

**Faculty of Education,  
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**Developmental Approaches to Reading Comprehension  
in Children with Reading Difficulties.**

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## **Abstract**

Previous studies have shown some students with good word recognition skills and high levels of reading fluency fail to comprehend what they read.

This study examined the explicit teaching of the rule based Question Answer Response (QAR) strategies to overcome specific learning difficulties in reading comprehension. Case study methods were used on five Year 4 students in Western Australia who were at different developmental levels in reading comprehension.

The study revealed that within the conceptual framework of the transactional model of reading, the Question Answer Response strategies were effective in improving literal, inferential, critical and creative comprehension at varying levels for each of the five students in the study. The strategies also proved to be an effective way to teach the resolution of anaphoric pronouns that are particularly problematic for students with poor comprehension.

The study indicates that the teaching of reading comprehension skills to students with reading comprehension problems through explicit rule based instruction is an important component of classroom-based instruction in the literacy learning area.

## **Declaration**

This thesis contains no material which has been accepted for the award for any other degree or diploma in any university.

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

Signature: .....

Date: .....

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## **Chapter I**

### **Introduction**

Reading is a complex cognitive process and mastery of all aspects of reading is essential for academic success. However, many students fail to master reading for diverse reasons and the personal, social and academic consequences are far reaching. The labeling of these students as students with specific reading difficulties (Prior, 1993) indicate that their reading problems are not explained by intellectual deficit or unusually deficient schooling. The aim of this thesis is to explore the reasons for failure of reading comprehension and in the light of these reasons to demonstrate the application of selected strategies to overcome the hypothesized deficits

The mean percentage of students with learning difficulties has been reported as being 16% across Australia with a higher prevalence of difficulties in literacy than numeracy (Department of Education, Training and Youth Affairs (DETYA), 2000). Studies of reading comprehension difficulties in New Zealand have reported that 10 to 15% of students aged seven to eight years are experiencing difficulties with reading comprehension (Dymoch & Nicholson, 1999). If teachers are to develop instructional approaches that improve reading comprehension, it is important to review the proposed causes of reading comprehension deficit and then to investigate remedial strategies.

#### **Understanding the Difficulty of Reading Comprehension**

Since reading failure is experienced by many adults and students in all ethnic groups and socio-economic levels, it can no longer be regarded solely as a result of poverty, migration or first language interference (Reid Lyons, 1997). Reading difficulties related to deficits in phonemic awareness, poor decoding skills or word recognition problems have been closely studied in young students by different researchers (e.g. Adams, 1991; Bryne, 1992; Ehri, 1994; Liberman & Shankweiler, 1991).

Difficulties in reading comprehension are often considered a secondary outcome of poor word recognition or an inability to decode. Many educators believe poor oral reading fluency to be the primary cause of reading comprehension failure (e.g. Samuels & Flor, 1997; Liberman, Shankweiler & Liberman, 1992). The general belief has been that once students learn to ‘crack the code’, their knowledge of spoken language would enable them to understand text. Whilst poor decoding or word recognition affects comprehension for some readers, researchers report there were others who fail to comprehend despite being able to read accurately and fluently (e.g. Asselin, 2002; Brown, 1980; Dymoch, 1993; Dymoch & Nicholson, 1999; Yuill & Oakhill, 1991).

Reading objectives in the early grades place an emphasis on ‘learning to read’ which involves an understanding of the alphabetic principle, phonemic awareness, decoding, word recognition and an understanding of phonological and orthographic processing (Adams, 1991; Reid Lyons, 1997). However, once students have learned to read aloud, the primary emphasis shifts towards ‘reading to learn’ which involves reading comprehension at various levels. The demands of reading comprehension increase as students reach the higher grades when they are expected to comprehend more complex texts that are often scriptually implicit, requiring well developed reasoning skills as well as an ability to apply appropriate background knowledge in a variety of contexts (Gardill & Jitendra, 1999).

In addition to problems of decoding and word recognition, students identified with specific learning difficulties in reading comprehension have trouble monitoring their own comprehension especially critical comprehension (Rabren, Darch & Eaves, 1999). These students also experience difficulty regarding text structures and text types that are generally referred as text genres. Students with poor reading comprehension seldom use comprehension strategies and when they do, often use those that are inappropriate. There appears to be a need for the direct or explicit instruction of reading comprehension strategies for students with specific learning difficulties in reading comprehension (Rabren et al, 1999).

Poor comprehension may also be due to insufficient teaching of the skill in a structured way (Yuill & Oakhill, 1991). There are students who learn to read with any organized approach, whilst others struggle to read and the explicit teaching of phonics and word recognition skills are needed to help them understand how to ‘crack the code’ (Reid Lyons & Moat, 1997). Likewise, there are also students who can comprehend once they learn to read but there are others who are unable to comprehend unless they are explicitly taught the strategies and behaviours necessary for reading comprehension. Dymock (1993) and Paris and Oka (1986) report that teachers spend less than 2% of the class time on teaching comprehension strategies. In many schools, reading instruction still focuses on pronouncing words correctly and fluently. This overemphasis on decoding sometimes produces students who can decode and pronounce words but fail to comprehend what they read (Yuill & Oakhill, 1991).

Given that reading comprehension is a complex task for many students, it is surprising that so little instruction on reading comprehension strategies are actually carried out in the classroom. This may be due to a lack of teacher understanding regarding the instruction of reading comprehension strategies. Some writers have argued that learning to comprehend, still remains part of an underground curriculum that is seldom taught or discussed (Dymoch & Nicholason, 1999). This is in spite of the evidence from a significant amount of research that has indicated that students can be assisted in overcoming reading comprehension difficulties and that reading comprehension instruction is especially beneficial for students with specific reading difficulties (e.g. Dymoch & Nicholson, 1999; Kamhi, 1997; Mastropieri & Scruggs; 1997; Rosenshine, 1980).

Some students with adequate decoding skills, who read like ‘Radio or Parrot-Fashion Readers’, have been found to have both reading and listening comprehension problems arising from their language difficulties. Further reading comprehension difficulties have been caused by a lack of understanding of the language of text (Dymoch, 1998). Whilst decoding skills can be successfully taught in the first two to three years of schooling, some students take longer to acquire language understanding (Jule, Griffith

and Gough, 1986). Poor language understanding also leads to a failure in the understanding of comprehension activities and questions. The lack of language knowledge and insufficient understanding that the purpose of reading is to extract meaning from text therefore contribute further to reading comprehension failure in students with specific reading difficulties. Other known factors prevalent in students with specific reading disabilities are the inability to store and integrate information, especially inferential information, and the lack of understanding and application of implicit information in text (Yuill & Oakhill, 1991). It is acknowledged that poor language understanding and cognitive abilities affect reading comprehension in some students. However, this study is concerned with students who have normal language and cognitive development but lack reading comprehension.

These explanations of reading comprehension difficulties need to be understood within the context of models of the normal development of reading comprehension. Three alternative models have been proposed. The *Automatic Information Processing Model* (La-Berge & Samuels, 1974) is a bottom-up model that identifies the reader's attention and reading automaticity as the key elements in reading comprehension. The *Interactive Model* (Rumelhart, 1994) is a bottom-up and top-down model that identifies reader's prior knowledge of script and story schema as being the key elements to reading comprehension. The *Transactional Model* (Rosenblatt, 1994) is a bottom-up, top-down and a parallel process model. Shared contextual knowledge between the author and reader is the key element of the transactional model. Detailed descriptions of these three models are given in the literature review (Chapter 2) together with discussion of the efficacy of the three models in guiding the development of comprehension instructional strategies.

Proponents of all three models have demonstrated the efficacy of each approach in guiding our understanding of reading difficulty. For example, the *Automatic Information Processing Model* works for students with decoding difficulties (Adams, 1991; Ehri, 1994; Kingham & Blackmore, in press). Since Dymoch and Nicholson (1999) advocate the teaching of script and story schema as a successful intervention

strategy for reading comprehension, they suggest the *Interactive Model* is a successful means of overcoming reading comprehension difficulties. An intervention study on second graders by Brown, Pressley, Schuder and van Meter (1995) using the *Transactional Model* strategies proved successful in developing reading comprehension at varied levels.

### **Reading Comprehension Instructional Approaches**

A body of literature has examined the effectiveness of the explicit teaching of reading comprehension strategies to students (e.g. Gardhill & Jitendra, 1999; Rabren, Darch & Eaves, 1999; Shannon, Kameenui & Bauman, 1988). These studies have examined a variety of instructional components such as:

- Advanced story mapping
- Character motives
- Main Idea

The explicit instruction of advanced story mapping strategies was examined by Garhill and Jitendra (1999), who investigated its effect on reading comprehension in relation to story grammar and basal type questions. The basal questions were a mixture of *literal* and *inferential* questions that required production responses. The study also investigated the generalization of strategy effects to novel passages and the maintenance of the skill. Finally, it tested the effects of story mapping procedures on the students' oral retells. The results indicated an increase in comprehension for all students in the story grammar test. The scores on basal comprehension questions indicated a mean increase of 16% in comparison to baseline data, indicating that there was an improvement in basal comprehension.

Some studies into developing comprehension skills have focused on character motives. In their study with mainstream elementary-age students, Shannon, Kameenui and Bauman (1988) used textually explicit, textually implicit and scriptually implicit stories to study character motives. In textually explicit stories, the character's motives were explicitly stated and the students found it the easiest to locate information because it



was 'on the line information'. Textually implicit stories implied, but did not state the character's motives. This meant that information was 'between the lines' and involved a certain amount of reasoning to be comprehended. Scriptually implicit stories neither implied nor stated the character's motives and to comprehend them, students needed to apply both background information and reasoning skills.

Rabren, Darch and Eaves (1999) also studied the effects of comprehension on character motives in students with reading comprehension difficulties. They employed and compared two methods of instruction; (a) a rule-based, explicit strategy instruction founded on direct instruction methods of Engleman, Becker, Carnine, and Gresten (1988); and (b) a basal-reader activity based instruction program. The subjects were 40 fourth grade students with reading comprehension difficulties from four schools in the southeastern U.S. Instructional materials included nine Aesop fables and three modern fables that used the same story structure as the traditional fables. All fables used in the study were rewritten to an approximate 3.5-4.0 reading level on the Fry readability scale, implying that the materials were modified. Three forms of texts, (a) textually explicit, (b) textually implicit, and (c) scriptually implicit were used as in the Shannon et al (1988) study.

The results of the study indicate that there was a significant improvement for the direct instruction group in all text types. This group averaged 82% for the textually explicit fables and 77% for both the textually implicit and scriptually implicit fables. The basal reader group achieved 71% for the textually explicit fables, 62% and 67% for the textually implicit and scriptually implicit fables respectively (Rabren et al. 1999). The researchers concluded that the number of training or intervention sessions and the sequences of introducing the different strategies are crucial to successful learning and transfer. This has implications for the present study since it suggests that the teaching of reading comprehension strategies should be long term to be effective (Rabren et al. 1999).

The main idea and its relation to reading comprehension for students with reading comprehension has also been a focus of many studies (e.g. Carnine, Silbert and Kameenui, 1990; Jitendra, Cole, Hoppes & Wilson, 1998; Williams, 1998;). Since students with specific learning difficulties are less aware of text structure and processing strategies than other students, they experience difficulties in identifying the main idea, especially in informational or expository texts. A growing body of research has indicated that a direct instruction model has improved in the reading comprehension skills of students with reading comprehension difficulties through the identification of the main idea (Williams, 1998).

In another study on main idea comprehension strategies, Jitendra et al (1998) worked with four grade six students with reading comprehension difficulties. Three students received intervention and one student served as a control. The researchers adapted the instructional program developed by Carnine, Silbert and Kameenui (1990) for main idea instruction. Narrative and expository passages were developed from fourth grade reading, science and social studies textbooks the students were using. Since the readability of content textbooks varied, the researchers calculated the readability levels of all expository passages to a mean of 6.4. The range of readability for the expository passages were 4.7 to 8.6. Comprehension of the main idea was assessed through probes which tested the students on five items requiring both selection and production responses (Jitendra et al, 1998).

Students were taught to self-monitor their use of summarization strategies. To assist them to remember the self-monitoring strategies, students were provided with 'Self-Monitoring Prompt Card', which delineated the direct instruction rule used to teach the students the strategy. Instruction on the self-monitoring sessions continued until the students reached the set criteria for mastery of 80%. The students reached the criterion set for mastery in two days (Jitendra et al, 1998).

Three sessions of baseline data were collected on both narrative and expository passages. During the instruction sessions on main idea and self-monitoring skills, the

students were not tested. After seven lessons of instruction, three sessions for the tests were administered using five main idea items which required either selection or production responses. The results of the study indicated an improvement in comprehension for two of the three students (Jitendra et al, 1998).

The above studies demonstrate that explicitly taught reading comprehension strategies achieved varied levels of success. However, each study has focused on teaching one particular strategy at a time. Furthermore, of the three strategies, only the main idea strategy encompasses both narrative and expository genres. The studies revealed an obvious need for strategies that could be taught to address more than one aspect of reading comprehension across narrative and expository genres. The National Reading Panel (2000) also advocates the use of multiple strategy instruction over the instruction of single strategies in reading comprehension in order to meet the varying needs of different genres and levels of comprehension.

### **Levels of Reading Comprehension**

To add to the complexities of understanding reading comprehension, Rosenshine (1980) has proposed the idea of skill hierarchies in comprehension. Rosenshine's search for the sequences or hierarchies of skills in reading comprehension did not reveal any hierarchical structure, but did document a division into levels of reading comprehension. These levels, namely *literal*, *inferential*, *critical* and *creative* add to the difficulty of teaching reading comprehension strategies to students with reading comprehension problems. Pearson and Nicholson (1976) describe *literal* comprehension as a textually explicit level of comprehension and *inferential comprehension* as a higher order level of textually implicit comprehension that requires the reader to draw inferences from the text. They describe *critical* comprehension as a textually implicit level of comprehension and *creative* comprehension as having no textual clues. *Creative* comprehension therefore requires the use of the readers' background knowledge to produce answers.

The research literature on the instruction of students in the varied levels of comprehension has focused on the Question Answer Relationship (QAR) strategy first

described by Pearson and Johnson (1978) and later refined by Raphael (1986). The QAR taxonomy teaches the students to consider two major sources of information in comprehending texts, namely information acquired from their own personal experience and information provided by the text. It therefore is consistent with the conceptual framework proposed by the transactional model of reading comprehension.

Studies on the levels of comprehension have all been related to the QAR comprehension strategies. Some studies e.g. Raphael & McKinney, (1983); Raphael & Pearson, (1985); Raphael and Wonnacott, (1985), focused on the effects of the QAR strategies delivered in large group instruction at improving reading comprehension through the answering of questions at three levels. These levels are (a) *literal comprehension, or comprehending information on the lines*; (b) *inferential comprehension, or comprehending information between the lines*; and (c) *a combination of critical and creative comprehension or comprehending information behind/beyond the lines*. No attention was given to different instructional procedures. The results found students using the QAR strategies outperformed the control group who received no instruction whatsoever.

Ezell, Kohler, Jarzynka and Strain (1992) examined the use of peer-assistance in the teaching of the QAR strategies to ask and answer reading comprehension questions on reading passages. Third grade students worked in dyads asking and answering questions on the different levels after receiving class wide training. This study also reported positive findings on the effects of the QAR strategies although it was reported that there was no way to measure the extent of the contribution of peer-assistance. Five years later, Ezell, Hunsicker and Quinque (1997) conducted a comparative study on peer-assisted and teacher-assisted instruction of the QAR strategies. Their study on fourth grade students indicated that the two forms of instructional design were equally effective.

The results of these studies on applying the QAR strategies demonstrate that working with levels of comprehension is an effective means of addressing reading comprehension difficulties. However, there could be some limitations to the previous

studies on QAR. The studies appear to have relied primarily on the cued directives for the instructions on each level of comprehension. There is no mention of instruction on the application of background knowledge, or the pre-teaching of the new vocabulary presented in the reading passages as is required within the transactional model to reading comprehension. This could have inhibited the comprehension of the critical and creative levels. Furthermore, there was no mention of the resolution of anaphors, an integral component of critical comprehension as portrayed in the Aylward (1983) text. The study designs were based on large groups with control groups as comparisons, which makes the analysis of individual responses difficult, if not impossible. Finally, there was no mention of genres in the previous studies and it is difficult to ascertain whether the QAR strategies were applicable across both narrative and expository genres.

Although the QAR strategy was selected over other known reading comprehension strategies for the present study, the researcher attempted to modify what appeared to be limitations to the previous studies by:

- Providing instruction on, and modeling the application of background knowledge.
- Clarifying the definitions of words that were unfamiliar to the students.
- Teaching the students how to resolve anaphors.
- Using the case study methods to gain an in depth understanding of individual responses to the instructional strategy.
- Applying the QAR strategy to reading passages across narrative and expository genres.

### **Purpose**

Within the conceptual framework of the transactional model of reading, the current study aims to research the effects of the explicit teaching of Question Answer Relationship (QAR) strategy and the four levels of comprehension in students with specific reading difficulties.

The approach that will be used is that of the case study method because it is more applicable to the understanding of individual differences amongst students in multi-faceted skills such as reading comprehension. It will compare the performance difficulty of the four levels of comprehension namely, *literal*, *inferential*, *critical* and *creative*. The research will also study the role anaphoric or referencing pronouns play in critical comprehension.

The explicit research objectives are:

- (1) To investigate the effects of the developmental reading approach known as the 'Question Answer Relationship' on the comprehension of students with reading comprehension difficulties.
- (2) To investigate whether developmental levels of comprehension namely *literal*, *inferential*, *critical* and *creative* will predict the performance difficulty of comprehension tasks for students with reading comprehension difficulties

### **Significance**

This study is significant because although there is a growing awareness for the need to implement explicit literacy instruction in the area of reading comprehension, many educators lack knowledge on how to proceed, especially with students with specific learning difficulties in reading comprehension (Dymock & Nicholson, 1999). A review of research in reading comprehension from the years 1976-1996 by Mastropieri and Scruggs (1997) reported that the studies failed to provide a comprehensive, qualitative analysis of the best practices in assisting students overcome difficulties with reading comprehension.

Secondly, the present study is significant because it assesses the developmental approach to reading comprehension using the QAR strategy. This strategy was not included in the studies reviewed by Mastropieri and Scruggs (1997) and has proved effective for both *literal* and *inferential* levels of comprehension.

Thirdly, this research examines the performance difficulty of the four levels of reading comprehension, *literal*, *inferential*, *critical* and *creative* simultaneously. This study will investigate which level appears to be the most difficult for students who have problems with reading comprehension.

Another significant reason for implementing this study is a lack of research on Australian students implementing a QAR intervention program using reading passages associated with different text genres and embedded in an Australian context that enables the four levels of comprehension to be investigated with respect to the same text extract.

Lastly, in contrast to the previous group of studies identified in the literature review, this study on QAR implements a series of case studies. This individualized collection and analysis of data resembles curriculum-based assessment, considered a valuable component in the field of special education and learning difficulties. The expected outcomes will lead to an understanding of the effectiveness of the explicit teaching of the QAR strategy and its level of success in assisting students with reading comprehension difficulties.

### **Overview of the Thesis**

The next chapter reviews the literature relevant to the study including theories of the processes of comprehension and the findings of previous empirical studies.

Chapter III presents a description of the method of the study, the background of each subject, the research design, materials used in the study, and a description of the procedure.

Chapter IV outlines the results of the study. Consistent with the case study approach each student's results will be presented individually, followed by a discussion of the results and the observations made during the intervention in relation to the research objectives.

Finally, Chapter V draws conclusions from the study and develops recommendations for the improved teaching and learning of reading comprehension among students who have failed to understand what they are reading.

### **Definition of Terms**

***Reading Comprehension:*** “a process of constructing meaning from written texts, based on a complex coordination of a number of interrelated sources of information (Anderson, Hiebert, Scott & Wilkinson, 1985).

***Anaphors:*** “words that take their meaning from an earlier part of text” (Yuill & Oakhill, 1991).

***Scaffolding:*** “the gradual withdrawal of adult control and support as a function of the students’ increasing mastery of a given task” (Diaz, Neal & Amaya-Williams, 1990).

***Meta-cognition:*** “a deliberate conscious control of one’s own cognitive actions” (Brown, 1980).



## **Chapter II**

### **Literature Review**

#### **Introduction**

Some students, the world over, regardless of race, culture, or socio-economic background, experience reading comprehension difficulties. A survey of reading comprehension conducted in high schools in low socio-economic areas in South Auckland, New Zealand, indicated that 91 per cent of the students were below average in reading comprehension (Nicholson & Gallienne, 1995). Reading impacts all areas of learning and it is important that students receive assistance in overcoming the difficulties they experience in reading comprehension.

#### **Overview of the Chapter**

This chapter reviews research on reading comprehension and examines the different perspectives on the causes of difficulty in reading comprehension. Three different reading models, and their attributes will be examined to study the progression of our understanding of reading processes. Factors related to reading comprehension difficulties will be appraised to better understand the various elements that cause reading comprehension failure. In particular, characteristics of the reader, the teacher and the text, will be examined to understand their influence on the development of reading comprehension.

Literature on the developmental approaches to reading comprehension will be reviewed to understand the strategies that may be used to assist students in overcoming their difficulties with reading comprehension. Skills hierarchies in reading comprehension and the levels of reading comprehension, namely *literal*, *inferential*, *critical* and *creative*, will be examined to understand the differences between the levels of comprehension and the strategies suited to address each level.

Literature on an explicit strategy known as the Question Answer Relationship (QAR) and previous research on its use to remedy reading comprehension difficulties

through the explicit teaching of reading comprehension strategies will be reviewed. Scaffolding strategies and their use as an instructional design for students with learning difficulties is also examined. The review of current research leads to the proposal for the research study outlined subsequently in the thesis.

### **What is Reading Comprehension?**

In one of the earliest definitions using the thought processes employed in mathematics to convey an understanding of the comprehension processes Thorndike (1917) states that,

“Understanding a paragraph is like solving a problem in mathematics. It consists of selecting elements of the situation and putting them together in the right relation, and also with the right amount of weight of influence of force for each... all under the influence of the right mental set or purpose or demand” [p.329].

More recently, reading comprehension has been conceptualized as a process of constructing meaning from written texts, based on a complex coordination of a number of interrelated sources of information (Anderson, Hiebert, Scott & Wilkinson, 1985).

### **Stages of Reading**

Reading is described as having three stages, logographic, alphabetic and orthographic (Firth, 1985). Students use non-phonemic visual, contextual or graphic cues to read words in the logographic stage. They have no knowledge of grapheme-phoneme correspondence. Long words such as “MacDonalds” are read by logographic readers without an understanding that the letter M sounds /m/. When the same word is presented in text, they are unable to read it. Logographic readers are able to read words seen in their environment by associating them with colour or shape (Bryne, 1992; Ehri, 1994).

In the second or the alphabetic stage, students are aware of grapheme-phoneme relations and process the correspondence between the spelling and pronunciations of words. Students can only move into the alphabetic stage when they are able to use phonological knowledge (Ehri, 1994).

The orthographic or third stage only develops when students have a sound understanding of the alphabetic principle and are able to use their understanding of the grapheme-phoneme correspondence. They are able to identify the grapheme-phoneme patterns that reoccur in words and envisage letter patterns or letter clusters in words. Orthographic knowledge develops as students decode words that consist of the same letter patterns. This accelerates the decoding process and improves fluency (Ehri, 1994).

However, the complex coordination of information leading to comprehension abilities does not automatically evolve once word-recognition skills are mastered. Reading comprehension skills are of a developmental nature and have to be taught. Reading comprehension is a process that obtains meaning through language. Since the meanings of single words are governed by the context in which they are embedded, a reader's thought cannot be completed until he/she reaches the final word in a sentence. Reading comprehension requires the reader to bridge the gap between the information read in text and the knowledge he/she possesses. This requires thinking and reasoning skills in addition to word recognition expertise (Lerner, 1997).

Reading comprehension relies on a reader's experience, knowledge of language and syntactic structure and the redundancy of the text (Lipson & Wixson, 1991). Reading comprehension is therefore a complex task, and it is important to understand the normal process and background before considering studies of reading comprehension failure.

This chapter reviews three models of reading comprehension, followed by factors related to reading comprehension difficulties and the developmental levels of reading comprehension.

### **Models of Reading Comprehension**

Three models of reading comprehension have been predominant in discussions on reading comprehension. These are the automatic information processing model (La-

Berge & Samuels, 1974), the interactive model, (Rumelhart, 1994) and the transactional model (Rosenblatt, 1994).

