

Seven efficient instructional strategies have emerged as the result of this study. The profile of teachers from schools with highly successful outcomes has provided insights into beneficial teaching practices.

1. Children in a writing tutorial setting benefit from ongoing low level support to guide their decision making as they problem solve words. As they gain control of more and more aspects of the writing process, the teacher, who acts as a knowledgeable guide, can provide a small amount of direct teaching, telling, demonstrating and strategy modelling for problem solving words. High levels of tutorial support, such as teaching, demonstrating and modelling word-solving, is

beneficial when it occurs with relatively low frequency throughout the entire course of an intervention.

2. The data indicates that it is imprudent to overwhelm a child with many new points of learning in one lesson. Knowledge of the student's understandings at any given point in time can help the teacher to plan appropriately for the next, most beneficial teaching point.

3. Planning for instruction in order to support the child's strategic writing development, was a critical factor in determining successful outcomes. More specifically, planning directed at developing or strengthening some aspect of the writing process was beneficial. When the teacher has determined a course of action prior to an intensive tutorial situation, teacher talk was focussed and time well used. The data has shown that attention to strategic planning was related to highly successful outcomes.

4. Students should be able to write the vast majority of words in stories they compose independently. This pattern was evident for all participants in this study. Independent word-solving increased over the course of the intervention. A qualitative analysis of students' stories indicates that the complexity of these words changed from early to later lessons. Attention to the complexity of the words the student adds to his or her repertoire of known words is important in order to monitor the increasing word knowledge. Solving words that were new was a task that was often shared by the student and teacher together. The

contingency support required was reduced when the student began to problem solve on his or her own.

5. When planning for the development of word-solving strategies in writing, attention to the amount of time teachers wait before offering support must receive attention. It was clear that students need some time, three seconds or more, to initiate word-solving for themselves. When wait time is provided, students increased the number and variety of words they were able to write independently and needed fewer highly supportive teaching moved by their tutors.

6. The word-solving strategies that were most effective when taught, prompted and promoted were those that involved more than one solving method for a particular word. Thinking about words in more than one way encouraged the flexibility that students needed in order to be able to problem solve on their own. That is, students benefited when a new word was analysed phonemically and linked to known words or other knowledge that students had within their repertoires.

7. It was more effective for children to write about personal experiences more frequently than it is to have them retell a story in writing. While the conversation between the teacher and child may centre on a personal response to a story, the story that evolves should centre on the child's own activities. An individual, child-centred perspective to the story may have helped a child relate personal experiences in a language structure more similar to that used in a story, but children need not be guided to write about the story from an objective viewpoint.

This factor must be considered as teachers plan for the stimuli they use to engage children in conversation during the pre-writing phase of the lesson.

Implications for Further Research

The results of this study may have been affected by experiences the children had been involved in within the classroom setting. The teachers in this study were working with students who had entered the Reading Recovery program in the second half of the year. That is, they were still the lowest achieving students in their classes after six months at school. While their scores on *An Observation Survey of Early Literacy Achievement* (Clay, 2002) may have been very low, results reflected confusions and gaps in knowledge rather than lack of classroom experience or exposure to literacy instruction. Future investigations are necessary with children entering the program in the first part of the school year in order to determine the pattern of contingency support required when children know very little about literacy.

Teachers' theoretical orientation to the writing process plays an important role in determining the learning opportunities provided to students. Further study into teachers' background knowledge, experience in teaching writing to young children and personal perspectives about instruction would clarify the way that the development of the writing process is supported by teachers. Additionally, research into teachers' stated beliefs versus teaching practices would provide valuable insights.

Composing is an integral part of the writing process. More investigation into the conversations between teachers and students before recording the words of the story takes

place may be warranted in order to establish the way teachers shape young children's stories. Consideration must be given to how that support shifts over time. Teacher support to increase the complexity of stories composed by children should be correlated with the number of opportunities the children have to solve new and unusual words, plan stories with changing structures, and create compositions with more meaningful content.

