# A STUDY OF INFERRING ACTIVITIES IN A SELECTED GRADE FIVE BASAL READING PROGRAM

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# A STUDY OF INFERRING ACTIVITIES IN A SELECTED GRADE FIVE BASAL READING PROGRAM

by

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A Thesis submitted to the School of Graduate Studies
in partial fulfillment of the requirements for the degree of
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ABSTRACT

This study was an examination of the prescription, extent and nature of the teaching of inferring in a basal reading program widely used in Canada. Using a skills-trace approach, all activities in the Teacher's Resource Book (TRB) and pupil components of the grade five Nelson Language Development Reading (LDR) Networks program were studied in order to complete this examination.

An overview of the results are as follows. Of the 281 activities prescribed for the Ripple Effects anthology and related components, 86 (30.6%) were identified as inferential. Moreover, 96 (33.2%) of the 289 activities prescribed for the Time Spinners anthology and related components were identified as inferential. Thus, of the 570 activities prescribed for this program, only 182 (31.9%) were identified as inferential. A variety of methodologies was used to teach inferring, the most common being composing, discussing, questioning, representing schematically, and skimming. However, neither of these was used in any unique way to teach inferring specifically.

On the basis of these results, the following conclusions are made. It can be claimed that inferring is prescribed for teaching in the Nelson LDR Networks program, however, the extent of this prescription is only minimally higher than reported in earlier studies. It seems that the authors of the program have not paid sufficient attention to current theory

on inferring, a most essential process to reading comprehension.

Conclusions for basal program development and further research are provided.

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# CHAPTER I

## INTRODUCTION

The purpose of reading is the comprehension of text. Comprehension is believed to be a collection of complex processes such as attending, predicting, analyzing, associating, synthesizing, inferring, generalizing, and monitoring, which have been identified and labelled in various ways by writers in the reading field (Collins, Brown and Larkin, 1980; Henry, 1974; Major, 1986; Phillips, 1988; Smith, 1978). This study examined one of these processes, the process of inferring. Specifically, this study examined a current grade five basal reading program to determine if inferring was prescribed for teaching; the extent to which the process of inferring was prescribed for teaching; and the nature of that prescription.

It is generally accepted by reading researchers and theorists that the ability to infer is necessary to reading comprehension (Carr, 1983; Carr, Dewitz and Patberg, 1983; Hansen and Pearson, 1983). Writers know that there is a considerable amount of knowledge that they share with readers. It is unnecessary and impossible for writers to include all information for comprehension to occur. Some thoughts are explicitly stated in text, while others are implied by writers. Thus, readers must integrate textual information with background knowledge to construct meaning. As Johnson and Smith (1981) noted, readers "need not be told

everything because we use our knowledge of the world to extend and add to the literal meanings. This inferential ability is a critical component of communication and of comprehension in general" (p. 1216). Inferring enables readers both to extend and enrich the explicit meaning of text and to connect the explicit propositions with those that are understood or implied (Phillips, 1988). Inferential ability facilitates the understanding of text. Consequently, any effective and comprehensive approach to reading instruction must provide for the development of children's inferential abilities.

Basal reading programs are used in many schools to teach reading. One current program, the Nelson Language Development Reading (LDR) Networks for grade five, was examined in this study to determine the extent to which inferring was prescribed for teaching and the methodologies presented for teaching inferring.

## Background of the Study

The ability to read with understanding is a basic lifeskill that contributes to success in a modern, technologically advanced society. Without the ability to read well, opportunities for personal fulfillment and job success will inevitably be lost. Yet reading is a skill that a substantial number of people never completely master. Anderson, Hiebert, Scott and Wilkinson, the authors of the Report of the Commission on Reading (1985), concluded that

most children and young adults can understand what they read and can express their understanding of the literal meaning of what they read, however, only a small percentage can reason effectively about what they read.

As a teacher, I often hear junior high and high school teachers complain that, when children reach their classes, many are expert "word callers" and can recall explicit facts given in text, but are unable to understand ideas implied by text. Research has shown that, even when children leave high school, many are still unable to reason effectively (Anderson, Hiebert, Scott and Wilkinson, 1985). Often I hear teachers, both at meetings and in conversation, discuss the fact that children are able to read text, but many are poor comprehenders. This suggests possible weaknesses in the reading instruction that children receive. It is reasonable to expect that a major objective of reading instruction is, or should be, to foster in children the ability to understand what they read. Considering the importance of inferring to comprehension, it seems that insufficient attention has been given to inference instruction in reading programs.

It has been estimated that between 80 and 90 percent of children in the United States are taught to read through the use of a basal reading series (Miller, 1986). There is little reason to believe that things are much different in Canada. Since basal programs are the primary means for reading instruction, it is important to know if they actually

include teaching suggestions and activities that will help children to reason effectively, that is to infer, as part of the comprehension process. Earlier studies revealed that the process of inferring gets no more than a passing mention in many basal reading series (Chou Hare and Pulliam, 1980; Durkin, 1986; Durkin, 1981; Guszak, 1967; Major, 1986). Since research has shown that children do not infer spontaneously when they first encounter print, it is important that they receive direct, explicit instruction on inferring (Carr, Dewitz and Patberg, 1983; Hansen and Hubbard, 1984).

As a teacher, I am concerned about why many of our children are unable to infer when reading. Are the reading programs that are being used in our classrooms providing the instruction needed to facilitate children's comprehension abilities? I feel it is important that children be taught to read using materials that incorporate the most up-to-date concepts in reading. If basal reading programs form the foundation of reading instruction in many schools, then it is important to ask if current basal programs incorporate the most recent research and theory on inference which is taken to be a necessary part of comprehension.

## Purpose of the Study

The purpose of this study was to examine the Nelson LDR Networks Program, a current grade five basal reading program, to answer the following three questions: First, is inferring

prescribed for teaching in this program? Second, to what extent is inferring prescribed for teaching? Third, what methodologies are prescribed for teaching inferring?

## Significance of the Study

Over the past two decades there has been a significant increase in the amount of research on the process of inferring. This research has underscored the importance of inferring to reading comprehension. As Kintsch and van Dijk (1978) wrote: "comprehension always involves knowledge use and inference processes" (p. 364). Therefore, it is reasonable to expect that children be taught to develop their inferential abilities, so that they have a greater possibility of comprehending what they read.

Since the ability to infer while reading is so important, it would seem logical that the most utilized method of reading instruction, basal readers, would incorporate and place emphasis on inferring. Yet, earlier studies have shown that this is not so. It would appear appropriate to ask whether research on inferring is reflected in current basal reading programs. These programs should both emphasize to teachers that the ability to infer is important for children's comprehension, and provide up-to-date strategies for teaching inferring skills. If basal programs do not provide explicit instruction on inferring, then teachers need to be aware of this, so that they can prepare and use alternate strategies to complement the

programs. Hence, the importance of this study, to determine whether or not inference instruction is provided for in a current and widely used basal reading program. In addition, it is hoped that this study will contribute to the body of research on inference and inference instruction.

# CHAPTER II

## REVIEW OF RELATED LITERATURE

It is now generally accepted that the ability to infer is necessary to reading comprehension. Comprehension is more than just a process of understanding the meanings of individual words in text. Words do not convey meaning through some additive process in which the meaning of the first word is added to the meaning of the second word and so on until a reader arrives at the total meaning at the end of the sentence. Rather, reading may be compared to problem solving. Meaning does not exist solely in the printed words of text. Writers cannot explicitly state everything, they omit details that they expect readers to know. Readers must use the explicitly stated information and integrate it with their background knowledge to infer meaning. Anderson and Pearson (1984) noted that comprehension results from the "interaction of new information with old knowledge" (p. 255). This process by which textual information is integrated with background knowledge is defined as inferring (Beebe and Phillips, 1980; Major, 1986; Whitney, 1987).

Research has shown that children have a natural inferential ability (Hansen and Hubbard, 1984; McIntosh, 1985), however, children do not spontaneously carry this ability to their reading (Carr, 1983; Johnson and Smith, 1981; Paris and Lindauer, 1976). Many children require direct inference instruction both to help them realize that

they must use their inferential abilities and to help them develop strategies that facilitate inferring (Pearson, 1985; Poindexter and Prescott, 1986; Wilson, 1983). Since basal reading programs appear to be used extensively for reading instruction in both Canada (Fagan, 1985; Major, 1986) and the United States (Clary and Smith, 1986; Duffy and Roehler, 1986), it is reasonable to expect that such programs would provide inference instruction and activities. However, while inference instruction has been offered in basal reading programs, research has shown that this instruction has not been as extensive as research suggests it should be (Bacharach and Alexander, 1986; Beck, 1984; Durkin, 1981).

The purpose of this chapter is to review the literature pertaining to inferring and inference instruction. This review has been completed in sections under the following headings: Inferring: a working definition; the role of inferring in reading comprehension; the ability of children to infer; utilization of basal reading programs in North American schools; the importance of good questioning practices to reading comprehension; and weaknesses of basal reading programs in developing inferential comprehension.

## Inferring: A Working Definition

Inference has been defined by researchers and theorists in a variety of ways. However, most definitions have the common element of a reader integrating textual information with background knowledge to construct meaning. Johnson and

Smith (1978) noted that inference is a critical component of comprehension. They defined inference as an ability which enables a reader to go beyond the information given to infer conclusions. Other researchers have defined inference as the ability or skill which allows a reader to read between the lines to understand implied relationships (Carr, Dewitz and Patberg, 1983; Paris and Upton, 1976; Poindexter and Prescott, 1986). Some writers have defined inference in very general terms, referring to it as one of the skills necessary for comprehension (Carr, 1983; Kail, Chi, Ingram and Danner, 1977).

Others have referred to inference as a general comprehension process. For instance, Beck (1984) defined inference as one of a number of interacting subprocesses which comprise the complex process of comprehension. Others have defined it more specifically as a process whereby a reader synthesizes textual information and background knowledge in order to comprehend text (Anderson and Pearson, 1984; Holmes, 1983; Malicky and Norman, 1985; Wilson, 1979).

Fundamental to the concept of inference used by those referred to above, including Beebe and Phillips (1980); Collins, Brown and Larkin (1980); Gauthier (1987); Kintsch and van Dijk (1978); McIntosh (1985); Phillips (1987; 1988); Poindexter and Prescott (1986); and Smith (1978), is that the explicitly stated information is not sufficient for comprehension. A reader has to construct an interpretation,

either deliberately or automatically from the implicit messages in text. In order to do this, a reader must infer. The inferred interpretation is good to the extent that there is a logical and plausible fit between the textual information and background knowledge.

The fundamental concepts of the above researchers have been incorporated into the working definition of inferring that is used to guide this study. Inferring is a cognitive process whereby a reader constructs meaning by integrating textual information with his or her background knowledge. A reader must infer in order to comprehend text. The next section will discuss the role of inferring as it relates to reading comprehension.

## The Role of Inferring in Reading Comprehension

That the ability to infer is one of the processes necessary to reading comprehension has been widely accepted by reading researchers and theorists for the past twenty years. Prior to this, only a few researchers seemed to recognize the inferential nature of reading comprehension. Thorndike (1917) noted that the process of reading is typical of the process of thinking. Readers organize and analyze textual information, weighing it against background knowledge and experience, making necessary modifications or seeking further clarification until understanding is achieved. Thorndike wrote:

> Understanding a paragraph is like solving a problem in mathematics. It consists in selecting the right

> elements of the situation and putting them together in the right relations, and also with the right amount of weight or influence or force for each. The mind is assailed as it were by every word in the paragraph. It must select, repress, soften, emphasize, correlate and organize, all under the influence of the right mental set or purpose or demand (p. 329).

Two decades later, Gray (1937) expressed similar thoughts and expanded upon the ideas put forward by Thorndike. Gray, like Thorndike, equated the processes used in reading to those of thinking. He wrote that an understanding of the process of reading:

> (A)ssumes that the reader not only recognize the essential facts or ideas presented (in text), but also reflects on their significance, evaluates them critically, discovers relationships between them, and clarifies his understanding of the ideas apprehended (p. 26).

That is to say, that a reader analyzes important or relevant textual information, judges it, seeks clarification, and arrives at an understanding of the information read. The Committee on Reading of the National Society for the Study of Education (1949) expressed the viewpoint that reading is more than just a 'thought-getting process'. They considered reading to be a complex organization of higher mental processes which require a reader to think, imagine and solve problems, and to evaluate, judge, and reflect on text in order to achieve understanding.

Without labelling it explicitly as inferring, the aforementioned theorists and others acknowledged the inferential nature of reading comprehension. They recognized

that readers have to actively search out meaning by analyzing and comparing textual information against their own existing knowledge in order to comprehend text. It was some years later that researchers labelled the process as inferring. Orasanu and Penney (1986) noted that in 1957 Jerome Bruner characterized the mind as an inference machine. Bruner concluded that the mind uses knowledge that it already possesses to interpret and organize information in terms or relationships not explicitly provided by an external stimulus such as text. More recent researchers have confirmed Bruner's conclusion, at least insofar as it relates to reading, that comprehension always involves knowledge use and inference processes (Anderson and Pearson, 1984; Beck and Carpenter, 1986; Brown, Armbruster and Baker, 1986; Farr, Carey and Tone, 1986; Kintsch and van Dijk, 1978; LaZansky, Spencer and Johnston, 1987; White, Vaughn and Rorie, 1986; Wilson and Anderson, 1986). Wilson (1979) synthesized the thoughts of earlier writers when she wrote that "reading is thinking, and inference is a skill that underlies both the study of thought and that of reading comprehension" (p. 244).

It has become widely accepted that readers must read between the lines or beyond the explicitly stated textual information in order to understand implied relationships (Carr, 1983; Johnson and Smith, 1981; Paris and Upton, 1976; Pearson, Hansen and Gordon, 1979). Writers use certain conventions of writing, omitting information that they know

readers will provide, based on shared knowledge of language, communication, culture and content. Kintsch and van Dijk (1978) wrote:

> Natural language discourse may be connected (in reading) even if the propositions expressed by the discourse are not directly connected. This possibility is due to the fact that language users are able to provide, during comprehension, the missing links of a sequence on the basis of their general or contextual knowledge of the facts. In other words, the facts, as known, allow them to make inferences about possible, likely or necessary other facts and to interpolate missing propositions that make the sequence coherent (p. 365).

This means that readers must use their inferential abilities to extend and enrich the explicit information in text. Inferential abilities are also used to connect the explicit textual information with readers' own background knowledge. If a reader is successful at inferring, that is, if a reader has made a valid inference, comprehension results.

Wilson (1983) constructed a model which summarizes the views of researchers in the field of reading comprehension. In discussing the model, shown in Figure 2.1, Wilson stated, "the reader's prior knowledge and inferencing skills are at the core of the model, reflecting the conviction that comprehension involves connecting information from the text to information already stored in the reader's head" (p. 383). Wilson does not claim that this is a complete model of the reading comprehension process. The model does present some of the language and reading skills involved in reading comprehension. However, it does not portray such factors as

comprehension strategies or reader characteristics such as reader interest and motivation, purpose for reading, reading proficiency, or the reader's perception of the writer's interpretation. Rather, it appears that the model was intended primarily to portray the central role of inferring in comprehension. Wilson noted that comprehension difficulties can arise if there is a lack of information in any part of the model. This means that, if a reader does not know how, or has not adequately developed the ability to infer, comprehension is impaired and an erroneous interpretation of text will likely result.

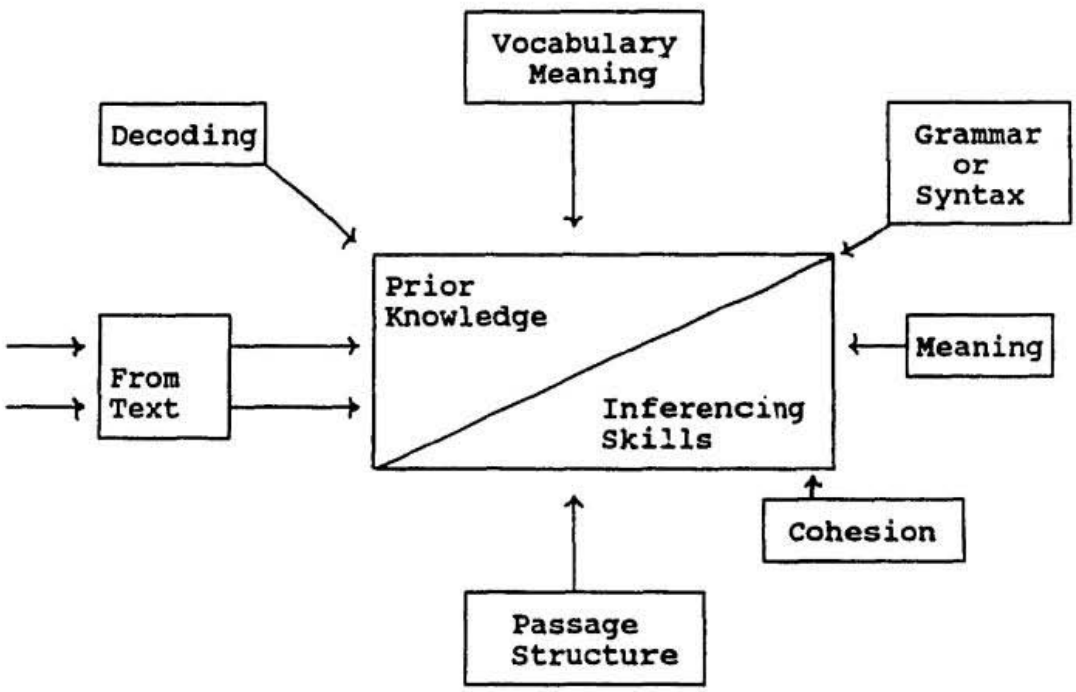



Figure 2.1: Model of Reading Comprehension (Wilson, 1983, p. 383)

Many researchers have noted that the ability to infer is a prerequisite to reading comprehension. McIntosh (1985) noted that "until - and unless - readers draw inferences, a text is nothing more than a collection of separate words and sentences" (p. 755). A reader may recognize the words in text, may know the meaning of the individual words, and may be a fluent oral reader, however, this does not mean that he or she understands text. Smith (1978) observed, "meanings do not lie at the surface of language but far more profoundly in the minds of the users of language; in the mind of the speaker or writer and in the mind of the listener or reader" (p. 71). The meanings of the individual words in text cannot be 'added up' to give the meaning of text as a whole. The reason provided by Spiro, Bruce and Brewer (1980) is the following:

> Because the meaning of text is only partially determined by the text itself reading must be an inferential, constructive process, characterized by the formation and testing of hypotheses or models about what the text is "about", a process similar in many ways to problem solving (p. 3).

This means that a reader constructs meaning by analyzing text, developing plausible interpretations and confirming, modifying or abandoning these interpretations as he or she reads further. Words often acquire meaning as a result of the way they are used. Even easily understandable words tend to have a multiplicity of meanings, the most correct or applicable being determined by the context in which it is used.

In analyzing text, a reader assesses both the content of text and the style and structure of the writing used by the writer to convey meaning. Farr, Carey and Tone (1986) observed:

> The emerging model of comprehension asserts that comprehension is an active process in which the reader constructs meaning from text cues, calling upon knowledge of language, text structures and conventions, content concepts and communication. This process is essentially inferential, with readers using their existing knowledge to link discrete pieces of information in the text, to ascribe appropriate meanings to words, and to fill in implied information (p. 136).

Through the process of inferring, a reader constructs meaning, using all aspects of text and integrating it with his or her relevant knowledge.

In summary, research indicates that the ability to infer is necessary to reading comprehension. An obvious corollary is that if children are to comprehend text, then they must develop the ability to infer. I believe that it is important to know whether or not inferential ability develops automatically or if it is an ability that must be taught. If it develops automatically, there may not be any need to provide explicit inference instruction. If it is developmental, then would explicit inference instruction improve children's inferential ability? If the ability is learned, can all children benefit from inference instruction, or would such instruction be of benefit to children only after they reach a certain age? The answers to these questions would naturally affect how, when and if inference

instruction would be provided, and would also influence how and when basal publishers would provide inference methodologies. The next section discusses the ability of children to infer.

## The Ability of Children to Infer

If children are unable to infer, then is it possible for them to comprehend text? If inferring abilities develop at a specific age or stage in children's lives, then it would seem to be beneficial to comprehension if reading programs included inference instruction from that age or stage of maturity.

Prior to 1970, many educators believed that young readers' comprehension abilities limited them to oral reading and to the memorization of text. Pearson (1985) observed "our view of the comprehension process was driven by our fixation upon the text as an object of study. Comprehension was viewed as some degree of approximation of text read" (p. 726). The ability to infer was considered to be a higher order process and, as such, was beyond the ability of young children. In keeping with this perspective, many basal programs did not introduce inferential activities or inference instruction until students reached grades 5 or 6. However, within the last two decades this perspective has changed.

Research has shown that children, even those who are very young, have the ability to infer. Hansen and Hubbard

(1984) noted that even toddlers infer regularly in their daily lives. This suggests that the ability to infer is automatic, since very young children do not receive explicit inferential instruction. In extending the research on this topic, McIntosh (1985) noted that "in children's first few years of life most of their learning is the result of inferences they have had to make about the world" (p. 756). Researchers have also examined young children's ability to infer while reading.

There is growing evidence that young children have the basic ability to go beyond the information given and infer conclusions. A variety of studies have shown that young children are quite able to answer questions about implied information. Danner and Mathews II (1980) confirmed the work of other researchers when they concluded that "young children can and do make inferences based upon information they have read" (p. 908). Carr, Dewitz and Patberg (1983) observed "children have the mental ability and memory capacity to draw inferences, (however) it is also apparent that they do not do so spontaneously" when confronted with print (p. 2). This may be, as Paris and Upton (1976) suggested, because younger children do not readily engage strategies that enable them to go beyond the information given. In other words, younger children may not realize that they can, and must bring their inferring abilities to their reading.