### **Automatic Information-Processing Model**

The automatic information-processing model, presented by La-Berge and Samuels (1974) is a 'bottom up' model that identifies attention as the key factor to successful reading. Attention is divided into two aspects, external and internal attention. External attention is within the control of most readers and easily observed by others. For example, when the reader's eyes are glued to the page, then external attention is being employed within the framework of this model.

On the other hand, internal attention is more complex. Three characteristics are involved in internal attention; alertness, selectivity, and limited capacity (Samuels, 1994). *Alertness* refers to an involvement on the part of the reader. *Selectivity* refers to a reader's ability to sift and select the important factors that are being transferred through multiple stimuli on the pages *Limited capacity* refers to the constraints on the reader's ability to process information. Beginner readers with limited sight words are likely to focus all their attention on word recognition or the decoding of texts. Only when internal attention is free from word recognition or decoding needs, do readers have the mental capacity to focus on reading comprehension. The automatic information-processing model implies that once readers develop automaticity or reading fluency, then reading comprehension will occur automatically as a consequence of the child's oral language and listening comprehension development (Samuels, 1994). This assumption of automaticity means that reading comprehension is not part of the instructional strategies associated with the automatic information-processing model.

### **Interactive Model**

A second model of reading and reading comprehension is probably the interactive model (Rumelhart, 1994). The interactive model states that readers use both 'bottom-up' and 'top-down' processes to construct meaning. It implies that the processing of text is a flexible interaction between various information sources and the reader. Information

from higher stages of processing can influence the understanding of the lower stages of analysis. Likewise, the lower stages can also influence the higher stages of text processing (Rumelhart, 1994).

Schema theory forms the theoretical base for the interactive model. Schema theory refers to the reader's prior knowledge of the framework or structure of a text genre. For example, a student's story schema is based on a mental framework that contains slots for each story component such as, character, setting, goals, obstacles and resolutions. In comparison, a child's script schema would be composed of different components since it is a recount rather than a narrative schema. In a script schema for example, the slots would contain components of an event such as, the participants, the goals and the actions (Rumelhart, 1994).

Whilst script or story schema knowledge play an important role in reading comprehension, interpretations of events and stories also rely on a reader's background or conceptual knowledge (Kamhi, 1997). However, an over reliance on background knowledge can interfere or cause reading comprehension failure, just as much as the lack of it (Maria, 1990). The interactive model is the basis of immersion practices (Cambourne, 1988) in reading comprehension which propose that extensive immersion or saturation in language experiences and oral discussions before, during and after reading will eventually lead to improved reading comprehension.

### **Transactional Model**

The transactional reading model (Rosenblatt, 1994) states that it is a fallacy to consider the reader and the text as two separate entities, and that meaning evolves when transaction between the reader and the text occurs. The transactional model indicates that besides 'top-down' and 'bottom-up' processes, there are also to-and-fro processes for comprehension that run parallel between the reader and text. These processes assist the reader to form an interpretation of the text. Interpretations are enhanced when contexts are shared between the reader and the author of the text. An example of these shared contexts include belonging to the same socio-cultural group or the same discourse

community. The shared contextual knowledge promotes the transactional process of comprehension between the reader and the author. The transactional view acknowledges that the reader will neither find the absolute meaning of the text nor will the reader's interpretation completely match the writer's intention. The same text could mean different things to different readers or even the same reader at different times or in different contexts (Rosenblatt, 1994).

The transactional model has three principles of strategy instruction: (a) long term instruction requires an active thinker who uses the text as a starting point for constructing meaning; (b) interpretations can differ, depending on the reader or group of readers; and (c) there may be lively discussions of texts when students are exposed to diverse reactions to text (Kamhi, 1997).

A study conducted by Brown, Pressley, Schuder and van Meter (1995, as cited in Kamhi, 1997) indicated that second grade students who received transactional strategies instruction performed significantly better than the control group, making diverse and richer interpretations of text. The students who received transactional strategy instruction also showed a stronger desire to read difficult texts and to collaborate with other students in discovering the meaning of texts. Transactional instruction strategies produced readers who were able to discuss and justify their interpretations. This is a more complex type of comprehension than literal interpretations of text and such observations have led to the view that reading comprehension occurs at different levels.

### **Levels of Information Processing**

The view that reading comprehension occurs at different levels has been considered by a number of authors ( Craik & Lockhart, 1972; Kahmi, 1997).

Alder and van Doren (1972) applied the idea of levels of processing to reading after identifying four levels of comprehension. The first level identified by Adler and van Doren (1972) was termed the 'elementary' level. This involved the understanding of the literal meaning of words and sentences. The second level was termed 'inspectoral'

reading. It focused on the amount of time spent on reading an assigned section of text. The third level was 'analytic' reading. This was a very thorough form of reading which Kamhi (1997) describes as 'chewing and digesting' the text. The fourth was 'comparative' reading. It related the text being read, to other texts or topics in the reader's prior reading experiences.

The research on levels has revealed the complexity of the reading comprehension process. Many theories and beliefs drive the diverse approaches and strategies used to develop and extend reading comprehension. Kamhi (1997) suggests that two different views of comprehension are necessary to understand its complexities. The first view is that comprehension is a transaction between readers and text and the second considers the different levels of processing and understanding.

Literary theorists and reader-response critics have explored the way meaning is constructed during reader text instruction. Meaning is believed to reside in the transaction between text and reader, rather than in text itself. Reader-response critics Fish (1980) questions the very existence of independent text, because according to Fish, all aspects of text are products of interpretive strategy. Text is understood not as a whole but through a series of changing interpretations and understandings. The construction of meaning is governed by social and cultural attitudes, the reader's personality and linguistic and conceptual skills. Meaning can also be influenced by the social-historical context between author and reader (Kamhi, 1997).

A recent study (Abu-Rabia, 1998) focused on the effects of social and cultural attitudes and social-historical context on reading comprehension. Arab Israeli students were tested on their comprehension of Jewish and Arab stories. Hebrew was a second language to these students. Since the social context and sociopolitical problems in Israel inhibit the social interaction between Jews and Arabs, Israeli Arabs have predominantly learned Hebrew from the texts of Jewish stories. One aspect of the study focused on the effects of familiar and foreign stories on the reading comprehension of Arab students in their first and second languages. A second aspect of the study focused on the cultural

backgrounds and attitudes of Arab students as potential influences on reading comprehension in Hebrew.

The students were in grade ten and had been studying Hebrew since grade four. The readings included six stories written in Hebrew by Jewish authors and six stories written in Arabic by Arab authors. Three of the Jewish stories were translated into Arabic, and three of the Arab stories were translated into Hebrew by a group of teachers who were adept in both languages. Ten multiple-choice questions were prepared for each of the twelve stories. Five of these were explicit questions based on literal comprehension and five were implicit questions based on inferential comprehension. The questions to all twelve stories were presented in the students' first language, Arabic. The students read Jewish texts in Hebrew and Jewish texts in Arabic; they read Arabic texts in Hebrew and Arabic texts in Arabic. They were allowed an hour to read each text and to answer the ten questions. The students revisited the text while answering the questions (Abu-Rabia, 1998).

An attitude questionnaire examined two types of motivation, instrumental and integrative. Instrumental motivation refers to the students desire to learn the second language only for utilitarian purposes. Integrative motivation is prevalent when the learner identifies emotionally with the second language and its speakers. Five items in the questionnaire expressed the learning of Hebrew for instrumental reasons and three items expressed the learning of Hebrew for integrative reasons. The questionnaire was presented in Arabic (Abu-Rabia, 1998).

The study revealed that the students scored higher for the Arab cultural stories in literal and inferential comprehension, regardless of the language of the text. This indicates that the students' comprehension of Arab cultural content was significantly greater than their comprehension of stories of Jewish cultural content. The results of the attitudes questionnaire revealed that the motivation of the students learning of Hebrew was instrumental rather than integrative. The results of the study imply that textual content is a powerful variable determining the understanding of cultural stories and



general social content. It also reveals that reading is more meaningful and comprehensive if it is relevant to the reader's social and cultural backgrounds (Abu-Rabia, 1998).

The results of the study imply that textual content is a powerful variable determining the understanding of cultural stories and general social content. It also reveals that reading is more meaningful and comprehensive if it is relevant to the reader's social and cultural backgrounds. The study indicates that social-historical context between the author and reader, and the social and cultural attitudes of the reader are variables that affect reading comprehension.

The literature on reading comprehension suggests that the transactional model of reading and the levels of information of processing applied together could form a stronger basis for understanding reading comprehension than if each idea or view were used in isolation.

### **Factors Related to Reading Comprehension Difficulties**

There are three basic theories proposed to explain reading comprehension difficulties. The premise of the first theory is that comprehension problems are embedded in word recognition problems (Perfetti & Lesgold, 1979). The second proposes that readers experience difficulties in syntactic and semantic analysis of texts, and are unable to make use of the structural constraints of language (Cromer, 1970). The third theory hypothesizes that readers experience difficulty in making inferences from texts, and integrating the ideas within them (Kamhi, 1997; Yuill & Oakhill 1991).

In supporting the first theory, that comprehension problems are embedded in word recognition problems, Perfetti and Lesgold (1979) state that students with good comprehension have stronger word recognition skills than students with poor comprehension. Slow decoding causes a bottleneck in the working memory of the reader. Since students with poor comprehension do not use their working memory

efficiently due to the bottleneck effect, this gives them a lower functioning capacity for comprehending purposes.

Alternatively, Cromer (1970) argues that readers experience difficulties in syntactic and semantic analysis of text, and are unable to make use of the structural constraints of language. Reading comprehension problems within this second theoretical perspective are due to higher level processing. Students with poor comprehension are presumed to ignore the syntactic clues in texts and read word by word instead of processing texts in appropriate units.

Within the third theoretical perspective, Yuill & Oakhill (1991) propose that readers experience difficulty when making inferences from texts and integrating the ideas in them. Poor comprehenders are argued to have adequate word recognition and syntactic skills but experience difficulty at inference and integration levels and fail to monitor their comprehension.

These three theories give different emphasis to attributes of reading comprehension. However, given the enormous diversity of students who experience reading comprehension difficulties, it may be more reasonable to consider comprehension at individual levels.

Yuill and Oakhill (1991) state that whilst low levels of reading fluency contribute to reading comprehension problems, it is neither the sole, nor the primary cause, as students with hyperlexia clearly indicate. The following briefly summarizes research on hyperlexia.

Sparks and Artzer (2000) state that students with hyperlexia exhibit three primary characteristics. These are:

- Spontaneous reading before the age of five
- Impaired comprehension on both listening and reading tasks

- Word recognition (decoding skills above expectations based on measured cognitive and linguistic abilities)

Richman (1997) identifies two subtypes within the spectrum of hyperlexia. The first termed 'Hyperlexia Language Disorder' portrays the following characteristics.

- Good rote memory skills
- Problems in understanding overall meaning
- Language is delayed, echolalic and preservative
- Autistic like symptoms

The characteristics of the second subtype termed 'Hyperlexic Visual-Spatial Disorder' are:

- Visual spatial and/or motor delay or disorder
- Language pragmatic deficit in expressing and interpreting experiential aspects of language and environment
- Asperger's like symptoms

Richman (1997) proposes that hyperlexia be considered a language related disability that coexists within other disabilities such as autism, asperger's syndrome and attention deficit disorder. Nation (1999) reports that approximately 2% of 7-9 year old students without the above disabilities are hyperlexic.

Studies on comprehension difficulties have identified two types of poor readers: firstly, the 'deficit readers', as being those who fail in the area of decoding, word recognition and vocabulary knowledge, and secondly, 'the difference readers', who are skilled decoders, but who are unable to work out the interrelations of ideas in text (Cromer, 1970; Isakson & Miller, 1976; Levin, 1973). Students with hyperlexia resemble the second category but are usually distinguished by additional features associated with conditions such as ADHD and Autistic Spectrum Disorders.

Kintsch and van Dijk (1978) suggest that comprehension involves a limited capacity buffer that temporarily stores information from different areas for integrating. They reason, that reading is processed in cycles of meaningful units to establish coherent understanding of text. The prepositions of the present cycle are related to the previous cycle and the reader must make the connections between the cycles. The integration of information can be accomplished only if the earlier cycles are still in the working memory. Since comprehension involves both storage and processing, and working memory also plays an important role in the process.

Successful comprehension therefore requires the building of a mental model and many reading skills such as word recognition, knowledge of grammatical and semantic relationships between words, the integration of texts through making inferences and the application of implicit information is necessary to achieve reading comprehension (Yuill & Oakhill, 1995).

Skilled comprehension also requires an awareness of the redundancies of language. It is important that readers realize that the same message is sent in different forms, that information from one source supports the other, reinforcing the intended message. Students can be taught to look for, and use the redundancies to assist them to comprehend what they read (Lerner, 1997).

Factors that research identifies as contributing to specific reading difficulties are related to any one or more of three crucial elements associated to reading comprehension processes, i.e. the reader, the teacher and the text. The following section reviews the role of reader, teaching practices, and the text in relation to reading comprehension difficulties.

### **The Reader**

Research has identified four major factors i.e. automaticity, meta-cognition, anaphoric resolution and conceptual knowledge related to the reader, that contribute to

reading comprehension failure. The following is a review of research on these reader related factors.

### **Automaticity**

Automaticity is a term applied to skilled performance. It is the ability to perform a series of complex skills with a minimum of effort or attention (Samuels & Flor, 1997). The above implies that automaticity is a term applicable to a range of skills including reading.

Automaticity in reading is considered to be an important contributor to reading comprehension. Fluent decoders or readers have achieved automaticity since their decoding or word recognition skills have reached a level where word recognition is automatic and does not require the reader's attention (Samuel & Flor, 1997). Automatic behaviours transpire without intention and do not interfere with the cognitive processing required for reading comprehension (Posner & Snyder, 1975).

Automaticity is not necessarily achieved with accuracy. Reading is automatic only when it is both accurate and effortless. Fluent readers having achieved automaticity, no longer need their attention or energy to decode words and are able to direct their efforts into comprehending the text. When practice of a concept is discontinued for certain lengths of time, students who have achieved automaticity will have better recall than students who have only achieved accuracy. Students who have only achieved accuracy levels, risk forgetting the concept, and may need to relearn it (Samuels & Flor, 1997).

Logan (1988) believes that automaticity develops through repeated instances or episodes. Three main assumptions underlie Logan's theory. Firstly, encoding into memory is a result of attention that transfers the stimuli to the memory. The level of memory depends on the level of attention. This implies that the more attention or concentration, the stronger the memory. Secondly, recalling from memory occurs as a result of attention, and whilst retrieval may be incomplete or inaccurate, it will take place.

Retrieval from memory is a result of former affiliations with the stimulus. Attention is the primary factor that connects encoding to retrieval. The third premise is that every instance the stimulus is presented, it is encoded, stored and retrieved. This theory on automaticity implies that the automatization process is item based, and that automaticity develops by learning a particular response initiated by specific stimuli.

Logan (1988) states that the premise behind his instance theory of automaticity, implies a learning mechanism that involves the accumulation of specific episodic traces with experience, which produce a gradual move from algorithmic processing to memory based processing. The instance theory suggests that the reader will approach a task differently depending on whether he/she has achieved automaticity. Automatic responses rely on memory retrieval that is fast, whereas non-automatic responses rely on an algorithmic strategy which employs cognitive problem-solving processes that compute an interpretation of the stimulus to produce a response. The two forms of retrieval are different because the variables that affect the two forms differ. Students, who read accurately, but have not yet achieved fluency, apparently use the algorithmic strategy that requires cognitive processing.

Samuels and Flor (1997) claim that there is a direct link between automaticity and reading comprehension. They state that beginner readers first focus their attention on decoding and only the excess attention not used in decoding, is used in comprehension processes. Decoding is laborious and attention consuming and overloads the working memory. However, once decoding is automatic, then, cognitive resources are used to comprehend the texts being read.

La-Berge and Samuels (1974) and Samuels (1994) state that repeated readings of the same passage increase fluency and comprehension. Mastropieri and Scruggs (1997) state that although repeated readings improve fluency, this strategy does not provide information to students on how to comprehend texts. Although improving fluency is necessary, it is not in itself sufficient to improve comprehension. There is clear evidence

that fluent reading does not always result in successful comprehension (Yuill & Oakhill, 1991).

Observations of literacy development on 29 students in their first years of schooling by Jule, Griffith and Gough, (1986) revealed that both decoding and an ability to understand language affected their comprehension. Jule (1988) studied these same students for a continuation of two years after the first study and found that although decoding was still important, language understanding had taken precedence in reading comprehension. The study indicated that decoding skills can develop to fluency or near fluency in the first years of school, but language understanding is more complex.

Some studies have explored the causes in reading comprehension problems in students with and without decoding difficulties (Yuhill & Oakhill, 1991). Small groups of students were identified with transient or late emerging reading difficulties. These students achieved average score in phonological skills in the early years and although these scores were maintained in grade six, the students were experiencing difficulties in reading and listening comprehension. These difficulties were due to a decrease in verbal IQ that stems from poor comprehension of verbal information conveyed through reading. The study indicates that although the students had 'learnt to read' successfully in the early grades, they were not so successful when the focus on reading switched to 'reading to learn' in the later grades.

Since comprehension spans a spectrum of skills, researchers have attempted to analyze certain aspects of comprehension in their endeavour to find a solution to comprehension problems. Just as some students grapple with phonological problems in the early years (Reid Lyons, 1997), others likewise struggle with comprehension problems in the later grades (Dymock & Nicholson, 1999).

### **Meta-cognition**

Vygotsky (1962) states that there are two phases in the development of knowledge. The first is cognition, an automatic unconscious acquisition of knowledge and the second is meta-cognition that follows cognition and is a gradual increase of active control over knowledge. Cross and Paris (1988) define meta-cognition as,

“The knowledge and control children have over their own thinking and learning activities.” [p.131].

Cognition occurs with the absorption of knowledge and meta-cognition is the control of cognition (Brown, 1980).

Effective readers use their knowledge in a range of deliberate actions that ensures comprehension. They evaluate and select strategies only to the depth needed to meet their current needs. This involves an analysis of task demands, the reader’s capacities and limitations and the interaction of the two. This deliberate effort to understand and control one’s task and knowledge resources is meta-cognition (Brown, 1980).

Students with specific reading difficulties seldom consider their behaviour in a sensible way. They use meta-cognitive strategies far less than skilled comprehenders and do not evaluate their own reading (Myers & Paris, 1981).

Students with specific reading difficulties follow instructions blindly and have poor self-questioning skills that would make them aware of these inadequacies. Brown (1980) states that students with specific reading difficulties do not realize that a task’s difficulty has increased and requires a change of strategy. They very seldom use inferential reasoning to assess their assumptions in relation to available information. Such students, experience difficulties at predicting the outcomes of the strategies they employ to solve a problem. They also have problems gauging the task’s difficulty, monitoring their own learning, and knowing when they have achieved success (Brown, 1980).



The primary problem with reading comprehension difficulties according to Brown (1980) is that readers are not aware that they have a problem. When readers are unaware that they have a problem, they have failed to comprehend an important point in the passage and do not plan a course of action to bridge the gap on their knowledge of the passage. Brown (1980) terms this meta-comprehension. Understanding the content of a text is comprehension, and understanding that the content of the text has been understood is meta-comprehension. Often small, but crucial selections of text are not comprehended, yet readers are unable to identify the part that is causing the comprehension failure (Brown, 1980).

Markman (1997) investigated students' insensitivity to their own lack of comprehension by studying the behavior of students from grades one to three. The students were asked to help design instructions for new games that were to be taught to other students. Observations indicated that not only were the instructions incomplete for the game to be played, but also the students were unaware that the instructions were incomplete. Students are generally unaware of the inadequacy of the messages they send and they are unable to evaluate the adequacy of the messages they receive (Brown, 1980).

According to Cross & Paris, (1988) meta-cognitive awareness is developmental. Brown (1980) states that adults can differentiate between what they know and what they do not know. Adults can also identify situation when they know something but fail to retrieve it immediately. In comparison, students cannot differentiate between what they do not know and what they cannot retrieve. This confirms that students are unable to evaluate their own knowledge. Moreover, research indicates that the students who were able to predict the best strategies to tackle reading tasks did not actually use those strategies when they were involved in the task themselves (Brown, 1980). This indicates that there are differences, between what students say they know and how they behave or perform in the same area.

Brown (1980) states that novices regardless of age experience meta-cognitive deficiencies. Ignorance is not a result of age but inexperience with a new problem

situation. Although there can be little doubt that meta-cognition is linked to a child's development, it is simplistic to generalize to a particular age when students acquire certain skills. Rosenshine (1996) supports this idea in mentioning that the major differences between an expert and a novice are that the expert has a larger number of knowledge items, more connections between items whose links are stronger, and a better organized structure. A novice does not envisage these patterns in structure and ignores them. The hallmarks of an expert are well developed and well connected patterns.

Well-connected knowledge structures are important for three reasons. They make it easier for retrieving, allow for more information and encourage the understanding and integration of new information. Further research may help educators to understand the interaction of age and task complexity in relation to the development of meta-cognitive skill in reading and other areas. Ackerman (1984) and Miller (1985) noticed that students's development plays an important role in their ability to learn and use meta-cognitive strategies in reading. They state that grade four students were found to learn reading comprehension strategies faster than younger students, and attribute this to maturity and well developed skills at following instructions.

Dermody and Speaker (1995) studied the effects of meta-cognition training in reading comprehension to grade four students with and without learning difficulties. They categorized the 41 students into three groups. The Good/Good group consisted of students who were good word readers and good at comprehension. The Good/Poor group were accurate word readers but poor at comprehension. The Poor/Poor group were poor word readers and poor at comprehension.

Explicit instruction in specific reading comprehension strategies was provided for nine weeks. The strategies consisted of predicting, clarifying, question generating and summarizing. Instruction was followed by modeling and guided practice. The students first worked on predicting skills, followed by clarification and questioning skills that were taught together. Questioning strategies were taught by modeling the identification of the different types of questions and showing the students how these questions could be

answered. Text summarizations were taught together with identifying both explicit and implicit main ideas to assist in summarization. The results of the study revealed a significant increase for the Good/Poor group who were good word readers but poor at comprehension. There were no significant effects for the students who were both poor word readers and poor at comprehension or the students who were good in both word reading and at comprehension (Dermody & Speaker 1995). These results indicate that explicit instruction can be applied to the teaching of reading comprehension strategies.

### **Anaphors**

Anaphors, also known as referencing pronouns or anaphoric devices, are a considerable area of difficulty for students with poor comprehension (Yuill & Oakhill, 1991). Readers often need to relate information to earlier segments of text in order to comprehend. Narratives containing many characters are likely to contain many anaphors or pronouns (see underlined words in reading passage and question 4, ‘ Work it out’ for example in Appendix A) and successful comprehension is possible only if students can understand the role and place of pronouns and other kinds of anaphoric devices (Bauman, 1986). Comprehension is more difficult when the antecedent is distanced from the anaphor (Yuill & Oakhill, 1991).

Yuill and Oakhill (1991) observed and tested students who were either skilled or unskilled at reading comprehension on anaphoric understanding in a series of studies. They assumed that less-skilled readers had difficulty processing referencing pronouns or anaphors due to memory overload or to confusion regarding the genders of characters in the text. They conducted a study to test their assumption. The results indicated that the assumption of memory overload was unfounded but gender did play a minor role. However, they found that less-skilled readers did not pay attention to pronouns. Even when they could refer to the text to identify the noun represented by the anaphor, they chose not to.

In their second experiment, Yuill and Oakhill (1991) studied the effects of inferential complexity on pronoun resolution. The first task was to provide a gender

appropriate pronoun to fill in a blank in the second clause of a sentence. The second task required a true or false answer derived from inferential processing. The researchers stated the first task required a simple inference where as the second task required a complex inference. The results indicated that less-skilled readers generally performed worse than the skilled readers did at inferential processing. The observations and results also indicated that the poor performance was related to the level of inferential processing needed to identify the appropriate pronoun. Their third experiment focused on resolving anaphors in narrative text. They used texts in which some nouns and their anaphors were spaced as far as two sentences apart. There were also anaphors that were near the nouns they referenced. The two types indicated the level of performance difficulty and the inferential processing required in identifying the noun. The students had to identify the noun referenced by the anaphor. The results firstly revealed that less-skilled readers look for the nearest plausible response. They sometimes referred outside the text to find a response. This implies that they randomly guessed a response and did not make corrections to the text at all. Yuill and Oakhill (1991) state that an analysis of the mistakes made by less-skilled readers indicated that students used (real world) answers instead of (text world) answers. These kinds of errors indicate that some young readers have difficulty coordinating information in the two worlds, namely the text world and the real world. Whilst background knowledge is essential to comprehending in many instances, it can sometimes be responsible for wrong responses to comprehension questions. Yuill and Oakhill (1991) also found an incorrect assignment of an anaphor can change the whole sense of the story resulting in missing the main point of the story. The overall results of the study indicate that if students with poor comprehension ignore or fail to resolve anaphoric connections to text, it could be part of the reason for their failure to comprehend reading. If left unchecked, the failure to resolve anaphoric problems could have pervasive effects on reading comprehension(Yuill & Oakhill, 1991).