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Appendices

Appendix A

Scores on *An Observation Survey of Early Literacy Achievement* (Clay, 2002) Tasks Connected to Writing

		Hearing And Recording Sounds In Words				Writing Vocabulary			
		at entry to Reading Recovery		when leaving Reading Recovery (discontinuing/referral for long term support)		at entry to Reading Recovery		when leaving Reading Recovery (discontinuing/referral for long term support)	
subject	leaving status	raw score	stanine	raw score	stanine	raw score	stanine	raw score	stanine
Student 1	disc	22	3	34	4	16	3	52	5
Student 2	disc	20	3	37	6	13	2	50	5
Student 3	disc*	15	2	37	6	12	2	63	6
Student 4	disc	22	3	37	6	13	2	48	5
Student 5	disc	22	3	37	6	32	4	45	4
Student 6	ref**	3	1	31	3	5	2	21	2
Student 7	disc	34	5	37	6	32	4	80	7
Student 8	disc	23	3	37	6	15	3	70	7
Student 9	disc	19	2	36	5	15	3	45	4
Student 10	disc	21	3	32	3	12	2	35	3

**disc* designates a student who was successfully discontinued from daily tutoring in literacy
** *ref* designates a student who has been referred for long term specialist support in literacy

Appendix B

Observation Sheet

Observation # ___

Date : _____

Teacher/Student: _____

School: _____

Lesson number: ___ Start Time:_____ End Time: _____

Writing Focus for lesson: _____

Story: _____

Inter-action number	Wait time for co-constructed words	actor c = child t = teacher	Comment or action	Non-verbal action by teacher	level of contingency support	Solving strategy prompted by teacher

Total Number of words in interaction: _____

Total Number of conversational turns devoted to composing:_____

Total Number of conversational turns:_____

Teacher's reflection on the lesson:

Word Solving

Child Solved	Co-constructed 2 sec. or less	Co-constructed 3 sec. or less	Teacher Written

Appendix C

Stories Composed and Written by Children from Early to Late

Student One

1. It is so windy. It is super cold.
2. My chicken pox are itchy.
3. The big case was stuck in the field
4. The Case is the boss of the tractors and the semi truck is the boss of the trucks.
5. They have the same seat and the same smoke stack.
6. He was not hungry. He ate the car and the bike.

Student Two

7. I made a book with a pig in it.
8. My uncle is going to Calgary and I said "bye".
9. I was sick and Miss Smith missed me.
10. I have a baseball game in three days.
11. I had Skooter before Christmas and I love him lots.
12. I have a rose hat that has roses that look like real roses.

Student Three

13 The fat cat ate too much fish.
14. The puppet people made the puppets jump.
15. Snakes can be dangerous if they are not your pet.
16. The giant was silly because he cried and a boy helped.
17. If I saw a T Rex I would say "Can't you pick on someone bigger?"
18. I have a car that can flip in the air when it goes fast.

Student Four

19. I gave Ella a cookie and a cracker.
20. I like to play in the pool and dunk my head.
21. I like to jump on the trampoline.
22. A bee can get a goat out of the turnip field by stinging them.
23. It was my party! The piñata had candy and lollipops, too.
24. I think that the tongue is sticking out because he is looking at a kangaroo.

Student Five

25. I got pajamas with lambs and numbers
26. I got some Pokemon toys from Sean and James
27. I was yawning and my ear popped.
28. A little old woman made a gingerbread man. She made a button out of smarties.
29. I went to the garage sale. I got lots of things.
30. The little duckbill heard the T Rex. She heard him coming. She hid in the ferns.

Student Six

31. The big hill is a dinosaur.
32. She found the book in the couch.
33. The animals made a trap.
34. I like to run in the sprinkler when its hot.
35. I'm going to make a play movie.
36. My brother is nine. My brother went to roller blade.