Although older children infer more readily and make a greater number of inferences than young children, it appears that children do not automatically develop the ability to make complex inferences as they become older. This can be concluded from an observation made by Anderson, Hiebert, Scott and Wilkinson, the authors of the Report of the Commission on Reading (1985). They noted that many high school students in the United States do not have well developed inferential reading abilities. There are two possible causes for their underdeveloped inferential abilities. The first is that the students did not receive sufficient inferential instruction in earlier grades and second, their general reasoning abilities are impaired.

Holmes (1987) examined the latter possibility in a study of proficient and less proficient readers in grades five and six. She found that both groups of students were able to infer. This led Holmes to conclude that the difficulties which less proficient readers have in answering inferential questions is not a global reasoning problem. It is not a basic inability to infer that inhibits children's inferential comprehension. Rather, the research suggests that children need to realize that they have to infer while reading. It is reasonable to conclude that children need to be taught to use specific inferential strategies, since many did not engage them automatically when reading. Researchers have examined the impact of explicit inference instruction on children's

ability to infer and have concluded that children do benefit from explicit instruction.

Hansen and Pearson (1983) modified and combined two procedures devised by Hansen (1981) to determine if explicit instruction would improve the inferring abilities of proficient and less proficient grade four students. The researchers established two experimental groups, one of proficient readers and the other of less proficient readers. Two control groups, one each of proficient and less proficient readers were also set up. The experimental groups were involved in prereading activities designed to help them develop a thinking strategy. After reading, the experimental groups were asked only inferential questions. In contrast, the control groups received the prereading instruction recommended in the teacher's manual. After reading, the control groups were asked questions of which 80 percent were literal and 20 percent were inferential. This is the same ratio of literal to inferential questions found in basal manuals. Hansen and Pearson found that the less proficient readers derived a significant benefit from explicit inference instruction. However, the proficient readers did not benefit from such instruction. The researchers speculated that, had they used material at the reading level of the proficient readers, rather than material at a lower level, the proficient readers would also have benefited from direct instruction. Other studies support Hansen's and Pearson's

conclusions on the benefit of explicit inference instruction to proficient readers. Research has noted that proficient readers do benefit from instruction (Beck, Omanson and McKeown, 1982; Wilson, 1983).

It is important to know if children can transfer inferential strategies they are taught to independent reading. Carr, Dewitz and Patberg (1983) conducted a study involving grade six students to see if these students could be taught to increase their inferring abilities. They extended their study to examine whether or not children retained learned strategies and used them during independent reading. In the study, the researchers used three procedures which seemed likely to improve children's inferring abilities. The first procedure was to help activate background knowledge before reading. This step is important because many children do not realize that they must integrate textual information with background knowledge in order to comprehend text. The second procedure provided the children with a strategy to help them relate background knowledge to textual information. Third, the children were made aware of their own mental processes, through metacognitive training, and were provided with self-monitoring techniques which enabled them to transfer these procedures to independent reading. They concluded that, using these strategies, children can increase their inferential abilities and can transfer these procedures to independent reading.

It is important that inference instruction provide children with effective strategies that they can readily understand. Children need sufficient practice in order to gain ownership of these strategies for use during independent reading. Pearson (1985), in a review of reading comprehension instruction, discussed a strategy developed by Pearson and Gordon (1983) to teach children to infer. The procedure initially requires teachers to model the process and gradually, through guided practice, students learn to use the strategy independently. The procedure involves subdividing each inference activity into four subtasks:

(1) Ask the inference question;

(2) Answer the question;

(3) Find clues in text to support the inference; and

(4) Tell how to get from the clues to the answer (i.e., give a line of reasoning).

They found that grade four students who received this inference instruction became better at inferring and learned to use the procedure themselves.

Researchers continue to note that children have greater difficulty with inferential comprehension than with literal comprehension. Poindexter and Prescott (1986) noted that the ability to understand implied relationships is usually more difficult than the recall of information. Consequently, the researchers maintained that children need a specific strategy for answering inferential questions. They tested a strategy,

based on a classification of question-answer relations, identified by Pearson and Johnson (1978). The three step strategy, which was based on research by Poindexter (1985), was designed to guide children in answering questions based on text. The steps children were to follow are:

(1) See if the answer is given directly in text. If it is not, then go to Step 2.

(2) See if the answer is given indirectly in text (i.e., think and search). If not, then go to Step 3.

(3) See if the answer must come from the reader's own thoughts.

The researchers recommended that teachers first model the procedure until children learn to use it independently. The researchers observed that, on average, children who used this strategy correctly answered more comprehension questions than those who did not receive explicit instruction in inferring. This study by Poindexter and Prescott confirmed the conclusions of other researchers that children can be taught inferential strategies and that they do benefit from direct instruction.

As children gain proficiency at inferring, they internalize inferential strategies and use them spontaneously when reading. Since the purpose of reading is, generally, the comprehension of text, it is in a reader's own self-interest to make good quality inferences. Phillips (1989)

noted that "(i)nferences in reading comprehension tend to be good to the extent that a reader integrates relevant text information and background knowledge to construct complete interpretations that are consistent with both the text information and background knowledge" (p. 11). Children need to engage effective inferential strategies, and discontinue the use of unproductive strategies, if they hope to construct a more complete interpretation of text. While there has been considerable research into both the ability of children to infer and strategies that facilitate children's inferential abilities, there has been little research into the strategies used spontaneously by children to arrive at inferences. Phillips (1987) examined inferential strategies employed by proficient and less proficient readers in grade 6 and identified ten such strategies. She concluded that only seven of these strategies proved to be effective in helping children arrive at good quality inferences. The remaining three were found by Phillips to be counterproductive to inferential comprehension.

It is reasonable to conclude from the research by Phillips that children will need to be encouraged to use the seven strategies that facilitate their inferring abilities. Moreover, children need to be taught to eliminate the use of the three strategies that are counterproductive to inferential comprehension. As logical as this observation is, it may not be easily achieved. Phillips (1988) cautioned

against teaching expert adult inferential strategies directly to children. She stated that greater success might be achieved by teaching children the more rudimentary strategies which might combine later to form more advanced ones. This suggests that children might be taught strategies such as those identified previously in order to develop their inferential abilities and, consequently, to improve their reading comprehension.

In summary, researchers have concluded that children have a natural inferential ability, however, they do not automatically use this ability when they are first confronted with print. If children are to develop their expertise and gain independence in comprehending text, they need to be taught to use specific inferential strategies. They also need to have ample opportunities to practice inferring so they can improve these abilities. This is important since many researchers have concluded that the ability to infer is necessary to reading comprehension. Consequently, it is reasonable to conclude that any reading program used in the classroom must include strategies to facilitate children's inferring abilities. Basal reading programs are one extensively used approach to reading instruction that has been available for many years. The next section of this study reviews the extent to which basal reading programs are used in classrooms in the United States and Canada.

## Utilization of Basal Reading Programs in North American Schools

The roots of current reading programs extend over several centuries. Early literacy instruction was designed to indoctrinate children with certain religious values and with a sense of social responsibility. Even at the primary school level instructional materials consisted of religious maxims and teachings which expressed the fundamental tenets of religious faith. Gradually content changed, so that by the nineteenth century commercial reading programs were being used.

While content has changed, modern programs are still commercial endeavours which rely heavily on promotional activities by the publishers. Venezky (1987) maintained that our changing society forces textbook publishers to change rather than the publishers being in the vanguard of change. Publishers have not been as quick to incorporate the findings of research into their programs as some people would like. There are at least two possible reasons for this. First, there has been a wealth of research done, not only into reading comprehension, but also into cognition, educational psychology, and other relevant areas of study. With the ever increasing volume of research, it is difficult for basal reading publishers to incorporate all relevant research into their programs. A second factor is the cost of publishing a basal reading program. The Report of the Commission on

Reading (1985) noted that it costs upwards of $15,000,000 to bring out new basal reading programs. If this is so, then publishers may find it too costly to update their programs frequently.

In spite of the weaknesses and drawbacks of basal reading programs, such programs play a dominant role in current classroom reading instruction. Research has established that both the content and the quality of reading instruction in basal readers have a major influence on reading curriculum and instruction. Stauffer (1961) noted, "during the past thirty years at least 90 percent of the pupils who learned to read did so through a basal reader program" (p. 269). Subsequent research suggests that there is little reason to believe that the percentage of usage is much different today. Durkin (1984b) concluded from classroom observational studies that "elementary school programs consistently reveal the prominent role of basal materials in reading instruction" (p. 734). Farr (1984) confirmed the conclusion of other researchers when he wrote, "basal readers are the predominant influence on reading instruction in the United States today" (p. 41). Clary and Smith (1986) echoed the same conclusion when they affirmed that basal reading series are the most widely used approach for teaching reading in the United States. They referred to research by Yarington (1978) who noted that basals were the

major component of reading programs in 95 percent of the schools in the United States.

Miller (1986) expressed the opinion that the selection of a basal reading program has more direct impact on how reading instruction is provided in the classroom than any other single activity. He stated,

> Like it or not, the composition of the chosen basal program will at least influence, or at most dictate, the literature children will read, the type of skill practice activities they will complete, and the numerous other components of the process of learning to read (p. 12).

Miller reached this conclusion after reviewing the extent to which basal reading programs are used in American schools. From his research, he concluded that between 80 to 90 percent of children are taught to read through some basal reading program.

The slight variations in the estimates made by the various researchers are not relevant for the purposes of this study. What the research does show is that basal reading programs are used extensively and they have a predominant role in American classrooms. There is little reason to believe that the extent of usage of basals in Canada is any different from that in the United States. Compared to the United States, there is, in Canada, a general dearth of studies in this area.

One researcher, Fagan (1985), stated that the use of basal reading programs is so extensive in Canada that:

> (I)t appears reasonable to estimate that at least 99 percent of teachers have at one time, or are at present using such materials in prescribed form. Conversely, at least 99 percent of students will have been exposed to these materials in one form or another (p. 29).

Although Fagan does not refer to any studies to substantiate his estimate, the limited research that is available suggests that basal reading programs are also widely used in Canada.

Malicky and Norman (1985) indirectly studied the extensive use of basal reading series in Canadian schools. They posed the question "How should children be taught to read?" to educators and the synthesized response is as follows:

> In the form of a packaged basal reading series in which skills are taught in a sequential systematic manner. Although each province differs in the specific basal recommended for use in schools, there is a general assumption that formal instruction is necessary at this very crucial stage of literacy development (p. 8).

In a study of inference instruction in the primary grades, Major (1986) confirmed the conclusions stated by Fagan and Malicky and Norman that basal reading programs enjoy widespread use in Canada. After conducting a survey of all Departments of Education in Canada, Major confirmed that basal reading series were prescribed for use in at least eight provinces and two territories across the country.

In summary, it is reasonable to conclude that many children in both Canada and the United States have been taught to read through some prepackaged basal reading program. This may be because, as Beck (1984) observed,

educators assume "that basals represent the state of the art in reading instruction" (p. 3). One of the main methods of providing reading instruction to children has been through the use of questions. Questions that lead children to integrate information about the central points of a selection with their prior knowledge significantly enhanced reading comprehension. There has been much research done on the kinds of questions found in basal manuals and the questioning practices used by teachers in the classroom. The next section of this review will discuss the importance of good questioning practices to reading comprehension.

## The Importance of Good Questioning Practices to Reading Comprehension

Wilson (1979) noted that the questions children are asked may be "facilitative, detrimental or irrelevant to comprehension" (p. 235). This suggests that questions should be reviewed to determine what demands they make on students and if they facilitate comprehension. It is important that children are asked questions that further their understanding of text. Pearson and Johnson (1978) discussed three categories of question-answer relations which enable teachers to analyze the kinds of questions they ask. The first category, referred to as "textually explicit", consists of questions where the answer is stated directly in text. The second category, referred to as "textually implicit", consists of questions where the answer is not directly stated

and a reader must search text for a plausible answer that reflects a logical relationship between the question and the information in text. The third category, termed "scriptally implicit", consists of questions where the answer is not found exclusively in text but requires readers to also use background information to construct the answer. It is reasonable to expect that a reading instruction program used in the classroom would offer a reasonable balance of these various categories of questions. However, research has shown that this is not the case.

In one of the first studies into the questioning patterns of teachers, Guszak (1967) observed teacher practices in grades two, four and six. He found that the number of inferential questions asked by the teachers averaged 13.7 percent. The vast majority of questions, 71 percent, tested literal comprehension, and much of the information sought was about trivial facts in the story. The answers to these questions did not contribute to students' comprehension of text. Guszak maintained that more inferential questions must be asked. However, he did not suggest a suitable proportion of literal to inferential questions that should be asked.

Chou Hare and Pulliam (1980), using Guszak's procedure, examined the types of questions asked by thirty-five elementary school teachers, grades one to five inclusive. They found that teacher questioning practices had not changed

significantly in the intervening years. They found the proportion of inferential to literal comprehension questions was similar to that which Guszak found in his 1967 study. Chou Hare and Pulliam expressed the opinion that there is no absolute proportion of literal to inferential questions that should be asked about text, but they did suggest that teachers should be more aware of the types of questions they ask, and, where necessary, they should modify their questioning patterns. Teachers can help students achieve a better comprehension of text if they ask questions that go beyond the recall of specific textual information.

Research continues to confirm that asking well-developed questions can be an important means of facilitating comprehension. Such questions, however, should not be too general, nor should they focus on trivial or unimportant details in text. Tierney and Cunningham (1984), in their review of the literature, found that meaningful questions, which sought information about important aspects of text, facilitated comprehension. Anderson, Hiebert, Scott and Wilkinson (1985) expressed a similar viewpoint, and cautioned against asking too many questions about trivial details, rather they noted that questions that are asked "should be formulated to motivate children's higher-level thinking" (p. 56). The authors wrote "when questions about details (of text) are asked, usually they should be links in a chain of questions that lead to an inference about a hard-to-

understand part of the passage or an understanding of the selection as a whole" (p. 56). Such questions facilitate comprehension rather than just test students' recall of specific aspects of textual information.

Beck (1984) maintained that it is counterproductive to comprehension to tap students' recall of irrelevant information. She further argued that questions should even do more than just elicit specific bits of important information. Instead, she maintained that questions tap information that is central to text comprehension. Thus, questions should promote the development of a unified conception of text since children would be reading to understand rather than reading to recall unimportant, or even important bits of specific information. Questions are a way to communicate to students the points they should have understood in text.

Carr (1983) confirmed the importance of probe questions to inferential comprehension. She noted that Brown, Smiley, Days, Townsend and Lawton (1977) had determined that "probing questions elicit nearly three times the number of inference statements as are revealed in free recall" (p. 519). In concluding her research of the literature, Carr recommended that teachers analyze text to determine what information has been omitted. She suggested that questions be devised to elicit inferences about missing information. Anderson, Hiebert, Scott and Wilkinson (1985) also recommended that

postreading questions should probe the major elements of text as a means to facilitate comprehension. Questions should provide students with a strategy they can use to facilitate their understanding of text during independent reading.

While teacher-initiated and teacher-directed questioning is important to children's comprehension of text, ultimately, the ability to generate questions must be transferred to children. Children are better able to comprehend if they are able to generate their own questions (Eeds, 1981; Nolte and Singer, 1985). Schmitt and Baumann (1986) extended this argument when they wrote that children should be made aware of, and take control over their thinking processes as a means of enhancing comprehension. This process includes having students generate their own questions and search for answers to these questions while reading. Carr, Dewitz and Patberg (1989) stated that "a major obstacle for students trying to answer inferential questions is that they do not realize that they must act like detectives, searching for clues and information to construct answers" to their questions (P. 380). Children must be taught to realize that reading is a thinking activity which requires them to figure out what information they are looking for as they read. They have to be taught, as Duffy and Roehler (1987) noted, reading strategies that are flexible and which they can adapt to the needs of specific reading situations.

Before children are able to gain ownership of these strategies for independent use, it is probable that teachers will have to model the processes involved. Modelling allows teachers to gradually transfer reading processes and strategies to children. By asking children to generate their own questions, teachers get children actively involved with text before reading. Shifting the question-asking responsibility to children is an instructional strategy that is important to comprehension. When children ask questions about text, they have to decide what is important and how their answers may be confirmed, that is if answers are likely inferences, or if they must come from background knowledge or from text. To answer some of these self-generated questions, children would have to infer, since the text would not contain all of the information necessary to answer every question that might be asked.

As has been noted, certain types of questions enhance children's abilities to infer and to comprehend text. Basal reading programs provide questions throughout all components of a lesson plan. Consequently, in light of the importance of inferring to comprehension, it is reasonable to expect that a good proportion of the questions and other activities offered would be designed to enhance inferential comprehension. However, research has shown that basal programs have not placed as much emphasis on inferring as might be expected. There have been a number of weaknesses

identified pertaining to inference instruction provided in various basal reading programs. The final section of this review will discuss some of the weaknesses of basal programs as they relate to facilitating inferential comprehension.

## Weaknesses of Basal Reading Programs in Developing Inferential Comprehension Activities

The importance of questions to facilitate inferential comprehension has been discussed in a previous section. Several studies have been conducted in which the questioning practices found in the classroom and the types of questions provided in basal reading programs have been examined. Durkin (1978-1979) noted that teachers often consulted basal manuals for questions. She also found that most of the questions that were asked only tested literal comprehension. In a later study, Durkin (1984a) noted that the questions basal manuals offer generally express a concern for right and wrong answers. She observed that "encouragement is not given (in manuals) to probe with questions like: How do you know it means that? What words in the sentence tell you what it means?" (p. 34). Such questions would require children to think about their answers as they seek to explain and justify them. In so doing, they would become more aware of their thinking processes and the way they use background knowledge in text comprehension.

In a more recent study Major (1986) examined three basal reading programs developed for grades kindergarten to three to determine the extent to which the process of inferring was prescribed for teaching. The programs examined were Starting Points in Language Arts by Ginn and Company Educational Publishers, 1977; Language Development Reading by Thomas Nelson and Sons Ltd., 1977; and Expressways by Gage Educational Publishing, 1977. She found that, in comparison to earlier studies by other researchers, on average there had been an increase in the number of inferential questions provided in basal manuals. The ratio of inferential to non-inferential questions for grades 1 to 3 for the Gage series was 43.9 percent; for grades 1 to 3 for the Ginn series was 28.6 percent; and for grades kindergarten to 3 for the Nelson series was 23.7 percent. These results show a slight increase in the percentage of inferential questions over that reported in previous analyses suggesting that publishers have paid some attention to research on the importance of teaching inferring. However, it was noted from Major's study that the ratio of inferential to non-inferential questions generally decreased as grade level increased. This would seem to be counterproductive to the development of children's inferential abilities since, as they read more complex texts, children are required to make more sophisticated and complex inferences in order to comprehend text. There would seem to

be no logical reason to decrease the ratio of inferential questions as grade level increases.

Beck (1989) noted that many selections in basal readers provide very good opportunities for children to develop their reasoning and problem solving abilities. However, usually only a small portion of the questions provided in the manuals tap important story issues. Many questions tap information that is not central to text comprehension.

Hansen and Pearson (1983) pointed out that children have greater difficulty in answering inferential questions than literal questions. This may be attributable to the manner in which questions are asked and instruction is provided. Petrosky (1980) wrote:

> I am particularly concerned with the possible link between the literalism we find as characteristic of children's responses (to questions) and the literalism we teach in reading and literature classes. Our inferences about the highly literal nature of children's responses could be mistaken or incomplete. We might be observing the effects of years of literal comprehension instruction (p. 150).

Such instruction is provided both by direct, explicit instruction and by implication, through questioning practices. As noted above, questioning practices have not been as facilitative to inferential comprehension as they might be. Perhaps this would not be a concern if explicit inferential instruction were provided in the classroom. However, research has shown that such instruction is not being provided.

In one study on comprehension instruction in the classroom, Durkin (1978-1979) found that, out of a total of 17,997 minutes of reading instruction observed, only 45 minutes were devoted to comprehension instruction. In a follow-up study, Durkin (1981) thoroughly examined the manuals of five basal reading programs, from kindergarten to grade 6, to identify what directions were offered for comprehension instruction. Instead of providing direct, explicit instructions, Durkin found that the manuals offered numerous practice exercises and provided for extensive comprehension assessment. She found that, even with the exercises provided in the workbooks, the focus was on literal comprehension not inferential comprehension. Durkin further found that there was a surprising number of manual segments mislabelled. Frequently, procedures referred to as comprehension instruction were actually comprehension assessment. Bacharach and Alexander (1986), in a study of basal usage in grades one to five, found that students spent most of their skills instruction time completing workbooks and worksheets rather than receiving explicit skill instruction.

Studies by Durkin, and Bacharach and Alexander suggest that many educators and basal publishers believe that children learn by doing exercises rather than by receiving direct instruction. Even where explicit instruction is provided, as Duffy and Roehler (1987) noted, it is not

uncommon for basal readers to prescribe skill development through activities isolated from real reading. Such emphasis on skill development separate from reading can interfere with children's perception of what reading is about. They must come to view reading as a search for meaning and, if they are to comprehend text, they must infer. As this review of the literature has discussed previously, children have a natural inferential ability, however, many do not spontaneously infer while reading. Researchers have noted that inference instruction must be explicit, since most children require guidance and practice, if they are to improve their inferential abilities (Bacharach and Alexander, 1986; Danner and Mathews, 1980; Durkin, 1978-1979; Durkin, 1984; Guszak, 1967; Hansen and Hubbard, 1984; McIntosh, 1985; Sanacore, 1985).

Another weakness of basal reading programs, as they pertain to inference instruction, relates to the activation, assessment and enrichment of background knowledge. Background knowledge is an essential element of inferring. Beck (1984) studied comprehension instruction offered in thirteen basal reading programs. After examining the basal readers, she concluded that most children probably would not have the necessary background knowledge to understand many of the stories in the various programs. This conclusion suggests that basal authors and publishers may not be in tune with children's experiences. Consequently, basal manuals

should offer suggestions to help teachers assess students' background knowledge and provide activities and questions for teachers to use when it is necessary to enrich children's background knowledge.