### **Conceptual Knowledge.**

Skilled readers use existing linguistic, and conceptual or world knowledge to comprehend text in a variety of genres. Readers make deductions, analogies and inferences and monitor their comprehension to assist in understanding complex texts.

Kamhi (1997) clarifies world knowledge as two parts of a whole. World knowledge can be *semantic knowledge* such a topic related vocabulary, as well as *procedural knowledge* of systems and relationships. Since the diversity of world knowledge is so broad, it clearly plays an important role in reading comprehension (Kamhi, 1997).

In summary, significant factors within the reader that contribute to reading comprehension failure are poor reading fluency or automaticity. Poor decoding and word recognition skills consume too much of the reader's working memory, leaving too little working memory free for comprehending purposes. A reader's poor meta-cognitive understanding and the lack of training also affect their reading comprehension. Readers fail to comprehend when they are unable to resolve anaphors, and have little conceptual knowledge or fail to apply the knowledge they have.

### **The Teacher**

There are five major teacher related factors identified in the research literature as causing reading comprehension failure in students. These are: (a) a poor understanding of the development of reading comprehension, (b) inappropriate class groupings, (c) inadequate allocation of time spent on the instruction of reading comprehension strategies, (d) failure to integrate reading across content areas and (e) the lack of coverage of the four levels of comprehension via teacher questions. The following is a review of research on these teacher related factors.

#### **Poor Understanding of Reading Comprehension**

Previous research into reading comprehension difficulties indicate that a teacher's poor understanding of reading comprehension could result in inadequate teaching strategies for comprehension. Some teachers still operate with the simple view of reading (Gough and Tunmer, 1986) that assumes comprehension proceeds automatically once decoding skills are mastered. Other teachers have taught reading comprehension in a segmented manner that focused on reading comprehension activities such as story maps

and story ladders. These were actually retells and involved the recall of what was read, implying that only literal comprehension was addressed (Maria, 1990).

### **Inappropriate Class Groupings**

Maria (1990) states that many teachers taught their students as a whole group. Whilst this met the needs of many students, whole group instruction was insufficient to meet the needs of students with specific learning difficulties. Small group instruction is needed to engage these students to ensure that their responses are heard and immediate feedback given in instances where mistakes or misconceptions occur. It is difficult to address the needs of students with reading difficulties when instruction occurs solely in whole group settings.

### **Inadequate Allocation of Time**

Research in different countries across the world indicate that although about 30% of the school day is spent on reading instruction teachers spend less than 35 minutes a day on reading comprehension instruction. In the lower grades, the majority of the time was spent on word recognition or phonics, and reading comprehension was overlooked (Asselin, 2002; Maria, 1990).

### **Lack of Integration**

Analysis of comprehension activities in many classrooms has indicated that teachers often taught one skill at a time and focused mainly on narrative genres (Rosenshine, 1980; Dymoch & Nicholson, 1999). The reading comprehension of expository texts was overlooked which increased the probability of reading comprehension failure in areas such as science and social studies (Dymoch & Nicholson, 1999). Teachers who taught content areas like science and social studies did not consider the instruction of reading comprehension to be their objective. They ignored the students' failure to comprehend and explained the concept to the students because their primary concern was the understanding of the concept (Greenleaf, Schoenbach, Cziko, & Mueller, 2001; Maria, 1990). Choate, Enright, Miller, Poteet & Rakes (1995) have

emphasized the importance of infusing content area curriculum such as science and social studies with study strategies such as reading comprehension.

### **Poor Coverage of the Four Levels of Comprehension in Questioning**

Dymock and Nicholson (1999) state that teachers do not generally think about questions and answers when teaching. They recommend that students be taught how to handle questions and answers since these tasks occur in tests and school examinations. A review of relevant literature indicated that there was a difference between the kinds of questions the majority of teachers ask in the classroom and those found in textbooks and examinations. Teachers usually asked 'Right There' or literal questions (see Table 2.1). Textbooks in comparison asked 1% of 'Right There' or 'Putting It Together' (both textually explicit levels). The 'Author and You' (textually implicit) questions were 44% and the 'On Your Own' which had no textual clues whatsoever made up 55% of the questions. This implies a discrepancy between the questions teachers ask and those asked in texts and examinations. Dymock and Nicholson (1999) suggest that cued directives of each level of question such as 'Right There', 'Putting It Together', 'The Author and You' and 'On Your Own' should be used, to explicitly teach the students the connections to strategies used in comprehending texts.

Teachers need to ensure that they ask three categories of questions, textually explicit, textually implicit, and scriptually implicit. Textually explicit questions usually require one sentence answers that can be found in the text. Answering textually implicit questions involve the integration of information across the text and the making of inferences about different pieces of information in the text. In answering scriptually implicit questions, students apply prior knowledge in connection with the text (Maria 1990). If the four levels of comprehension require different reader strategies, it follows that instructing students in reading comprehension is better managed through introducing the four major sub-skills i.e. literal, interpretive, critical and words in context (Choate et al, 1995).

Student groupings and the methods used to deliver instruction are important to meet the needs of multi-level students. Small group instruction has been recommended since it is easier to engage and hold the attention. Students have a better chance to answer oral questions and participate in discussions. It is also easier to monitor the students and give corrective feedback to small groups (Maria, 1990).

Teachers should provide and model comprehension strategies and encourage the students to become independent. Students need scaffolding in the initial stages but it is important that students understand that the goal of comprehension instruction is to make them independent learners. Scaffolding affords the students success since they receive support until they can apply the taught strategies by themselves and success is crucial to motivation. Only if students succeed will they persevere (Asselin, 2002; Maria, 1990)

In summary, teacher factors that have contributed to reading comprehension failure in students include a poor understanding of the development of reading comprehension. Teachers have overlooked the needs of students who require remediation in failing to provide instruction to small groups. There has been inadequate time allocation for the teaching of reading comprehension. Reading comprehension instruction has not occurred in content areas like science and social studies that use expository texts. Therefore, students have experienced reading comprehension failure when reading to learn from informational texts. Lastly, some teachers have had little understanding of the different types of comprehension itself, and have to ask questions that elicited all four levels of comprehension.

### **The Text**

Research has identified the use of inappropriate texts and an imbalance in the distribution of genres as text factors that contribute to reading comprehension failure (Dymoch & Nicholson, 1999). Texts used in schools usually fall into three categories. There are basal readers, content area textbooks and trade books or novel studies.



The old basal readers have given way to anthologies that include a majority of narratives, a few expository texts, poetry and plays. The reading passages are usually lengthy, with a small focus on comprehension. The comprehension activities focus on a progression of segmented skills. Many reading critics state that although the quality of the reading material has improved over the years, since the basal/anthologies now use mostly classic students' literature, they are still based on the passive view of learning and a reductionist bottom-up model of reading (Maria, 1990).

Content area texts are used in teaching subjects such as science and social studies. They focus on teaching the content of a discipline rather than the reading process. Even teachers of self-contained classes viewed reading and content areas as separate entities of the curriculum. In focusing on covering the curriculum, content area teachers have failed to teach the students how to use the text to access information, and deprived them of becoming independent learners (Greenleaf, Schoenbach, Cziko, & Mueller, 2001; Maria, 1990).

Trade books or novel studies, also known as students' literature, have been the focus of whole language reading instruction in Australia, New Zealand and Canada for some years (Maria, 1990). Whole language approaches to reading emphasizes the reading of trade books and authentic texts. However, whole language approaches de-emphasize the explicit teaching of skills, focusing primarily on the context of texts for reading comprehension (Mastropieri & Scruggs, 1997).

Although the quality of the literature is excellent, teachers grapple with ways to individualize the teaching of reading comprehension. For example, the teaching experience of the writer has indicated that the use of big books in shared book experiences in the early grades elicits comprehension from the whole group. This is sufficient to meet the needs of many, but not all the students. Observations have indicated that students who did not really comprehend the reading passages were able to produce acceptable answers because they had heard these answers from their peers and had seen them accepted as correct answers. When reading activities became more

independent in the higher grades, the students who could not comprehend the reading passages began to stand out, as they started failing in all areas related to reading comprehension.

Literature on genre difficulty in reading texts will be reviewed next in relation to reading comprehension failure.

### **Genres In Texts.**

Texts are comprised of many different written genres that are categorized under two main categories, narrative or expository genres. Research has revealed that many students have trouble comprehending expository genres (Dymoch & Nicholson, 1999).

A reader's understanding of narratives is stronger if the student has some knowledge of story grammar/schema and script knowledge. A story schema is a mental framework that categorizes narratives into story components such as setting, characters, problems, and solutions. A script is a recount that represents an event rather than a story and generally written in the first person. Script and schema knowledge are as important contributors to reading comprehension, as is an individual's world knowledge. In order to understand units of written language, readers must also determine the relation of particular sentences, pronouns or propositions to other sections of the discourse by interpreting and integrating information about characters, objects and events in the discourse (Kamhi, 1997; Reutzel & Cooter, 1999).

In the early years of schooling students read texts which are mostly narrative genres, and this is why even skilled readers experience difficulty with expository texts (Beck & McKeown, 1989). In the later years of schooling, reading comprehension becomes more difficult due to the wide use of expository genres. Varied text genres involve different purposes in reading that require varied levels of comprehension and specific genre related comprehension strategies (Dymock & Nicholson, 1999).

The characteristic features of expository texts are different to those of narrative, and recount genres. Sentences are longer and complex, and texts are dense with content that is quite new to the reader, making reading comprehension more problematic. Readers need to be familiar with expository text structure to enable them to integrate relevant content knowledge in comprehending the reading of such texts. The lack of knowledge regarding the structure of various expository genres, means that extant knowledge within the reader cannot be fully utilized (MacLellan, 1997).

Cook and Mayer, (1988) state that readers require knowledge of the common structures used in expository text to focus on both high and low levels of comprehension. In order to access expository texts, readers need an understanding of how content is organized and represented as well as some extant knowledge on the topic being read.

Expository genres are also generally more difficult to comprehend because they are high in lexical density and low in redundancy. Expository texts can also be categorized as considerate and inconsiderate texts. Considerate texts have both global and local coherence. Global coherence requires the integration of ideas presented in the text. This implies that global coherence is linked to conceptual or world knowledge. Local coherence involves the relation within and between syntactic and semantic content and this implies linguistic knowledge. Inconsiderate text has the reader providing both coherence and structure, requiring significant amount of input from the reader, for comprehension (Ambruster, 1984).

In Australian schools however, inquiry based teaching integrates science and social studies into other learning areas such as English and mathematics which means that informational texts are presented at more appropriate reading levels. Teachers trained in the First Steps Reading Resource (EDWA, 1995) are familiar with the reading comprehension strategies for both narrative and informational or expository texts. Moreover, the First Steps Writing Resource (EDWA, 1995) provides instructions on how to develop the understanding the text structures of narratives, recounts, procedures, reports, explanations and expositions.

In summary, the primary text related factor that has contributed to reading comprehension failure appears to be an imbalance in the use of narrative and expository genres in reading. Early reading programs in many countries around the world have tended to use a majority of narrative genres since their structures were easier to comprehend and remember than expository genres. Students do not get enough reading exposure to expository genres and have poor understanding of the characteristics and structures of expository genres. Expository genres are more subject specific and involve specific vocabulary. They are complex and dense in text. When students receive little if any instruction on reading comprehension, the combination of poor prior knowledge of the structures of expository texts, and lack of exposure to the concept leads to comprehension problems in content areas such as science and social studies in the later grades. However, Australian schools that use the First Step Reading and Writing Resource books (EDWA, 1995) may be providing a more balanced program in respect to narrative and expository genres

### **Overview**

These factors suggest that reading comprehension failure is attributed to many complex factors and their interactions. Therefore, remedial approaches must be multi-dimensional rather than reductionist. To focus only on the reader, the teacher or the text is inadequate. An alternative conceptualization of reading comprehension that adopts the non-reductionist view is the developmental approach. Within this alternative framework, remedial instruction is designed to replicate and reinforce the developmental sequence of reading and the developmental emergence of increasing complexity in levels of comprehension.

The following reviews the essential elements of a developmental approach. These include thoughtful and purposeful reading, schema building, awareness, monitoring and adjusting strategies and the identification of keywords. It reviews the idea of skill hierarchies and the four levels of comprehension. Lastly, it reviews the Question

Answer Relationship strategy, as a means of addressing reading comprehension difficulties.

### **Development Approaches To Reading Comprehension**

Several developmental approaches to reading comprehension such as, thoughtful and purposeful reading, schema building, awareness, monitoring and adjusting strategies, and the use of keywords are suggested by Choate et al, (1995); and the Education Department of Western Australia [EDWA], (1995).

#### **Thoughtful Reading.**

Students receive instruction on thinking skills related to reading comprehension. Beyer (1986) as cited in Choate et al (1995) recommends two thought processes. The first requires the teacher to introduce the specific technique or rule and model its use. Students then apply the rule whilst being assisted in remembering how and why they accomplish the task. The second strategy requires the student to state his/her goal then describe the steps they will take to achieve it (Choate et al, 1995).

#### **Purposeful Reading**

Another strategy in a developmental approach to reading comprehension is to ask students to locate answers to a few important questions. Student read the questions before reading the passage or passages. In using this strategy, the teacher assists the student in understanding the particular purpose for the reading (Choate et al, 1995).

#### **Schema Building**

Schema building is also recommended as a development strategy in reading comprehension. Since a reader's ability to comprehend text is influenced by previous experiences, and knowledge, the building of background knowledge is considered an important developmental strategy in reading comprehension. In building background knowledge before reading, the student's schema is developed. This assists the student in assimilating new information especially in topics or concepts where there is but little extant knowledge (Choate et al, 1995).

The developmental strategies described by EDWA, (1995) groups reading comprehension strategies under awareness, monitoring and adjusting categories.

### **Awareness Strategies**

Two awareness strategies in the First Steps Reading Resource (EDWA, 1995) relevant to the present study are (1) the development of background knowledge on a specific topic, before the reading activity; (2) the development of an understanding that texts are comprised of explicit and implicit information and that reading comprehension activities usually involve the identification of both forms of information.

### **Monitoring Strategies**

Amongst the range of monitoring strategies suggested by the First Steps Reading Resource (EDWA, 1995) the most relevant to this study are the integrating of prior knowledge to new text information, evaluating information, and the critical consideration of information

### **Adjusting Strategies**

Rereading, backward-forward searching and locating the point of misconception will be some of the suggested adjusting strategies taught in the study from the First Steps Reading Resource (EDWA, 1995).

### **Keywords**

The First Steps Reading Resource (EDWA, 1995) recommends the identification of keywords. Students learn how to identify keywords and scan for missed information when rereading texts in order to locate specific information. Identifying the keyword in the question also helps the students to refocus on the question itself.

In summary, the teaching of a range of developmental strategies could improve reading comprehension. These strategies correlate with the idea of the four levels of

comprehension, and can be taught through scaffolded instruction, using the transactional model.

### **Skills Hierarchies and Levels of Reading Comprehension**

Rosenshine (1980) reviewed the possible presence of skill hierarchies in reading comprehension and discovered some surprising findings. The review focused on two questions. Firstly, was there any evidence of substantial agreement on common reading skills? Secondly, were these skills best learned in a hierarchical fashion?

### **Common Reading Skills**

In relation to the first question on whether or not there was substantial agreement on common reading skills, Rosenshine (1980) found common reading skills that fell into three categories. ‘Locating details’, the first category was the simplest. It involved recognition, paraphrasing and matching skills. ‘Simple inferential skills’, the second category required an ability to draw inferences from the reading passages. ‘Complex inferential skills’, the third category referred to drawing inferences from longer reading passages. The skills were classified into two groups, simple inferential skills and complex inferential skills.

Simple inferential skills include understanding words in the context, recognizing the sequence of events, recognizing cause/effect relationships and comparing and contrasting events and characters. The complex inferential skills identified were recognizing the main idea, drawing conclusions and predicting outcomes. A number of unique skills that could be classified as sub-skills to the above list of seven skills were also noted. If sub-skills were to be analyzed, there would be hundreds of sub-skills. An analysis of a range of reputable sources revealed that the skills common between sources were recognizing sequence, recognizing words in context, identifying the main idea and supporting details, drawing inferences, recognizing cause and effect, and comparing and contrasting. The skills were not organized in any form of hierarchy (Rosenshine, 1980).

A study of the works of Davis (1968 & 1972); Spearritt (1972) and Thorndike (1973); as cited in Rosenshine (1980) in search of the distinctiveness of different comprehension skills, revealed five unique skills. These were:

- Recalling word meaning;
- Finding answers to questions asked explicitly or in paraphrase;
- Drawing inferences from content;
- Recognizing a writer's purpose, attitude, tone or mood; and
- Following the structure of a passage.

One skill that stood out as being consistent across all studies was remembering word meaning (Rosenshine, 1980). This implies that a prevalent factor in reading comprehension could be vocabulary development and understanding.

### **Skills Analysis of Primary Grades Reading Programs**

The five reading programs reviewed by Rosenshine (1980) were:

- Ginn & Company: Reading 360
- Harper & Row: Design For Reading
- J.B. Lippincott Company: Basic Reading 1975
- Scott Foresman Systems: Reading Unlimited
- Webster/McGraw Hill: Programmed Reading

Eight reading comprehension skills were noted across the five programs. These skills were:

- Locating details;
- Recognizing the main idea;
- Recognizing the sequence of events;
- Drawing conclusions;
- Recognizing cause and effect relationships;
- Understanding words in context;
- Making interpretations (judgment & generalizations); and
- Making inferences from text.



The majority of the reading programs with the exception of Webster/McGraw Hill, introduced all eight skills within the first year of formal schooling. Harper & Row delayed the introduction of the skill ‘using words in context ‘ until second grade. There was no apparent sequence in the introduction of any of the skills although identifying the main idea was introduced only in the second semester of Grade 1 (Rosenshine, 1980).

Differences were noticed in the Weber/McGraw Hill programme. Skills were only introduced one at a time over the span of three years of reading levels. Webster/McGraw Hill introduced inferential skills before literal ones. Rosenshine (1980) reasoned that skills that have an hierarchy, once mastered, are no longer taught. In contrast, reading comprehension skills introduced in first grade continue to be taught through to fifth grade (Rosenshine 1980). The review implies that reading comprehension skills are part a of spiral curriculum, with skills fine-tuned at each level of difficulty.

### **Skills Hierarchies in Reading**

There are skill hierarchies in many learning areas such as phonemic awareness, decoding, spelling, and math. However, Gagne (1970, as cited Rosenshine,1980) who was one of the first to introduce the concept of hierarchies in learning did not mention the idea in relation to reading comprehension.

### **Reasoning Skills in Reading**

In the Carver (1973) study, Rosenshine (1980) noted four levels of reading comprehension:

- Decoding of words and determination of meaning in a particular sentence;
- Combining meaning of individual words into complete understanding of a sentence;
- Understanding the paragraph and its implied main idea, as well as cause and effect, hypothesis proof, implications, unstated conclusions and ideas associated with but tangential to the main idea of the paragraph; and
- Evaluation of ideas, including question of logic, proof, authenticity and value judgments.

Carver (1973) as cited in Rosenshine (1980) implied that the first two levels represented reading whilst the third and fourth represented reasoning skills. In view of Carver's description of comprehension skills, the majority of the other skills analyzed so far would fall into the category of reasoning skills. Clymer (1968) as cited in Rosenshine (1980) identified these skills as inferential skills. Rosenshine (1980) concluded that in view of the research literature he reviewed there was no evidence of a hierarchy or optimal sequence of skills.

### **Levels of Reading Comprehension**

An extensive search by Rosenshine (1980) for sequence and hierarchy into reading comprehension textbooks revealed nothing. However, a division of reading comprehension was apparent. Three categories namely, *literal*, *interpretive/inferential*, and *critical* reading comprehension were mentioned and described

1. Literal: word meaning, context clues, sentence meaning, and paragraph organization.
2. Interpretive/inferential: reaching conclusion, drawing inferences from what was read, identifying purpose, anticipating outcomes, matching generalizations and recognizing the main idea.
3. Critical: recognizing the difference between fact and opinion, recognizing the logic of arguments and judging the appropriateness of arguments and conclusions.

The Rosenshine (1980) review into the skills hierarchies in reading comprehension described and explained the idea of the levels of reading comprehension. The following is an examination of the perspectives of other reading specialists on the concept.

### **Similarities and Differences in Levels of Reading Comprehension**

A search for literature on the levels of comprehension revealed similarities and differences between four different sources. Pearson and Nicholson (1976) categorized questions into four different categories (see Table 2.1) Their first category is termed

‘Right There’, and is a textually explicit level of comprehension. The second level is termed ‘Putting it Together’ is a higher order level of textually explicit comprehension. The third level is termed ‘Author and You’ and is a textually implicit level of comprehension. The fourth is termed ‘On Your Own’ has no textual clues whatsoever. The fourth level requires the use of prior knowledge to arrive at the answers.

In contrast, Raphael (1982) in the Question Answer Relationship strategy defined three categories namely; ‘On the line’ as being explicit, ‘Between the lines’ as being implicit, and ‘Behind and beyond the lines’, as being ‘transplicit’.

Lerner (1997) named the four levels as being; literal, interpretative, critical and creative. Unlike the others, she does not provide cued directives. The Aylward (1983) text Skill Builders: Reading Comprehension used in the intervention program in the study matches the Lerner (1997) description of the four levels of comprehension. In fact, the Aylward (1983) text uses what may be considered a refined model derived from the Pearson and Nicholson (1976); and the Raphael (1982); models of the levels of reading comprehension. (see Table 2.1).

### **The Question Answer Relationship**

Pressley and Harris (1990) state that the analysis of questions is an effective reading comprehension and learning strategy. The question answer relationship {QAR} Choate et al. (1995), technique encompasses the three levels of comprehension namely; literal, interpretive and critical comprehension. Raphael (1986, as cited in Choate et al., 1995) focused on the QAR technique as a way of developing reading comprehension.

Table 2.1

Comparisons of Levels of Comprehension

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Levels of Reading Comprehension

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Levels	1	2	3	4
Pearson & Nicholson, (1976)	<u>Text Explicit</u> Cued directive: 'Right there' <i>Locate information in text</i>	<u>Higher level Text Explicit</u> Cued directive: 'Putting it together' <i>Connect parts of text, detailed searching of text</i>	<u>Text Implicit</u> Cued directive: 'Author & you' <i>Use general knowledge combined with text to derive answers</i>	<u>No Text Clues</u> Cued directive: 'On your own' <i>Use prior knowledge</i>
Raphael, (1982)	<u>On The Lines</u> Cued directive: 'Right there, on the page' <i>Recalls details and recalls details in sequence</i>	<u>Between The Lines</u> Cued directive: 'Search & think' <i>States main idea, draws conclusions and states cause and effect</i>	<u>Behind/Beyond The Lines</u> Cued directive: 'On your own' <i>Evaluates fact, fiction and opinion; propaganda, authors purpose and bias</i>	
Lerner, (1997)	<u>Literal</u> Sample Question What did the little brother want to eat?	<u>Interpretation</u> Sample Question Why was the cookie jar kept on the basement steps?	<u>Critical</u> Sample Question Did mother do the right thing in leaving the students alone?	<u>Creative</u> Sample Question How would you have solved the problem?
Aylward (1983)	<u>Literal</u> Cued directive: 'Find the facts' <i>Direct literal meaning of words, sentences and meaning in context</i>	<u>Inferential</u> Cued directive: 'Use the clues' <i>Identify meaning implicit in the text</i>	<u>Critical</u> Cued directive: 'Work it out' <i>Evaluate the quality and accuracy of text. Open ended answers using prior knowledge</i>	<u>Creative</u> Cued directive: 'What do you think' <i>Expression of new ideas on topic. Application of issues raised in real life situations</i>

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The QAR strategy integrates the comprehension process by providing three cues to assist the students. These cues are; ‘right there’ for literal questions, ‘search and think’ for interpretive questions, and ‘on your own’ for critical questions. In providing a ‘right there’ cued directive, teachers alert the student that the answer is on the page. In the early stages of teaching, students learn how to locate the answer. The teacher will model finding the answer’s location by using a keyword or phrase in the question itself. The scaffolding gradually removed, as the student learns to use the strategy. When a ‘think and search’ directive is given, the student is taught that information from more than one part of the text is required to achieve at an interpretive answer. The use of background knowledge is also used, and teachers use a think aloud strategy in showing how he/she links background knowledge to current concepts. Teachers model how a combination of text information, background knowledge, and evaluative judgment are used to obtain the answer. In providing a strategy for the ‘on your own’ cued directive, teachers model making an educated guess, rather than a random guess, in forming evaluative judgments. QAR provides a simplified taxonomy for guiding the students thinking and generating of ideas (Choate et al, 1995).