Student Seven

37. Shelby and I were playing in the broken fort.
38. Some kids play in puddles.
39. It is warm outside today. I had fun on the structures.
40. On the weekend I played with my friend's dog.
41. They made a gingerbread man. It came alive.
42. The boy did not protect the sheep. The sheep died.

Student Eight

43. My mom is at home.
44. I like to play hockey.
45. I like eating hot dogs.
46. My dad is going to Toronto.
47. Toby and B.J. had to get a cow out of a ditch. He lived in a farm.
48. I threw water balloons at the pilot and I hit him in the arm.

Student Nine

49. I like going in the toilet machine because I like getting soaked.
50. I saw my sister graduate and I liked it.
51. My mom is coming to school in two days.
52. I had a party for my birthday.
53. We are going to have a party in my class.
54. Jamie is my friend and we like to play war.

Student Ten

55. The baby is hungry.
56. Kitty cat likes to play in the house.
57. If you rake all the leaves up I will give you your money.
58. They were trying to scare the girls on the hard top.
59. He was feeling very sad when he came to his house.
60. They wanted to eat the sweet green grass so they went over the bridge.

Appendix D

An Analysis of the Method of Solving Raw Data Chart

total number of words in composition	1	2	3	4	5	6	7	8	9	10	11
	percent	percent	percent	percent	percent	percent	percent	percent	percent	percent	percent
HSO in early lessons 8	50	0	25	12.5	0	12.5	0	0	0	0	0
5	40	0	20	0	0	40	0	0	0	0	0
19	63.1	0	10.5	0	5.3	0	0	0	21.1	0	0
11	72.7	0	0	0	9.1	9.1	0	0	9.1	0	0
9	66.7	0	22.2	0	0	11.1	0	0	0	0	0
10	50	0	0	0	10	10	20	0	0	0	10
8	75	0	12.5	0	0	0	0	0	0	12.5	0
8	62.5	0	25	12.5	0	0	0	0	0	0	0
10	60	20	10	0	0	0	0	0	0	0	10
13	38.6	0	7.6	0	0	23.1	30.8	0	0	0	0
HSO Mean for early lessons 10.1	52.69	2	13.28	2.5	2.44	10.58	5.08	0	3.02	1.25	2
HSO in middle lessons 8	50	0	0	0	12.5	25	0	0	12.5	0	0
7	28.6	0	14.3	0	14.3	14.3	0	0	28.6	0	0
7	28.6	0	14.3	0	14.3	14.3	0	0	28.6	0	0
10	30	10	20	0	0	20	0	0	10	0	10
11	54.5	0	27.3	0	0	9.1	0	9.1	0	0	0
14	71.4	14.3	0	7.2	0	0	0	0	7.2	0	0
14	64.3	0	28.6	7.2	0	0	0	0	0	0	0
8	50	0	12.5	0	0	0	0	0	37.5	0	0
11	63.6	9.1	0	0	0	27.3	0	0	0	0	0
7	57.1	0	28.6	0	0	0	0	0	14.3	0	0
HSO Mean for middle lessons 9.91	53.78	2.64	13.69	2.00	3.24	10.78	2.66	0.43	8.19	0.65	1.52