In light of the importance of background knowledge to inferential comprehension, it is surprising that so little time is spent in the classroom activating and enriching it (Durkin, 1981; Hansen and Hubbard, 1984; Orasanu and Penney, 1986). Beck (1984) noted that even some recent basal manuals dealt with prereading discussion in a perfunctory manner where little opportunity or encouragement for teachers to activate and enrich relevant knowledge in students was offered. Even in programs where basal manuals do suggest activating, assessing and enriching students' knowledge before reading, it seems tnat at least some teachers do not use the suggestions offered. Durkin (1984b) observed sixteen teachers in grades 1, 3 and 5 to determine what parts of basal manuals they used during reading periods. She noted that none of the teachers, during the time observed, activated, assessed or enriched students' background knowledge before reading even though the manuals had offered various suggestions. She further noted that they rarely asked prereading questions. When questioned on these omissions, the teachers indicated that they did not have the time to follow the suggestions in the manual. In addition, some felt that the suggestions offered were unimportant.

Russavage, Lorton and Millham (1985) surveyed twenty-five teachers in grades 1 to 5, to determine specific strengths and weaknesses that teachers could identify in basal reading programs. One of the weaknesses that teachers identified was that there were few strategies for resolving problems that result from inaccurate background knowledge. Since inferring requires the integration of background knowledge with text, inaccurate or incomplete background knowledge increases the potential of interfering with comprehension. Teachers may need to modify or extend the suggestions in basal manuals when recommended strategies do not achieve the desired result. Durkin (1981) concluded that basal publishers do not "seem to think it is necessary to offer alternative teaching procedures, should the recommended one not succeed" (p. 533). Russavage et al. concluded that the comprehension skill development strategies offered by basals are insufficient to meet the needs of individual students.

Commercial reading programs have had a strong influence on the structure and content of reading instruction in the classroom. However, research has identified that many programs have serious weaknesses and teachers need to be aware of these. This is especially important when the weaknesses have an adverse effect on children's inferential comprehension. While some critics of basals suggest the removal of these programs from the classroom, many

researchers recommend the improvement not the elimination of such programs. McCallum (1988) wrote:

> I do not believe that basals in and of themselves will solve all the problems associated with developing a nation of readers. But we must be careful not to discard practices or materials which have been shown to produce results. We must be honest with ourselves when evaluating the usefulness of basals. Basals do have limitations, but these stem from our ever-changing understanding of the reading process and the application of that understanding to teacher training and classroom practice (p. 204).

McCallum noted that basal programs only partially fill the gap which exists between reading research and practice. Given the extent and diversity of research, basal publishers could not incorporate all of the research findings into their programs.

As this review of the literature has shown, basal reading programs have been weak in the area of inferential instruction. While teachers, not basals, teach, teachers use basals extensively for reading instruction. Bacharach and Alexander (1986) surveyed thirty-eight teachers in grades 1 to 5 to determine their perceptions of the helpfulness of basal manuals. They also undertook classroom observational studies of ten of the teachers surveyed, two at each grade level, to determine if the teachers actually used the program to teach as they said they did. The researchers found that the parts of the basal manuals teachers used did not necessarily coincide with the findings on effective reading instruction. None of the teachers who were observed used the

background information suggestions and only one-half of them asked prereading questions. So, there is a two-fold problem. First, activities designed to facilitate inferring are often dealt with in a perfunctory manner. Second, even if useful activities were provided in basal manuals, there are no assurances that teachers would use them.

In conclusion, several weaknesses in basal reading programs in developing children's inferential abilities have been noted. Research has shown that some programs spend too much time assessing literal comprehension and not enough time developing inferential comprehension. Also, many basal manuals fail to adequately address children's lack of background knowledge for the basal stories.

Basal reading programs are used to teach reading in a large number of schools in North America. Basal programs are periodically modified, and new ones developed, as publishers endeavour to incorporate the findings of more recent research. It is, therefore, important to analyze recent programs to determine the extent to which inference is prescribed for teaching. As a result, this study undertook to assess the degree to which inference was prescribed for teaching in a basal program that is presently being used in a large number of schools in Newfoundland and Labrador, as well as in other provinces of Canada.

# CHAPTER III

## DESIGN OF THE STUDY

The purpose of the study was to determine whether inferring was prescribed for teaching in the grade five Nelson Language Development Reading (LDR) Networks program; the extent to which inferring was prescribed; and the methodologies presented for teaching inferring. The theoretical framework for the study was established in the preceding chapter where inferring was defined and the importance of inferring to reading comprehension was discussed. It has been estimated that between 80 and 99 percent of children have received reading instruction through some basal reading program. Given the high usage of basals for instruction in reading and the identified importance of inferring to successful reading, new basal programs ought to be reflective of the reading processes that should be taught. The Nelson LDR program is one such program that is widely used across Canada, so it was selected for analysis.

The methodologies commonly used to analyze various characteristics of basal reading programs are reviewed and evaluated. A rationale for choosing the methodology used in the present study is presented. Finally, the chosen methodology is described in detail, materials, program philosophy, and procedures are outlined.

## Basal Reading Program Analysis

Systematic study of basal reading programs was rare until the late 1970's. Since then, various researchers have analyzed basal programs in a number of ways and from a variety of perspectives, yet there has been little analysis done of inference instruction specifically in basal programs. Consequently, in order to develop a methodology to be used in this study, the procedures used by researchers in analyzing basal programs and comprehension instruction generally were reviewed.

A skills-trace analysis has been frequently used to analyze textual materials. Using this approach, researchers isolate and analyze one skill, such as decoding, or one concept such as comprehension instruction. In a skills-trace analysis, every page is read and every reference to the skill or concept under study is noted. Furthermore each reference to the skill or concept under analysis is examined to see how it is actually introduced, taught, practised, and tested. A skills-trace analysis reveals the method of instruction, the rate of instruction, and the amount of instruction provided on the specific skill or concept under analysis. Such analyses show whether basal programs actually provide the skill development or instruction that the publishers say the program provides. Once an analysis has been completed, in order to ensure the validity of the findings, a colleague analyzes a reasonable sample of the materials. The results

of the original analysis are confirmed if there is a high inter-rater reliability between the two analyses.

Researchers have used a skills-trace approach to analyze various concepts or characteristics of basal reading programs such as educationally relevant content (Schmidt, Caul, Byers and Buchmann, 1984); the types of writing found in basal reading programs (Flood, Lapp and Flood, 1984); the portrayal of the elderly in basal readers (Serra and Lamb, 1984); common words not taught in basal reading series (Fry and Sakiey, 1986); the number and types of reading events portrayed in basals (Green-Wilder and Kingston, 1986); the extent of sexism in basals (Hitchcock and Tompkins, 1987); and how the organization and content of basal programs influence reading instruction (Barr and Sadow, 1989). While these studies do not relate directly to comprehension instruction, they were reviewed in order to get a good understanding of how a skills-trace analysis is undertaken.

Two studies that relate directly to comprehension instruction were also reviewed. Durkin (1981) analyzed comprehension instruction generally and Major (1986) analyzed inference instruction specifically. Durkin (1981) examined five basal reading series, kindergarten to grade six, to see what directions were offered to teachers for comprehension instruction. This was done to see whether those directions suggested in basals for comprehension instruction compared with her findings (Durkin, 1978-79) on how comprehension

instruction was taught in the classroom. To facilitate her analysis, Durkin (1981) identified and defined six categories relating to comprehension and four types of study skills. While the teacher manuals were the main focus of her study, Durkin also analyzed all comprehension-related activities in the readers, workbooks and ditto masters. Every page in each manual was read and every recommendation relating to comprehension was identified and recorded under the appropriate comprehension or study skill category.

One of the limited number of studies which analyzed inference instruction in basal reading programs was completed by Major (1986). She used a skills-trace approach, similar to that of Durkin, to examine three basal reading series in use in Canadian schools. Specifically, Major analyzed the programs for grades kindergarten to three to determine the extent to which the process of inferring was prescribed for teaching and to identify the inference methodologies presented in each series. To achieve this, she examined the teacher manuals, readers and student workbooks to determine whether inferring was prescribed. After confirming that it was, she analyzed each component of each series to adjudicate the extent to which inferring is taught and how it was taught. The ratio of inferential to non-inferential questions was calculated for each grade in each series.

It appears that the skills-trace approach is the most comprehensive procedure available for basal reading program

analysis. Hence, it was the procedure adopted for use in this study to determine if, the extent to which, and the nature of inferring instruction in a recently published grade 5 basal reading program. The next section discusses the selection of the Nelson LDR Networks program and the various components of the program.

## Materials

In order to select a basal program for analysis, officials in the Departments of Education for each of the 10 Provinces and 2 Territories in Canada were written (see Appendix A for a copy of the letter). Specifically, each was asked to provide information on the three most widely used basal reading series, and the extent of usage of each series in grades 4, 5 and 6.

Table 1 presents a summary of the information contained in the replies from the various Departments. The table shows that the Nelson LDR Networks program is currently approved for use in 6 Provinces. Published in 1985-86, the Networks program is one of the most recent basal programs in use in the schools across Canada. Of particular interest is the fact that the Networks program is the only Language Arts program prescribed for use in the elementary grades in Newfoundland and Labrador, and all schools are expected to use it.

Given the many components of the Networks program for grades 4, 5 and 6, an analysis of only the components

TABLE 1

Basal Programs Presently Used Throughout Canada

| | Nelson Networks Program | Holt, Rinehart & Winston Language Development Program | [illegible] Program | Gage Expressway (2) Program | Nelson & Sons Language Development Reading | Holt, Rinehart & Winston Impression Series | Ginn & Co. Starting Points in Language Arts | Ginn & Co. Reading 720 | McGraw Hill Unicorn | Ginn & Co. Journeys | Melser, J. et al. Shorthand Publications The Story Box Series |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Newfoundland | * | | | | | | | | | | |
| Nova Scotia | * | | * | | | * | | | | | |
| New Brunswick | | | * | | | | | * | | | |
| Prince Edward Island | | | * | | | | | | | | * |
| Quebec | | | | | | * | * | | * | | |
| Ontario | * | | * | * | * | * | | | | * | |
| Manitoba | * | | * | | | | * | | * | * | |
| Saskatchewan | * | | * | | * | | | | | | |
| Alberta | * | | * | | * | | * | | | | |
| British Columbia | | * | | | | | | * | | | |
| Yukon | | | | | | | * | | | | |
| Northwest Territories | | | * | | * | | * | | | | |
| Totals | 6 | 1 | 8 | 1 | 4 | 3 | 5 | 2 | 2 | 2 | 1 |

prescribed for grade 5 was undertaken in this study. Grade 5 was chosen because it is the grade with which I am most familiar. All of the components of the Networks program thatpertain to grade 5 were examined. They include a Teacher's Resource Book (TRB); two Anthologies, Ripple Effects and Time Spinners; and related components consisting of two Skillbooks; two Teacher's Annotated Editions of Skillbooks; a Reading and How text; a Writing and How text; a Teacher's Edition of Writing and How; two Listening and How cassette tapes; two novels, One John A Too Many and Always Ask for a Transfer; and an Evaluation Resource Book.

The Teacher's Resource Book provides a comprehensive overview of the Nelson LDR Networks program and discusses the underlying principles that were used to guide the development of the program. The next section summarizes the philosophy of the Networks program.

## Summary of Program Philosophy

Before undertaking an analysis of the various components of the Networks program, the introduction to the program in the TRB was reviewed. This was necessary to get an overview of the program, that is to ascertain how the program was organized and what the authors claim that it was intended to accomplish. Specifically, the review was used to determine whether the authors claim to incorporate current research on reading instruction; what comprehension processes are

prescribed for teaching; and how these comprehension processes are presented for teaching.

The philosophy of the Nelson LDR Networks program as stated by the program authors in the TRB is summarized next. It should be noted that this study is not intended to either confirm or refute the claims made by the program authors beyond examining the extent to which inferring is prescribed for teaching. The authors of the Networks program describe it as an integrated reading and language arts program. The program was developed from a set of principles based on both classroom experience and current theory about how children develop language abilities.

The Networ[1] program was designed, according to the authors, to provide cohesive experiences in literacy by integrating listening, viewing, speaking, reading, and writing. The program is organized within a thematic framework which provides children with the opportunity to bring a great deal of their "real world knowledge" (TRB, p. 12) to their reading and writing. The authors claim that the thematic framework allows students to extend themselves through the rich variety of integrated experiences offered in the program. The content was designed to be meaningful to Canadian school children and contains predominantly Canadian material specifically written for this series.

The authors further state that the many teaching suggestions given are designed to assist teachers in

developing students' reading strategies. Many of the teaching suggestions may be used in flexible ways to suit particular needs of students. The authors claim that the program makes students aware of their own reading processes, and that there is an emphasis on higher-order comprehension.

The format adopted in the TRB was designed to make it easy for teachers to identify which thinking processes are found in each activity. Each lesson plan claims to offer a variety of activities designed to prompt or promote particular thinking processes. These processes are listed in the left margin of the manual adjacent to each specific activity. The following example, taken from the TRB, illustrates the format.

Example 3.1: Teacher's Resource Book B, Unit 19, "The Dip", p. 199.

Focusing

ON PROCESS
Previewing Narrative Structure
Skimming: Format, Print Signals, Illustrations
Questioning: I Wonder, I Think

Predicting, Interpreting, Inferring

Invite the children to open their Readers to page 140, read the title, and view the illustration. Then suggest that the group play a game of I Wonder, I Think. The teacher may begin by providing a model such as the following:

> TEACHER: I wonder what the Dip is? I think it may be a place to swim.

Encourage the children to formulate their own questions and predictions about the illustration, using the I Wonder, I Think model. For example:

STUDENT: I wonder why the boy looks so mad? I think he's angry because the girl is there.

Next, read the first paragraph aloud to the children and allow time for as many questions and predictions as the children generate. Repeat the process for the second paragraph of the selection.

The authors claim that the program was developed from recent research on how children develop language abilities and that there is emphasis on higher-order comprehension. Moreover, they list inferring as one of the key thinking processes to be taught in the program. This suggests that the authors have noted the importance of inferring to reading comprehension by including activities designed to facilitate children's inferring abilities. The format adopted in the TRB, where the key thinking processes to be developed by each activity are listed, would seem to be helpful to the identification of inferential activities for this study. However, before a comprehensive analysis of the program was undertaken, a pilot study was conducted to see if the procedure developed for the analysis of the program was an effective method for obtaining the information needed to answer the three research questions posed.

## Pilot Study

Having developed a tentative procedure to analyze the Networks program, a pilot study was undertaken to determine its suitability. The selections examined for the pilot study consisted of a story, a poem and a play taken from the Ripple

Effects and Time Spinners Anthologies. In addition, when the TRB referred to an activity in either the Skillbook or Reading and How text, that activity in the relevant component was examined.

The results of the pilot study revealed that:

1. Inferring was prescribed for teaching.
2. Inferring was listed as a key thinking process in three of the four steps of the instructional sequence.
3. Inferring was presented for teaching through a variety of inferential activities. In the activities examined for the pilot, much of the instruction was provided through teacher-led discussion and questioning. If a teacher knows what constitutes inferring, then he/she can ensure that the activities are used effectively to develop children's inferring abilities.

Based upon the findings of the pilot study, the procedure with modifications would enable me to undertake an analysis of the grade 5 Networks program. The most significant modification to the procedure involved a change in the definition of an activity. Initially each question or task was classified as an activity. However, in order to analyze the material and collate the data in an efficient manner, the concept of an activity was extended to encompass all questions and tasks provided in a teaching suggestion.

Another modification which resulted from the pilot was the decision to analyze each Anthology and each component of the program separately in order to make the analysis manageable. The modified procedure used in the analysis of the various components of the program is discussed in detail next.

## Procedure

The procedure will be outlined on the basis of the major components of the program first. Then, the procedure used to analyze each component will be discussed. The Nelson LDR Networks program is developed around two pupil texts consisting of two Anthologies, Ripple Effects and Time Spinners.

Having conducted the pilot study, it became apparent that each Anthology together with its related components seemed to be a natural unit for analysis. By analyzing each Anthology separately, it was possible to compare the extent to which inferring is prescribed in each Anthology. Thus, the prescribed activities for the Ripple Effects Anthology and related components, Ripple Effects Skillbook, Reading and How and the Novel, were analyzed first. The results for each component were tabulated separately and discussed under the heading: Ripple Effects Anthology and related components, using the procedure detailed in the following pages. Similarly, the activities prescribed for the Time Spinners Anthology and related components, Time Spinners Skillbook,

Reading and How and the Novel, were then analyzed, the results for each component were tabulated separately and discussed under the heading: Time Spinners Anthology and related components. A comparative analysis was undertaken to determine the extent to which inferring was prescribed across both Anthologies and related components.

The TRB has a four-step lesson plan for each selection. The four steps of each lesson plan are Focusing, Experiencing, Reflecting, and Extending. Relevant activities for each lesson are listed in the TRB under each step. The Experiencing step involved the students reading the textual selection, consequently, data was not collected for this step. Each activity in the three other steps were examined to determine whether or not it was inferential. In order to classify an activity as inferential or non-inferential, the appropriate selection in the Anthology was read. If the activity could be completed using only textual information, or only background knowledge, it was classified as non-inferential. Using the definition of inferring adopted to guide this study, only activities that required the integration of textual information with background knowledge were classified as inferential. Activities that were difficult to classify were listed in a separate category and identified as unclear.

For the purpose of understanding how the data for this study was tabulated, each teaching suggestion presented in

the TRB, including all questions provided to guide discussion, was classified as one activity. An example of an activity, as presented in the TRB, is illustrated in Example 3.2 which follows:

Example 3.2: Teacher's Resource Book B, Unit 1, "Messages", pp. 60-61.

Reflecting

ON CONTENT
Discussion: Retelling, Describing

Locating, Imagining, Inferring, Classifying

Invite the children to share the images evoked by the poem. Ask them if the poem reminded them of messages they have received or offered others.

- Did you picture any messages you have personally received?
- What kind of message might you shout? Whisper?
- What kind of message comes "dream-wrapped"?
- Can you think of messages that are unwritten? Unread? Unspoken? Unheard?
- Did the illustrations give you any ideas about other kinds of messages?

An activity was classified as an inferential activity even when only a small proportion of questions or a single suggestion was identified as inferential. Moreover, some activities were identified as inferential even when the program authors did not specify that the activity developed children's inferring abilities.

The activities prescribed in the TRB for the Ripple Effects Anthology were examined. The number of inferential, non-inferential and unclear activities for the Focusing, Reflecting and Extending/Culminating steps of the

instructional sequence were counted. The frequency and percentage of inferential, non-inferential and unclear activities for each step was tallied, calculated and tabulated. When the TRB referred to either the Ripple Effects Skillbook or Reading and How component, the activity in the appropriate component was examined. To determine the extent of inferential activities in the Skillbook, each Skillbook activity was examined and the appropriate selection in the Anthology was read. The total number of inferential, non-inferential and unclear activities was counted and the frequencies and percentages calculated and tabulated. Similarly, when the TRB referred to a selection in the Reading and How component, the appropriate selection was read and the accompanying activities were examined to determine whether they were inferential or non-inferential. The procedure that was described previously was used to tally, calculate and tabulate the frequencies and percentages of inferential, non-inferential and unclear activities.

The novel One John A Too Many was read and the prereading and post-reading activities in the TRB were examined. The prereading activities were analyzed and the number and percentage of inferential and non-inferential activities were tallied, calculated and tabulated. The post-reading activities consisted solely of questions related to the novel. If the post-reading questions in each unit had been considered as one activity, then 100% of the activities

would have been inferential, since each activity had at least one inferential question. In order to represent more accurately the extent of inferring in the post-reading activities prescribed for the novel, each question was analyzed and the results reported in a separate table.

When the aforementioned analyses were complete, an analysis of the Time Spinners Anthology and related components was undertaken. Each was analyzed separately, using the procedure described to analyze Ripple Effects and related components, to determine the frequency and percentage of inferential, non-inferential and unclear activities.

The activities provided in the Writing and How component; the Listening and How cassette tapes; and the Evaluation Resource Book were examined. The Writing and How component was examined to determine if inferring was prescribed and to see if there were writing suggestions provided which were facilitative of children's inferring abilities. It was not possible to gain access to children's writing to determine if inferring actually did occur. Consequently, the extent of inferring in this component was not calculated. Rather, the methods that were used to present inferring were examined and reported in a narrative format.

The researcher listened to the thirteen listening tasks prescribed for the Listening and How component of the program. In this component inferring was said to occur

through listening. Of the 13 post-listening activities provided, 7 were presented for completion in other components of the program. Consequently, the data for those activities was tabulated under the appropriate component. Each activity in the Listening and How component was analyzed to ascertain which methods were presented to facilitate children's inferring abilities while listening. As in the Writing and How, the findings are reported using a narrative format.

The Evaluation Resource Book was examined to see if suggestions and guidelines were provided in the Networks program to help teachers evaluate children's inferring abilities. Data was not tabulated since this component of the program was not intended to be used for teaching inferring or any other thinking process. A Language Development Checklist consisting of twelve questions to guide teachers in evaluating key thinking processes was examined. In addition, the 5 paper and pencil tasks and 3 listening tasks were examined to determine if children's ability to infer was evaluated. The findings are reported in a narrative format.

During the pilot and at each step of the main coding, at least one-quarter of all the activities were analyzed by my thesis supervisor to ensure the reliability of my coding. The minimum percentage of inter-rater reliability was .91.

## Data Analysis

This study analyzed all of the activities prescribed in the teacher and pupil components of the Nelson LDR Networks program for grade 5. This data is best presented using descriptive statistics.