Since many texts as well as examinations use questions to assess comprehension in both reading and understanding concepts, more research covering the spectrum of reading comprehension levels is justified.

### **Previous Research on QAR**

Ezell, Hunsicker, Quinke, and Randolph (1996, as cited in Dymock and Nicholson, 1999) conducted a longitudinal study on the effects of the Question Answer Relationship (QAR) strategy to two fourth grade classes. The students were described as having average reading ability. The students received instruction on QAR strategies for three sessions a week for 36 weeks. The following year when the students were in fifth grade, they received another 16 weeks of instruction. The students received instructions on the QAR strategies twice a week.

The results indicate that training was effective for three of the four strategies. The highest level of success was in the first two categories; ‘Right There’ and ‘Putting It Together’. The third category ‘Author and You’ was less successful. No improvement was indicated for the ‘On Your Own’ level of comprehension. The authors believe that training did not help with this type of question/comprehension level because the student answers did not depend on the text but on the students’ prior knowledge (Dymock & Nicholson, 1999).

### **Justifying the Use of QAR**

The Question-Answer Relationship strategy was chosen in the current study for the following reasons. The first reason is its close link to the levels of comprehension, therefore providing a holistic means of addressing the levels of comprehension simultaneously. This gives the QAR strategy a strong advantage over other strategies that have segmented the comprehension skills. Other studies on addressing reading comprehension skills have focused on each sub-skill in isolation. The integration of comprehension processes makes it more authentic, since readers need to comprehend all levels simultaneously. The integration of skills within the four levels would also save valuable student and trainer time.

QAR incorporates explicit instruction in the form of rule-based cues for each level of comprehension. There is a considerable amount of literature that reports the successful use of the explicit instruction of strategies for students with learning difficulties in a variety of learning areas including those with higher order thinking skills (Carnine, 1992). Another advantage of QAR is that it is not genre specific, and can be used with either narrative or expository genres. The students should be able to generalise the skills learned to other learning areas such as science and social studies.

QAR assists in meta-cognition training. The cue prompts guide the students in their learning and assist students to develop an awareness of the different ways in which to approach comprehension questions. QAR allows for intervention on anaphoric pronouns, an area of reading comprehension overlooked in many of the studies.

The multi-faceted nature of QAR makes it a valuable and worthwhile reading comprehension strategy. Choate et al, (1995) state that the analysis of questions is an important and effective comprehension and learning strategy. QAR provides a simplified taxonomy for thinking and generating answers. The QAR strategies could be taught to students experiencing reading difficulties through a scaffolded instructional design. The following briefly reviews the scaffolded instructional design as teaching method that is likely to have a higher rate of student success, thereby developing a stronger self-concept in students experiencing reading difficulties.

### **Scaffolding as an Instructional Design**

Vygotsky (1962) introduced the idea of scaffolding in his theory on the *zone of proximal development* (ZPD) as a higher order development in which young students could engage with the support of parental or adult scaffolding. During the ZPD phase, the child engages in learning a specific concept with the continuous support or scaffolding of an adult. As the child grasps the concept, the scaffolds given by the adult are gradually withdrawn allowing the child full responsibility for achieving the goal. Just as parents and other adults in the children's immediate family scaffold children into skills acquisition, assisting them into achieving social goals as family members and members of a wider community, likewise teachers can scaffold instruction to assist students to attain life-long learning skills. The primary goal in both contexts is the transfer of responsibility to the learners since their future success depends on their ability to use these skills independently (Meyer, 1993).

However, similarities and differences exist between parental scaffolding, which takes place at home, and teacher scaffolding, which takes place in schools. The most predominant of these differences is the adult to child ratio between the two settings. In typical classroom situations, there are limited individual students-teacher interactions. The whole group interactive sessions between and among the teacher and students prove to be more risky for the student, and allow for fewer choices on how to participate. Classrooms are far more public and offer less quality intervention time due to time

constraints. Teachers have to be aware of teachable moments and make the best of these. Students have to interact with many more adults who are not as attached to them as family members (Meyer, 1993).

The applications of scaffolding in classrooms have become so multi-faceted and situation specific that it only emphasizes the cognitive support of the learner. In order to apply scaffolding to classroom instruction using a pedagogical approach rather than a single methodological approach, Meyer (1993) identified six features that distinguish scaffolded instruction to other instructional methods. These features are; teacher support, transfer of responsibility, dialogue, non-evaluative collaboration, appropriateness of instructional level and co-participation.

Instructional scaffolding is a specific approach to instruction and learning. It promotes the negotiation of meaning and the transfer of responsibility for learning in a social context. The goal of the scaffolder and the scaffoldee is for the scaffoldee to achieve independence on what he/she could initially accomplish only with assistance. Therefore, teacher support is temporary and given only when necessary. Both parties are responsible for negotiating meaning and transferring responsibility. Scaffolded instruction is collaborative and social-constructive and aims at the optimal participation of the student. Scaffolding is carried out through dialogue and a social plane of learning (Meyer, 1993).

Rosenshine (1996) states that some academic tasks are well-structured and can be taught using specific algorithms which can be broken down into small steps. Tasks such as reading comprehension, writing and study skills are less-structured tasks and these are more difficult to teach since they are in fact higher-order tasks.

However, Rosenshine (1996) reported that cognitive strategies in reading comprehension can be taught to students who have specific difficulties in comprehending through scaffolded instruction. Since scaffolded instruction is a means of supporting students at their ZPD levels, and reading comprehension is considered a higher order



task, scaffolded instruction in small group settings could be the ideal instructional design to address the needs of students with reading comprehension difficulties. Instructional elements that serve as scaffolds for learners include simplified problems, modeling of procedures and think alouds by teachers, prompts, suggestions and guidance can be given to students as they work. Scaffolds used in reading comprehension instruction include tools such as cues using prompt cards, checklists and cued directives, which serve as reminders of strategies to students during the learning stages of the concept.

The present study incorporated two instructional designs in its intervention program. It applied the rule-based methods of explicit instruction in providing cued directives for each level of comprehension, and all but one of the six features on the scaffolded instruction mentioned by Meyer (1993). The missing feature of scaffolded instruction in the present study was non-evaluative collaboration. Under the circumstances it would have been impossible to carry out the research with non-evaluative collaboration, especially when students were working on improving their responses based on their scores from previous sessions. In the case-studies design used in the research, students competed with themselves to improve their scores from their previous lessons. Students were given their corrected worksheets after each testing session so they would get feedback on errors. The errors were used as teachable sections of the intervention, and non-critical discussions on the text took place amongst and between the students and teacher.

### **The Present Study**

The aim of the present study is to test the effectiveness of the intervention program on the reading comprehension skills in students who are experiencing specific learning difficulties in reading comprehension. It focused on teaching developmental strategies to students in year four, to assist them comprehend reading passages and answer questions at the four levels of comprehension which are literal, inferential, critical and creative.

The study is based on the transactional model of comprehension and integrates properties regarding the different levels of processing. The QAR strategy was utilized in the intervention program because in doing so, reading comprehension difficulties could be addressed from a developmental perspective, in a transactional approach, that addressed the four levels of comprehension in a holistic manner. Strategy instruction provided the students with rule-based prompts that assisted them in identifying the strategy they needed to achieve comprehension for each of the four levels (Aylward, 1983; Choate et al, 1995).

The Question Answer Relationship approach goes beyond the early developmental stages in reading comprehension since it covers critical and creative comprehension. These two levels were not prevalent in the many retelling comprehension activities such as story maps, story grammars, sequencing, main idea and character motives that have been widely used in general classrooms (Garhill & Jitendra, 1999; Jitendra, Cole, Hoppes & Wilson, 1998; and Rabren, Darch, & Eaves, 1999). These activities were all taught individually and with the exception of the main idea focused primarily on narrative genres. Comprehension activities based on story recall and retelling skills focus mainly on literal and inferential skills that only cover the explicit information in texts (Dymock & Nicholson, 1999). The developmental approaches in the QAR strategy encompass all levels of comprehension and make it an ideal approach for the teaching of higher order comprehension. Higher order comprehension requires meta-cognition that is vital for the overall success of students who need to be critical and creative thinkers (Brown, 1980; Rosenshine, 1996).

The fact that QAR's comprehension strategies cater for all four levels of comprehension makes it ideal for the study of expository texts which increase as students move into higher grades in elementary and middle school ( Dymock & Nicholson, 1999).

Scaffolding and direct instruction strategies were used to teach the students the meta-cognitive strategies that were incorporated into the Question Answer Relationship approach (Rosenshine, 1996). The students were also taught how to identify the nouns

referred to by anaphors because studies by Yuill & Oakhill (1991) indicated that an inability to resolve anaphors were partially responsible for a breakdown in reading comprehension.

The study was conducted on year four students experiencing specific reading comprehension difficulties. These students were all the students from one classroom experiencing reading comprehension difficulties. Year four students were chosen because students's development is known to play an important role in their ability to learn and use meta-cognitive strategies in reading and year four was identified as being an adequate age for the teaching of meta-cognitive strategies since students need to be more mature when taught meta-cognitive strategies (Ackerman, 1984; Miller, 1985).

Skill Builders: Reading Comprehension, was considered ideal for the intervention program for the following reasons. Firstly, it incorporated the four levels of comprehension (Rosenshine, 1980). Secondly, it included both narrative and expository texts (Dymock & Nicholson, 1999). Thirdly, it was an Australian text that provided reading passages that were authentically Australian. Therefore, the students had extant knowledge that was necessary for successful comprehension (Kamhi, 1997).

Small group instruction was based on the student's ZPD level in reading comprehension. New strategies were introduced when the students no longer need scaffolding in the previously taught strategies. However, they continued practicing the learned strategies in guided practice settings. The students assumed responsibility for the use of a strategy once they have learned to apply it successfully. The small group instruction provided the social constructs of scaffolding (Meyer, 1993; Rosenshine, 1996).

The combination of the Question Answer Relationship approach together with direct instruction and scaffolded instruction was expected to help the students overcome difficulties in literal, inferential, critical and creative comprehension of narrative and expository genres.

## **Conclusion**

Reading comprehension difficulties could lead to students' failure in many academic areas since students 'Read to learn' once they have learnt to read. Reading comprehension however, is a complex, higher order skill and there are many views on the processes of reading comprehension. Moreover, there are many causes to reading comprehension failure and various factors in the reader, the teacher, and the text result in a variety of reading comprehension difficulties.

The transactional view of reading comprehension is a holistic model which views reading comprehension as a transaction between the reader, the author and the text. Likewise, the QAR approach to reading comprehension is also holistic as its strategies address the four levels of comprehension simultaneously. A study that is framed within the transactional view of reading and implements the QAR reading comprehension strategies is proposed to address the needs of students with specific reading comprehension difficulties.

## **Chapter III**

### **Method**

Students with reading disabilities represent an extraordinarily diverse group of learners. An important premise in the field of special education is that each student has an individual profile of strengths and weaknesses that must be addressed educationally (Felton, 2000). The case study method was chosen to enable the researcher to observe, assess and report in detail the response of five individual readers to the proposed comprehension strategies. In this chapter, each student's particular profile of reading disability is described, along with the details of the educational intervention methods for assessing student outcomes.

These cases are presented as examples of students who are appropriately considered as having a specific learning difficulty in reading comprehension. It provides a preliminary investigation of an innovative approach. Whilst it is acknowledged that such an approach does not permit generalization of outcomes, it is argued that a series of case studies serves to highlight the strengths and weaknesses of the chosen intervention and therefore represents forward progress in research designed to improve comprehension ability in students with specific reading disability.

Case studies with repeated observations were used to provide systematic data on each student, who then acts as his or her own control. The use of case study designs ensures that this study may be replicated in situations where remedial teaching is required with one student or a small group. There are also ethical advantages because no students' intervention program is delayed, as is necessary when some students must be assigned to non-interventionist control group procedures.

## **Participants**

The participants of the study were three girls and two boys in Year 4. They were attending a state primary school in Perth, Western Australia. The study was started in June; therefore, the students were into the second quarter of the school year. The class teacher and the assistant principals identified the students as having difficulties in reading comprehension. Each student, is described in terms of family circumstances, chronological age and grade placement for reading comprehension, reading accuracy and reading rate as defined by the Neale Analysis of Reading Ability (1999) pretests in turn below.

### **James**

James was 9 years and 9 months old. He came from a large Aboriginal family. James was proud of his reading ability but seemed to have problems following instructions and producing appropriate classroom behaviours. He appeared unaware of the purposes for reading and gave random answers to comprehension. He answered in single words or holo-phrases and often repeated the last word or words in the questions as answers. For example, to a question that asked, “What did the bird do in the garden?” James answer was, “Garden.”

The Neale Analysis of Reading Ability (1999) pretests placed James’ reading age for comprehension at 6.9 years, which indicates a discrepancy of three years between James’ chronological age of 9.9 years and his reading age. The National Profile at the pre-tests indicated James was performing at a Year 1 level. His performance was described as *very low*. James was a slow but confident reader who made a minimum of errors but was unable to comprehend what he read.

The Neale Analysis of Reading Ability (1999) pretests indicated that James’ reading age for accuracy was 9.6 years, indicating a discrepancy of three months from his chronological age. James achieved his highest score in accuracy in the three components tested by the Neale Analysis of Reading Ability (1999). The National Profile indicated

that James was performing at a Year 3 level in reading accuracy. His performance was described as *average*.

James' reading age for reading rate or fluency was 7.8 years, indicating a difference of 2.1 years from his chronological age. The National Profile placed him at a Year 1 level. James' performance was described as *below average* for reading rate.

The National Profile Level of the Neale Analysis of Reading Ability (1999) indicated correlating levels between comprehension and rate since both placed James at Year 1 level. However, the National Profile Level placed James at a Year 3 level for accuracy. The results of the post-test will assist in a better understanding of the relationship between reading rate or fluency as it is more commonly known, and reading comprehension.

### **Sam**

Sam was 9 years and 10 months old at the time of the pretests. He was a cooperative boy who tried hard to follow instructions. Sam would not talk about his family. He often came to school without a jumper and sat huddled during the lesson. Observations indicated that Sam had a low self-concept and presented a very low class/group profile. He would not ask for help and tried not to attract attention to himself. He read very slowly but quite accurately. He mentioned preferring expository to narrative texts, because in his words, "They teach me what I need to know."

The pretests placed Sam's reading age for comprehension at 7.3 years indicating a discrepancy of 2.9 years from his chronological age of 9.10 years. The National Profile placed Sam at a Year 1 level. His performance was described as *below average*.

The Neale Analysis of Reading Ability (1999) pretests indicated that Sam's reading age for accuracy was 8.3 years, 1.9 years below his chronological age. Sam's scores indicate his difficulty with reading comprehension could be partly due to poor

accuracy. The National Profile indicated that Sam was at a Year 2-3 level. The performance descriptor described Sam as being *average*.

Sam's reading age for reading rate was 7.10 years indicating a discrepancy of 2 years. The National Profile indicated the he was at a Year 1 level. His performance was described as *below average* for reading rate.

### **Crystal**

Crystal had just celebrated her ninth birthday. She was the eldest in a family of three children. She carried around stuffed toys with her and appeared to need to hold onto something. Crystal was easily distracted. When redirected to pay attention or concentrate she would rush into her work, paying little attention to its quality. Her handwriting resembled that of a Year 1 student. Her work was disorganized and answers were often written in the wrong lines or spaces. She was in the phonetic phase of spelling. Crystal spelt the words 'was' as 'wos' and 'saw' as 'sor'. She often lost her place when reading and had to be taught to use different strategies to help her to focus and to develop appropriate reading behaviours.

The pretests placed Crystal's reading age for comprehension at 7.6 years indicating a 1.6 years discrepancy to her chronological age. The National Profile indicated that she was at a Year 1 level. Her performance was described as *below average*.

The Neale Analysis of Reading Ability (1999) pretests indicated that Crystal's reading age for accuracy was 8.2 years indicating a discrepancy of ten months. The National Profile indicated she was at a Year 2-3 level. Her performance was described as being *average*.

Crystal's reading age for reading rate was 7.6 years indicating a 1.6 years difference. The National Profile indicated she was at a Year 1 level for reading rate. Her performance was described as *below average* for rate.



## **Kim**

Kim was 9 years and 3 months old at the time of the study. Kim's parents were divorced and she had been living in Melbourne with her father for the past three years. She mentioned that she had moved into Perth just before the new school year to live with her mother and two younger stepbrothers. Kim once spoke of her loneliness when she was away from her mother and how she hoped she would be allowed to continue to stay with her. Kim was aware of the difficulties she was experiencing in language and was keen on developing her academic skills. She worked hard at producing neat written work and took pride in her work.

The Neale Analysis of Reading Ability (1999) pretest indicated that Kim's reading age for comprehension was 7.10 years, a discrepancy of 1.5 years to her chronological age. The National Profile indicated she was at a Year 1-2 level. Her performance for reading comprehension was described as *below average*.

The Neale Analysis of Reading Ability (1999) pretests indicated Kim's reading age for accuracy was 7.10 indicating a difference of 1.5 years from her chronological age of 9.3. The National Profile indicated she was performing at a Year 2 level. Her performance was described as *below average*.

The pretests further indicated Kim's reading age for rate was 6.7 years indicating a discrepancy of 2.5 years in comparison to her chronological age. The National Profile indicated she was at a Year 1 level and her performance was described as *very low*.

The results of the Neale Analysis of Reading Ability (1999) pretests suggest that Kim's learning difficulties were probably due to poor word recognition and decoding problems. Whilst the reading age for accuracy matched her reading age for comprehension there is no correlation amongst the three components in the national profile level. Her weakest area was therefore in the area of reading rate or reading fluency. Since this study's aim was to find ways to develop reading comprehension

skills, no attempt would be made to address Kim's decoding or word recognition difficulties.

### **Amanda**

Amanda was 8 years and 4 months old at the time of the study. She is a middle child with an older brother and a younger sister. Both her parents were unemployed at the time of the study. Amanda demonstrated good listening and learning behaviours. She was enthusiastic and well-focused during instruction sessions and individual work. Amanda favoured narratives to expository texts and mentioned that pretend stories were more fun than reading facts.

Amanda had no trouble decoding. However, she appeared to rely heavily on background knowledge to guess the answers to many questions and did not attempt to revisit the text to identify or locate the answers to questions she could not answer.

The Neale Analysis of Reading Ability (1999) pretest indicated that Amanda's reading age for comprehension was 8.3 years indicating a discrepancy of one month. The National Profile indicated she was at a Year 2-3 level. Her performance was described as *average*.

Amanda's reading age for accuracy was 9.6 years, which indicates that Amanda was 1.2 years ahead of her chronological age. The National Profile indicated she was at a Year 2-3 level and her performance was described as *average*.

The pre-test identified Amanda's reading age for reading rate at 8.0 years indicating four months difference to her chronological age. The national profile indicated she was at a Year 1 level. Her performance was described as *below average*.

The results of the pretests suggested that Amanda was an average performer on accuracy and comprehension but was experiencing difficulty in reading fluency. This indicates that Amanda was probably not the best candidate for the study. However, her

class teacher insisted that Amanda's comprehension was poor and since the parents and the student wanted to participate in the study, she was included. Including Amanda in the study would enable the researcher to ascertain whether procedures and instructional designs used to develop meta-cognitive skills for students with reading difficulties would be effective in enhancing and extending the same skills in students without reading difficulties.

### **Setting**

The testing and instruction took place in the central area known as the wet area in most schools since it is used for activities such as cooking or large group incursion session. This area is also usually used for pull-out remedial lessons with small groups of students.

### **Instruments and Materials**

The independent variables in this study were:

- (a) The Question Answer Relationship (QAR) strategy and its cued directives
- (b) The performance difficulty for the four levels of reading comprehension, *literal*, *inferential*, *critical* and *creative comprehension*.

The dependent variables were:

- (a) The results of the Neale Analysis of Reading Ability (1999) pre and post-test
- (b) The percentage of correct answers to literal, inferential, critical and creative comprehension questions
- (c) The mean difference of responses to anaphoric pronouns across the three phases.

The standardized instruments, the program materials and the constructed tests of reading comprehension that were utilized in each of the case studies will be described as they are important components in this study.

### **The Neale Analysis of Reading Ability Tests**

The Neale Analysis of Reading Ability (1999) consists of four tests. Only the two standardized tests (Forms 1 and 2) were used in this study. Although the levels of testing

were the same, the same test was not administered twice. This ensured that prior knowledge of the reading passage or comprehension would not affect the post-test.

The test manual indicates that the standardised Test (Forms 1 and 2) used in the study have parallel form reliability coefficients of .91 for rate, .97 for accuracy and .93 for comprehension. Internal consistency reliability coefficients (Kuder-Ridhardson or KR2, as it is better known) for reading rate is reported to be .94 for Form 1 and .93 for Form 2. For accuracy, it is reported to be .95 for Form 1 and .96 for Form 2. The reliability coefficients for reading comprehension, is reported to be .85 for Form 1, and .88 for Form 2 (Neale, 1999).

The producers of the Neale Analysis of Reading Ability (1999) compared it to the ‘Vocabulary and Similarities’ subtests of WISC-R, to ascertain criterion-related validity and found it to be a valid measure of the various components of the reading process (Neale, 1999).

### **Skill Builders: Reading Comprehension**

Many different reading texts and programs were considered for the study. Skill Builders: Reading Comprehension Aylward (1983) was finally selected, because it focused primarily on reading comprehension. It also focused on the four levels of comprehension tested in this study. *Literal comprehension* required the student to find the direct literal meaning of words, sentences and ideas in the context of a particular passage. The cued directive for *literal comprehension* was ‘Find the Facts’, suggesting that the facts were right there on the page. *Inferential comprehension* involved the student in finding the meanings that were implied rather than stated directly in the text. Its cued directive was ‘Use the Clues’, suggesting that the answers were implied between the lines. *Critical comprehension* required the evaluation of aspects such as the quality, or accuracy of the reading passage to answer the questions. Anaphoric or referential pronouns (see Appendix A) were underlined and the reader was asked to identify the noun they referred to. The cued directive for *critical comprehension* was ‘Work It Out’ suggesting that the students needed to go beyond the text to answer the question.

*Creative comprehension* allowed the student the freedom of expressing new ideas and the application of issues raised in real life situations. The cued directive for *creative comprehension* was ‘What Do You Think?’

The text Skill Builders: Reading Comprehension Aylward (1983) allowed for the incorporation of the QAR strategy with its cued directives. Like the Neale Analysis of Reading Ability (1999), the reading passages were of a suitable length. Each lesson’s reading passage averaged 200 words. Students could engage in a range of genres and topics since it included both narrative and expository passages. Many of these passages were set in Australia (see Appendix B) and contained information that Australian students would find interesting and to which they could relate.

Level B was chosen although Level B would normally be used with Year 3 students. Two factors were considered in deciding on Level B. Firstly, these students had been identified as having reading comprehension difficulties. Secondly, the reading level of the text was more likely to allow the students to succeed. Any level of the series Levels A-D could have been used to teach the QAR strategies. Although there was no sequence in the reading passages since each lesson focused on an individual topic, the layout of the text was conducive to introducing and extending the reading skills and strategies crucial to the QAR approach to developing reading comprehension. The text ensured that whilst the interest levels and topics of the passages varied, it was possible to focus on the gradual introduction and maintenance of the necessary skills. Continued engagement with pre-taught skills is necessary for all learners and is especially important for students with reading difficulties (Choate et al, 1995).

The layout or format of the text, Skill Builders: Reading Comprehension Aylward (1983) was conducive to the gradual introduction of the different strategies required by the QAR approach. This meant that as the students learnt to apply one strategy, a new one would be introduced, allowing for the maintenance of the first strategy whilst introducing a new one. For example, the students would be engaged in the use of context clues in deciding whether the story was fact or fiction for about three to five lessons when

the skill of deciding whether a comment was a fact or just someone's opinion would come into focus. This was very important to the students' self-esteem since the students were able to succeed with the first learned skill whilst contending with a new skill. As the students had succeeded with the first skill, they believed they could also succeed with the others. It was as if they were programmed for success. It was crucial in keeping these students involved and motivated.