HSO in late lessons 10	50	0	10	0	10	0	30	0	0	0	0
14	35.7	14.3	21.4	7.1	0	7.1	0	0	0	0	14.3
11	63.6	0	9.1	0	0	18.2	0	0	9.1	0	0
15	66.7	0	0	0	6.7	30	0	0	6.7	0	0
7	28.6	14.3	14.3	0	0	14.3	0	0	14.3	0	14.3
9	33.3	0	22.2	0	0	11.1	0	0	22.2	0	11.1
7	57.1	0	28.6	0	0	0	0	0	0	0	14.3
14	35.7	14.3	21.4	0	0	14.3	7.1	0	0	0	7.1
11	72.7	9.1	9.1	0	0	0	0	0	0	0	9.1
15	60	0	33.3	0	0	6.7	0	0	0	0	0
7	28.6	0	28.6	0	0	0	14.3	0	28.6	0	0
HSO mean for late lessons 10.24	50.48	3.30	14.90	1.62	2.73	10.14	3.44	0.52	7.94	0.72	3.37
LSO for early lessons 6	50	0	33.3	0	0	0	0	0	16.7	0	0
10	70	0	10	0	0	0	0	0	20	0	0
10	20	0	10	0	0	0	30	0	40	0	0
9	44.4	0	11.1	0	11.1	0	0	0	33.3	0	0
5	40	0	0	0	0	0	0	20	40	0	0
12	66.7	0	0	0	0	0	8.3	8.3	16.6	0	0
9	66.7	0	0	0	0	11.1	11.1	0	11.1	0	0
9	33.3	0	0	0	0	0	11.1	0	44.4	0	11.1
10	60	10	0	0	0	0	0	0	30	0	0
5	80	0	0	0	0	0	0	0	20	0	0
LSO mean for early lessons 9.85	52.20	2.60	13.25	1.20	2.31	8.18	3.95	0.87	12.30	0.34	2.69
LSO for middle lessons 5	40	0	60	0	0	0	0	0	0	0	0
5	80	0	0	0	0	0	0	0	20	0	0
5	80	0	0	0	0	0	0	0	20	0	0
6	83.3	0	0	0	0	0	0	0	0	0	16.7
17	58.8	0	35.3	0	0	0	5.9	0	0	0	0
14	57.1	0	0	0	0	7.1	7.1	0	28.6	0	0

12	58.3	0	0	0	0	0	8.3	0	33.3	0	0
9	55.6	0	0	0	0	0	0	0	44.4	0	0
9	55.6	0	11.1	0	0	0	0	0	22.2	0	11.1
7	71.4	0	14.3	0	0	0	0	0	14.3	0	0
10	70	0	10	0	0	0	0	0	20	0	0
LSO mean for middle lessons 9.68	54.63	2.25	12.98	0.96	1.86	6.70	3.56	0.70	13.50	0.28	2.66
LSO for late lessons 8	62.5	0	12.5	0	12.5	0	0	0	12.5	0	0
10	80	0	10	0	0	0	0	0	0	0	10
4	50	0	25	0	0	0	0	0	0	0	25
8	37.5	0	37.5	0	0	0	0	0	0	0	25
13	53.8	0	23.1	0	0	0	0	0	23.1	0	0
11	54.5	9.1	18.2	0	0	18.2	0	0	0	0	0
11	54.5	9.1	27.3	0	9.1	0	0	0	0	0	0
14	50	0	14.3	14.3	0	14.3	7.1	0	0	0	0
LSO mean for late lessons 9.70	54.71	2.26	13.96	1.06	1.96	6.38	3.23	0.61	12.39	0.24	3.25

Appendix E

Observations of Instructional Contingency Levels (Wood, 2003)
Raw Data

Subject	Observation	St. Dev.	AV	1	2	3	4	5
1	1	1.07	2.20	13	27	12	8	2
1	2	1.39	2.59	14	10	8	13	5
1	3	1.06	2.43	7	12	14	3	2
1	4	1.40	2.36	14	21	4	1	9
1	5	1.46	2.49	13	20	5	1	10
1	6	1.35	2.19	15	19	4	1	5
2	1	1.07	1.90	24	23	6	3	3
2	2	1.61	2.45	22	21	1	1	17
2	3	1.18	2.17	13	26	1	3	5
2	4	1.62	2.53	21	20	1	1	17
2	5	0.94	1.73	22	13	5	1	0
2	6	0.91	1.76	17	23	0	1	0
3	1	1.38	2.54	21	29	8	9	13
3	2	1.17	2.17	17	9	12	4	2
3	3	1.59	2.91	13	13	1	0	0
3	4	1.41	2.43	15	20	2	5	5
3	5	1.24	2.28	13	13	5	4	2
3	6	1.46	2.25	16	11	0	6	3
4	1	1.07	1.86	18	14	4	3	1
4	2	1.10	2.18	16	32	5	7	3
4	3	1.16	2.00	22	19	6	1	4
4	4	1.10	2.09	14	21	3	3	2
4	5	1.35	2.50	19	16	2	1	4
4	6	1.46	2.49	10	33	2	1	6
5	1	1.27	1.93	11	12	7	4	4
5	2	1.19	2.23	18	13	7	7	6