The frequency and percentage of inferential, non-inferential and unclear activities are reported for the three steps, Focusing, Reflecting and Extending/Culminating, of the four step instructional sequence for each Anthology, each Skillbook, the Reading and How text, and each novel. The frequency and percentage of inferential activities prescribed for the Ripple Effects Anthology, Skillbook and Reading and How component is compared with the frequency and percentage of inferential activities for the Time Spinners Anthology, Skillbook and Reading and How component and is reported. Finally, the overall frequency and percentage of inferential activities for these components is reported.

A discussion of the findings of the study is the subject of the next chapter.

# CHAPTER IV

## FINDINGS AND DISCUSSION

The purpose of this chapter is to present the findings and to discuss the results of my analysis of the inferential activities in a selected basal reading program. Three questions guided the conceptualization and analysis. Each question will be discussed in turn in the subsequent three sections. The first section discusses whether inferring is prescribed for teaching in the Nelson Language Development Reading (LDR) Networks Program for grade five. The second discusses the extent to which inferring is prescribed for teaching. The final section discusses the methodologies prescribed for teaching inferring in the Nelson LDR Networks Program. The chapter will conclude with a summary of the findings.

Question 1: Is Inferring Prescribed for Teaching in the Grade Five Nelson LDR Networks Program?

Examination of the Teacher's Resource Book (TRB) for the grade five Networks program revealed that inferring was prescribed. A "Processes and Tasks" chart, which lists the key thinking processes found in each chapter, indicates that inferring is identified in forty-five of the forty-six chapters in the TRB. A review of each chapter in the TRB revealed that inferring is prescribed for many activities in the Focusing, Reflecting and Extending steps of the four-step instructional sequence. However, no key thinking processes

were identified for the second step in the instructional sequence, the Experiencing step. The teaching suggestions for experiencing a selection involve children in independent readings; or in listening to all or part of a selection; or in guided reading. Since the research reported here was an examination of the program components only, then an analysis of how students experienced each selection of the program was not undertaken.

It appeared, at first, that it would be relatively easy to identify which activities developed inferring and how inferring was taught. The Program authors had highlighted inferring among the key thinking processes shown in the margin to the left of many activities in the TRB (see Example 4.1). However, upon closer examination of each activity it was not always possible to identify which aspect of the activity developed inferring. A discussion of some examples will illustrate the difficulty teachers would likely have in identifying which specific activities develop children's inferential abilities.

The Program authors indicated that, in Example 4.1, inferring occurs through composing answers. In answering questions, it seems that inferring would likely only occur if the questions asked were inferential. Since the Program authors did not indicate which questions develop which thinking processes, it would be necessary for teachers to

examine each question and consult the text to determine whether it was inferential or literal.

Example 4.1: Teacher's Resource Book B, Unit 33, "Newfoundland Norse", p. 309.

Reflecting

ON CONTENT
Discussion: Reporting, Describing
Composing: Answers, Orally

Recalling, Locating, Interpreting, Inferring, Drawing Conclusions, Making Judgments

Have the children reflect on the selection by meeting in small groups to answer the following questions orally. Encourage them to refer to "Newfoundland Norse" as necessary to compose their answers. Several children can contribute to a single answer.

1. Who are the characters in "Newfoundland Norse"?
2. How do the characters meet or know one another?
3. Mike and Joe develop a special relationship with someone. Who? What is their relationship?
4. What is Charles's first story for the boys about?
5. What surprises the boys about how the Vikings sailed?
6. What is Charles's second story for the boys about? What is the boys' reaction to it?
7. What makes Charles stop talking right in the middle of his sentence (at the top of page 71)?
8. Why is Charles's discovery important?
9. What does Charles tell the boys about the Norse sagas?
10. What is the third story that Charles tells the boys?
11. How do the boys feel as the newcomers prepare to leave? How do you know?
12. How does Charles feel? How do you know?

To answer questions 1, 2, 3, 4, 5, 6, 7, 9 and 10, children did not have to infer; the answers are explicitly stated in

the story. Only questions 8, 11 and 12 require children to infer. Thus, only 25% of the questions in Example 4.1 were inferential, an example that is representative of the rest of the program. Such a low proportion of inferential questions is not in keeping with research which recommends that a high proportion of questions should be inferential (Beck, 1984; Carr, 1983; Chou Hare & Pulliam, 1980; Guszak, 1967).

You will notice that the direction given to teachers in Example 4.1 was to have children meet in small groups to answer the questions. Where necessary, children could refer to the text. However, there were no directions or suggestions for teachers to teach strategies to assist students to answer the inferential questions. Example 4.1 is also representative of the lack of direction provided to teachers on how to teach inferring. It is possible that, considering this lack of direction, children would not receive the direct, explicit inference instruction that research states is necessary. Furthermore, since the activity under discussion is not teacher-directed, teachers may not know whether children are having difficulty making the inferences necessary to answer the three questions.

Since there is virtually no teacher direction provided, teachers with a limited knowledge of inferring would be at a greater disadvantage because they may have difficulty in identifying which activities are specific to inferring, thereby increasing the likelihood that inferring would not be

taught at all. The activity presented in Example 4.2 which follows, is similar to Example 4.1 discussed previously. Both activities list similar tasks to develop children's thinking processes. Directions to have children meet in small groups to answer questions on text are similar. However, inferring is not prescribed in Example 4.2, yet children would have to infer in order to answer three of the questions. For instance, the answer to the question: "Why would the sight of the tracks of another swing be reassuring to the crew?" is not explicitly stated in the selection. In order to give a correct response to this question, children would have to integrate their background knowledge with the textual information. Similarly, the answer to the last two questions are not directly stated in the text. The suggestion at the end of this example directs the children to generate their own questions. While some of the questions generated may be inferential, no guidance on the differences among question types is provided. Moreover, while the authors had indicated that there was overlap between and among some thinking processes, neither of the three listed for Example 4.2, Recalling, Locating, and Confirming is necessarily inferential in nature.

Example 4.2: Teacher's Resource Book B, Unit 38, "The Bearskin Swing", pp. 348-349.

Reflecting

ON CONTENT
Composing: Questions and Answers, Orally

| | |
|---|---|
| **Recalling, Locating, Confirming** | **Let the children meet in small groups to respond orally to questions such as the following:** |

- When might Windigo not operate, and why?
- What happens to Windigo when it is very cold?
- Why is the cook important to the swing?
- How do the drivers prepare for the possible problem of the swing's breaking through the ice?
- Why is the tractor moved to the back of the train when the swing is travelling downhill?
- Why would the sight of the tracks of another swing be reassuring to the crew?
- How is a swing like a train?
- How is a swing different from a train?

Then suggest that each child in the group pose one question on an aspect of the selection he or she finds especially interesting. Any group member or members can compose an answer in reply.

Encourage each group to respond to the questions generated in Focusing during the PReP questioning process. The group members should make note of questions not answered in the selection. Some children may wish to pursue these outstanding questions through independent research and report back to the group.

In teaching the how of reading in the Focusing on Process and Reflecting on Process steps of the instructional sequence, the authors have provided a number of schematic diagrams to give children a visual layout of how information may be structured. It was indicated in Example 4.3 that inferring was prescribed for teaching through the use of a non-narrative diagram. Example 4.4 is similar, yet inferring was not listed as a key thinking process to be developed. It

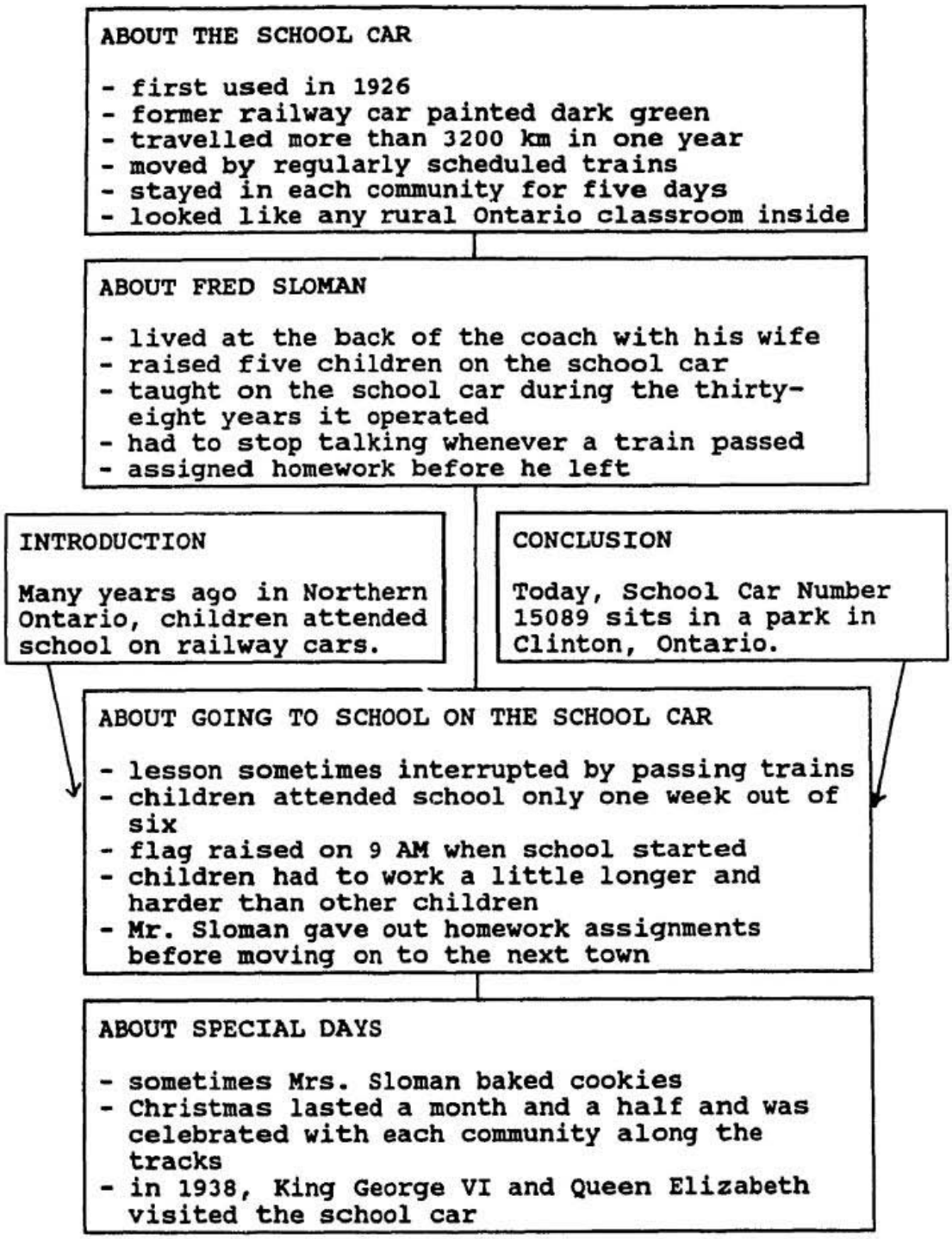
is difficult to determine why inferring would be specified for one activity but not for the other.

Close examination of the two activities revealed that many of the key thinking processes listed are identical; the tasks designed to develop the key thinking processes are identical; and the suggestions and guidance provided to teachers are similar. Thus, it is not clear why inferring would be developed in one activity but not in the other. Neither is it clear how the use of the diagram would develop inferring, or any other thinking process because it seems that a person would already have to have a substantial understanding of inferring in order to infer how to use the information provided even though inferring is the very process presumed to be developed by the activity. It seems that the designation of the thinking processes is arbitrary.

Example 4.3: Teacher's Resource Book B, Unit 37, "School on Wheels", pp. 343-344.

| | |
|---|---|
| | **Reflecting** |
| | ON PROCESS<br>Reviewing Non-narrative Structure<br>Rereading/Lookback: Organization<br>Representing Schematically: Non-narrative Diagram |
| Locating, Inferring, Classifying, Seeing Relationships: Cause/Effect, Main Idea/ Detail, Synthesizing | Invite the children to review the predictions they made about the organization of the selection. Select one that the children like and use it as a title for a Non-narrative Diagram. If the children are keeping a class chart titled "Ways to Organize Information," let them add their descriptions of the selection organization to it. They may suggest report, comparison, or history. (See Unit 6, Reflecting on Process.) |

A Non-narrative Diagram for the selection might resemble the diagram on page 344.



Example 4.4: Teacher's Resource Book B, Unit 30, "Pieces of the Puzzle", p. 293.

Reflecting

ON PROCESS
Reviewing Non-narrative Structure
Rereading/Lookback: Organization
Representing Schematically: Non-narrative Diagram

Locating, Comparing, Classifying, Seeing Relationships: Sequence, Main Idea/ Detail, Confirming, Synthesizing, Drawing Conclusions, Making Judgments

Invite the children to evaluate their earlier predictions in response to the question "How is this selection going to go?" or "How do you think this interview will be organized?" using supporting examples from the text. If the class is keeping a list of "Ways to Organize Information," add to the list any predictions that the children felt "worked" for the selection. (See Unit 6, Reflecting on Process.)

Then select any of the organizational descriptions the children have suggested and use the method to create a Non-narrative Diagram. For example, to make a diagram illustrating a progression from general to specific, write these two words on the two upper corners of the chalkboard. Let the children work their way through the interview, suggesting entries and determining the placement of each entry. Encourage them to list details, then identify the topics. A completed diagram may resemble the following:

GENERAL → SPECIFIC

| About Archaeology | About Finds | About Evaluation of Finds | About Brian's Own Work |
|---|---|---|---|
| artifacts | sherds | cataloguing | petroglyphs |
| tools | hunting tools<br>fire pits | reconstructing | pictographs |
| importance of records | longhouses | artifacts and ideas | Brian's personal feelings |
| preparing a site | | dating artifacts | |
| | | Carbon-14 test | |

In the Reflecting on Process step, schematic diagrams were intended to help children recognize and practise key reading strategies so as to gain ownership of these strategies for use in independent reading. However, teachers who wish to use such diagrams to develop children's inferential abilities would find it difficult to do so. Many of the diagrams presented in the TRB offer directions that are too brief or too general because often it was not clear how the key thinking processes listed would be developed. Compounding this difficulty was the number of schematic diagrams where the directions and tasks were similar but where there were important differences in the thinking processes to be developed at least on the basis of how the authors represented the activities. They did not explain, for example, why inferring would be developed in Example 4.3 but not in 4.4. Consequently, there is a need for clarity for both teachers and students.

Similar identification difficulties were noted in the Reading and How B componert of the program. An explanation of each section was provided in the TRB and the key thinking processes were listed as illustrated and explained in the TRB example that follows.

| | |
|---|---|
| Example 4.5: | Teacher's Resource Book B, Unit 33, "Newfoundland Norse", p. 317.<br><br>Reading and How B, "Digging for the Past," "A Gift From the Past" |
| Imagining, Inferring, | These two selections take the form of a factual account of the work of student |

Comparing, Synthesizing — archaeologists at the site of a five-hundred-year-old Huron village and a fictional account of a young Huron girl making and hiding a bowl for her father. The children compare the language features, such as descriptive words and phrases, and their effect on the reader. They also organize information from the two selections in a chart to gain an appreciation of life in a Huron village. Children then compose their own ending for the narrative.

The suggested activities for "Digging for the Past" and "A Gift from the Past" were listed under four questions: What do you know already?; How do you read?; What did you find out?; and What can you do now?. The authors did not indicate which activity developed which thinking process. There was no indication whether each activity developed one, two or all three of the processes of Interpreting; Inferring; and Making Judgements. It would have been more beneficial to teachers had the authors done so in order to enable teachers to select those activities that need to be developed in students.

Other selections in the Reading and How text revealed even further difficulties with the identification of inferential activities. After reading a selection on "Spiders", children were required to complete three activities as illustrated in Example 4.6.

Example 4.6: Reading and How B, "Spiders: To Know Them Is To Love Them", p. 88.

How do you feel?

The title of the article says that to know spiders is to love them. How did you feel about spiders before you read the article?

> Now that you know more about spiders, do you feel the same way or have you changed your mind? Why?

Inferring was not listed as a key thinking process to be developed, however, in order to complete this activity, children had to integrate textual information with background knowledge. Thus, they had to infer. It seems that the specification of the thinking processes is arbitrary, and consequently misleading for the users of the Networks program.

Problems with specific identification of the inferential activities in the Networks program are compounded further by the lack of direction and instruction to teachers for the development of children's inferring abilities. Lack of clarity will be discussed and illustrated in the selected examples which follow.

Inferring was identified as occurring through oral reading in Example 4.7. There were no directions or explanations provided to teachers on what inferring is or how oral reading facilitates children's inferring abilities. The only direction provided for inferring was for children "to work together to understand the material". Simply working together does not necessarily result in children using inferential strategies. As noted in the review of the literature, while older children recognize the importance of using inferential strategies and often use them to comprehend text, younger children do not spontaneously use such

strategies when reading (Carr, Dewitz & Patberg, 1983). They need explicit guidance and direction to do so, if they are to develop the ability to make complex inferences (Anderson, Hiebert, Scott, & Wilkinson, 1985).

Example 4.7: Teacher's Resource Book B, Unit 30, "Pieces of the Puzzle", p. 292.

| | |
|---|---|
| | Reflecting |
| | ON CONTENT<br>Oral Presentation: Oral Reading |
| Interpreting, Inferring, Making Judgments | Invite the children to meet in pairs to reread the interview orally, exchanging roles at the top of page 54. Encourage the partners to pause at any sections they find difficult or confusing and to work together at understanding the material. |
| | Then have each pair refer to the Expectation Outline that the class generated in Focusing on Process. Let them jointly record two lists:<br><br>- Questions Not Answered<br>- New Questions<br><br>Have them save their lists for use in Extending. |

The next two examples illustrate further the lack of explicit direction and suggestions for instruction. In Example 4.8, inferring was identified as occurring through rereading/lookback. However, the directions do not explicitly state how this is to be achieved. Consequently, teachers with a limited knowledge of inferring would have difficulty in knowing how these directions would facilitate the development of children's inferring abilities. The difficulty that teachers would have in providing inference

instruction would be compounded when they find that the same directions were provided for other activities, such as the one in Example 4.9, where inferring was not listed as a process to be developed. In comparing Examples 4.8 and 4.9, it was noted that the task of rereading/lookback was prescribed for both activities. The directions for both activities suggested that teachers: "Invite the children to review their earlier predictions about the (overall) organization of the selection." The authors did not explain why rereading text to compare predictions about the organization of the selection would develop children's inferential abilities in one activity (Example 4.8) but not in the other (Example 4.9).

Vague directions, such as those noted above, and the seeming arbitrariness in the identification of thinking processes not only fail to assist teachers in developing children's inferring abilities, but in fact cause confusion amongst teachers who wish to use the Networks program to help children develop their inferential abilities. Teachers may think that if the activity in Example 4.8 is completed, then children's inferential abilities will automatically develop. If that is what teachers think, then they could also conclude that inferring would automatically develop when the activity in Example 4.9 was completed. However, since the authors of the program, did not specify that inferring would be developed in Example 4.9, teachers could wonder whether the

authors had mislabelled the key thinking processes in the activity. In any case, the directions are not clear and the mere completion of an activity is insufficient to ensure either understanding of what is read or the development of reasoning ability.

Example 4.8: Teacher's Resource Book B, Unit 31, "City Dig", p. 298.

Reflecting

ON PROCESS
Reviewing Non-narrative Structure
Rereading/Lookback: Organization

Locating, Interpreting, Inferring, Comparing, Classifying, Confirming

Invite the children to review their earlier predictions about the organization of the selection. Several words can be used to describe the organization: the children may say that it is a report, an account, a "how-to," or a "step-by-step description" of the dig. To help them to see that the selection develops in a step-by-step fashion, ask them if they think they could use the material to plan and carry out a dig of their own. Add the children's descriptions of the organization to the class list headed "Ways to Organize Information" if the children are keeping such as list. (See Unit 6, Reflecting on Process.)

Example 4.9: Teacher's Resource Book B, Unit 13, "Horses in the Coal Mines", p. 161.

Reflecting

ON PROCESS
Reviewing Non-narrative Structure
Rereading/Lookback: Organization

Recalling, Locating, Comparing, Classifying, Confirming, Synthesizing

Invite the children to review their predictions about the overall organization of the selection. How many of their predictions were correct? Which ones?

To help the children give shape to their understanding of the organization of the selection, suggest that they can call it an "oral history" -- quotations of older people's

> statements on the past linked together by a narrator who may provide information or explanations. If the class is keeping a chart of "Ways to Organize Information," let them add "Oral History" to it. (See Unit 6, Reflecting on Process.)

Problems with clarity were found in other components of the program. As can be noted in Example 4.10, the directions were vague and too general to be helpful. For instance, the suggestion to "have students do the following activities" would not be helpful to teachers who wished to use the activity to develop children's inferential abilities. The authors did not indicate which part of the activity was inferential, nor did they suggest that teachers teach students to integrate background knowledge with textual information where the answer was not stated in the text. Children would have to infer in order to formulate an opinion about Mr. Henderson and his motives in answering question 1, for instance. Question 1 offered a good opportunity for teachers to have children explain the rationale used to arrive at their various opinions. In explaining what text clues helped them formulate their opinions about Mr. Henderson, they may come to realize that comprehension requires them to interpret text by integrating textual information with background knowledge to construct an interpretation. Unless children have previously been taught strategies to integrate textual information with background knowledge, they may not do so while reading. Carr, Dewitz and Patberg (1983) noted that children not only need to

activate relevant background knowledge but they also need to be provided with a strategy to help them relate that knowledge to textual information. As was noted in this example, no suggestions or directions were provided to assist the teacher in developing strategies and for that matter there is no mention of strategies.

Example 4.10: Teacher's Resource Book B, Nelson Novel, Unit 4, "One John A. Too Many", p. 419.