The reading passages in the Skill Builders: Reading Comprehension Aylward (1983) (see Appendix A & B) were followed by short phrased or multiple-choice answers for *literal* and *inferential* comprehension. In comparison, the answers required for the critical and creative comprehension questions were more detailed. Since the format of the text did not accommodate these detailed answers, the *critical* and *creative* comprehension sections of the questions were reformatted onto a separate worksheet to afford the students more writing space. Some activities in the creative section that involved research and writing reports on the topic were excluded since their objectives focused on research and writing rather than reading comprehension. Another reason for excluding the activities was the lack of pull out time granted to the students. The intervention program was implemented during their normal daily reading period of 40 minutes.

One important factor that added to the choice of the text, Skill Builders: Reading Comprehension Aylward (1983) was that its questions encompassed the four levels of comprehension targeted in the research. It is important to note at this point is that the Neale Analysis of Reading Ability Tests (1999) for comprehension covered only *literal* and *inferential* levels of comprehension. Although many other comprehension tests were considered, the Neale Analysis of Reading Ability (1999) was deemed the most desirable for this study because the format of the reading passages and the post reading comprehension activities/tests of the text Skill Builders: Reading Comprehension Aylward (1983) were similar the Neale Analysis of Reading Ability Tests (1999). Therefore, the teaching and testing packages were appropriate and valid for the study.

## **Procedure**

### **Initial Testing.**

The Neale Analysis of Reading Ability (1999) Form 1 [colour coded yellow] was used as the instrument for initial testing. This is a standardized test. The first four levels of the test were administered. The fifth level of the test was attempted but dropped because all five students exceeded the limit of sixteen errors during reading. According to the instructions in the Neale Analysis of Reading Ability (1999) pretests, the readings should be stopped at level four for an accurate analysis of reading ability.

The students were timed as they read the passages so that their reading rate could be calculated from their raw scores. The numbers of errors and types of errors were recorded to establish the students' levels of accuracy from the raw score. In order to assess their reading comprehension, students were given a typed page of comprehension questions with adequate spaces below each question for a written answer. This part of the test was modified because the Neale Analysis of Reading Ability (1999) requires oral answers for the comprehension questions. The modification was deemed necessary so as to establish a similarity between the pre and posttests of the Neale Analysis of Reading Ability (1999) and the materials Skill Builders: Reading Comprehension Aylward (1983) used for the testing and intervention. The reading passage was given to the students along with the typed question page to allow them to revisit the text in case information was forgotten or if the students wanted to check their answers. Observations during the pretests indicated that none of the students revisited the text.

### **Phase A: Baseline.**

Baseline data was collected for three consecutive sessions. The first three sessions were in fact the first pieces of assessment for critical and creative comprehension. The students were given the passages to read individually followed by comprehension questions that accompanied the reading.

The students used the text format for answering the literal and inferential questions. These questions required short phrases or multiple-choice answers.

Therefore, they could be categorized as selection tests. The questions for the critical and creative levels were crossed out. Students were given a newly formatted copy of the same crossed out questions that provided more space for written answers. The students silently read the passages and followed the text's instructions to answer the questions.

A percentage of correct answers for each level of comprehension were mapped on individual time series line graphs such as those used in data-based programs. The scores for the baseline phase were mapped in Phase A of the graph. Each level of comprehension was allocated a 100% score. The percentage of each question in its own level was equally weighted. For example, if there were six questions in literal comprehension, then the score for one question was 16.6%. However, critical comprehension sometimes included one question that asked the student to identify a certain number of nouns referred to by anaphoric pronouns. If the critical comprehension questions consisted of four questions, they were equally weighted at 25%. If there were five anaphoric pronouns to be resolved, then each pronoun was given a score of 20%. This means that critical comprehension was assessed including anaphoric resolution, and the skill of resolving anaphors was also assessed exclusively by itself to better understand that area of difficulty in reading comprehension which stood out as a particular area of difficulty in the reviewed literature on reading comprehension.

The students' correct responses to anaphoric pronouns across phases are presented as mean scores across phases in a bar graph. This was because not every reading passage was applicable to teaching or testing the concept of anaphoric pronouns. Moreover, identifying the nouns of anaphoric pronouns were a part of *critical* comprehension but not other levels of comprehension so it deserved another means of data display that would afford it a better means of data analysis. A closer study of anaphoric pronouns in reading comprehension was necessary due to its impact on reading comprehension.

### **Phase B: The Question Answer Relationship**

The first data collection for Phase B, took place after three sessions of baseline data was collected and two sessions of intervention had taken place using the text, Skill



Builders: Reading Comprehension Aylward (1983) and the QAR strategies. During the teaching intervention sessions, the title of the passage was read, followed by the students predicting what they might read in the passage.

Each student then read the passage silently underlining the words they either could not recognize or understand. A discussion and explanation of the difficult words followed. If the word was not recognized the students were briefly instructed on the pronunciation or syllabification of the word. Some of the students had problems with morphemes such as ‘tion & ion’, digraphs such as ‘au/aw’ ‘ou’ and the concepts of soft ‘C & G’. The phonemes produced by the various graphemes were explained and students were assisted in decoding the words. If the difficult words deviated from common phonics patterns, then an onset/rime method (Ehri, 1994) was implemented to encourage the students to recognize or decode the word. However, more time was devoted to word definitions since that was one of the developmental strategies recommended by the literature. Once the ambiguities with the words had been resolved, the passage was read aloud to the students. The students pointed to the words and visually follow the reading whilst listening to the passage as it was reread. Once the reading passage had been reread, the students took turns to read aloud the questions. Again, the other students had to point and view the words as their peer read it aloud. This was to ensure that all students participated in the whole group’s collaborative approach to learning. Answers were discussed and the students observed the methods used to develop acceptable answer. The cued directives of QAR strategies and the Skill Builders text were used to guide the students into using the appropriate strategies following the discussion and the best answer was chosen. The students learned how to use the keywords in the question to revisit the text and to search for the answer.

In teaching the students how to approach a *literal* comprehension questions, the students were taught to focus on the cued directive in the Aylward (1983) text ‘Find the Facts’. The term was explained, and the use of the QAR cued or rule-based directive *Right There on the Page* was taught to the students. Before students started working on the *literal* level of comprehension they would be prompted, “Where will you find the

facts?” to which they would answer, “*Right there on the page.*” This served as a cue to the students to revisit the text and employ the use of keywords, identified from the question, to search for the answers in the text. Once the initially taught strategies such as the use of keywords were being used, students were made aware of the sequential nature of the layout of the questions which made their revisits to the text more efficient. They learned to predict just which part of the text could contain the necessary information.

The cued directive for *inferential* comprehension in the Skill Builders: Reading Comprehension Aylward (1983) text was ‘Use the Clues’. The term ‘clue’ was discussed and the students concluded that police and detectives used clues to solve mysteries. This input from the students was used to make them aware that the answers to *inferential* questions would involve using the clues in the reading passage. The students learnt they would in fact need to be reading detectives to find the answers. The students gradually understood that they had to use the clues in the text (context clues) and their background knowledge to arrive at the answers to *inferential* questions. The students were asked, “How do we find and use the clues?” The QAR cued directive, “*We search and think*” was the response taught to the students and they learned that this was the rule-based prompt to apply the use of strategies crucial to identifying the answers for inferential questions. In teaching the students to use the strategies, the students participated in the reading and discussion of the text, where implicit between the lines information was used to choose the best possible answer. The text used multiple-choice answers for the majority of the *inferential* questions so the answer was provided, however, the students had to select the correct answer from three to four choices.

The cued directive for *critical* comprehension in the Skill Builders: Reading Comprehension Aylward (1983) was ‘Work It Out’. The students observed demonstrations on how an individual could work things out “*On Your Own*”, which was the QAR prompt to revisit the text and use a back chaining reading strategy to draw conclusions on referential pronouns. The resolution of anaphoric pronouns was one of the key components of critical comprehension and was a concept in which the students had little prior knowledge. The referential pronouns were underlined in the reading

passage. Students were taught how to retrack the rest of the preceding phrase and the previous complete sentence to reread and identify the noun represented by the underlined anaphoric pronoun. The students observed how sometimes the reader had to retract to the beginning of the paragraph that included the anaphoric pronoun to identify the noun it represented.

Another aspect of *critical* comprehension was character traits. Students were asked to locate and underline information that lead to the drawing of conclusions on certain character's traits. *Critical* comprehension required the students to consider alternate words or synonyms for certain words and phrases. This meant that critical comprehension also required the use of keywords to locate and reconsider or reflect on certain pieces of information. It required the use of background knowledge on language, and personal experiences, to answer the questions.

The cued directive for *creative* comprehension in The Skill Builders: Reading Comprehension Aylward (1983) text was 'What Do You Think?' The students were taught to respond to the question prompt, "What do I use to tell other people 'What I Think?'" with '*Use My Own Brain*'. Generalization and the use of background knowledge were the key strategies employed to achieve *creative* comprehension. The fact that many of the reading passages were based in Australia meant that Australian students were likely to have background knowledge on the passages they read, to enable them to achieve *creative* comprehension. It was their context and is another reason why this particular text was chosen. Many of the *creative* comprehension questions were open-ended, and this meant that the majority of answers could be accepted, if they could be explained or justified.

Data was mapped on the ABC graph in Phase B at every third session. This meant that two sessions of teaching preceded a testing session. The classic teach-test-teach pattern commonly used in curriculum-based programming and assessment in special education and remedial teaching was modified to a teach-teach-test model. The more widely used model was modified because reading comprehension is a complex

multi-faceted skill. Comprehension skills take considerably more time to understand, employ and generalize. Moreover, it involves developing meta-cognitive processes and these are difficult skills for all learners. Eight sessions of testing data were mapped on the Intervention: Phase B. This meant that 24 sessions were required to collect the data for Phase B.

### **Phase C: Follow Up**

Follow up data mapped on Phase C were collected on two consecutive sessions after the intervention phase had been completed, and one week had elapsed. Ideally, follow up data should be collected 2-4 weeks after intervention. However, the time constraints made it impossible to allow for such a lapse of time, so follow up data was collected one week after intervention.

### **Data Analysis**

The results of each participant in the study were plotted on individual graphs using an ABC design. A percentage of the student's correct answers on the four levels of comprehension questions namely, *literal*, *inferential*, *critical*, and *creative* were plotted on four graphs, one for each level, at every testing session. This means that there are four graphs depicting data for each level of comprehension.

Data comparing the performance difficulty of narrative and expository genres was calculated as means in the baseline and intervention phases for each level of comprehension and these results were described in text and presented in line graphs. The mean percentage of each student's correct responses to referencing pronouns during the three phases, are presented in horizontal bar graphs.

### **Ethical Considerations**

Written consent to implement the intervention program was requested from the students' parents (see Appendix C) and pseudonyms were used to protect the students' identities. Their comfort and self-esteem remained a primary concern throughout the study. The students enjoyed participating in the study and remarked they were sorry

when it was over. Copies of the results were given to the school's principals at the end of the study and parents were informed that this data could be viewed at the school.

### **Conclusion**

The purpose of this study was to assess the effectiveness of the developmental strategy for reading comprehension known as the Question Answer Relationship or QAR on improving reading comprehension in students with reading difficulties and to investigate the performance difficulty of the four levels of comprehension, namely literal, inferential, critical and creative comprehension.

Five case studies were conducted on Year 4 students with reading difficulties. Reading comprehension was addressed utilizing the developmental strategy known as QAR and the text/workbook, Skill Builders: Reading Comprehension Level B, Aylward (1983). The effectiveness was determined by the Neale Analysis of Reading Ability (1999) pre and posttests and text-based tests on *literal*, *inferential*, *critical* and *creative* comprehension administered at every third session of the intervention program. The outcomes of the study are presented in the following chapter.

## **Chapter IV**

### **Results**

The objectives of this study were to investigate the effects of the developmental reading approach known as the ‘Question Answer Relationship’ on the comprehension of students with reading comprehension difficulties, and to investigate whether developmental levels of comprehension namely literal, inferential, critical and creative will predict the performance difficulty of comprehension tasks for students with reading difficulties.

In this chapter, the results of each student will be presented as individual case studies. The dependent variables in this study were:

- (a) The results of the Neale Analysis of Reading Ability (1999) pre and posttest which were used to overview the reading ability and determine changes in various reading measures following the implementation of QAR reading comprehension strategies.
- (b) The percentage of correct answers to literal comprehension, inferential, critical and creative comprehension questions. The percentage of correct answers were measured across baseline, intervention and follow up phases to ascertain whether the QAR reading comprehension strategies would address reading comprehension problems in students with specific reading difficulties and investigate whether there was a performance difficulty between the four levels of comprehension. The percentages of correct answers in each level of comprehension were also used to assess text difficulty between narrative and expository genres.
- (c) The accurate resolution of anaphoric pronouns across baseline, intervention and follow up phases

Although the resolving of pronouns is a part of critical comprehension, the results will be presented separately. This is because the teaching and testing of the concept often

occurred with narrative reading passages and seldom with expository genres. The results of each student will be followed by an overall summary for the five students.

**Case Study 1:James**

**Standardised Reading Test Results.**

A standardised reading test was administered before and after the intervention. The reading comprehension results of the pre and posttests of the Neale Analysis of Reading Ability for James are presented in Table 4.1.

Table 4.1

The Neale Analysis of Reading Ability Standardised Tests (1999) Reading Comprehension Score Summary for for James

	Pretest Reading Comprehension	Posttest Reading Comprehension	Pre/posttest Difference Comprehension
Raw Score	8	26	+ 18
Percentile Rank	5	68	+ 63
Stanine	2	6	+ 4
Performance Descriptor	Very Low	Average	+ 3
National Profile Level	1	3-4	+2-3
Reading Age	6.9	10.7	+ 3.8

James’ chronological age at the beginning of the study was 9.9 years. The pre-test of the Neale Analysis of Reading Ability (1999) indicated that his reading age was 6.9 years for reading comprehension. James performance was described as *very low*, and

the National Profile of the pretests indicated that he was performing at a Year 1 level in reading comprehension.

The posttest of The Neale Analysis of Reading Ability (1999) indicated that James' reading comprehension age was 10.7 years. Differences between pre and posttests indicated that his reading comprehension had increased by 3.8 years over the five weeks of intervention. James moved from *very low* to *average* on the performance descriptor and on the National Profile he progressed from Year 1 to Year 3-4 level in reading comprehension, apparently as a result of his exposure to the QAR strategy.

The pre-test also tested James in two other areas, reading accuracy and reading rate. The reading accuracy results of the pre and posttests of the Neale Analysis of Reading Ability (1999) for James are presented in Table 4.2.

Table 4.2

Score Summary for The Neale Analysis of Reading Ability Standardised Tests (Reading Accuracy) for James

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Accuracy	Accuracy	Accuracy
Raw Score	59	58	- 1
Percentile Rank	54	48	- 6
Stanine	5	5	0
Performance			
Descriptor	Average	Average	0
National			
Profile Level	3	3	0
Reading Age	9.6	9.4	- 0.2



James' reading accuracy was 9.6 years. His performance was *average* and he was at a Year 3 on the National Profile Level for accuracy.

The pretests on results on reading rate presented in Table 4.3 indicate that James' reading age was 7.8 years, classified *below average*, at a Year 1 level on the National Profile.

Table 4.3

Score Summary for The Neale Analysis of Reading Ability Standardised Tests (Reading Rate) for James

	Pretest Reading Rate	Posttest Reading Rate	Pre/posttest Difference Rate
Raw Score	46	64	+ 18
Percentile Rank	19	51	+ 32
Stanine	3	5	+ 2
Performance Descriptor	Below Average	Average	0
National Profile Level	1	2-3	+ 1-2
Reading Age	7.8	9.2	+ 1.4

The posttest also indicated a decrease of 0.2 years in reading accuracy age and an increase of 1.4 years for reading rate. No instruction had occurred in these two areas of reading.

The results of the Neale Analysis of Reading Ability (1999) indicate an improvement in James' general reading comprehension. The next section examines the improvements in the levels of comprehension.

### **Literal Comprehension**

Figure 4.1 illustrates the percentage of literal comprehension questions answered correctly by James across the three phases of the study.

The data in Phase A represents James ability to answer literal comprehension questions before intervention occurred. For the first of these sessions, James' responses were 40% correct on a narrative genre. The following two sessions were both expository genres and James answered 40% and 33% of the questions correctly. James' mean in the Phase A was 38% for literal comprehension.

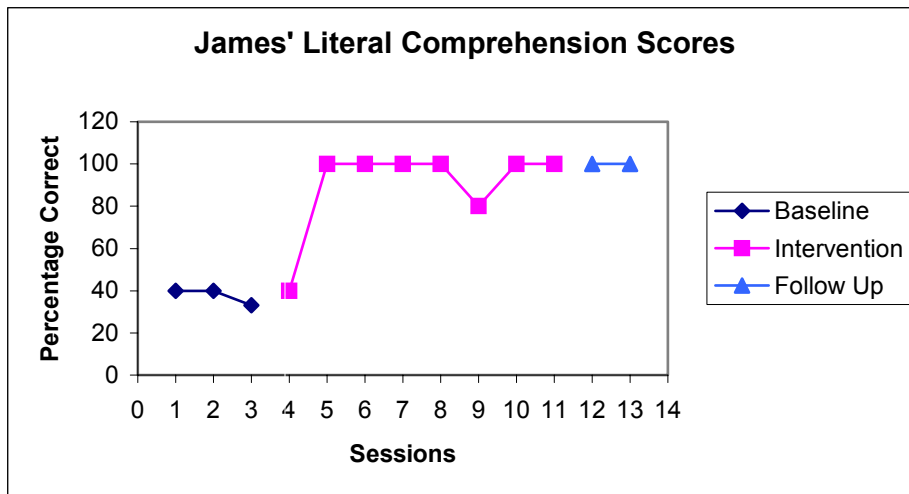


Figure 4.1 James' performance on literal comprehension for baseline, intervention and follow up phases.

Intervention on the QAR reading comprehension strategies occurred during Phase B. The data for the first session of Phase B was collected after James had two sessions of

teacher instruction on how to use the literal comprehension cued directive, ‘Find the Facts’. James learned that the facts could be found, ‘Right There on the Page’. James answers were 40% correct. This indicated that the first two lessons did not make a difference to James’ understanding of either the cued directive or the use of keywords in answering literal comprehension questions. Close observations of James’ reading behavior indicated that he was still answering randomly as he had done in the past, before the intervention. During the next two lessons that occurred, before the testing session for Phase B, data point two, extra care was taken to ensure that James was paying attention during the instruction and modeling. James appeared to be more engaged and cooperative after this and he achieved 100% for the following four sessions. In the sixth session, James achieved 80.0% followed by two sessions of 100%. The mean difference between Phases A and B was 62%.

To find out whether there was a difference in text difficulty in literal comprehension between narrative and expository genres, the mean for each genre was calculated for baseline and intervention phases. The results for narrative (40%) and for expository (36%) indicate that James found narrative genres to be slightly easier than expository genres in baseline (see Figure 4.2). However, by the end of intervention phase the text difficulty for genres had changed for narratives (86%) and for expository texts (96%). The data demonstrates that the QAR strategy assisted in comparable improvement across both text genres.

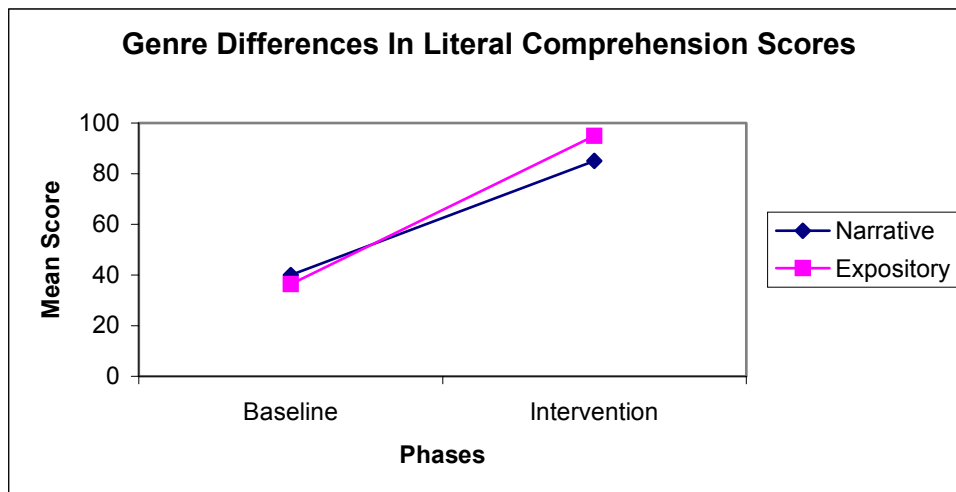


Figure 4. 2 Mean literal comprehension scores as a function of genre across baseline and intervention phases, for James.

Two follow up sessions were implemented a week after intervention had ceased. James answers were 100% correct for both sessions with narrative reading passages (see Figure 4.1). This implies that James was maintaining his command of the QAR strategies for literal comprehension.

### **Inferential Comprehension**

The percentage of correct answers to inferential comprehension questions across phases for James are presented in Figure 4.3.

Three sessions of baseline data were collected to establish James' ability to answer inferential comprehension questions before instruction occurred. He was unable to answer any of the inferential questions for the narrative text in the first session. James' responses for the second session were 40% correct with an expository text. He was unable to answer any inferential comprehension questions in the third session, with an expository text.

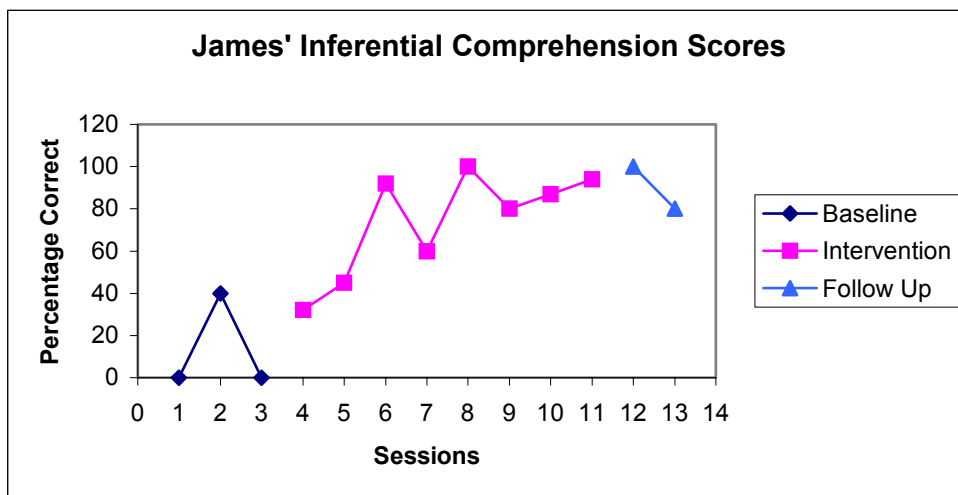


Figure 4.3 James' performance on inferential comprehension for baseline, intervention and follow up phases.

During the intervention (Phase B), James received instruction on how to apply the QAR cued directive 'Use the Clues', and other inferential comprehension strategies mentioned in the previous chapter to answer inferential questions. James' responses were 32% correct after two sessions of instruction and modeling, followed by 45% in the second session. James achieved 92% in the third session of testing followed by 60 % for the fourth session. The final four sessions of Phase B in which he achieved 100%, 80%, 87%, and 94% clearly indicate an upward trend that implies James had understood the instruction and was applying what he had learned in answering inferential questions. The data between phases A and B indicate a mean increase of 60%.

Genre means calculated for Phases A and B to ascertain whether there was a text difficulty (see Figure 4.4) illustrates that James experienced more difficulty with narrative genres (0%) than expository genres (20%) in baseline. This relative difficulty with narratives at (67%) compared to expository (78%) continued to persist after the intervention. However, it is apparent the QAR comprehension strategies led to improvement in his reading comprehension in both genres.

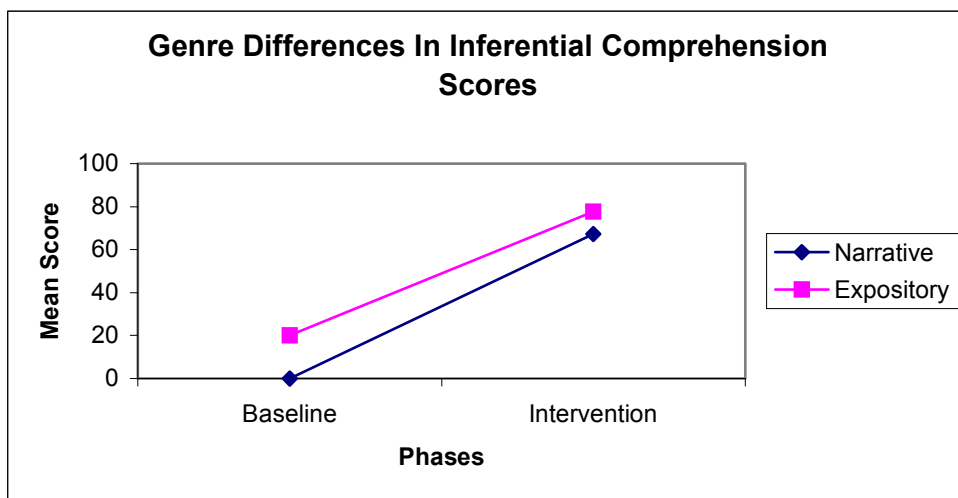


Figure 4.4 James' mean inferential comprehension scores as a function of genre across baseline and intervention phases.