5	3	1.38	2.52	12	14	3	9	4
5	4	1.41	2.53	13	25	5	3	10
5	5	1.49	2.79	9	16	5	4	9
5	6	1.64	2.74	10	11	3	2	8
6	1	1.64	2.76	6	16	0	1	10
6	2	1.81	2.95	22	4	4	6	20
6	3	1.39	3.50	4	8	5	12	13
6	4	1.57	2.64	32	30	3	9	19
6	5	1.48	2.54	11	15	2	4	5
6	6	1.52	2.59	22	26	5	9	12
7	1	1.75	3.22	10	7	2	8	15
7	2	1.57	2.37	5	9	0	0	2
7	3	1.72	2.88	5	8	1	1	6
7	4	1.81	3.27	10	4	1	5	13
7	5	1.64	2.96	14	7	2	14	7
7	6	1.59	3.79	4	0	0	11	5
8	1	1.80	3.24	11	7	2	8	15
8	2	1.67	2.33	6	9	0	0	3
8	3	1.82	2.92	5	8	1	1	6
8	4	1.87	3.30	10	4	1	5	13
8	5	1.70	3.00	13	7	2	13	7
8	6	1.66	3.80	4	0	1	11	5
9	1	1.81	3.43	15	18	0	8	36
9	2	2.06	3.58	6	1	0	4	11
9	3	1.86	2.22	9	8	0	0	2
9	4	1.97	2.89	7	8	0	2	6
9	5	1.64	2.95	4	16	5	3	6
9	6	1.77	3.34	16	7	4	15	19
10	1	1.64	2.96	22	28	18	9	23
10	2	1.78	3.31	5	12	3	9	12
10	3	1.81	2.33	16	10	1	5	3
10	4	1.81	2.24	18	7	3	4	2

10	5	1.62	2.88	5	24	3	8	6
10	6	1.66	2.39	19	25	1	7	5

Appendix F

Opportunities for Solving
Raw Data

subject/ time in program	*words solved independently*	*teacher written*	*co-constructed 2 sec or less*	*co-constructed 3 sec +*
HSO early				
	4	0	1	3
	2	0	0	3
	6	0	0	3
	1	1	1	3
	2	0	2	3
	2	0	2	3
	4	0	1	3
	7	0	0	4
	2	1	2	2
	3	1	1	4
HSO middle				
	4	0	2	2
	12	0	2	4
	6	0	0	2
	5	0	1	3
	3	1	1	5
	6	0	1	4
	4	0	1	2
	5	2	2	5
	4	1	0	2
	5	1	3	5
HSO late				
	5	0	2	3
	8	0	1	2
	6	1	0	2

	5	0	0	8
	10	0	1	3
	9	0	1	4
	7	0	0	
	10	0	0	5
	8	1	1	1
	9	0	2	4
LSO early				
	3	0	3	0
	2	0	5	0
	4	0	4	1
	2	0	3	0
	4	0	1	0
	4	0	1	0
	7	0	5	0
	5	0	3	1
	2	2	0	0
	3	2	0	3
LSO middle				
	2	0	3	0
	7	0	3	0
	8	0	3	0
	6	0	4	0
	4	0	1	0
	5	1	0	0
	5	1	3	0
	4	0	3	0
	7	0	5	1
	7	0	0	7
LSO late				
	5	0	3	0
	2	0	8	0

3	1	5	0
6	0	3	1
10	0	6	1
8	0	5	1
6	0	4	0
8	1	1	0
7	0	6	1
7	0	6	0