POST-READING

Have students do the following activities:

Reflecting--Speaking, Writing

| | |
|---|---|
| Recalling, Locating, Inferring, Seeing Relationships: Sequence | 1. What do you think of Banker Henderson's reasons for staying open on Labour Day? Do you think banking is an essential service? Did Mr. Henderson really make many sacrifices for his community? |
| | 2. Describe the main events in this part of the novel. How does one event lead to another? Make an Events Chain beginning with:<br><br>A robber holds up the bank.<br>Andrew tries to tell Mr. Henderson who the robber is.<br>The robber and his partner kidnap Andrew. |

Furthermore, there were activities where the directions to both teachers and children lacked clarity and specificity. In these activities teachers may not provide the necessary guidance and direction that children require to develop their inferring abilities. Moreover, such activities do not offer suggestions to children that facilitate th . Inferring abilities. Consequently, it is unlikely tha. ..ildren will receive inference instruction in these activities. In

Example 4.11, the directions to teachers in the TRB explicitly state that children have to make inferences about the characters' thoughts and behaviour in order to answer the questions. However, there was no explanation about what an inference is, how inferences are made, or which questions relate directly to inferring. Moreover, the suggestion to children to look back through the selection as they answer the questions provides little guidance for an inferring activity since there was no indication that the answers may not be explicitly stated in text and that children would have to integrate background knowledge with textual information.

Example 4.11: Teacher's Resource Book B, Unit 23, "Journey Through the Stars", p. 237.

Reviewing Narrative Features
Rereading/Lookback: Descriptive Style, Characters

Ripple Effects Skillbook, pages 60-61

| | |
|---|---|
| Locating, Inferring | This activity challenges children to answer questions about the principal characters in the serial. Some questions require recall of events in the story, while others require children to make inferences about the characters' thoughts and behaviour. |

In Example 4.12 which follows, the authors had explicitly stated that inferring was required to answer the questions. The only direction given to children was that they look back through the selection as they answer the questions. It was not explained what they had to do whenever they looked back, what they were to look back for, or why looking back would develop their inferential abilities.

Example 4.12: Ripple Effects Skillbook, "Journey Through the Stars", p. 60.

Inferring

Look back through "Journey Through the Stars" as you answer these questions about the main characters. A number of responses may be appropriate.

As noted, if children are to develop their inferential abilities, they require direct, explicit instruction on the nature of inferring and the strategies which would enhance their abilities to infer. Additionally, they need guided practice to gain ownership of these strategies for independent use. It was found that the Networks program did not provide the explicit guidance and direction that researchers conclude is necessary if children are to develop their inferential abilities. Moreover, in order to help teachers, with a limited knowledge of inferring, to use the activities to maximum advantage, the authors should have indicated which part(s) of the activities developed inferring. Even then, such specification would assist teachers only in question selection, and not in how to teach inferring. It is reasonable to conclude from these findings that the authors did not fully incorporate into their program current reading research and theory that children need explicit guidance and direction in order to develop their inferring abilities.

In summary, inferring is prescribed for teaching in the Nelson LDR Networks Program. The authors indicated that it

was prescribed in 45 of the 46 chapters in the Teacher's Resource Book. However, prescription was not found to be accompanied by specification, direction and instruction. It was noted that the authors had specified that various activities were inferential, yet similar activities were not identified as inferential. Examination of such activities revealed that the authors had prescribed similar tasks to develop children's thinking processes, yet they did not indicate why one activity developed children's inferential abilities while another activity did not. There was no explanation given on what inferring is or how specific activities facilitate it. No discussion on how to teach strategies, to identify where inferring was required, or how to make the necessary inferences to construct meaning was provided. The program seems to be founded on a belief that the mere completion of an activity is sufficient to ensure that children understand the text and develop their reasoning abilities, a belief that is highly suspect.

While inferring is indeed prescribed in the grade five Nelson LDR Networks program, albeit, in a limited manner, the degree to which it is specified is the subject of the next section.

Question 2: To What Extent Is Inferring Prescribed for Teaching in the Grade Five Nelson LDR Networks Program?

The results of the analysis of inferring found in the Networks program for grade five will be reported, analyzed and discussed under the following headings: Ripple Effects Anthology and related components; Time Spinners Anthology and related components; and, Comparative analysis of inferential activities across Ripple Effects and Time Spinners. The answer to question 2 will be summarized prior to my moving on to answer question 3.

## Ripple Effects Anthology and Related Components

The TRB was examined to determine the frequency and percentage of inferring activities presented for the Ripple Effects Anthology. A comparison of the total number of inferential and non-inferential activities identified for Ripple Effects is presented in Table 2. Inferring activities were found in the Focusing, Reflecting and Extending/ Culminating steps of the four-step lesson plan. An examination of all activities revealed that out of a total of 155 activities 59 (38%) were identified as inferential and 81 (52.3%) were identified as non-inferential according to the definition of inferring adopted for this study. The remaining 15 activities (9.7%) could not be identified as either inferential or non-inferential due to vagueness.

Table 2 shows that there were almost one and three quarters as many non-inferential activities as inferential activities in the Focusing on Content step. Having only 37%

Table 2

A Comparison of Inferential to Non-Inferential Activities in the Ripple Effects Anthology

| Instructional Sequence Step | Inferential Activities | | Non-Inferential Activities | | Unclear Activities | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Focusing on Content | 10 | 37% | 17 | 63% | 0 | |
| Focusing on Process | 10 | 52.7% | 7 | 36.8% | 2 | 10.5% |
| Reflecting on Content | 20 | 51.3% | 14 | 35.9% | 5 | 12.8% |
| Reflecting on Process | 6 | 31.6% | 11 | 57.9% | 2 | 10.5% |
| Extending/ Culminating | 13 | 25.5% | 32 | 62.7% | 6 | 11.8% |

of the 27 activities as inferential would seem to be inconsistent with the purpose of the Focusing on Content step as expressed by the authors. Specifically, this step was designed to draw children into the selection by helping them create a purpose and context for reading. Children are expected to both share relevant background knowledge and experiences and predict story content using picture cues, headings and introductory readings. Given the low percentage of inferential activities in this instructional step, it can be concluded that an insufficient number of activities required children to use textual information to bridge the gap between what they already knew and the story content.

The highest proportion (52.7%) of inferential activities was found in the Focusing on Process step. The Focusing on Process step was designed to provide children with strategies to help them comprehend the text selection. It would be expected that, since inferring is necessary to comprehension, the Focusing on Process step would provide both explicit directions for inferring and a large number of activities to help children develop their inferential abilities. As was noted in the previous section, directions and instructions for inferring were either unclear or non-existent. Moreover, it was found that many of the teaching suggestions for inferring were used only once or twice, and there were no suggestions for later review. Using a teaching suggestion only once or twice is not likely to provide sufficient

practise for children to gain ownership of the strategies presented.

Of the 39 activities in Reflecting on Content, 20 (51.3%) were identified as inferential. This seemingly high percentage of inferential activities might appear to be reasonable, however, analysis of each activity revealed that only a small proportion of the questions suggested for each activity was inferential. The majority of questions dealt with the explicitly stated, literal content of text. This does not reflect the recommendation of Chou Hare and Pulliam (1980) that teachers should ask a high proportion of questions that go beyond the recall of explicit textual information. Anderson, Hiebert, Scott and Wilkinson (1985) concluded that questions should stimulate children's higher-level thinking and provide them with strategies to facilitate comprehension. Children would have had more opportunities to practice inferring had there been a greater number of inferential questions suggested in this step. Inferential activities in Reflecting on Content could both stimulate children's inferential thinking and enable them to bridge the gap between the explicitly stated text information and the ideas and information implied by the author. Thus, inferential activities would help children to reason more effectively and, consequently, lead to greater comprehension of textual material.

Further analysis of Table 2 revealed that the Reflecting on Process step, which is intended to teach the how of reading and to reinforce reading strategies, provided a total of 19 activities for the Anthology selections. Only 6 (31.6%) of these activities gave children practise at inferring. This would not seem to be sufficient for children to gain ownership of the reading strategies intended to develop their inferring abilities, especially for activities where directions were unclear or non-existent.

The activities in the Extending/Culminating step comprised 32.9% of the total for the Ripple Effects Anthology. Activities in this step were intended to extend children's language experiences beyond the material presented in the program. They were designed to encourage children to integrate background knowledge with the selection content; to extend topics and forms introduced in the other steps of the instructional sequence; to pursue topics of particular interest; and to provide independent practice for skills introduced in the other steps. Thus, it would seem that because inferring is necessary to comprehension, a large proportion of the activities in this step would be inferential. Further, since children who complete the Extending/Culminating step have already completed the activities in the other steps, it would be expected that the material presented would be more difficult and that children would be required to make more complex inferences. Yet, the

results presented in Table 2 show that only 25.5% of the 51 activities in Extending/Culminating were identified as inferential. As with the low percentage of inferential activities in the other steps, it is difficult to see how children would receive adequate instruction and practise in this step of the program.

Table 3 presents the number of inferential to non-inferential activities found in the Ripple Effects Skillbook. The analysis revealed that out of a total of 72 activities 15 (20.8%) were identified as inferential; 48 (66.7%) as non-inferential; and 9 (12.5%) were unclear. While the highest percentage of inferential activities (50%) was found in the Extending/Culminating step, only four out of a total of eight were inferential. Consequently, children would not have many opportunities to extend their inferring abilities. There were three activities prescribed for Focusing on Content, however, none of these was inferential. The low number of activities in this step was not surprising since Focusing activities, which are intended to develop various thinking processes such as inferring, were oriented more to group participation. As such, they would generally be inappropriate for Skillbook activities.

The Reflecting on Content and Reflecting on Process steps had a total of 61 activities, yet only 11 (18%) were identified as inferential. Considering the conclusions of researchers and theorists that children require frequent

Table 3

A Comparison of Inferential to Non-Inferential Activities in the Ripple Effects Skillbook

| Instructional Sequence Step | Inferential Activities | | Non-Inferential Activities | | Unclear Activities | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Focusing on Content | | | 3 | 100% | | |
| Reflecting on Content | 6 | 31.6% | 12 | 63.1% | 1 | 5.3% |
| Reflecting on Process | 5 | 12.0% | 29 | 69.0% | 8 | 19.0% |
| Extending/ Culminating | 4 | 50% | 4 | 50% | | |

opportunities to practice inferring, it would seem that the number and percentage of inferential activities provided in the Ripple Effects Skillbook does not show evidence of incorporation of recent research on inferring. A much higher frequency of inferential activities is warranted, if we want to promote reading at a sophisticated level in our schools.

The frequency and percentage of inferential and non-inferential activities prescribed for Ripple Effects in the Reading and How student component are presented in Table 4. Out of a total of 49 activities, only 9 (18.4%) were identified as inferential, 36 (73.5%) were non-inferential and 4 (8.4%) were difficult to identify. With the exception of 2 activities in Focusing on Content, all other suggested activities were prescribed for use in the Extending/ Culminating step, this means that neither of the Focusing activities was identified as inferential. The purpose of the Reading and How component was to help children recognize and practise reading strategies using a variety of materials. The text provided a variety of stories, informational articles, poems, comics, cartoons and classified ads. With only 18.4% of the activities identified as inferential, children are yet again not given much opportunity to practise inferring through different types of reading.

Tables 5 and 6 present a comparison of inferential and non-inferential activities provided for in the novel One John A Too Many. Specifically, Table 5 presents the data for the

Table 4

A Comparison of Inferential to Non-Inferential Activities in the Reading and How

| Instructional Sequence Step | Inferential Activities | | Non-Inferential Activities | | Unclear Activities | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Focusing on Content | | | 2 | 100% | | |
| Extending/ Culminating | 9 | 19.1% | 34 | 72.3% | 4 | 8.6% |

Table 5

Nelson Novels: Prereading Activities

| Novel | Inferential Activities Frequency | % | Non-Inferential Activities Frequency | % |
|---|---|---|---|---|
| One John A Too Many | 3 | 60% | 2 | 40% |
| Always Ask For A Transfer | 2 | 50% | 2 | 50% |

Table 6

Nelson Novels: Post-Reading Activities

| Novel | Inferential Questions Frequency | % | Non-Inferential Questions Frequency | % |
|---|---|---|---|---|
| One John A Too Many | 13 | 38.2% | 21 | 61.8% |
| Always Ask For A Transfer | 13 | 50% | 13 | 50% |

prereading activities and Table 6 the data for the post-reading questions. At this point in my discussion, I will speak only to the novel One John A Too Many. The data for the novel Always Ask for a Transfer, which is also included in Tables 5 and 6, will be discussed with the Time Spinners components of the program. The purpose of the novels was to give children an opportunity to enjoy extended reading experiences. The prereading activities were designed to help children set a purpose for reading and to give them an opportunity to infer from text in order to make guesses and predictions about events in upcoming chapters. The reader must be cognizant that, when compared to the percentage of inferential activities identified in other components of the program, the percentage (60) of inferential activities prescribed for the novel appears disproportionately high because the total is low.

All post-reading activities for the novel consisted solely of questions. Each question was analyzed to determine whether it was inferential. Of the 34 questions provided, 13 (38.2%) were identified as inferential and 21 (61.8%) non-inferential. Pearson and Johnson (1978) identified three categories of question-answer relations and recommended that teachers analyze the questions they ask children to ensure that there is a reasonable balance among the three types of questions. The high proportion of literal post-reading questions provided for the novel One John A Too Many does not

reflect the balance suggested by Pearson and Johnson. Research reveals that a high proportion of inferential questions, which require children to make the inferences necessary to comprehend a selection, increase the probability that children would understand both the literal content and the underlying meaning of the story.

The results of the analysis of inferring found in Time Spinners will be reported, analyzed and discussed next. However, in instances where the findings are similar to those just discussed in Ripple Effects, the findings only will be reported in order to reduce repetition.

## Time Spinners Anthology and Related Components

The TRB was also examined to determine the frequency and percentage of inferential activities provided for the Time Spinners Anthology. A comparison of the total number and percentage of inferential and non-inferential activities is presented in Table 7. Inferential activities were identified in the Focusing, Reflecting and Extending/Culminating steps of the four step lesson plan. Of the total 158 activities provided, 69 (43.7%) were identified as inferential, 78 (49.3%) as non-inferential and 11 (7%) were unclear. The inferential activities ranged from 23.1% to 61.9% with the highest percentage prescribed within the Focusing on Process step, and the lowest for the Reflecting on Process step. The Focusing on Process step for both the Time Spinners and

Table 7

A Comparison of Inferential to Non-Inferential Activities in the Time Spinners

| Instructional Sequence Step | Inferential Activities | | Non-Inferential Activities | | Unclear Activities | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Focusing on Content | 7 | 31.8% | 13 | 59.1% | 2 | 9.1% |
| Focusing on Process | 13 | 61.9% | 7 | 33.3% | 1 | 4.8% |
| Reflecting on Content | 22 | 53.7% | 17 | 41.5% | 2 | 4.8% |
| Reflecting on Process | 6 | 23.1% | 18 | 69.2% | 2 | 7.7% |
| Extending/ Culminating | 21 | 43.8% | 23 | 47.9% | 4 | 8.3% |

Ripple Effects Anthologies offered the highest percentage of inferential activities compared to the other steps of the lesson plan, although the percentage (61.9) prescribed for this step in Time Spinners was greater than the percentage (52.7) prescribed for Ripple Effects. It might be concluded from these results that the authors had incorporated the recommendations of various researchers by including a high proportion of inferential activities. Yet, even though this step contained the highest percentage of inferential activities, Table 7 shows that there was only a total of 21 activities in that particular step of which 13 were identified as inferential. Consequently, there were not many opportunities for children to be taught inferring strategies and how to use text clues to make inferences and predictions about the upcoming selections. The greatest increase in the frequency and percentage of inferring activities from the Ripple Effects Anthology to the Time Spinners Anthology was found in the Extending/Culminating step. It was noted that 21 (43.8%) of the activities were identified as inferential as compared to 13 (25.5%) in the Ripple Effects Anthology. While this increase was an improvement, the percentages of inferring activities are still lower than 50%. In only two of the five steps were there more activities of an inferential nature than of a non-inferential nature.

An analysis of the Time Spinners Skillbook activities presented in Table 8 revealed that there were 68 activities

Table 8

A Comparison of Inferential to Non-Inferential Activities in the Time Spillers Skillbook

| Instructional Sequence Step | Inferential Activities | | Non-Inferential Activities | | Unclear Activities | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Reflecting on Content | 5 | 23.8% | 12 | 57.1% | 4 | 19.1% |
| Reflecting on Process | 5 | 13.5% | 30 | 81.1% | 2 | 5.4% |
| Extending/ Culminating | 5 | 50.0% | 4 | 40.0% | 1 | 10.0% |

of which 15 (22%) were inferential; 46 (67.7%) non-inferential; and 7 (10.3%) unclear. Thus, there were three times as many non-inferential activities as inferential activities. Skillbook activities were only provided for the two Reflecting steps and the Extending/Culminating step and there were inferential activities for all three of these steps. There was little difference in the percentage of inferential activities for both Skillbooks except for Reflecting on Content where the Ripple Effects Skillbook had a higher percentage (31.6) than that calculated (23.8%) for the Time Spinners Skillbook. Of interest is the fact that there were 15 inferential activities identified for each Skillbook. Consequently, if the only independent practice that children receive over the period of a year in school is that which is provided in the Skillbooks, then it is unlikely that it is sufficient for children to acquire a good understanding of the various inferring strategies.

Table 9 presents the data concerning the activities presented in the Reading and How component of the program. There were 59 activities provided: 10 (16.9%) were inferential; 45 (76.3%) were non-inferential; and 4 (6.8%) were unclear. The majority of these activities (56) as suggested for the Extending/Culminating step of the instructional sequence; yet, only 8 (14.3%) of these activities were identified as inferential. The low percentage of inferential activities in this component was

Table 9

A Comparison of Inferential to Non-Inferential Activities in the Reading and How

| Instructional Sequence Step | Inferential Activities Frequency | % | Non-Inferential Activities Frequency | % | Unclear Activities Frequency | % |
|---|---|---|---|---|---|---|
| Focusing on Content | 2 | 66.7% | 1 | 33.3% | | |
| Extending/ Culminating | 8 | 14.3% | 44 | 78.6% | 4 | 7.1% |

disappointing because this is a pupil component designed to increase children's awareness of their reading strategies and to give them practice to enhance their abilities, such as inferring.

To determine the number of inferential suggestions provided for the novel Always Ask for a Transfer, the prereading activities and post-reading questions were analyzed. The results are presented in Tables 5 and 6. As noted in Table 5, there were only 4 prereading activities and half were inferential. Analysis of the post-reading questions in Table 6, revealed that there were 26 questions, half of which were inferential. The number of prereading inferential activities and post-reading inferential questions prescribed for this novel was consistent with the findings discussed for the novel One John A Too Many, also presented in Tables 5 and 6. There were inferential questions provided for each unit of this novel. While 50% of the questions were inferential, it is still not in keeping with research which suggests that higher proportions of inferential questions should be provided in order to enhance children's comprehension.

The next subsection will compare and summarize the frequency and percentage of inferential activities for the two anthologies and related components.

## Comparative Analysis of Inferential Activities Across Ripple Effects and Time Spinners

Examination of the TRB revealed a total of 155 activities for the Ripple Effects Anthology; 59 (38%) of those activities were identified as inferential according to the definition of inferring adopted for this study. There was a total of 158 activities prescribed in the Time Spinners Anthology, of which 69 (43.7%) were identified as inferential. As presented in Table 10, there was a slightly higher frequency and percentage of inferential activities in the TRB for Time Spinners than for Ripple Effects. Both Skillbooks had 15 inferential activities, however, the higher percentage (22%) was found in the Time Spinners Skillbook. The lowest percentage of inferential activities was found in the Reading and How component of the program for Ripple Effects (18.4%) and Time Spinners (16.9%). As presented in Table 6, the two novels, that are used to complement the Anthologies, had the same frequency (13) of inferential questions identified.

Time Spinners Anthology had a slightly higher frequency and percentage of inferential activities than the Ripple Effects Anthology. However, the difference is not significant enough to conclude that the Time Spinners portion of the Nelson LDR Networks Program is superior to Ripple

Table 10

Ratio of Inferential Activities Across Components

| Component | Ripple Effects Frequency | % | Time Spinners Frequency | % |
|---|---|---|---|---|
| Teacher's Resource Book | 59 | 38% | 69 | 43.7% |
| Skillbook | 15 | 20.8% | 15 | 22.0% |
| Reading and How | 9 | 18.4% | 10 | 16.9% |
| Overall | 83 | 30.1% | 94 | 33% |

Effects in developing children's inferring abilities. The 46 units in the TRB are evenly distributed between Ripple Effects and Time Spinners; there is a pupil Skillbook and a novel included for each Anthology; and there is a similar number of activities prescribed for each Anthology in the Reading and How text. Thus, maybe there was some plan to ensure a high degree of similarity between the materials presented, the frequency of activities prescribed, and the extent of inferential activities provided for both Ripple Effects and Time Spinners.

In summary, there was a total of 570 activities in the two Anthologies and related components of the program, as presented in Table 11. Only 182 (31.9%) of these activities were identified to be inferential. There were 338 (59.3%) non-inferential activities and 50 (8.8%) unclear activities. There was a general consistency between the total number of activities provided in Ripple Effects and Time Spinners and the frequency and percentage of inferential activities across both components of the program.

Various researchers noted that many basal reading programs did not provide a sufficient number of inferential activities to adequately develop children's inferential abilities (Chou Hare and Pulliam, 1980; Durkin, 1986, Guszak, 1967; Major, 1986). These researchers recommended that children be provided with explicit inference instruction and that they be asked a high proportion of inferential

questions. As can be seen from Table 11, the Ripple Effects and Time Spinners components of the Networks program do not offer a high percentage of inferential activities. Overall, it was found that fewer than one-third of the activities were inferential. This low proportion of inferential activities does not seem to incorporate the recommendations of researchers that inferring should be abundantly provided for in basal reading programs.