In the two follow up sessions with narrative genres that occurred a week later, James achieved 100% and 80% respectively. This indicates that James was maintaining his command of the QAR inferential comprehension strategies taught during the intervention phase.

### **Critical Comprehension**

The percentage of correct answers to critical comprehension questions for James across the three phases of the study are presented in Figure 4.5.

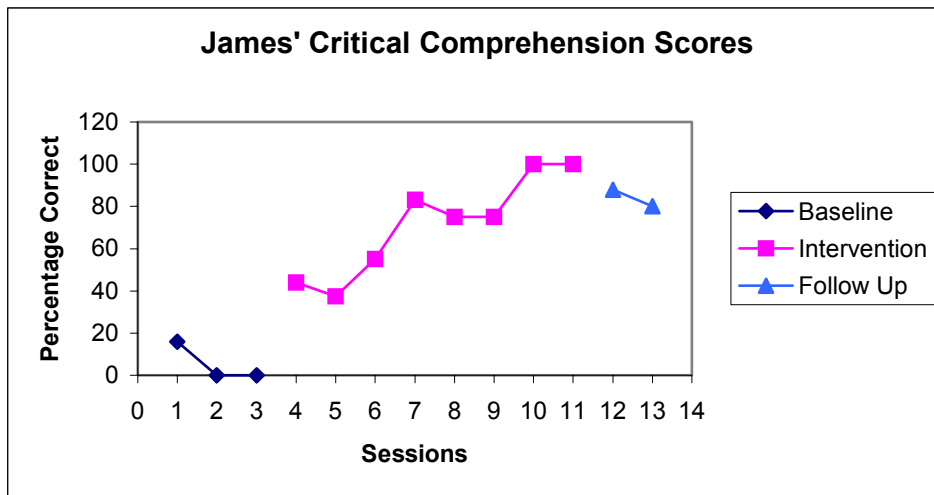


Figure 4.5 James' performance on critical comprehension for baseline, intervention and follow up phases.

The baseline data revealed that James' achieved 16% for critical comprehension in the first session in which the reading passage was of a narrative genre. James was unable to correctly answer any of the critical questions for the next two sessions of baseline. His mean for critical comprehension in baseline at 5% was the lowest of the four levels of comprehension in the baseline phases.

During Phase B, when intervention occurred, James was instructed in critical comprehension with the cued directive, ‘Work it Out’. The first session in Phase B followed two teaching sessions. James achieved 44% for correct responses. He dropped to 38% in the second session. However, James’ performance steadily improved as indicated by the ascending data of 55% and 83% in the next two sessions. During the fifth and sixth testing sessions, James achieved scores of 75%. He climbed to 100% in the last two sessions. A comparison of the mean data in Phases A & B indicate a mean improvement of 66%.

Mean scores for narrative and expository genres, (see Figure 4.6) were calculated to investigate the level of text difficulty between genres in critical comprehension. James mean in Phase A for narrative texts was 16% and it was 0% for expository texts indicating that expository texts were slightly more difficult for James. His mean scores in the intervention phase were 76% for narratives and 69% for expository texts. The QAR strategies affected an increase for critical comprehension in both text genres for James.

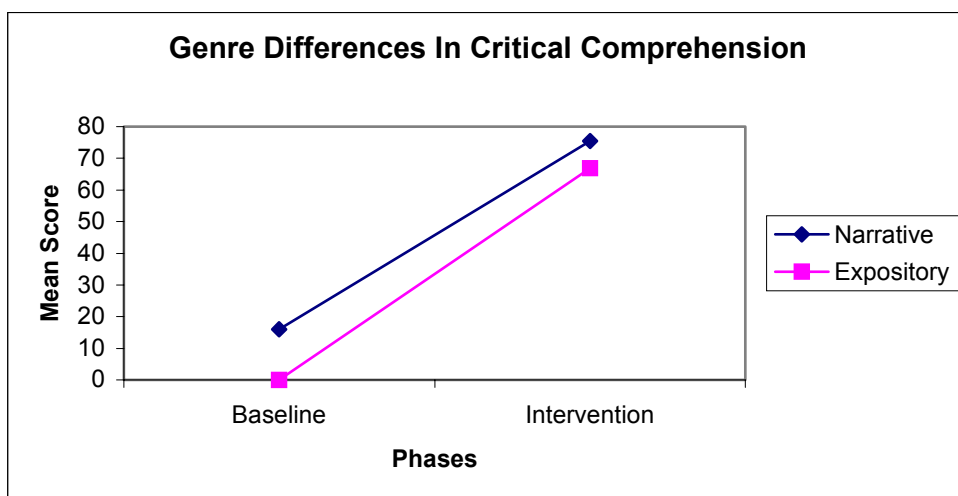


Figure 4.6 James’ mean in critical comprehension scores as a function of genre across baseline and intervention phases.

The data for the follow up sessions presented in Figure 4.5 (Phase C) illustrate that James' responses were 88% correct in the first and 80% correct in the second session indicating a slight drop in scores relative to intervention, but still representing improvement from baseline. Overall, the QAR strategies worked well in addressing James' critical comprehension difficulties

### Creative Comprehension

The percentage of correct answers for creative comprehension questions for James' are illustrated in Figure 4.7.

The baseline data in Phase A indicate that James had some understanding of creative comprehension. He produced 50% correct answers in the first session with a narrative text, followed by 25% in the second session with an expository text. However, in the third session of baseline in which James read an expository passage, he did not answer any of the creative comprehension questions correctly.

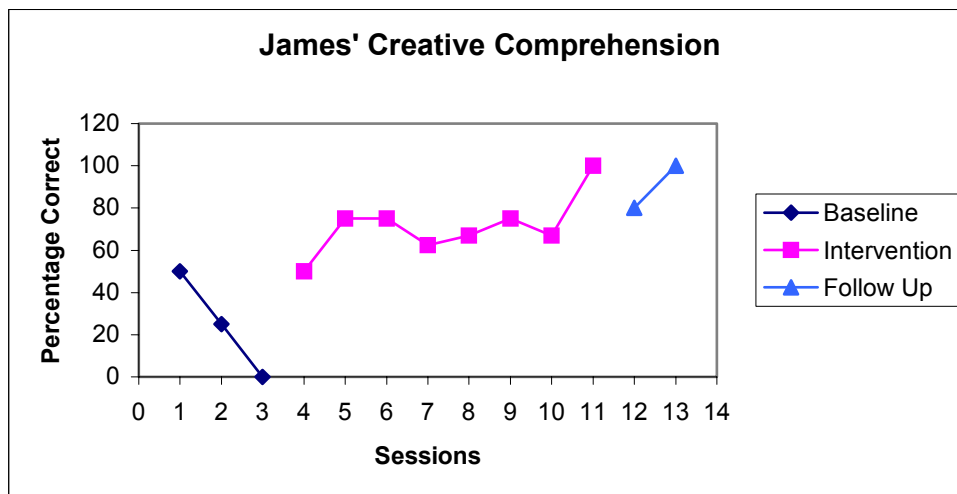


Figure 4.7 James' performance on creative comprehension in baseline, intervention and follow up phases.

During intervention, James received instruction on the use of the creative comprehension cued directive 'What Do You Think?' His responses to the first session



in the intervention phase produced 50% in correct answers with a narrative text. This was followed by 75% each in the next two sessions with expository texts. James' responses were 62% and 67% in the fourth and fifth sessions, both with narrative texts. The sixth session was an expository text for which his responses were 75% correct. James scored 67% for the seventh session with a narrative. For his final session, James scored 100% with a narrative genre. A comparison of the mean between the baseline and intervention phases indicated that the QAR strategies had improved James' creative comprehension by 46%.

James' performance on narrative and expository genres in creative comprehension for baseline and intervention phases are presented in Figure 4.8. The data indicate that in baseline James found narrative text (50%) easier to comprehend than expository texts (13%). The QAR strategies for creative comprehension improved James' narrative responses slightly (62%). James' responses indicate the QAR strategies improved his answering of questions for expository texts (81%).

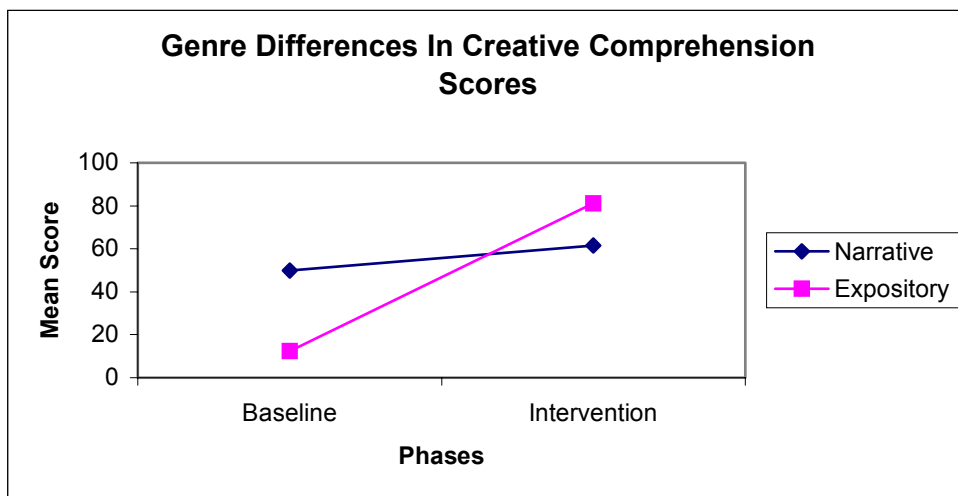


Figure 4.8 James' mean creative comprehension scores as a function of genre across baseline and intervention phases.

During the follow up sessions that followed a week later, James achieved 80% and 100% respectively for narrative genres. The data presented in Phase C in Figure 4.7.

indicate that James was maintaining his command of the QAR strategies for creative comprehension after a week in which no intervention occurred.

### **Summary of Outcomes Across Levels of Comprehension**

The intervention that implemented the QAR strategies, improved James' reading comprehension skills in all four levels of comprehension. His mean scores on the four levels of reading comprehension are presented in Figure 4.9.

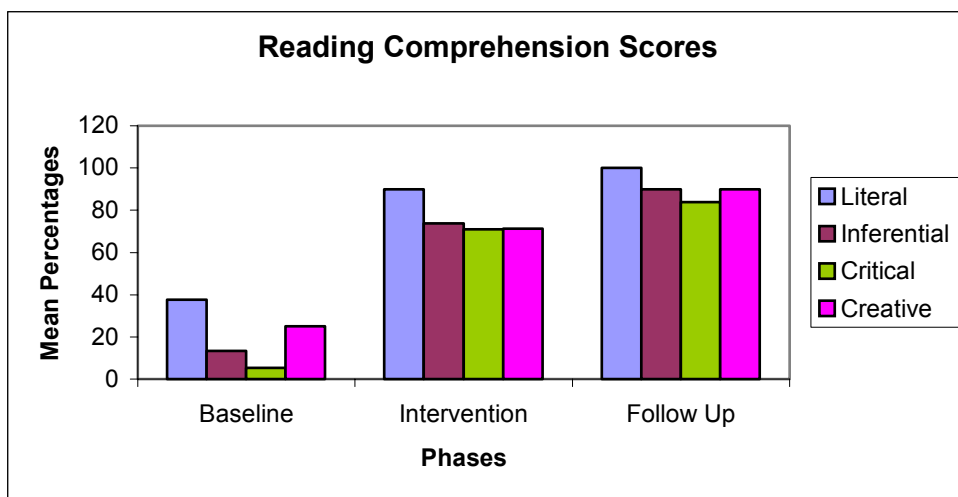


Figure 4.9 James' performance on the four levels of comprehension across baseline, intervention and follow up phases.

The relative mean improvements are greatest for critical comprehension (66%), followed by inferential comprehension (60%), creative comprehension (46.4%) and literal comprehension (42%). James experienced the most difficulty for critical comprehension in baseline but also made the most progress in critical comprehension. The mean of the four levels of comprehension in Phase B indicated that James' strongest level of comprehension was literal, followed by inferential, creative and critical.

### **Anaphoric Pronouns**

As mentioned earlier, the resolving of anaphoric pronouns were a part of critical comprehension. The resolution of anaphoric pronouns were not taught or tested during every session of the study. This was because the concept was more prevalent in narrative than expository genres. Therefore, the display and description of James' responses to the resolving of anaphoric pronouns are presented separately.

The bar graph in Figure 4.10 illustrates the mean difference between the phases. The data in Phase A represents the baseline phase. Anaphoric pronouns were tested only in the first session with a narrative genre and James' score for this was 17% correct resolution.

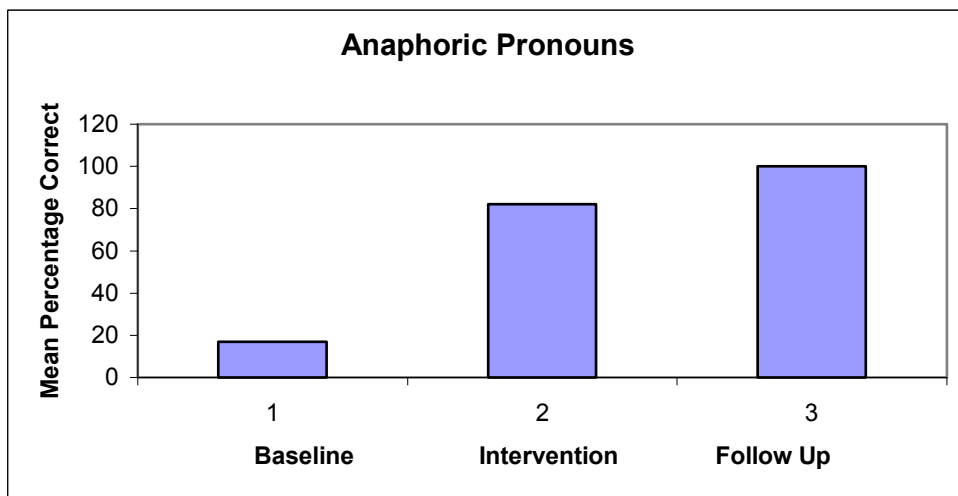


Figure 4.10 James' mean on anaphoric pronouns across phases.

During Phase B, when intervention took place, James received instruction on resolving anaphoric or referencing pronouns as mentioned in the previous chapter. Of the eight sessions of testing in Phase B, only five sessions involved the resolving of anaphoric pronouns. Session three and eight in 'Phase B' involved the resolving of anaphors in expository texts, while sessions one, four and seven were narrative texts. James achieved 28% of correct answers in the first session, followed by 83% in the

second and 100% respectively in the last three sessions. The mean difference between Phases A and B was an increase of 54%. The data indicates that the QAR strategies for the resolving of anaphors produced positive results for James.

James achieved 100% for the follow up testing sessions that occurred a week later. Both of these involved the reading of narrative passages and the results indicate that he was maintaining his skill in the resolution of anaphoric pronouns.

### **Summary for James**

The Neale Analysis of Reading Ability (1999) pre and posttests indicated an increase of 3.10 years in James' general reading comprehension age resulting apparently from the intervention of the QAR reading comprehension strategies.

James' curriculum-based assessment graphs on the four levels of comprehension demonstrated a rising trend in the intervention phases and the maintenance levels in the follow up phases. The data indicates that the QAR reading comprehension strategies led to comparable improvements in reading comprehension for James across the four levels of comprehension. James appears to have found literal comprehension easier than the three other levels of comprehension across baseline and intervention phases.

Data on text difficulty regarding genres indicated that James experienced a slight text difficulty in expository genres for critical comprehension. In narrative genres, he experienced difficulty in literal, inferential and creative comprehension.

The data on anaphoric pronoun resolution indicates improvement suggesting the QAR strategies improved James' ability to resolve anaphors and impacted on his understanding of critical comprehension questions.

Over all the QAR strategies for reading comprehension improved James' comprehension at all four levels.

## Case Study 2: Sam

### Standardized Test Results

A standardised reading test was administered before and after the intervention. The reading comprehension results of the pre and posttests of the Neale Analysis of Reading Ability for Sam are presented in Table 4.4.

Sam's chronological age at the beginning of the study was 9.10 years. The pretest of the Neale Analysis of Reading Ability (1999) indicated that his reading age was 7.3 years for reading comprehension. Sam's performance was described as being *below average* and the National Profile Level of the pretests indicated that he was performing on a Year 1 level in reading comprehension.

Table 4.4

#### The Neale Analysis of Reading Ability Standardized Tests (1999) Reading Comprehension Score Summary for Sam

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Comprehension	Comprehension	Comprehension
Raw Score	11	25	+ 14
Percentile Rank	13	64	+ 51
Stanine	3	6	+ 3
Performance			
Descriptor	Below Average	Average	+1
National			

Profile Level	1	3	+ 2
Reading Age	7.3	10.4	+ 3.1

---

The posttest of the Neale Analysis of Reading Ability (1999) identified Sam’s reading comprehension age at 10.4 years. The difference between the pre and posttests indicated that his reading age for comprehension had increased by 3.1 years over the five weeks intervention period. Sam moved from *below average* on the performance descriptor to *average*, and on the National Profile Level he moved from a Year 1 to a Year 3 level in reading comprehension apparently as a result of his understanding of the QAR reading comprehension strategies.

The pretest also tested Sam in two other areas reading, accuracy and reading rate. Sam’s reading accuracy score summary for the Neale Analysis of Reading Ability (1999) Standardized Tests are presented in Table 4.5. His reading accuracy was 8.3 years. His reading accuracy was *average* and at a Year 2/3 level on the National Profile for accuracy.

Table 4.5

The Neale Analysis of Reading Ability Standardized Tests(1999) Reading Accuracy Score Summary for Sam

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Accuracy	Accuracy	Accuracy
Raw Score	43	52	+ 9
Percentile Rank	30	36	+ 6
Stanine	4	4	0
Performance			
Descriptor	Average	Average	0

National			
Profile Level	2-3	3	+ 0.5
Reading Age	8.3	8.11	+ 0.8

---

The posttests on reading accuracy indicated an increase of 0.8 years for Sam although he did not receive instruction on improving his reading accuracy skills.

Sam's score summary for reading rate is presented in Table 4.6. The results on the pretests for reading rate indicated that Sam's reading age was 7.10 years. His performance was *below average* at a Year 1 level on the National Profile.

Table 4.6

The Neale Analysis of Reading Ability Standardized Tests (1999) Reading Rate Score for Sam

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Rate	Rate	Rate
Raw Score	48	45	- 3
Percentile Rank	22	21	- 1
Stanine	3	3	0
Performance			
Descriptor	Below Average	Below Average	0
National			
Profile Level	1	1-2	+ 0.5
Reading Age	7.10	7.8	- 0.2

---

The posttest indicated a decline of 0.2 years for rate. Sam had received no instruction on reading rate during the study.

The results of the Neale Analysis of Reading Ability (1999) Standardized Tests demonstrate that Sam's general reading comprehension score improved. The next section examines improvement in the levels of comprehension.

### **Literal Comprehension**

Sam's percentages of correct responses to literal comprehension questions across the three phases of the study are presented in Figure 4.11.

Baseline data collected for three sessions before intervention occurred represents Sam's ability to comprehend literal comprehension before any instruction occurred, and is illustrated in Phase A. Sam's responses were 33% correct in the first session that involved a narrative genre. This was followed by an expository genre for which Sam's responses were 20% correct. The third session also involved an expository genre on the early settlers of Australia. Sam appeared to enjoy the reading passage and achieved 67% in correct responses.

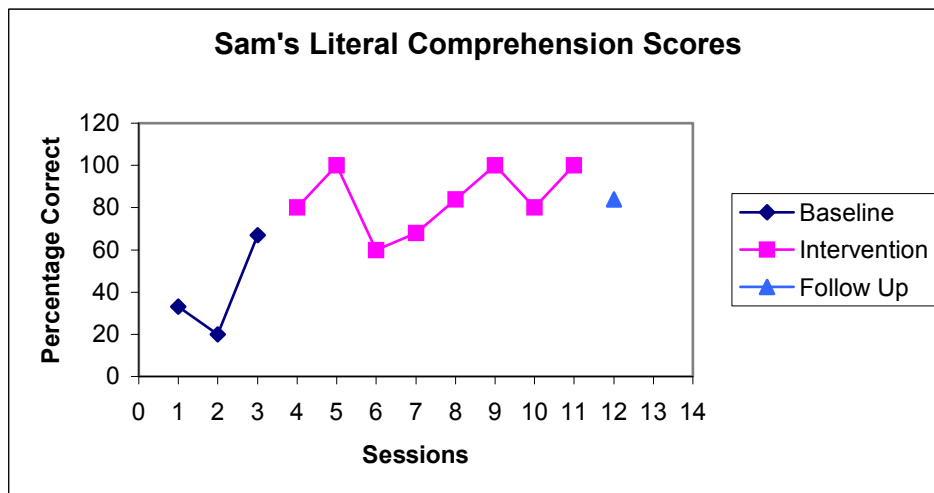




Figure 4.11 Sam's performance on literal comprehension for baseline, intervention and follow up.

Intervention using the QAR reading comprehension strategies involved two sessions of teaching to one session of testing i.e. a teach-teach-test pattern. The data in Phase B represents Sam's percentage of correct responses at each testing session.

Sam's responses to literal comprehension were 80% correct in the first session of testing which involved a narrative genre. The next two sessions were expository genres and Sam responses were 100% and 60% correct respectively. The fourth and fifth sessions were narrative genres. Sam's answers were 68% correct for the fourth and 84% correct for the fifth. Sam's responses were 100 % correct for the seventh session in which the reading passage was of an expository genre. The next session involved a narrative passage for which his responses were 80% correct. The reading passage for final or eighth session in Phase B was an expository genre for which Sam achieved 100%. The mean comprehension score across genres in Phase B for Sam was 84% indicating a mean increase of 44% in comparison with Phase A.

To ascertain whether there was a performance difficulty between genres, means were calculated for each genre within the baseline and intervention phases and is presented in Figure 4. 12.

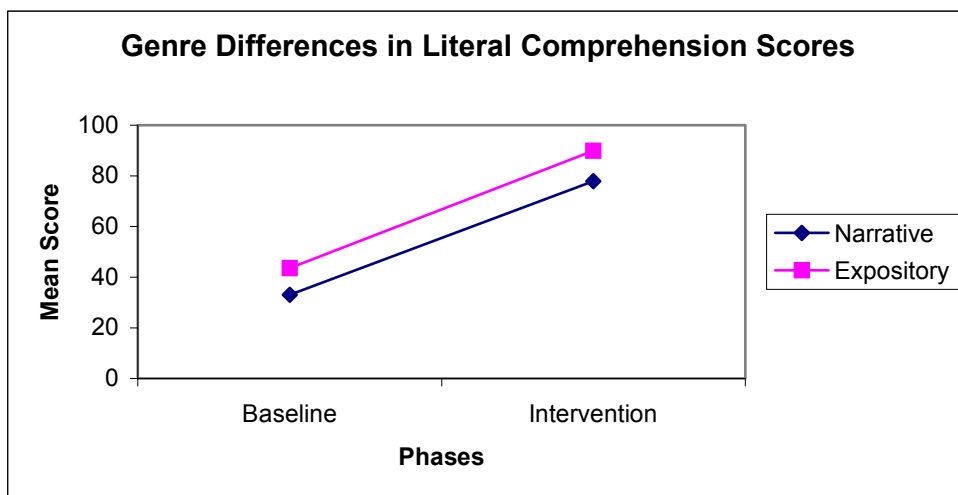


Figure 4.12 Sam's mean in literal comprehension scores as a function of genre across baseline and intervention phases.

The data indicates that Sam started out with a better command of literal comprehension for expository texts and at the end of the intervention phase he continued to find the comprehension of expository texts to be easier than that of narrative texts. The differences for genre difficulty in literal comprehension for Phases A and B presented in Figure 4.12 demonstrate that the QAR strategy led to comparable improvements across both narrative and expository genres.