Research reveals that there has been only a gradual increase in the number of inferential activities in basal reading programs over the past ten years. This study revealed that there is little evidence of a significant change in the proportion of inferential activities in a current grade five basal reading program. Since it is a costly undertaking to develop new basal programs, costing upwards of fifteen million dollars, new programs are only developed, on average, approximately every ten years. Given the slow and gradual increase in the proportion of inferential activities from earlier programs by various publishers to this current program, does it mean that we will have to wait possibly another ten years or more before research recommendations on inferring are incorporated into basal reading programs?

The next major section of this chapter will discuss the findings to the third research question.

Table 11

Total Inferential Activities Across Components

| Component | Total Activities | Inferential Activities | Percentage |
|---|---|---|---|
| Teacher's Resource Book | 313 | 128 | 40.9% |
| Student Skillbooks | 140 | 30 | 21.4% |
| Reading and How | 108 | 19 | 17.6% |
| Novel Prereading Activities | 9 | 5 | 55.6% |

Question 3: How is inferring prescribed for teaching in the Nelson LDR Networks Program for grade five?

As mentioned in the opening section of this chapter, inferring is prescribed for teaching in the Nelson LDR Networks program for grade five. There are activities listed in both the TRB and the pupil components of the program to facilitate and develop children's inferring abilities. The TRB appears to provide a variety of inferential activities under the Focusing, Reflecting and Extending steps of the four-step instructional lesson plan. Activities are also included in the pupil components of the program, including the two Skillbooks, the Reading and How, the Writing and How, the two novels, and the Listening and How cassette tapes. The methods used to teach inferring in each step of the lesson plan, as indicated in the TRB, and in the pupil components of the program will be outlined. Each will be discussed separately and, where appropriate, examples provided. A summary of the analysis of inferring in the Networks program will complete my discussion of the findings.

Focusing Step in the Instructional Sequence

Readers do not extract meaning from text, rather, they construct meaning by integrating the information in text with their background knowledge; and when they do so, they infer meaning. Even the simplest of language comprehenson requires readers to infer. Research shows that children do not

automatically infer while reading, consequently, effective reading programs must provide prereading guidance and direction to help children integrate textual information with background knowledge. In the Networks program, the Focusing step is designed to provide children with prereading strategies. Activities in the Focusing step of the lesson plan were designed to help children both to develop a questioning frame of mind and to prompt guesses and predictions about the selection. There were two categories of Focusing activities presented, Focusing on Content and Focusing on Process and each is discussed next.

Focusing on Content

Activities in this category were intended to provide a context and purpose for reading. Selections were introduced through a variety of discussion and attending activities. The discussion activities involved children in reporting, describing, explaining, interviewing, role-playing, brainstorming, and problem solving. Many of the activities provide sample questions to prompt and guide class discussion. In Example 4.13, the authors indicated that inferring occurs through attending or viewing an illustration in text. The use of illustratons and pictures that parallel the printed text and which are viewed prior to reading is a context-setting device. Pictures can be used to get children to make predictions about the selection. Having children make predictions is a good way of guiding them into making

inferences about how new information in the text related to what they already know. The directions in Example 4.13 suggest that the teacher invite the children to view the illustration in the text as the riddle "Horse Power" is read to them. The children then tell what insights the riddle gives them in explaining why the farmer is using horses to help him work. Children have to integrate their knowledge of farming with the illustration and riddle in order to understand and explain the textual material, that is, children have to infer. This activity is an introduction to the theme on horses and, consequently, the discussion on working horses is intended to activate children's background knowledge prior to reading the other text selections in the theme. McIntosh (1985) recommended that teachers hold a thorough discussion on the text topic before children read the text. This enables children to share their knowledge and the consequent pooling of knowledge extends and enriches the background knowledge of all the children. Discussion also provides an opportunity for teachers not only to detect any misconceptions that children may have prior to experiencing the selection but also to clear up those misconceptions.

**Example 4.13:** Teacher's Resource Book B, Unit 11, Horse Power History, p. 141.

| | |
|---|---|
| | Discussion: Reporting, Describing<br>Attending: Viewing |
| Recalling,<br>Predicting,<br>Inferring, | Invite the children to open their Readers to page 70 and study the illustration while you read the riddle "Horse Power" to them. Ask |

| | |
|---|---|
| Comparing | them what insights the riddle gives them into why the farmer in the illustration is using horses to help him work. Then invite the children to tell what they know about working horses. Here are some possible questions: |

- Where have you seen horses working? In person? On television? At the movies?
- What kinds of jobs were the horses doing?
- Can you think of any jobs horses used to do that they do not do any more?
- Can you think of any jobs horses do today that were not so common in the past?

Developing background knowledge prior to reading is not sufficient, children need to be taught strategies to enable them to integrate their background knowledge with the textual information. The next section discusses the Focusing strategies that are presented for teaching children to infer.

## Focusing on Process

The emphasis in this category was to provide children with specific strategies to use while reading. The methods presented for teaching inferring were skimming, questioning and representing schematically. An illustration of each and an explanation of how it relates to inferring follows.

### Skimming

Skimming was designed to provide a strategy for using text format, print signals, pictures and illustrations to infer and make predictions about text content. Skimming activities allow children to adjust their reading rate to achieve a specific purpose. Children can skim text to determine if the information they are seeking is explicitly stated. If the information is not explicitly stated, they

can look for clues to guide them in making the inferences necessary to help them comprehend text. Example 4.14 illustrates a skimming activity where the children are invited to use both the format of the poem and an illustration to make inferences about the changes in ponies brought out into the green fields and sunlight after years of working in a coal mine. Having previously read a story about the conditions ponies endured while working in a coal mine, children would have to infer the feelings of the ponies both in the enclosed mine and in the open field. Thus, skimming is a procedure that can be used to help develop children's inferring ability. The authors of the Nelson LDR Networks program have utilized this procedure.

Example 4.14: Teacher's Resource Book B, Unit 14, "The Pit Ponies", p. 165.

| | |
|---|---|
| | ON PROCESS<br>Previewing Poetic Structure<br>Skimming: Format, Illustration |
| Locating, Imagining, Predicting, Inferring | Invite the children to open their Readers to pages 94-95, read the title of the poem, and view the illustration. Ask the children what they think the ponies will be like at the beginning of the poem, then what they will be like at the end of the poem. |

Questioning

Questioning activities help develop a questioning frame of mind and get children actively involved in a selection prior to reading. Four questioning strategies were offered as teaching suggestions to develop children's inferring abilities in this Focusing step. These questioning

strategies were: How Many Questions?, I Wonder, I Think, ReQuest (Reciprocal Questioning), and PReP (Pre Reading Plan). Although teacher-directed, the authors indicated that the teacher's role is to model these questioning strategies and prompt questions, guesses, and predictions that will help children anticipate meaning. The modelling approach is designed to transfer ownership of the strategies to children.

An example of a questioning strategy used in this program to develop inferring is illustrated in Example 4.15. The strategy "How Many Questions?" encourages children to read the title or view the illustrations in text and by free-association to formulate questions. Encouraging children to pose questions prior to reading helps them to organize their comprehension based on what they want to understand and what is unclear to them. Prereading questions will either activate children's background knowledge or help them develop expectations about text content. In posing questions children often make guesses and predictions about the answers based on inferences made while previewing text. The purposes for reading evolve from the children's own questions, and reading becomes an active search for information to confirm or reject their prior predictions and to find answers to their questions.

Example 4.15: Teacher's Resource Book B, Unit 39, "Delivering the Goods", p. 301.

FOCUSING

ON PROCESS

Previewing Narrative Structure
Skimming: Format, Illustrations
Questioning: How Many Questions?

| | |
|---|---|
| Locating, Predicting, Inferring | Let the children open their Readers to page 117, view the illustration, and read the title. Then invite them to play a game of How Many Questions? To play, encourage the children to pose as many questions as come to mind, free-associating one question with another. |

Example 4.16 provides an example of a ReQuest questioning strategy. In the ReQuest procedure the teacher and student take turns asking each other questions. The directions given in this example indicate that the teacher's role is to model the types of questions to ask and the kinds of responses to give. In using the ReQuest strategy it is important for the teacher to model higher level questions, including inferential questions, in an attempt to get children beyond the level of literal recall. Moreover, in answering the questions posed by the children, it is also important for teachers to discuss the textual clues that helped them make the inferences. In so doing, teachers will be both modelling and explaining the thinking processes involved in reading and comprehending text.

Example 4.16: Teacher's Resource Book B, Unit 9, "Maybe a Mole", p. 124.

Previewing Narrative Structure
Questioning: ReQuest

| | |
|---|---|
| Locating, Predicting, Interpreting, Inferring | To play ReQuest, both students and teacher silently read part of the selection, then take turns asking and answering each other's questions about what they have read. The teacher's role is to model the type of questions to ask and the kind of responses to |

give, without giving away details that would spoil the children's enjoyment of the story.

Let the children read the title and first paragraph of the selection, then invite them to pose as many questions as come to mind. Answer as if you had not read the selection. For example:

Student: What is the mole doing on the rock?

Teacher: Perhaps he is lost and can't find his way home.

Student: Why will the mole fry his gizzard?

Teacher: I don't think moles are used to being out in the hot sun.

Read the next paragraph, then let the children offer answers to the questions you pose. The dialogue might go like this:

Teacher: Who doesn't want the mole underground?

Student: Maybe the other animals who live underground. Other moles.

Teacher: Why do you suppose other animals would send him away?

Student: Maybe he did something bad.

Continue taking an alternate role with the children, paragraph by paragraph, until you come to the words "What happened, finally?" on page 57.

Activities that encourage children to generate questions, make predictions, develop expectations, and activate background knowledge tend to facilitate inferring. Having activities that encourage children to generate questions is a positive feature of this program because

questioning strategies have the potential to develop children's inferring abilities however, that potential is limited by the nature of the questions asked. It was noted that the authors did mention that, as children's competence in using the strategies increased, the teacher could model different types of questions and answers that go beyond the literal level. Yet this could be a difficult task for teachers with a limited knowledge of inferring.

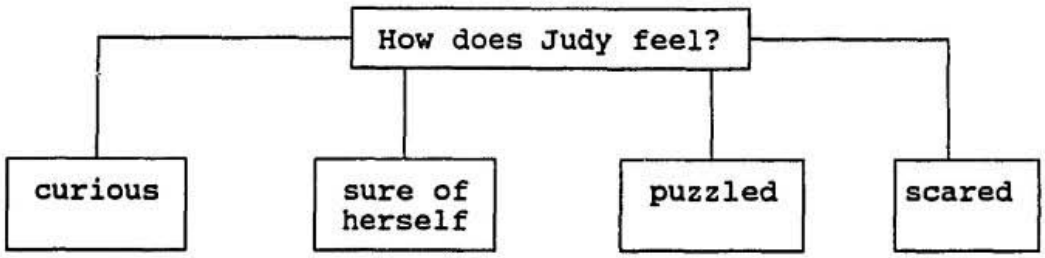
Representing Schematically

In the Focusing step, the authors suggest using schematic diagrams as another method of introducing a selection. To construct such a diagram it was suggested that children skim text clues to make inferences and generate predictions about a selection. Using these predictions, children prepare a diagram which gives them a visual indication of how the ideas and information may be presented in the selection. There were eight types of schematic diagrams presented in the TRB: only three types, Emotions Web, Predictions Web, and Expectations Outline were used to facilitate inference instruction in the Focusing step. A brief explanation of each of the three types, together with an example, is provided next.

Emotions Web. An Emotions Web is built around a teacher-posed core question, such as "How did the story character feel?". Since the question is posed after only a few paragraphs in the text are read, there is not enough

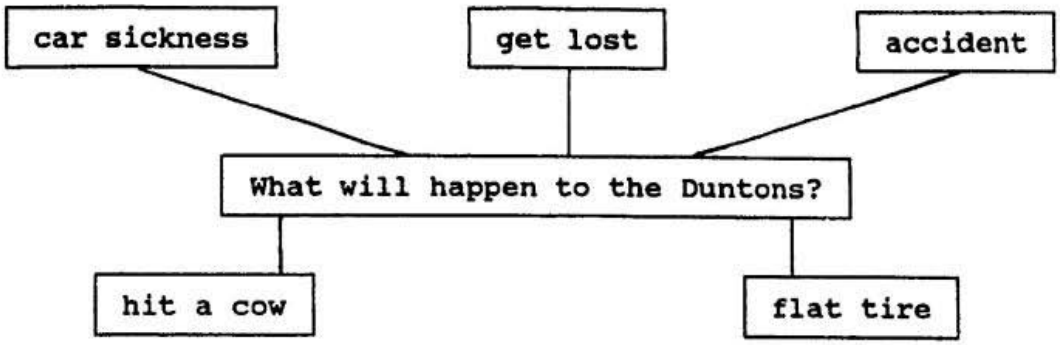
information for children to conclusively answer the question. Thus, children have to synthesize the limited textual information with their own interpretation of text and knowledge of human emotions and thereby infer the feelings of the story character. The following example illustrates an Emotions Web.

Example 4.17: Teacher's Resource Book B, Unit 4, "The Door", p. 74.




Predictions Web. A Predictions Web (Example 4.18) is similar to an Emotion- Web in that it also is built around a core question. In this example, children read about a key event or happening in the story. Then in response to the core question, such as "What will happen to the Duntons?" they infer and make predictions about the direction of the story. The use of a key question directs children to read the text with specific purposes in mind. Asking questions that require inferences and which elicit predictions about the text facilitates children's comprehension of the story.

Example 4.18: Teacher's Resource Book B, Unit 36, "An Automobile Trip", 1912, p. 338.




Expectations Outline. The Expectations Outline provides children with direction in reading a non-narrative selection. The authors used Expectations Outlines to activate background knowledge and to help children organize both what they know and what they infer from skimming or reading a portion of text. These are intended to help children organize information in a hierarchical manner to facilitate the integration of textual information with background knowledge when reading. In Example 4.19 which follows, children were instructed first to skim through the selection, and then they were asked what they expected to learn from reading the selection. Their expectations were categorized in a diagram similar to the one illustrated in Example 4.19.

**Example 4.19:** Teacher's Resource Book, Unit 6, "What's Going On Down There?", p. 93.

ON PROCESS
Previewing Non-narrative Structure
Skimming: Format, Print Signals, Illustrations

Representing Schematically: Expectation Outline

Predicting, Inferring, Classifying

Invite the children to open their Readers to "What's Going On Down There?" Let them read the title and spend a few minutes thumbing through the selection, then guide them in a discussion of the format:

- What did you notice first about the pages in this selection? (photographs, boldface type)
- If you were doing research at the library and wanted a quick idea of what this selection was about, what would you look at? (title, photographs, boldface type; you might read page 32)

Next, invite the children to build an Expectation Outline. Ask them "What do you now think you will find out about by reading this selection?" To make an Expectation Outline, write the children's responses on the chalkboard, grouping them by topic as they are offered. When all the responses are recorded, ask the children to assign titles to the groups. Here is how the outline may look:

| Equipment | Underwater Creatures | Ways of Exploring Underwater | Resources |
|---|---|---|---|
| fins<br>snorkel tube<br>scuba equipment | whales<br>creatures<br>fish<br>flashlight fish<br>unknown creatures | swimming<br>diving<br>submarine<br>undersea community | minerals<br>solar energy |

The three schematic diagrams, Emotions Web, Predictions Web and Expectations Outline, presented in the Nelson program were designed to help set the stage for reading and to provide the children with a strategy to evoke background knowledge prior to experiencing the selection. Teachers who want to facilitate children's comprehension of text must help them employ strategies for actively relating the new

information they gain from reading to their previous knowledge structures. Strategies that help children evoke prior knowledge and predictions about a selection may help to facilitate inferential comprehension. The teacher-led discussion that takes place during the completion of these diagrams not only allows teachers to assess the level of background knowledge that children have on the topic, but also enables them to identify and correct any misconceptions that children have. If children are to make the inferences necessary to comprehend text, they must utilize relevant background knowledge.

In my judgement, the methods used in the Networks program to have children represent text schematically are an effective way to actively involve children in reading. Making predictions or forming expectations prior to reading is an important aspect of inferring. The authors of the Nelson program appear to recognize this.

### Reflecting Step in the Instructional Sequence

Post-reading activities are designed to achieve several purposes. They are intended to provide and reinforce strategies that children can use during independent reading to understand text, pose questions that further the understanding of the selection, allow children to check their predictions about the content and structure of the selection, and provide opportunities for children to extend and enrich their understanding of text.

There were post-reading activities and teaching suggestions presented in the Reflecting step of the lesson plan. There were two categories of Reflecting activities identified, Reflecting on Content and Reflecting on Process. The methods presented for teaching inferring in each category are discussed.

## Reflecting on Content

Activities under Reflecting on Content were intended to encourage children to reconstruct text content and share their interpretation of text. This was achieved by using a variety of methods, including discussion, composing, oral presentation, and art. Each method will be discussed and illustrations provided where appropriate.

### Discussion

The discussion activities involved children in retelling, describing and explaining their interpretations of text. Sample questions were provided in the TRB to help teachers prompt discussion. Unfortunately, the majority of questions suggested for discussion focused on the literal content of text. It was suggested that children generate and answer their own questions about the selection. However, research has shown that children who are asked mostly literal questions tend to generate similar types of questions. Therefore, if we expect children to generate inferential questions, then questions provided for teacher-led discussions must consist of inferential questions to help

children learn the nature and purpose of inferential questioning strategies.

A Reflecting strategy used regularly throughout the program was role-playing and retelling (see Example 4.20). You will note that it was suggested that children reconstruct the content of the story by interviewing and role-playing the part of Dorothy. Sample questions provided for the interview included some inferential questions. In this type of activity children project themselves into story characters and, drawing on their understanding of text, act out their interpretations of the character's role. Role playing activities are generally considered inferential since children must use background knowledge to infer the behaviour and responses of the character. Acting out the story encourages children to generate inferential relationships in order to give meaning to the story and make it comprehensible to others.

Example 4.20: Teacher's Resource Book B, Unit 2, "The Mind Reader", p. 66.

| | |
|---|---|
| | ON CONTENT<br>Discussion: Role-playing, Retelling |
| Locating, Imagining, Inferring, Synthesizing | Invite the children to reconstruct the content of the selection by taking turns "interviewing Dorothy." Write interview questions, such as those below, on the chalkboard, then let the children select partners. Suggest that one partner role-play Dorothy for the first five questions, then interviewer for the next five questions. Encourage the children to skim the story as necessary for answers to the interviewer's questions. |

1. Dorothy, how do you feel about having a reputation as a mind reader? Why is that?
2. Can you explain how you knew where Carlos's cat was hiding?
3. How did you know that Yvette's sister would get a bike for her birthday?
4. Were you happy about being the only fortune-teller at the Fall Fair? Why or why not?
5. How did you know Terry would win the baseball glove?
6. How did you know the teacher was going to take a trip?
7. How did you know how much money was earned for charity at the Fall Fair?
8. Why did you tell your friends how you know all those things?
9. How did you feel when your friends called you a fake?
10. Do you have any predictions for the future?

Representing Creatively

Inferential activities under this heading require the children to represent their understanding of the story through drawing pictures or preparing time lines. An instructional strategy which encourages children to explore the meaning of text through art is shown in Example 4.21. Children are asked to illustrate some of the sections in the story by "using text to find detailed directions for their work and improvising as necessary." The improvising that children have to do in this activity is, in fact, inferring, since all details are not contained in text and children have to integrate background knowledge with textual information.

Example 4.21: Teacher's Resource Book B, Unit 13, "Horses in the Coal Mines", p. 161.

Representing Creatively: Pictures

| | |
|---|---|
| Imagining, Interpreting, | Several aspects of the horses' work in the mines are described in detail in the selection. |
| Inferring, Synthesizing | Some children may enjoy illustrating a few of these sections, using text to find detailed "directions" for their work and improvising as necessary. Consider suggesting that the children make line drawings, then highlight the shade with charcoal or graphite pencil. Encourage the children to display or exchange their illustrations. |

As suggested in some of the activities provided for representing creatively, it can be extended when children share and discuss their illustrations within a group. By sharing and discussing their illustrations, children are exposed to a variety of interpretations which allow them to extend and clarify their understanding of the selection. To explore the meaning of text through art requires the children to make inferences.

Oral Presentation

The teaching suggestions in the TRB provide activities that allow children to explore written material through oral presentation. Activities suggested for inferring involve the children in poetry reading, dramatic interpretations, choral reading, and oral reading. In making an oral presentation, children bring their own personal interpretation of the poem or story to the reading. Based on their own background knowledge and personal experience, they individually decide what is important, where to place emphasis, and how to use the language effectively to present their interpretation of

the text. To sense rhythm in order to give life to a poem requires inferring.

Composing

Composing activities require the children to work either independently or collaboratively in order to restate or elaborate on the content of a selection. These activities can be either written or oral and involve the children in composing their own questions and/or answers, writing paragraphs, stories, and experimental writing. An activity where children are asked to compose a paragraph is shown in Example 4.22.

Example 4.22: Teacher's Resource Book B, Unit 35, "Bright Ideas: The Wheels Go Round", p. 333.

Composing: Paragraphs

| | |
|---|---|
| Locating, Interpreting, Inferring, Comparing, Seeing Relationships: Cause/Effect, Main Idea/ Detail, Synthesizing, Making Judgments | Invite the children to respond to ideas in the selection by composing a paragraph answer to a "thought" question, such as one of those below. Encourage them to combine facts and impressions from the selection when they are composing their paragraphs.<br>- Why do people have bright ideas?<br>- Why do inventions designed to solve the same problem or answer the same need keep improving over the years?<br>- Will people be able to keep making better and better wheeled vehicles? Why or why not?<br><br>Let the children share their completed paragraphs with partners. |

The suggestion that children combine facts and impressions from the selection in answering a thought question encourages

them both to think inferentially and to integrate background knowledge with textual information.

In summary, the Networks program provided a variety of Reflecting strategies to develop children's inferring abilities. These methods involved children in group discussion, role-playing, retelling, oral presentation, and art activities. The next section will discuss the strategies presented in Reflecting on Process.

## Reflecting on Process

Activities in this instructional step were designed to help children recognize and practice the key reading strategies. The methods used were: Schematic Diagrams, Rereading/Lookback, and Reviewing Language Features. Two of these methods, Schematic Diagrams and Rereading/Lookback will be discussed next. Inferring activities provided for Reviewing Language Features were prescribed for use in the Skillbook only and will be discussed in a subsequent section.

### Representing Schematically

The schematic representation strategies allowed children to show their understanding of text by means of a diagram. These diagrams gave a visual representation of how text was organized and provided a hierarchical structure which enabled children to organize text and assimilate information more easily. These diagrams enable children to see the important concepts without being distracted by specific or unimportant detail. Moreover, the diagrams help children to assess and

confirm or modify predictions made prior to reading. Of the seven schematic diagrams presented, the five used to develop children's inferring abilities in the Reflecting on Process step are discussed next.

Emotions Web. In the Reflecting step, as shown in Example 4.23, the Emotions Webs were often an extension of the prereading webbing activities introduced, and discussed previously in Focusing on Process. Children were referred to the prereading Emotions Web completed in the Focusing on Process step, illustrated and discussed in Example 4.17, and directed to use the information in the text either to confirm or modify their predictions. In Example 4.23, children had to infer the emotions that the story character, Judy, experienced since these emotions were not explicitly stated in the text. The discussion that takes place as the diagram is being completed allows children to share their personal interpretations of the text. This encourages children to think about the information in the text that helped them formulate any inferences necessary to text comprehension. Sharing their personal interpretations of text exposes children to new perspectives on the story characters and events in ways they may not have considered. In evaluating the interpretations of others, they may hear alternate interpretations of information implied by the writer of the story. This helps children either to confirm or modify the

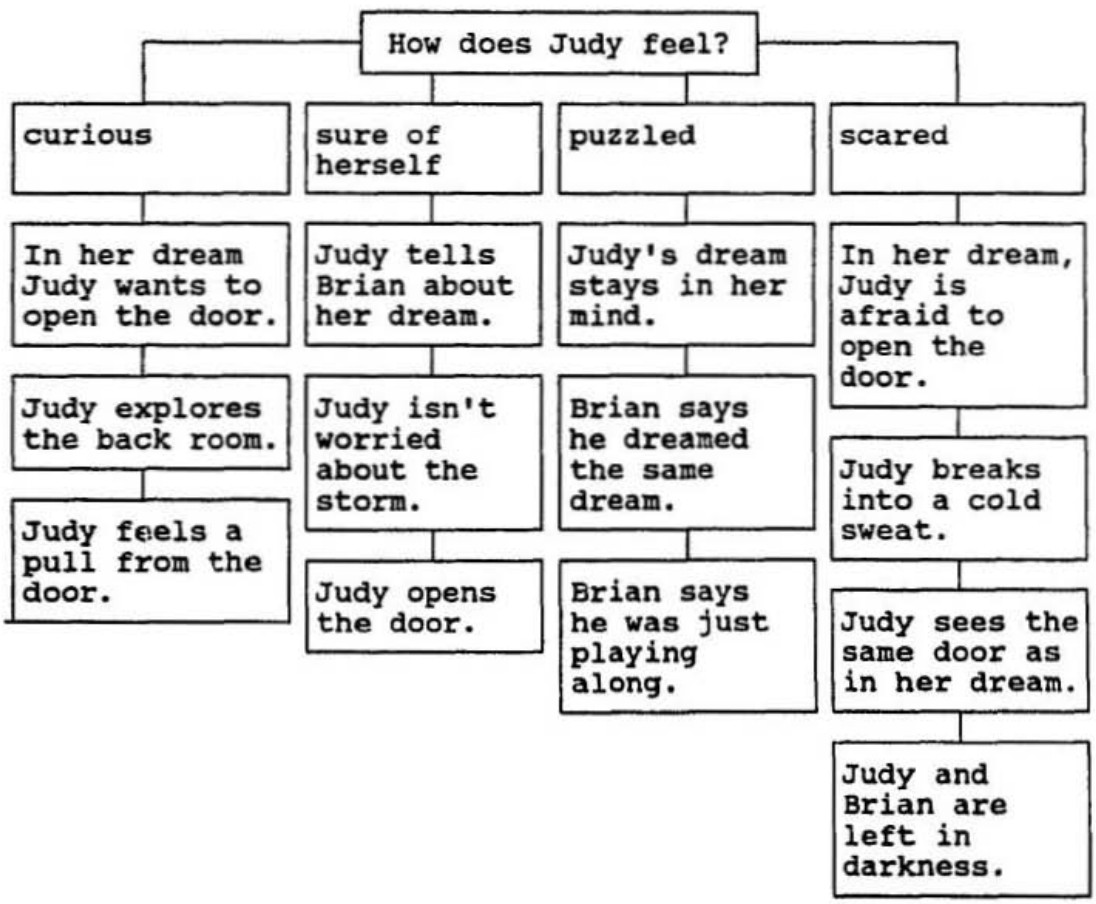
inferences that led to their interpretation of the story. An example of an Emotions Web follows.

Example 4.23: Teacher's Resource Book B, Unit 4, "The Door", pp. 75-76.

ON PROCESS
Reviewing Narrative Structure and Features
Rereading/Lookback: Character
Representing Schematically: Emotions Web

Locating, Inferring, Classifying, Confirming, Drawing Conclusions, Making Judgments

Invite the children to refer to the Emotions Web they began in Focusing on Process. Ask them if they would like to add to or remove any of the feelings, then have them look back through the story for examples of where Judy experienced each feeling. Record the examples in chains attached to the initial circles. The completed Emotions Web might look like the web on page 76.



Guide the children in a discussion of how each chain in the web represents an important facet of what makes the story interesting. Here are some questions to prompt discussion:

- Do you think it is understandable that Judy--or anybody--could have all these different feelings about one event? Why?
- How do you think the story would have gone if Judy were just scared? Just sure of herself? Just curious? Just puzzled?
- Do you think you would have felt the same way about Judy if she told you simply that she was scared? Simply that she was curious?
- Do you think you would have the same opinion of the story if Judy had described only one of her feelings?

Events Outline. An Events Outline, as shown in Example 4.24, is used to depict the structure of a story that has two or more story lines. One story line is presented in detail in the text while the details of the other parallel story are not described. Both story lines share some common characters, settings and events which serve as the starting point for the parallel story. The teacher first helps the children to develop an outline for the main story. Then, through questioning, the teacher prompts the children to use their background knowledge and both explicitly stated and implied information from the main story to infer and imagine Jack's experience in the parallel story. Research reveals that questions, particularly probing questions which require children to think and to explain their answers, facilitate the development of children's inferring abilities.

Example 4.24: Teacher's Resource Book B, Unit 12, "Crossing the Creek", pp. 155-156.

ON PROCESS
Reviewing Narrative Structure
Rereading/Lookback: Sequence
Representing Schematically: Events Outline

Locating, Predicting, Inferring, Classifying, Seeing Relationships: Sequence Confirming, Synthesizing

Point out to the children that the reader knows very little about the experience of one important character in the story--Jack. Ask them if they have any ideas about what happened to Jack, then help them to develop an Events Outline that will give them a framework for recording and expanding those ideas. The following sample outline establishes the notion that Jack's story represents a parallel untold story.

| Laura's Story | Jack's Story |
|---|---|
| Laura and her family are travelling westward in a covered wagon. | Jack is going west with Laura's family. |
| The family reaches a dangerous ford and Ma tells Laura that Jack will be all right swimming across. | Jack begins to cross the creek with the family. |
| Ma and Pa, Pet and Patty struggle and manage to bring the wagon across the creek. | |
| Laura realizes Jack is missing. Pa can't find him. | |
| The family pitches camp. | |
| Laura sees green eyes lurking in the grass and Pa almost shoots at them. | Jack finds the family again. |
| Jack creeps out and licks Laura. | |

> Encourage the children to "fill in" the entries in the column titled "Jack's Story," either on their own or in small groups.

Narrative Cues. Narrative cue diagrams use story frames as depicted in Example 4.25 to reconstruct important features of narrative text. In this example, sentence starters were used to prompt children either to bridge gaps of meaning or convey their impressions of a character in the text. In the example under discussion, two of the four sentence starters require children to infer. In completing the sentence starter "The old sheep is an important character because ..." children had to relate their own background knowledge and experiences to the information in text in order to infer an answer. There was no single correct answer, answers were based on children's interpretation of character or story development. This format encouraged children to infer. The following example, taken from the TRB, illustrates a set of narrative cues.

Example 4.25: Teacher's Resource Book B, Unit 28, "Charlotte Calls a Meeting", p. 270.

> Invite the children to choose one or more of the sets of Narrative Cues below and write their impressions of the characters, using the cues as guides. When the children have completed their compositions, let them meet in small groups to read one another's work and to compare and contrast their individual impressions.
>
> Here are the Narrative Cues:

| |
|---|
| The old sheep is an important character because...<br>At the meeting he suggests...<br>He convinces Templeton by...<br>I think that the old sheep is...because... |

Narrative Diagram. Diagram completion required children to reconstruct the story by placing events under a number of headings such as Setting, Beginning, Action, Results, and Ending. Example 4.26 illustrates a narrative diagram used to develop children's inferring abilities. Inferring could occur when children decide on what information they should place under the appropriate heading. However, the information included would depend on their purposes for reading and their personal interpretation of text. Discussion of their choices, as previously noted, facilitates children's inferring abilities.

Example 4.26: Teacher's Resource Book B, Unit 34, "Legends", pp. 323-324.

Reviewing Narrative Structure
Representing Schematically: Narrative Diagram

"The Origin of Stories"

Locating, Interpreting, Inferring, Classifying, Seeing Relationships: Cause/Effect

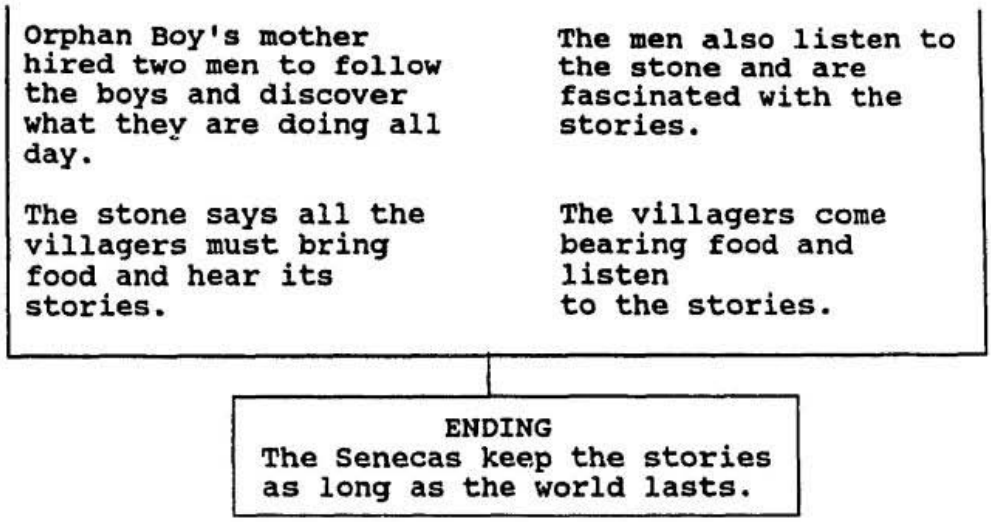
Invite the children to use a Narrative Diagram to build a picture of how "The Origin of Stories" is constructed. Tell them they will be retelling the story to one another a bit later, and encourage them to make the diagram with this retelling in mind--what events would you be certain to relate if you wanted to tell this legend? Then draw the frame of the diagram on the chalkboard and let the children generate and locate the entries.

The Narrative Diagram for the selection may resemble the following:

**SETTING**
A Seneca village, long ago

**BEGINNING**
A woman adopts a little boy, whom she names Orphan Boy.

| ACTIONS | RESULTS |
|---|---|
| The woman give Orphan Boy a bow and arrows and tells him to go hunting. | He kills many birds. |
| Each day he goes further and further into the wood. | He gets so many birds that his mother has enough to share. |
| On the tenth day, the sinew on his bow breaks. | He sits on a high, round, smooth stone in a clearing and begins to fix his bow. |
| The stone says that if Orphan Boy will give it his birds, it will tell him stories. | Orphan Boy hands over the birds and the stone tells him stories all day. |
| Orphan Boy comes home with fewer birds than before. | His mother wonders why. |
| The next day Orphan Boy listens to the stone all day and brings home few birds. | His mother wonders why. |
| His mother hires an older boy to follow him and find out what he is doing all day. | The older boy follows Orphan Boy to the stone, also gives it his birds, and listens with Orphan Boy to the stories. |




Non-narrative Diagram. The non-narrative diagram was used to help children understand the organization and development of non-narrative text. Children select what they consider important ideas c key events in text and these become headings for the diagram. The text information is then analyzed and placed under the appropriate heading. An illustration of a non-narrative diagram was illustrated in Example 4.3. It was suggested that children review their predictions about the organization of the text selection. In the process of analyzing textual information to confirm or reject their predictions, children would have to infer since the text would not explicitly specify what organizational structure was used.

Schematic Diagrams are intended to help children construct a tangible representation of the content of text. Thus, such diagrams may help them see what information has been included and what has been omitted and have to be

inferred. To help children recognize what information in the diagram has been inferred, teachers should guide children in rereading text to locate the explicitly stated information and the text clues that led them to make the necessary inferences.

Rereading/Lookback

Children skim and reread text to locate information or answer questions about story sequence, the feeling of characters, the organization of text, or the descriptive style of writing used in rereading/lookback. Example 4.27 shows an activity in which children listed words and phrases used in a story to describe two pursuit episodes, one in which a fox is the pursuer and the other in which the fox is pursued. Since the text does not explicitly state that the words and phrases used by the writer describe the pursuit, children must make the necessary inferences based on their understanding of how writers use language. The descriptive words and phrases identified by the children are placed in the list under the appropriate heading.

Example 4.27: Teacher's Resource Book B, Unit 43, "Day of the Fox", p. 387.

| | Reviewing Language Features<br>Rereading/Lookback: Descriptive Style |
|---|---|
| Locating<br>Inferring,<br>Comparing,<br>Classifying | Invite the children to look back through the story to find the descriptive words and phrases the author uses to describe the two pursuit episodes--the fox in pursuit and the humans in pursuit. The words and phrases might be entered on a chart. The chart below illustrates how each column might begin: |

| Fox in Pursuit | Humans in Pursuit |
|---|---|
| - fox "nosed about | - the fox "pricked his ears up at a distant roar" |
| - "A red sun, just beginning to fade to yellow, hung behind the woods." | - the fox saw noisy animals bearing down on him..." |
| - "He stretched and stretched again, limbering up ever muscle in his body." | - "terrifying new experience..." |
| (and so on) | |

In conclusion, the authors of the Networks program offer a number of methods designed to transfer inferring strategies to children in this step of the instructional sequence. The most prevalent of these methods was the use of Schematic Diagrams, of which five different types, Emotions Web, Events Outline, Narrative Cues, Narrative Diagrams, and Non-Narrative Diagrams were provided. The use of Schematic Diagrams may be beneficial to the development of children's inferring abilities if explicit guidance is provided on how to use the diagrams effectively to develop inferring.

The methods used to develop children's inferring abilities presented in the Extending step of the instructional sequence are discussed in the next section.

### Extending Step in the Instructional Sequence

The Extending step provided children with additional, theme-related activities designed to enrich their knowledge

of the theme topic. Strategies used in this step to enhance children's inferring abilities, such as Composing, Discussion, Oral Presentation, and Representing Creatively have already been discussed in the Focusing and Reflecting steps. Thus, it was not considered necessary to discuss them again.

The focus of this study will now shift from methods used in the TRB to develop children's inferring abilities to activities prescribed in the Skillbooks for independent use by children.

## Skillbook Activities

There were two Skillbooks in the student component of the Networks program, one for each Anthology. After reading the text selection, children independently complete the relevant activity in the Skillbook. Activities were intended to provide further practice and to reinforce some of the reading, listening and study skills presented in the TRB. There were a total of 140 activities included in the two Skillbooks, of which 30 were identified as inferential.

Many of the inferential activities in the Skillbooks were similar to those already described and illustrated in the discussion of the TRB, consequently, they will be listed, but not discussed. Inferential activities common to the TRB and Skillbooks included composing, discussion, attending, rereading/lookback, narrative cues, and representing creatively through pictures. The most frequently used method

of developing children's inferring abilities presented in the Skillbooks was composing.

Composing activities involved children in composing statements and paragraphs, answers to questions and experimental writing. In completing these activities, children restated or elaborated the content of the story. Writing is heavily influenced by a writer's background knowledge, thus, even where children are asked to focus on and write about important parts of the story, many will integrate their background knowledge with textual information as they write. Thus, composing activities have the potential to be beneficial to the development of children's inferring abilities.

Anaphora

Anaphoric activities, as illustrated in Example 4.28, help children understand the relationship between nouns and their referent pronouns. Pronoun referents provide cohesive ties which enable readers to carry meaning across phrase, clause and sentence boundaries. In order to identify the noun to which a pronoun refers, children must look forward or backward through the sentence or paragraph for syntactic and semantic information and make plausible inferences about the pronoun. In the example which follows, children must make the inferences necessary to link the noun and pronoun referents if the story is to be coherent for them.

Example 4.28: Time Spinners Skillbook, "Charlotte Calls a Meeting", p. 11.

Pronoun Referents

Read the paragraphs. Then write the word or words you could use instead of the underlined pronouns. Write the words in the spaces provided. Try not to change the meaning. Answers may vary.

1. "The message I wrote in my web, praising Wilbur, has been received," said Charlotte, 'The Zuckermans have fallen for it, and so has everybody else. Zuckerman thinks Wilbur is an unusual pig, and therefore he won't want to kill him and eat him."

I Charlotte he Zuckerman
it the message him Wilbur

Reviewing Language Features

In the reviewing language features or cloze procedure, children are presented with sentences or paragraphs containing deleted words and they are asked to supply the missing words. Cloze activities give children practise in using context to infer the meaning of the missing word. To complete cloze activities, children must focus their attention on syntactic and semantic textual information and relate these clues to their background knowledge in order to infer what the most likely word would have to be to express that meaning. This strategy is most beneficial to children's comprehension of text when words that are critical to text understanding are deleted. The cloze procedure requires children to focus on the important concepts in text, to search backward and forward in text and to check their background knowledge for the answer. In the Networks

program, the cloze activities were presented in the Skillbooks.

Another component of the program that is written directly to children, the Reading and How text, will be discussed next.

### Reading and How B Component

Each selection in the Reading and How component was linked to a theme in the Anthologies. The purpose of this component was to help children recognize their own reading processes, and to provide them with strategies for reading in the content areas. Examination of this component revealed that, out of 108 activities, 19 were identified as being inferential. Inferring was developed within one or more of the five headings used to guide children in reading the selections. How each heading was used to help children develop their inferential abilities is the subject of the next subsection.

What do you know already? This prereading activity was designed to introduce children to the selection and to activate background knowledge. Example 4.29 is representative of the activities presented under this heading. In this specific activity, children are asked to tell about their experiences with snorkelling and exploring underwater. This activity is supposed to activate background knowledge and help make the topic personally meaningful to the children. Having children discuss the work of

professional divers and underwater exploration helps them to focus their thinking and set a purpose for reading the selections in the theme "Undersea Exploration Unlimited". Moreover, in viewing the picture which accompanies this activity, children integrate information from the picture with background knowledge to extend their knowledge of diving. This activity is designed to facilitate children's inferential abilities.

Example 4.29: Networks Reading and How B, "Undersea Exploration Unlimited", p. 22.

> What do you know already?
>
> Have you ever put on a snorkel and mask and explored underwater? If you have, what were you looking for down there? What did you see down there? What things do you think professional divers look for when they explore underwater?
>
> Exploring underwater is different from exploring on land. What problems do you think professional divers face when they explore underwater?

How do you Read? This heading was used both for prereading and post-reading inferential activities. As illustrated in Example 4.30, where recommended as a prereading activity, suggestions and strategies were provided to help children comprehend text. In this example, it was suggested that children use the photographs which accompany the selection "Cleaning Noble Creek" to get a better understanding of the written material. Pictures which are supportive and are viewed prior to reading, often facilitate

children's comprehension of the printed textual material. Introducing a selection with pictures or illustrations helps in the linking of textually explicit and textually implicit information. In this example, the photographs and written material are integrated thereby the activity enhances children's inferring abilities.

Example 4.30: Networks Reading and How B, "Volunteer Cleanup", p. 56.

> How do you read?
>
> Finding information
> Sometimes authors use a number of photographs in an article to help you picture the scene. The photographs give you some information, but the text gives you a lot more. As you read the next article, "Cleaning Noble Creek," look at the photographs, but you should read the text to find out most of the details.

How do you feel? After reading a selection, children were encouraged to think about how they felt about the subject prior to reading. They were then asked if their feelings had changed as a result of reading the text. In explaining why their feelings had or had not changed, children would have to cite the textual information that either supported their previously held viewpoint or explain why they had modified it. That is, children would have to integrate the textual information with their background knowledge in order to explain their position. The following is a good illustration of activities suggested under the heading, "How do you feel?".

Example 4.31: Networks Reading and How B, "Spiders: To Know Them Is To Love Them", p. 86.

How do you feel?

The title of the article says that to know spiders is to love them. How did you feel about spiders before you read the article? Now that you know more about spiders, do you feel the same way or have you changed your mind? Why?