There was only one follow up session for Sam, as he did not attend school when the second session took place. The reading passage was a narrative text for which Sam's responses were 84% correct indicating that Sam was maintaining his command of literal comprehension strategies. The data for the follow up session for Sam are presented in Phase C of Figure 4.11.

### **Inferential Comprehension**

Sam's percentage of correct answers to inferential comprehension questions across phases are presented in Figure 4.13

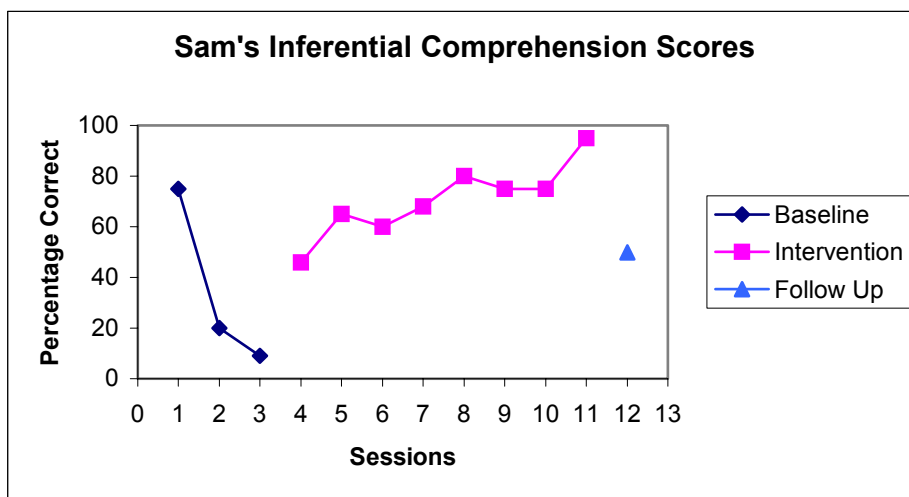


Figure 4.13 Sam’s performance on inferential comprehension for baseline, intervention and follow up.

Three sessions of baseline data were collected to establish Sam’s level of success in inferential comprehension before he received any instruction (Phase A). Sam’s responses were 75% correct for the first session in which the reading was a narrative genre. The reading passages of the next two sessions were expository and Sam’s responses were 20% correct for the first and 9% correct for the second.

Sam received two QAR lessons on inferential comprehension strategies before his first testing session in Phase B. He received instruction on the cued directive, ‘Use the Clues’, to search the text for clues and to apply his own background knowledge on the topic being read in answering the questions. His responses in the first testing session were 46% correct for the reading passage in a narrative genre. The next two sessions were expository texts and his responses were 65% and 60% correct respectively. The fourth and fifth sessions, involved narrative reading passages, and Sam’s responses to these were 68% for the fourth and 80% for the fifth. His responses for the sixth testing session with an expository genre were 75% correct, followed by another 75% for a narrative genre. The last session’s reading was an expository text for which Sam’s responses were 95% correct. The mean for inferential comprehension in Phase B was 71% indicating an increase of 36% from Phase A.

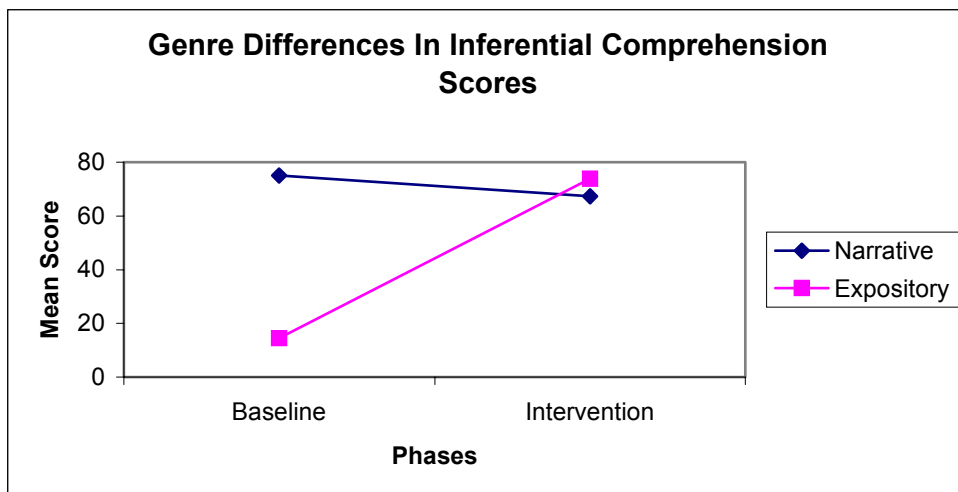


Figure 4.14 Sam's mean in inferential comprehension scores as a function of genre across baseline and intervention phases.

The data for genre differences in Phases A and B are presented below in Figure 4.14. The data illustrate that the QAR strategy led to improved inferential comprehension of expository texts for Sam.

As mentioned earlier Sam was only available for one session of follow up which took place a week after instruction had stopped. His responses were 50% correct for a narrative genre (see Figure 4.13, Phase C). The data indicate Sam's ability to answer inferential questions was not sustained at the intervention phase.

### Critical Comprehension

The graph in Figure 4.15 illustrates Sam's percentage of correct responses in critical comprehension across the three phases of the study.

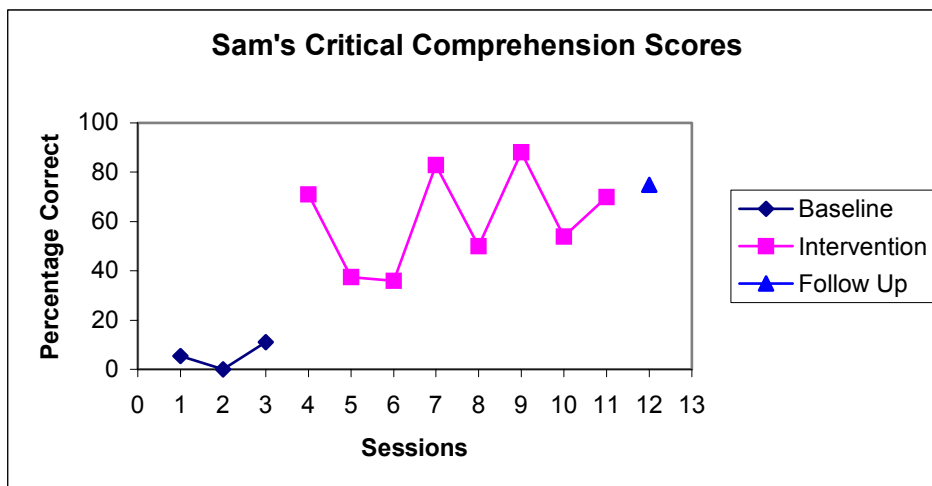


Figure 4.15 Sam's performance on critical comprehension for baseline, intervention and follow up phases.

The baseline data revealed Sam's poor critical comprehension scores. His correct responses for the first session in which the reading passage was a narrative, were 6 %.

The next two sessions were both expository genres and his critical comprehension scores were 0% and 11% respectively.

During the intervention phase, Sam was instructed in critical comprehension with the cued directive, ‘Work it Out’. Sam’s responses to the first session of intervention testing on a narrative genre indicated that his answers were 71% correct. Two subsequent sessions for which the reading passages were both expository genres indicated that Sam’s responses were 37% and 36% correct. In the next two sessions when narrative passages were read, Sam’s responses were 83% correct for the first and 50% correct for the second. An expository text followed in the sixth session and Sam’s responses were 88% correct for this. The seventh session required the comprehending of a narrative text and Sam achieved 54% of correct answers. In the eighth and final session of intervention, an expository text was read. Sam responses were 70% correct for this session. The mean critical comprehension score for Phase B was 61% indicating an increase of 27% from Phase A.

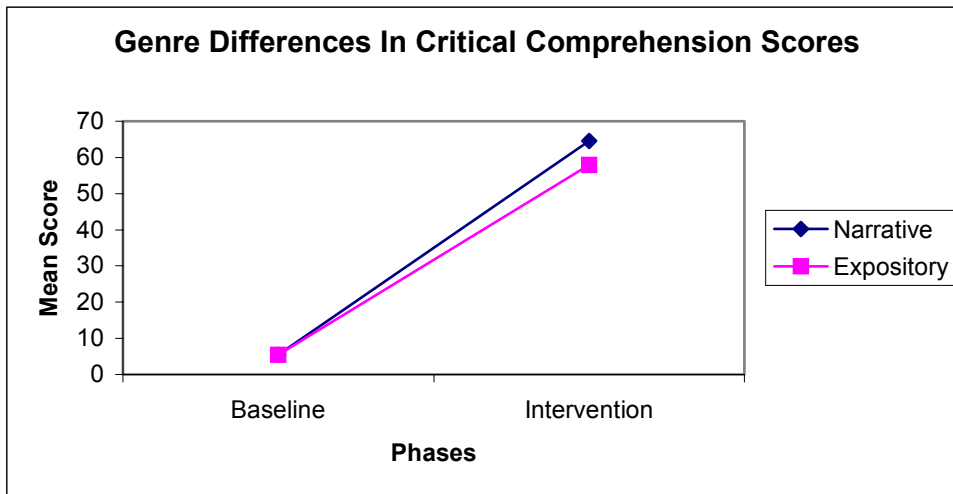


Figure 4. 16 Sam’s performance on genres in critical comprehension scores as a function of genre across baseline and intervention phases.

A breakdown of the mean according to genres indicated a mean of 65% for narratives and 58% for expository genres implying that in critical comprehension Sam

found narratives to be slightly easier. The data for genre differences in critical comprehension are presented in Figure 4.16.

Overall, the data indicate that the QAR reading comprehension strategy has led to improvements in critical comprehension for both genres, although an analysis of the sessions (Figure 4.15) indicates more variable performance than for literal comprehension (Figure 4. 11).

Sam participated in only one of the two follow up sessions that took place a week later. His responses were 75% correct which indicated that Sam was maintaining his knowledge of the strategies for critical comprehension. The passage was a narrative text.

### Creative Comprehension

Sam's percentage of correct responses to creative comprehension across the three phases are presented in the Figure.4.17.

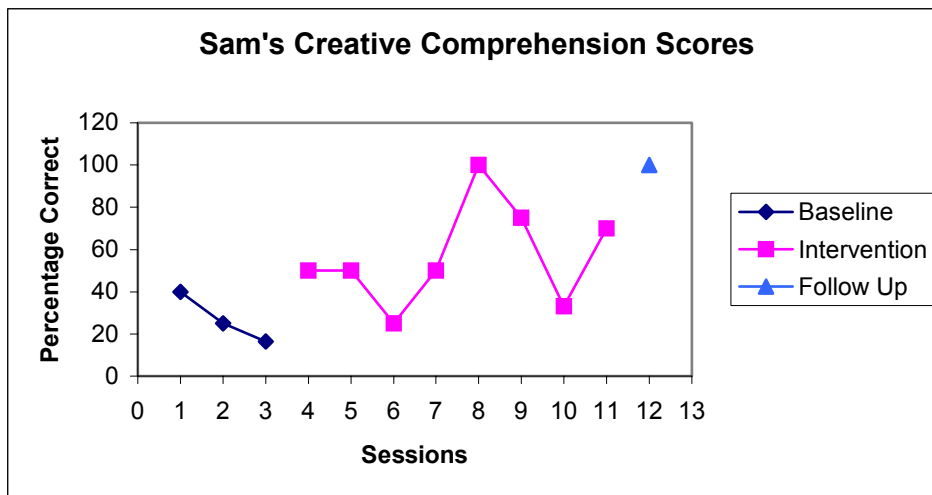


Figure 4.17 Sam's performance on creative comprehension for baseline, intervention and follow up phases.

Sam's data in creative comprehension for baseline are presented in Phase A, of Figure 4.17. Sam's responses to the first session in baseline with a narrative genre were

40%. His answers for the second and third sessions that involved the reading of expository genres were 25% and 17% respectively.

Sam received instruction on how to approach creative comprehension in the intervention phase of Phase B with the cued directive ‘What Do YOU Think?’ Sam’s answers in the first testing session that followed two sessions of teaching were 50% correct for a narrative genre. The next two sessions required the reading of expository genres. His answers were 50% and 25% correct respectively. The fourth and fifth sessions were both narratives and Sam achieved 50% for the fourth and 100% for the fifth. The sixth was an expository text and Sam’s answers were 75% correct. The next session involved a narrative text and he may have found it difficult in understanding this passage since his percentage of correct answers were 33% correct. For the final session, Sam achieved 70% for an expository passage. His mean creative comprehension score in Phase B was 56% indicating a 29% increase from Phase A.

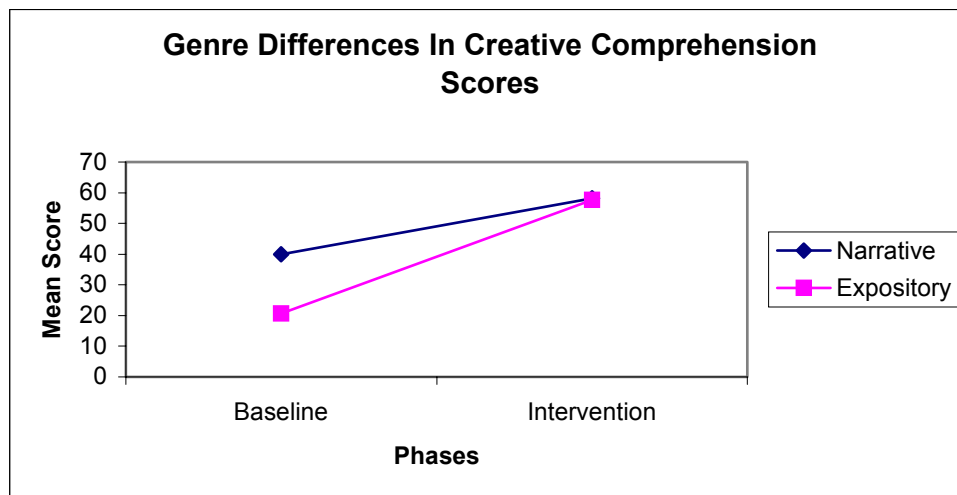


Figure 4.18 Sam’s mean creative comprehension score as a function of genre across baseline and intervention phases.

Sam’s performance for genre in creative comprehension for Phase A and B are presented in Figure 4.18. The findings indicate that the QAR strategies have led to

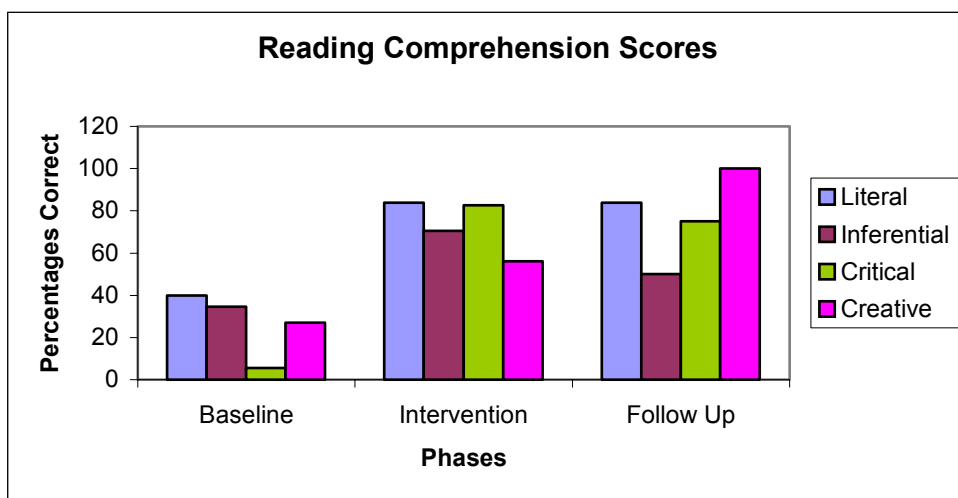
improvements in both genres, although there is a relatively greater improvement in the expository genre.

Sam's score on his single session of follow up for creative comprehension was 100% correct indicating that he was maintaining his command of the QAR strategies for critical comprehension.

### **Summary Of Outcomes Across Levels Of Comprehension**

The intervention that implemented the QAR strategies improved Sam's reading comprehension skills in all four levels of comprehension. His performance data for the four levels of reading comprehension during three phases of the study are presented in Figure 4.19.

It is evident that the QAR strategy led to improvements on all four levels of comprehension. The relative improvements are greatest for critical comprehension (56%), followed by literal comprehension (44%), inferential comprehension (36%), and creative comprehension (29%).



**Figure 4.19** Sam's performance on the four levels of comprehension across baseline, intervention, and follow up.



Regarding performance difficulty in the levels of comprehension for Sam, the data indicate he had the most difficulty with was creative comprehension. Although the weakest area for Sam’s existing knowledge was critical comprehension, it was also his highest success area after intervention occurred. The mean of the four levels of comprehension in Phase B indicated that Sam’s strongest levels of comprehension were literal and critical followed by inferential and creative comprehension.

### **Anaphoric Pronouns**

Sam’s mean percentages for anaphoric pronouns across the three phases are presented in Figure 4.20.

Only one session of baseline data was collected for anaphoric pronouns and this occurred in the first session for which the reading passage was a narrative genre. Sam responses were 34% correct.

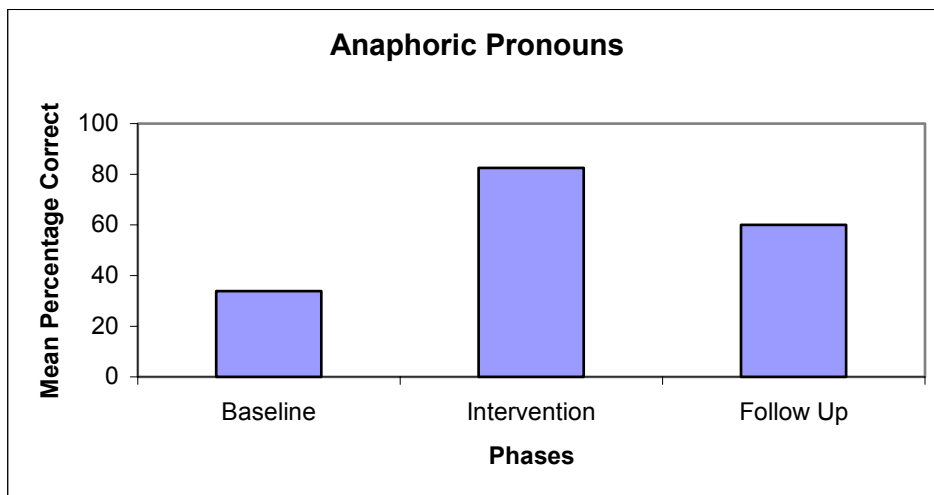


Figure 4.20 Sam’s mean percentages on anaphoric pronouns across phases.

In ‘Phase B’ Sam was taught to resolve pronouns as an aspect of the QAR strategy for critical comprehension. The first, third, fourth, seventh, and eighth sessions included the resolving of pronouns as part of the questions in critical comprehension. Sam’s responses for session one were 86% correct for a narrative genre. He achieved

80% for the third session, which was an expository genre. For the fourth session, his responses to anaphoric pronouns were 100% correct for a narrative genre. He achieved 67% for the seventh session that was also a narrative genre. The last session involved an expository genre and Sam's responses were 80% correct for this session. Sam's mean in 'Phase B' for referencing pronouns was 83%.

In his single follow up session, Sam's responses for the resolution of anaphoric pronouns were 60% for a narrative passage.

### **Summary For Sam**

The Neale Analysis of Reading Ability (1999) pre and posttests indicated an increase of 3.1 years in Sam's general reading comprehension age resulting apparently from the intervention of the QAR reading comprehension strategies.

Sam's curriculum-based assessment graphs on the four levels of comprehension demonstrate a rising trend in the intervention phases and the maintenance levels in the follow up phases. The data indicate that the QAR reading comprehension strategies led to comparable improvements in reading comprehension for Sam across all levels of comprehension namely literal, inferential, critical and creative.

Data on text difficulty regarding genres indicated that Sam experienced a text difficulty in expository genres in creative and inferential comprehension.

The data on anaphoric pronoun resolution demonstrated improvement following the implementation of QRA strategies.

Over all the QAR strategies for reading comprehension improved Sam's comprehension on all four levels.

### **Case Study 3: Crystal**

#### **Standardised Test Results**

The Neale Analysis or Reading Ability (1999) standardised reading tests were administered before and after the intervention. The results of the pre and posttests for reading comprehension are presented in Table 4.7.

Table 4.7

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Comprehension Score Summary for Crystal

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Comprehension	Comprehension	Comprehension
Raw Score	13	18	+ 5
Percentile Rank	17	35	+ 18
Stanine	3	4	+ 1
Performance			
Descriptor	Below Average	Average	+ 1
National			
Profile Level	1	2-3	+ 1.5
Reading Age	7.6	8.7	+1.1

Crystal’s chronological age was 9.0 years at the time of the study. The pre-tests of the Neale Analysis or Reading Ability (1999) indicate that her reading comprehension age was 7.6 years. Her performance was *below average* and she was at a Year 1 level on the National Profile.

The posttests of the Neale Analysis or Reading Ability (1999) indicate Crystal’s reading comprehension age was 8.7 years. The differences between the pre and posttests for Crystal’s reading comprehension indicate an increase of 1.1 years in reading age over

a five-week period. She improved by one step on the performance descriptor to *average*, and her National Profile Level indicated an increase of 1.5 school years to Year 2-3 level in reading comprehension, apparently as a result of the QAR reading comprehension strategies.

The Neale Analysis of Reading Ability (1999) pretests for reading accuracy indicated that Crystal's age for reading accuracy was 8.2 years. Her performance was described as *average*, and she was at a Year 2-3 level on the National Profile. The posttests indicated an increase of 1 month in Crystal's reading accuracy age. In fact, more than a month had elapsed between the pre and posttests.

Table 4.8

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Accuracy Score Summary for Crystal

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Accuracy	Accuracy	Accuracy
Raw Score	42	43	+ 1
Percentile Rank	28	23	- 5
Stanine	4	4	0
Performance			
Descriptor	Average	Average	0
National			
Profile Level	2-3	2-3	0
Reading Age	8.2	8.3	+ 0.1

The score summary for pretest of the Neale Analysis of Reading Ability (1999) reading rate age for Crystal presented in Table 4.9 indicated her reading age for rate was

7.8 years. Her performance was described as *below average*. She was performing at a Year 1 level.

Table 4.9

The Neale Analysis of Reading Ability (1999) Standardised Tests Score Summary for Reading Rate for Crystal

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Rate	Rate	Rate
Raw Score	43.6	43	- 0.6
Percentile Rank	18	19	- 1
Stanine	3	3	0
Performance			
Descriptor	Below Average	Below Average	0
National			
Profile Level	1	1-2	+ 0.5
Reading Age	7.6	7.6	0

The posttest indicated no improvement in age for reading rate. The results demonstrate that Crystal's reading comprehension improved and the next section examines improvements in the levels of comprehension.

**Literal Comprehension**

Crystal's percentage of correct responses to literal comprehension across the three phases are presented in the Figure 4.21

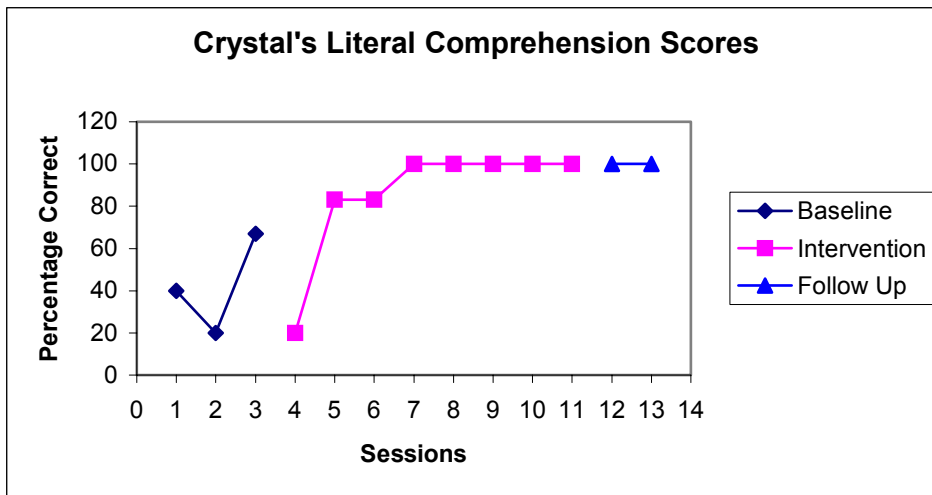


Figure 4.21. Crystal's performance on literal comprehension for baseline, intervention and follow up phases.