What did you find out? This postreading strategy prompted children to compare textual information to their background knowledge prior to reading. Presumably this would help them identify new facts or additional information gained from reading. In Example 4.32, there were three inferential questions provided to encourage children to think about which things in an early science-fiction comic strip have come true; which things have, with modification, come true; and which things are still in the realm of science-fiction. In answering the questions, children must integrate their background knowledge with textual information, that is, they must infer. It was suggested that the answers to the questions serve as the basis for a group discussion. Such discussion often helps many children to further integrate the textual information with their background knowledge. A reading strategy such as this, which explicitly encourages children to integrate textual information with background knowledge, appears to be beneficial to the development of children's inferring abilities.

Example 4.32: Networks Reading and How B, "Buck Rogers", p. 84.

What did you find out?

Think about the following questions. They may be used as topics for a discussion in class.

1. Which things in the comic strip have come true?

2. How are the things that have come true different from how the comic showed them?

3. There are some things in the comic which we know today are not the way things are. Which things in the comic do we know are not true?

In your notebook you may want to take some notes about your own answers to the questions. Then you could use these notes to help you in the class discussion.

What can you do now? Activities under this heading were designed to extend the selection in the Reading and How text. Many of the activities suggested involved experimental writing which allows children to be creative in their response to text. It encourages them to retell text as they understand it; to decide what is important and worth writing about; to elaborate on ideas and information presented in the text; and to express divergent viewpoints. Writing activities, such as the one illustrated in Example 4.33, where children are required to integrate their impressions and interpretations of text into their writing, are inferential. This kind of writing both facilitates children's understanding of text and the development of their inferring abilities. When writing, children may want to reread to clarify and reconsider their initial understanding of the selection.

Example 4.33: Networks Reading and How B, "Working Robots", p. 76.

What can you do now?

In your notebook you can write two or three paragraphs about:

- the kinds of things that you think robots will never be able to do because it would be too difficult to program them to do the task
- a robot cook that was programmed to make your dinner but was not given the right instructions. (You may prefer to write about a robot plumber or a robot carpenter that was programmed incorrectly.)

Writing and How B Component

What children learn from their reading influences their writing and what they learn from their writing influences their reading. Children use ideas from their reading and incorporate them with background knowledge to form the content of their writing. The authors of the Networks program have recognized the importance of writing to children's comprehension and have included a Writing and How component as an integral part of the program. This component provides children with a productive and structured set of regular writing experiences. It is organized thematically and uses the themes presented in other components of the program, thereby linking writing to the language arts strands.

There are no key thinking processes listed in either the teacher's edition or student text of the Writing and How

component. Rather, the emphasis is on writing. It is expected that, over the course of the program, children will assimilate the skills of writing, including preparing to write; composing first drafts; revising; editing; and publishing their writing for a variety of audiences. Examination of the text revealed that some of the activities intended to help children prepare for writing required them to infer. Two such activities are discussed next.

As an introductory activity to prepare children to write their own journals, they were asked to read an excerpt from the journals of Beatrix Potter. After reading the journal and viewing the illustrations in text, they discuss what they have read. Amongst the questions that children are asked to consider are: "What were some of her (Beatrix Potter's) interests?" and "What were some of her feelings?". In order to answer both of these questions, children would have to infer.

Another introductory writing activity where children would have to infer was preparing to write a poem. Before composing their own poem, children were required to read six poems, including the one illustrated next.

Example 4.34: Networks Writing and How B, "Nightscape", p. 122.

The Night is a Big Black Cat
by G. Orr Clark

The Night is a big black cat
The Moon is her topaz eye,
The stars are the mice she hunts at night,
In the field of the sultry sky.

To understand this poem, and to incorporate metaphoric language into their own writing, children must make sophisticated inferences. Such sophisticated inferences are necessary in this example, if children are to make the equivalent of an intellectual leap in order to make the inferential connection between the darkness of a starry night and a big black cat hunting mice.

The above examples illustrate that there was an expectation that children infer in this component of the program. As a further means of facilitating inferring, most units provide prewriting suggestions to activate or enhance background knowledge. Suggested activities involve brainstorming, discussing, viewing pictures and illustrations, webbing, and skimming. As noted earlier, these methods of activating background knowledge are believed to facilitate children's inferring abilities.

Included in this component of the program is an evaluation checklist that children can use to evaluate their own writing. In reflecting on some aspects of their writing, as suggested in the checklist, children would be inferring. A copy of the checklist is included in Appendix B.

In summary, the intent of this component of the program was to develop children's writing skills. Some of the prewriting activities were designed to activate children's background knowledge which is understood to facilitate inferring. Other activities required children to integrate

textual information with background knowledge in order to comprehend a selection provided to guide their writing. Since I did not have access to the material that children wrote, I am not able to determine if they did actually incorporate any inferences into their writing. However, if they did assimilate some of the suggestions provided in the prewriting activities, then it is likely that inferring occurred.

### Listening and How B Component

The Listening and How B component of the Networks program consists of two cassette tapes. Each tape contains listening material that complements many of the themes in the Anthologies. There are 13 listening tasks provided, three of which are for use with the Evaluation Resource Book. The methodologies presented for teaching inferring in the remaining ten listening tasks will be discussed.

A narrator initially introduced each listening task, established a purpose for the activity, and activated relevant background knowledge by relating content to children's experiences. The importance of activating background knowledge prior to reading has already been discussed. Four of the listening tasks presented on the tapes were also found in the TRB where it was indicated that inferring was to occur through listening. For these four listening tasks, children were required to listen to the tapes and complete an activity in the Skillbook. It is

recognized that the ability to infer is as important to effective listening as it is to effective reading and writing.

The remaining six listening tasks had related inferential activities for children to complete. The methods used to develop children's inferring abilities involved children in discussion, drama, experimental writing, and drawing pictures. The importance of these methods to the development of children's inferring abilities has been discussed.

## The Basal Program Novels

The two novels were an integral part of the pupil components of this program, and were matched to the interest and readability [illegible] of grade five children. The novels were lin[illegible]lly to the Anthologies, directly complementi[illegible]cific themes. They were prescribed for use in the Extending/Culminating step of the instructional sequence. This presumably allowed children to assimilate sufficient background knowledge from the theme to study the novels in a meaningful context. Activities related to the novels were arranged within a prereading and post-reading format. These activities were analyzed to determine how inferring was prescribed for teaching.

### Prereading Activities

Prereading activities were designed to activate background knowledge. Examination of the TRB revealed a

total of nine prereading activities for the two novels, five of which were identified as inferential. In most of these activities, children were involved in discussion, brainstorming, and predicting upcoming events before reading text. Example 4.35 is an example of a prereading activity for the novels where it was suggested that teachers write key words on the chalkboard as a means of activating children's background knowledge about key concepts in the story. It was also suggested that, where necessary, teachers provide additional information as a means of facilitating children's comprehension.

Example 4.35: Teacher's Resource Book, Nelson Novel, Unit 1, "One John A Too Many", p. 413.

PREREADING
Focusing--Speaking, Listening

| | |
|---|---|
| Recalling, Imagining, Predicting, Interpreting, Inferring | Introduce this segment of the novel by writing certain key words on the chalkboard: Labour Day weekend, circus, Sir John A. Macdonald, a small town's birthday celebration. Point to one of these terms and ask the students to tell anything that comes to mind when they see it. Encourage free-association of ideas; write the students' responses on the chalkboard. Follow the same procedure for each term. This will enable the students to bring forth certain key concepts of the novel. If children show a lack of understanding of some of these concepts, provide them with additional background information, before they get into reading. |

This activity both activates and enriches background knowledge. Of particular interest in this example was the explicit suggestion that, where lacking, children's background knowledge be enriched. This was one of the few

times in this program that such a suggestion was made. It is widely believed that activating background knowledge and introducing specific key story elements prior to reading is facilitative of children's inferring abilities.

Post-reading Activities

These activities consisted of questions to be answered after the relevant chapters were read in the two novels. Examination of the 60 post-reading questions revealed that 26 were inferential. A typical post-reading activity that required children to infer is illustrated in Example 4.36. This activity was considered inferential even though the authors did not indicate how inferring was to occur or where children were required to infer. To answer question 1, for instance, children would have to integrate background knowledge and textual information to make the inferences necessary to understand Laura's attitude toward men and Mr. Bazos' attitude about the role of women as housewife and mother.

Example 4.36: Teacher's Resource Book, Nelson Novel, Unit 2, "Always Ask for a Transfer", pp. 427.

POST-READING
Students engage in the following activities:

Reflecting--Speaking

| | | |
|---|---|---|
| Recalling, Inferring, Drawing Conclusions, Making Judgments | 1. | Why do you think Laura has decided never to get married? Why does Mr. Bazos disagree with her? |
| | 2. | In Canada the roles of women appear to be different from those in many other countries. Canadian women now have many choices open to them as to how they wish |

> to live their lives. What are some of these choices? Which sound most attractive to you? Why?

In summary, there were prereading activities and post-reading questions designed to facilitate children's inferring abilities prescribed for the two novels. Prereading activities consisted of teacher-led discussion, brainstorming and predictions of upcoming events. Post-reading questions were designed to prompt discussion and guide children's writing. The importance of these methods to the development of children's inferring abilities has already been discussed.

Evaluation Resource Book B Component

The Evaluation Resource Book (ERB) was designed to help teachers monitor the strategies and processes children use in reading, writing, listening, and speaking. Of particular interest was whether or not the ERB provided suggestions and guidelines to evaluate children's inferring abilities. Examination of the ERB revealed that provision was made for teachers to evaluate inferring.

A Language Development checklist (see Appendix C) was provided to help teachers identify and monitor children's strengths and weaknesses in language development during the school year. Five of the fourteen suggestions in the checklist were directly related to inferring. To illustrate, two of the suggestions assessed how well the child, "relates previous knowledge or experience to new information" and "responds critically to ideas." If used as suggested, the

checklist helps teachers plan instructional activities to meet children's specific needs, including inferential instruction.

Guidelines for evaluating oral reading were available to help teachers gather essential information about the strategies used by children to comprehend written material. A variety of strategies were suggested and explained to help facilitate children's inferring abilities where needed. These strategies include having children preview text illustrations, skim text, relate their own experiences, brainstorm, write what they know about the topic, listen to similar stories, answer teacher-prompted questions, and complete cloze activities. The importance of these activities to inferring has already been discussed.

Paper and Pencil Tasks were provided to evaluate children's reading and thinking skills. Two of the five evaluation tasks were explicitly designed to assess children's inferring abilities. Before completing one task, children were explicitly told that many ideas in the story were only hinted at rather than stated directly. Thus, children had to infer in order to complete the task.

There were three Listening tasks presented in the ERB. Inferring was identified as a thinking process being evaluated in one of the tasks. Children had to reconstruct the unheard portion of a telephone conversation. This required them to make inferences on what was not heard but

which was apparent from the context, content and sequence of information provided in the conversation that was heard.

In conclusion, as noted in Table 12, a variety of general reading strategies designed to promote comprehension was presented in the Networks program. It was intended that these strategies would facilitate the development of children's inferring abilities amongst other key thinking processes. Many of the strategies presented incorporated research on comprehension instruction. Children were expected to assimilate these strategies through practise, however, it was found that the frequency of use of some of the strategies was low. Consequently, some children may not receive sufficient practise to gain competency in using these strategies for inferring.

## Summary

Examination of the various components of the Networks Program revealed that inferring was prescribed for teaching in three of the four steps of the instructional sequence. Inferring was listed as a key thinking process for many activities in all but one of the 46 chapters. However, closer analysis of each activity revealed some difficulties of identification. Some activities had inferring listed as a key thinking process, however, using the definition of inferring utilized in this study, they were not considered to be inferential. In other instances, activities that were not listed as inferential were judged to be inferential.

Table 12

Methods By Which Inference Is Prescribed for Teaching

| Method | Anthology | |
|---|---|---|
| | Ripple Effects | Time Spinners |
| Attending | * | * |
| Composing | * | * |
| Discussion | * | * |
| Listening Activities | * | * |
| Oral Presentation | * | * |
| Questioning | * | * |
| Reading and How Activities | * | * |
| Representing Creatively | * | * |
| Representing Schematically | * | * |
| Rereading/Lookback | * | * |
| Reviewing Language Features | | * |
| Skillbook Activities | * | * |
| Skimming | * | * |

Moreover, the directions and instructions to teachers lacked specificity on how to develop children's inferring abilities. It was found that, rather than providing explicit inference instruction, children were expected to assimilate the various strategies provided. Teaching suggestions provided for so-called inferential activities were similar and identical, in some cases, to the teaching suggestions provided for non-

inferential activities. Even in activities identified as inferential, the proportion of inferential questions provided to guide discussion was low. Thus, teachers with a limited knowledge of inferring could find it difficult to use the activities in the Networks program to develop children's inferring abilities.

In order to determine the extent of inferring in this program, instructional activities in both Anthologies and related components were analyzed. Results of this quantitative analysis revealed that there were a similar number of activities and a similar proportion of inferential activities for each Anthology and related components. Analysis revealed that, of the 313 activities provided in the Teacher's Resource Book, only 128 (40.9%) were identified as inferential. Since the TRB was designed to provide teachers with guidance and suggestions for reading instruction, it would be fair to expect a high proportion of inferential activities as recommended in recent research. Moreover, considering the importance of inferring to comprehension, it would be fair to expect that the pupil components of the program intended to give practise in using the reading strategies provided in the TRB, would provide a high proportion of inferential activities. However, of the 140 activities in the two Skillbcoks, only 30 (21.4%) were identified as inferential. Additionally, only 19 (17.6%) of the 108 activities in the Reading and How component were

identified as inferential. There were a total of 570 activities examined in the Networks program, of which 182 (31.9%) were identified as inferential. On the basis of these findings, that there is such a low proportion of inferential activities in the Nelson LDR Networks Program, it is reasonable to conclude that the program does not reflect the importance of inferring to comprehension to the extent recommended by researchers.

A number of methods were prescribed for teaching inferring in this program. Some of these methods involved children in group activities, such as group discussion and preparing schematic diagrams of the organization of textual information. Other methods had children individually complete the activities, such as art activities and creative writing. While many of the methods presented for teaching inferring did incorporate current research, the frequency of use of some of these methods was low. Consequently, many children may not have sufficient practise to gain ownership for use in independent reading.

On the basis of the findings discussed in this chapter, the final chapter discusses the implications of the findings and makes recommendations for future research.

# CHAPTER V

# CONCLUSIONS AND RECOMMENDATIONS

In this chapter, a review of the study will be presented. It will be followed by conclusions formulated from the findings of the study and recommendations for authors of basal reading programs, teachers and researchers.

## The Study in Review

The purpose of this study was to identify if inferring was prescribed for teaching in a grade five basal reading program; the extent to which it was prescribed; and the methodologies for teaching it.

The reading field has highlighted the essential role of inferring in reading comprehension. In fact, many researchers take reading to be synonymous with inferring meaning from text. Inferring meaning from text is the integration of text information and background knowledge. Research has shown that inference-making has not received the attention it is due, and that children need specific instruction on the role of inferring in text understanding.

Basal reading programs have, in the past, and continue to play a dominate role in reading instruction in North American schools. For instance, the Nelson Language Development Reading (LDR) Networks program, the one analyzed in this study, is prescribed for use in many Canadian schools, and is the only basal program prescribed for use in schools in Newfoundland and Labrador.

Results of a comprehensive examination of all of the components of the Networks program revealed that inferring was prescribed for teaching. However, at times there were difficulties in identifying which part of an activity developed children's inferring abilities. It was further noted that, for some activities, directions for inferring were unclear. Teachers with a limited knowledge of inferring would have difficulty in using these activities to develop children's inferring abilities.

There were a total of 570 activities provided in the Teacher's Resource Book (TRB), the two Skillbooks and the Reading and How text. Of this total, 182 (31.9%) were clearly identified as being inferential. In addition, there were 60 post-reading questions suggested for use with the two Nelson novels; 26 (43.4%) were identified as being inferential. Inferring was taught using a variety of methodologies such as composing, discussing, questioning, representing schematically, and skimming.

## Conclusions

Based on the results of this study, and supported by recent research on the importance of inferring to reading comprehension, the following conclusions are made:

1. Inferring is prescribed for teaching in the grade 5 Nelson LDR Networks program, however, the extent of this prescription is low. This suggests that the program authors did not pay sufficient attention to the

recommendations of recent reading researchers who recommend that a higher percentage of activities be inferential.

2. Inferring was taught through a variety of methodologies designed to develop various key thinking processes. However, many were not used often enough to ensure that children incorporate these into their independent reading.

3. Although the process of inferring was specified for many activities, there were difficulties in identifying which activities actually facilitated the development of children's inferring abilities.

4. The TRB does not explain what inferring is and only provides minimal directions and suggestions to help teachers develop children's inferring abilities. Directions and suggestions often lacked specificity and, for a great many activities were non-existent.

## Recommendations

The recommendations emanating from this study are based on the findings and conclusions discussed. The recommendations correspond directly to my conclusions in the previous section. On the basis of these conclusions the following recommendations are for basal program authors, teachers and researchers.

## Basal Program Authors

1. Authors of basal reading programs should look more closely to the claims made by current researchers on comprehension instruction and develop programs that are consistent with research and theories on inferring.
2. Inferring should be clearly defined. All activities and specific questions designed to facilitate the development of children's inferring abilities should be clearly identified.
3. Inferring, an essential process to reading comprehension, should have a more central focus in basal reading programs. The percentage of inferential to non-inferential activities and questions should be significantly increased.
4. Basal programs should provide explicit directions and teaching suggestions to facilitate the development of children's inferring abilities.

## Teachers

1. The importance of inferential questions to the development of inferring ability is widely recognized. Children become sensitive to the types of questions they are asked. Thus, teachers need to be aware of the importance of inferential questions and, when selecting questions to guide prereading and post-reading discussion, select a high percentage of inferential questions.

2. Basal reading programs are only one source of reading instruction. Teachers need to supplement basals with other materials in areas where these programs do not provide adequate guidance and direction for developing key thinking processes such as inferring.
3. Teachers, not reading programs, teach. Thus, teachers need to keep abreast of current research on reading instruction, thereby enabling them to incorporate the latest teaching strategies, including methods to teach inferring, into their teaching.

Researchers

1. The present study analyzed only the methods for teaching inferring prescribed in the basal program. An equally important factor that influences how inferring is taught is the classroom teacher. Hence, it is important to know whether teachers use the methods prescribed in the program and whether they supplement the basal program with other materials where the teaching suggestions and activities provided in basals are insufficient to develop children's inferring abilities. Studies of actual classroom reading instruction should be undertaken to allow us to have a more complete picture of what is taught.
2. A variety of methods were prescribed for teaching inferring in the Networks program, many of which were not used extensively enough to ensure the development of

children's inferring abilities. Since we do not know which of the prescribed methods are the most effective in developing children's inferring abilities, studies should be undertaken to determine which methods are most effective.

3. Given the inadequate treatment of inference instruction in basal reading programs, if it is to be taught effectively, then the responsibility rests with teachers. Reading and methods courses used in teacher training programs must reflect current research on inferring in order to prepare teachers to teach inferring. Reading and methods courses should be examined to see if sufficient emphasis is placed on inference instruction.

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# APPENDIX A

## Correspondence

1 Curtis Place
St. John's, Newfoundland
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July 14, 1988

I am a student at Memorial University of Newfoundland, enrolled in a Masters Degree program in Language Arts/Reading. I have selected as the topic for my thesis to address the issue of inferential comprehension skills taught in basal reader series at the elementary school level (Grades 4, 5 and 6).

Specifically, I plan to review the three most commonly used basal reader series utilized in each grade of the elementary school systems throughout Canada. I will seek to determine whether or not inferential comprehension skills are taught and the methodology used to teach these skills.

Toward this end, I seek your co-operation. I would appreciate your assistance in identifying the three most commonly used basal reader series in the elementary schools in your province in 1988.

In addition, if possible, could you identify the extent of usage (e.g., percentage of schools using each) of these series.

I thank you in advance for your co-operation in this matter.

Sincerely,

Eileen Murcell

# APPENDIX B

## Evaluation Checklist A--for Authors

## APPENDIX B

### Evaluation Checklist A--for Authors

Here are some things to think about when you look at your own writing.

**How do you feel?**

1. What words would describe your feelings as you were writing?
2. What feelings do you have about this piece as you reread it?
3. How do you feel about this piece in comparison with some others you've written? Why?

**How well does it work?**

1. What was the purpose of this piece of writing?
   - to tell something personal
   - to write information
   - to make someone laugh
   - other reasons (What are they?)
2. How well does it satisfy that purpose?
3. How well might it catch a reader's attention?
4. How well might it hold someone's attention?
5. Who do you think might enjoy reading this piece of writing?

**Techniques**

1. Did you use any special techniques that made this piece interesting to write?
2. Are the following techniques used well?
   - choice of words
   - sentence variety (sentences of different length, different kinds of sentences)

- paragraphing
- punctuation
- spelling

# APPENDIX C

## Language Development Checklist

| LANGUAGE DEVELOPMENT<br>Key: 3-Often, 2-Sometimes, 1-Seldom | Name: _____<br>Date: _____ | | | |
|---|---|---|---|---|
| | Reading | Writing | Language | Comments |
| The child:<br><br>demonstrates a positive attitude. | | | | |
| shows confidence in ability to complete tasks. | | | | |
| is able to work independently. | | | | |
| words cooperatively on tasks. | | | | |
| is able to set or identify purposes. | | | | |
| understands audience needs. | | | | |
| selects strategies appropriate to given tasks. | | | | |
| relates previous knowledge or experience to new information. | | | | |
| demonstrates comprehension of a selection. | | | | |
| is able to self-correct. | | | | |
| identifies/expresses ideas and feelings effectively. | | | | |
| responds critically to ideas. | | | | |
| demonstrates creativity. | | | | |
| is able to self-evaluate | | | | |
| Other: _____ | | | | |