Three sessions of baseline data, illustrated in Figure 4.21. were collected to assess Crystal's ability to answer literal comprehension questions prior to the intervention phase. Her responses to the first session were 40% correct for a narrative genre. In the second and third sessions in which both the reading passages were expository genres, Crystal's responses were 20% and 67% correct.

During the intervention phase, Crystal was tested at every third session following two sessions of instruction. She was instructed on how to use the QAR strategies' cued directive for literal comprehension, 'Find the Facts'. Phase B (Figure 4. 21) illustrates Crystal's performance on literal comprehension during the intervention phase. Her responses to the first session of testing in which a narrative genre was used, were 20% correct. The next two session involved expository genres. Crystal's responses were 83% correct for each of these sessions. The fourth and fifth sessions in Phase B both involved narrative passages for which Crystal's responses were 100% correct. Her percentages for the next three sessions were all 100% correct. One of these was of a narrative genre and the other two were expository genres. Crystal achieved 100% for literal comprehension irrespective of genres in the last five sessions of the intervention phase. A comparison of

the mean difference between Phases A and B indicate an increase of 43% implying that the QAR strategies for literal comprehension led to improvements in Crystal's reading comprehension abilities.

Crystal's data for genre differences are presented below in Figure 4.22. The mean baseline data for literal comprehension, 40% for narratives and 44% for expository genres indicate little difference between genres. A comparison of mean scores for genre after intervention, indicate that her score for expository genre (90%) were slightly higher than that of narrative genre (80%).

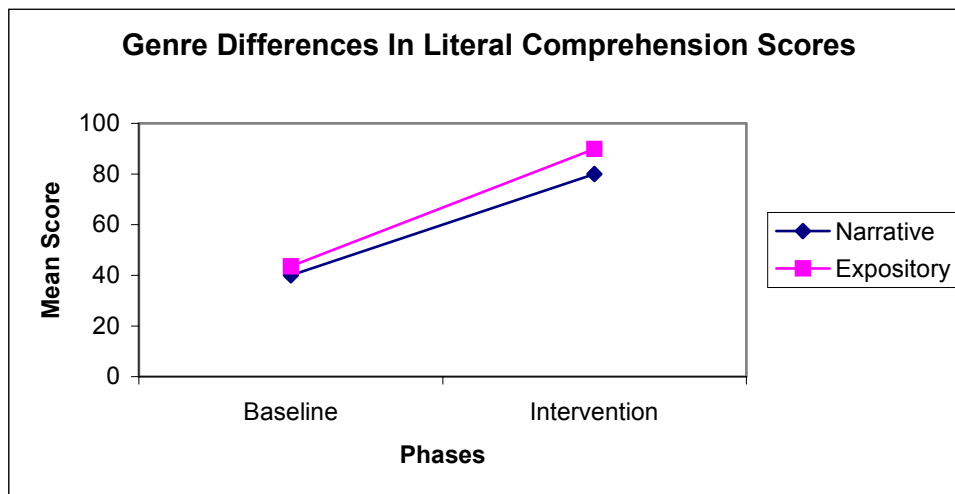


Figure 4.22 Crystal's mean in literal comprehension scores as a function of genre across baseline, and intervention phases.

Crystal's responses for the follow up sessions that took place a week later are illustrated in Phase C of Figure 4.21. Her answers were 100% correct in both sessions for narrative reading passages. This implies that Crystal was maintaining her command of the QAR strategies for literal reading comprehension.

### **Inferential Comprehension**

Crystal's correct responses to inferential questions over the three phases of the study are presented in Figure 4.23.

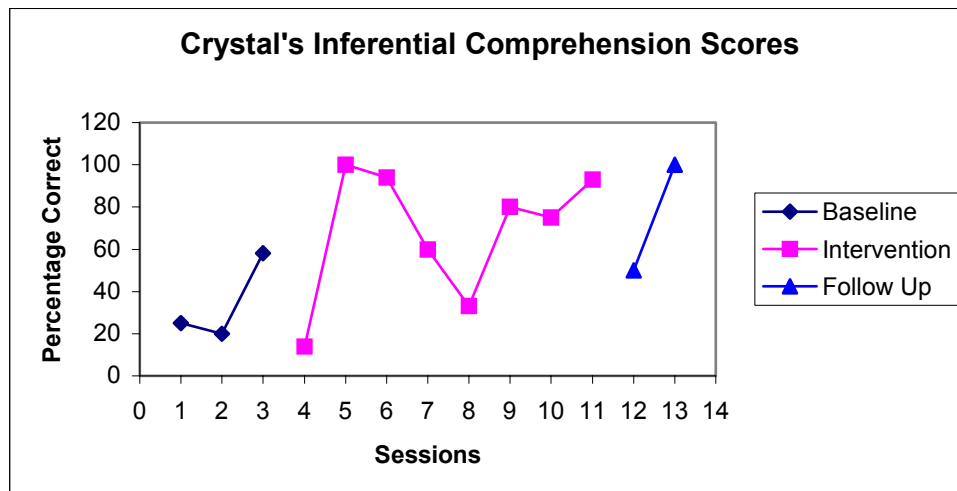


Figure 4.23 Crystal's performance on inferential comprehension for baseline, intervention and follow up.

Three sessions of baseline data were collected to establish Crystal's existing knowledge on answering inferential comprehension questions. Her score for the first session with a narrative genre was 25%. Two sessions involving the reading of expository genres followed. Crystal's responses were 20% and 58% respectively. A comparison of the means between genres revealed 25% for narratives and 39% for expository genres indicating that Crystal found it easier to comprehend expository than narrative texts during the baseline phase.

Crystal's responses to inferential comprehension in the intervention phase are illustrated in Phase B. The first session of data were collected after two sessions of instruction. Crystal received instructions on the use of the QAR cued directive 'Use the Clues' in answering inferential questions. Her responses to the first session on a narrative genre were 14% correct. The next two sessions involved comprehending expository genres and her responses were 100% and 94% correct respectively. In the fourth and fifth sessions for which the texts were narratives, Crystal's responses were 60% correct for the fourth and 33% correct for the fifth. These sessions were followed



by an expository genre for which her answers were 80% correct. Her responses for the seventh session with a narrative genre were 75% correct and for the final session of intervention, she achieved 93% with an expository genre. A comparison of the mean differences between Phases A and B indicate a mean increase of 34% for inferential comprehension. Apparently, the QAR strategies for inferential comprehension affected these results.

A mean for the correct responses to narrative and expository genres was calculated to find out whether there was a difference in text difficulty in Phases A and B. The results are presented in Figure 4.24.

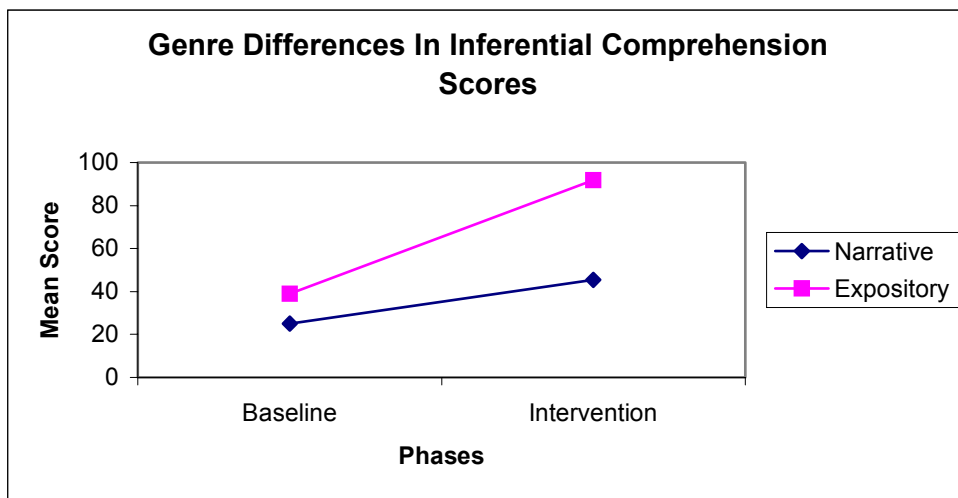


Figure 4.24 Crystal's mean inferential comprehension scores as a function of genre across baseline and intervention phases.

The results indicate that Crystal found narrative text slightly more difficult than expository text in both phases. Whilst the QAR strategies for inferential comprehension appear to have improved the comprehension of both genres, it appears to have addressed Crystal's comprehension of expository texts more successfully than it did for narrative texts.

The results for the follow up sessions are illustrated in Phase C of Figure 4.23. These sessions took place after the intervention phase had been completed. The reading

passages of both sessions were narratives. Crystal's responses were 50% correct for the first and 100% correct for the second. The data indicate that Crystal was maintaining her command of the QAR strategies for inferential comprehension, although not quite as well as she was doing for literal comprehension.

### Critical Comprehension

Crystal's correct responses to critical comprehension across the three phases of the study are illustrated in Figure 4.25.

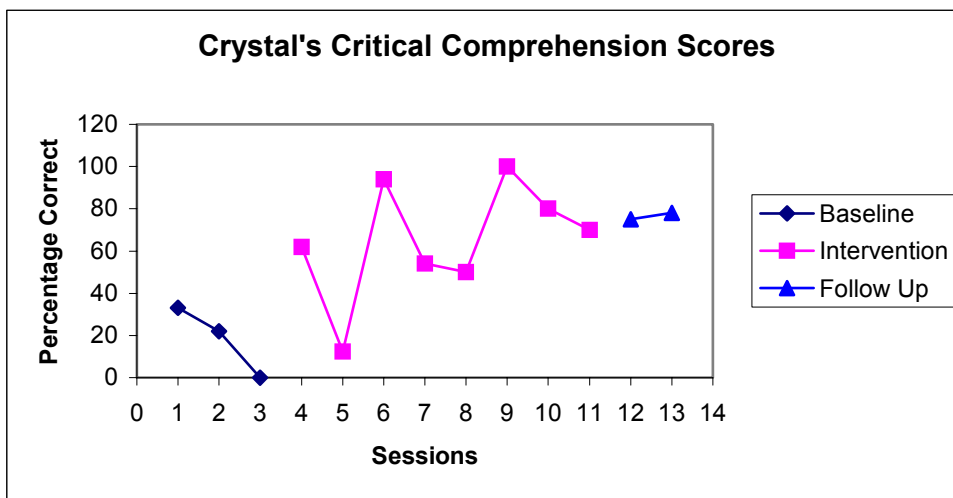


Figure 4.25 Crystal's performance on critical comprehension for baseline, intervention and follow up phases.

Three sessions of baseline presented in Phase A illustrate Crystal's ability to answer critical comprehension questions before intervention was implemented. Her responses were 33% correct for the first session with a narrative genre followed by 22% and 0% for the second and third sessions with expository genres.

Two sessions of teaching took place before the first testing session. Crystal was instructed on the use of QAR cued directive, 'Work It Out'. Her responses were 65% correct for a narrative text in the first session of testing. However, for the second session of testing which involved an expository genre Crystal's score dropped to 13%. The third

testing session also involved an expository genre and her scores rose to 94%. Crystal read narrative texts were read for the fourth and fifth sessions. Her responses were 54% and 50% correct for these. An expository genre read for the sixth session produced answers were 100% correct. This was followed by a narrative genre, for which her responses were 80% correct. The final session involved the reading of an expository genre for which Crystal's responses were 70% correct. Although her performance appeared erratic, there was an improvement in the intervention phase apparently due to the QAR strategies for critical comprehension. A comparison of the mean difference between Phases A and B indicate an increase of 47% for critical comprehension.

Means for genre difficulty calculated for Phases A and B are presented in Figure 4.26. The data in Phases A and B indicate Crystal found narratives to be easier to comprehend than expository texts in baseline. During the intervention phase, there was no difference in the text difficulty of the two genres.

The QAR strategies for Creative comprehension improved Crystal's comprehension of both genres.

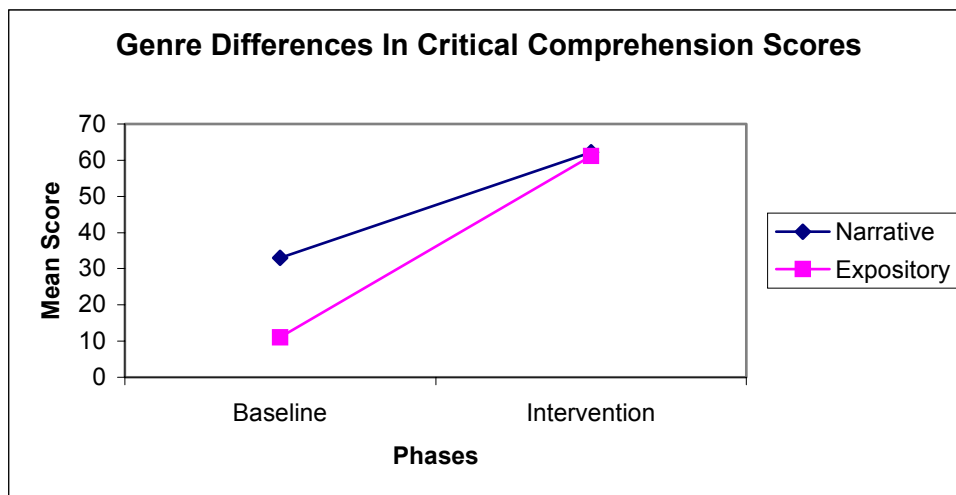


Figure 4.26 Crystal's mean critical comprehension scores as a function of genre across baseline and intervention phases.

A week after instruction ceased, two follow up sessions were implemented. Crystal's responses were 75% and 78% correct respectively for narrative genres presented in Figure 4.25 indicate she was maintaining her command of the QAR strategies for critical comprehension.

### **Creative Comprehension**

Crystal's correct responses to creative comprehension across the three phases are illustrated in Figure 4.27.

Crystal's ability to answer creative comprehension questions prior to the intervention phase was established in three testing sessions of baseline illustrated in Phase A. She achieved 20% of correct answers for the first session with a narrative reading passage. For the second and third sessions when expository genres were read, Crystal's answers were 12% and 67% correct.

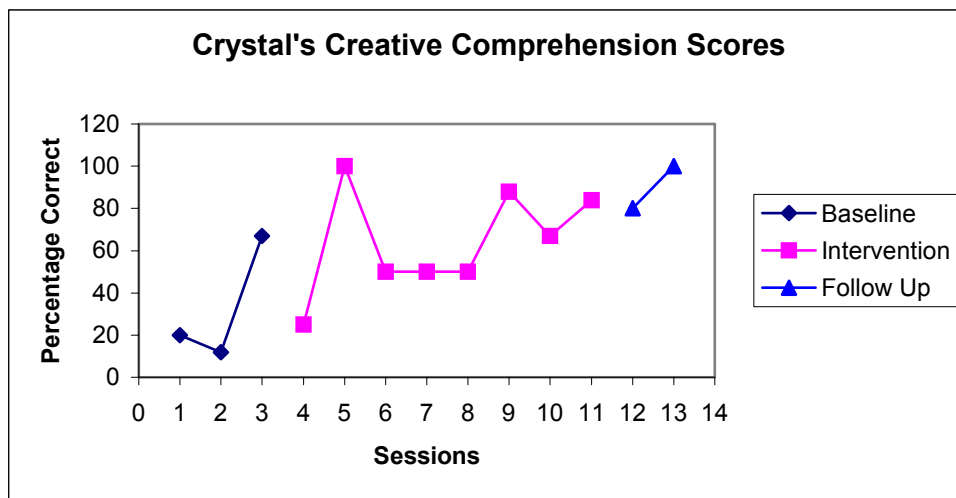


Figure 4.27 Crystal's performance on creative comprehension for baseline, intervention, and follow up phases.

Crystal received instruction with the QAR cued directive ‘What Do YOU Think?’ for creative comprehension. For the first session of testing that followed two sessions of instruction, Crystal’s answers were 25% correct. The second and third sessions were expository reading passages for which her answers were 100% and 50% correct respectively. For the next two sessions that involved the reading of narrative passages, her responses were 50% correct for both. Her responses for the sixth session were 88% correct for an expository genre. Crystal achieved 67% for a narrative and 84% for an expository genre for the seventh and eighth sessions. A comparison of the means between Phases A and B indicated a mean increase of 31% occurred over a five week period. The QAR strategies for creative comprehension apparently led to improvement in Crystal’s ability to answer creative comprehension questions

Crystal’s data for differences in text difficulty in creative comprehension are presented in Figure 4.28.

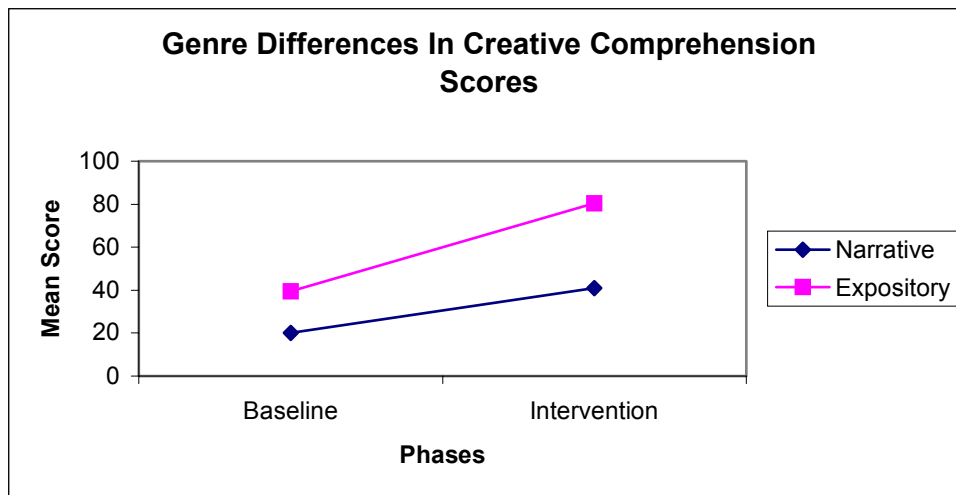


Figure 4.28 Crystal’s mean in creative comprehension scores as a function of genre across baseline and intervention phases.

A comparison of the means across genres in baseline indicates a performance difficulty for narrative genre. This difficulty persists in Phase B indicating that for Crystal, narratives were twice as difficult to understand as expository genres.

The data also implies that although the QAR strategies for creative comprehension improved both genres, in Crystal's case, they were more effective for expository than for narrative genres.

Crystal's responses in the follow up phase implemented a week later were 80% and 100% correct for narrative reading passages and are presented in Phase C of Figure 4.27. The data indicate that Crystal was maintaining her command of the QAR creative comprehension strategies.

### **Summary Of Outcomes Across Levels Of Comprehension**

Her mean scores in the three phases of the study for the four levels of comprehension are presented in Figure 4.29

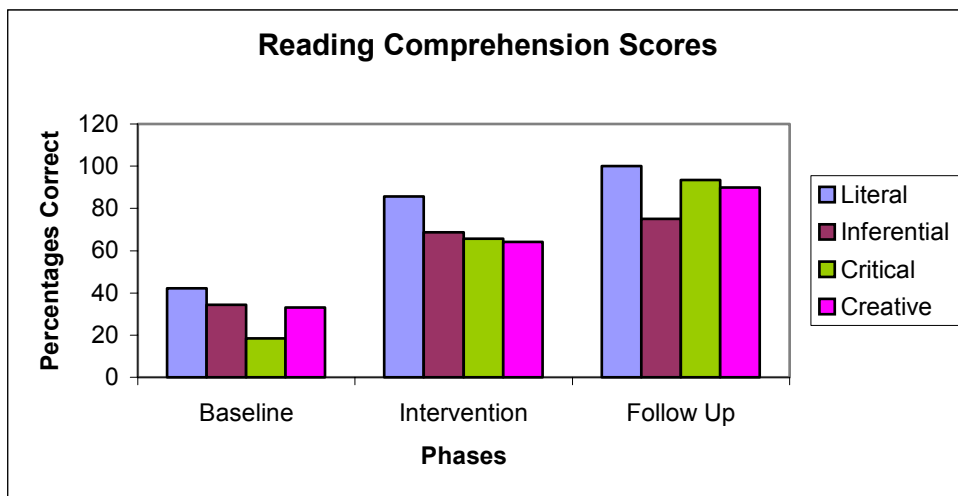


Figure 4.29 Crystal's performance on the four levels of comprehension across baseline, intervention and follow up phases.

The data indicate that the QAR comprehension strategies implemented in the intervention phase improved Crystal's comprehension skills at all four levels. Regarding the performance difficulty in levels of comprehension, the relative improvements are

greatest for critical comprehension (47%), followed by literal comprehension (43%), inferential comprehension (34%) and creative comprehension (29%)

### **Anaphoric Pronouns**

The mean differences for the resolution of pronouns between the three phases of baseline, intervention and follow up are presented in Figure 4.30.

Only one session of baseline data was possible for anaphoric pronouns. Crystal's responses were 17% correct for this session with a narrative genre.

Crystal received instruction on how to resolve pronouns as an aspect of critical comprehension during Phase B. The testing of anaphoric pronoun resolutions were only possible in the first, third, fourth, seventh, and eighth sessions.

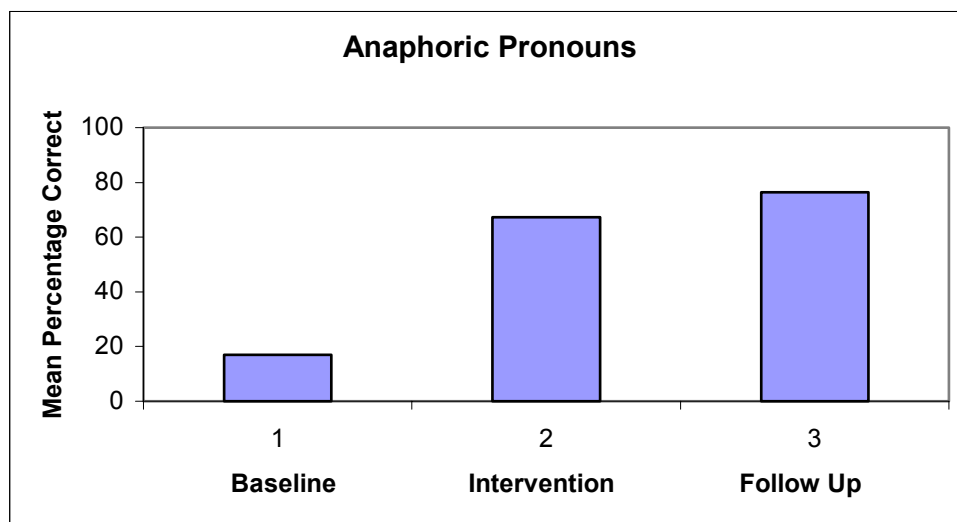


Figure 4.30 Crystal's accuracy on anaphoric pronouns across phases.

Crystal's responses were 70% correct for the first session with a narrative genre. She achieved a score of 66% for the third session with an expository text followed by 20% for the fourth with a narrative text. The seventh session involved a narrative reading passage for which Crystal's answers were 100% correct, followed by 80% for the final session with an expository genre.

In the follow up phase implemented a week later, Crystal achieved 100% for the first session and 80% for the second. Her mean in Phase C was 94%. This indicated that Crystal was maintaining her command of the QAR strategies for resolving anaphors.

### **Summary for Crystal**

The Neale Analysis of Reading Ability (1999) pre and posttests indicate an increase of 1.1 years in Crystal's general reading comprehension age, resulting apparently from the intervention of the QAR reading comprehension strategies.

Crystal's curriculum-based assessment graphs on the four levels of comprehension demonstrated a rising trend in the intervention phases and the maintenance levels in the follow up phases. The data indicate that the QAR reading comprehension strategies led to comparable improvements in reading comprehension for Crystal across literal, inferential, critical and creative levels.

Data on text difficulty regarding genres indicate that Crystal experienced a slight text difficulty in narrative genres. The data on anaphoric pronoun resolution indicate improvement following the implementation of the QRA strategies.

Overall, the QAR strategies for reading comprehension improved Crystal comprehension on all four levels.

### **Case Study 4: Kim**

#### **Standardized Test Results**

The standardised test of the Neale Analysis of Reading Ability (1999) was administered before and after the intervention. The score summary for reading comprehension is presented in Table 4.10.

Kim's chronological age was 9.3 years at the time of the study. The pre-tests of the Neale Analysis of Reading Ability (1999) indicated that her reading comprehension



age was 7.10 years. Kim’s reading performance was described as *below average* and she was at a Year 1-2 level on the National Profile Level in reading comprehension.

Table 4.10

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Comprehension Score Summary for Kim

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Comprehension	Comprehension	Comprehension
Raw Score	14	27	+ 13
Percentile Rank	23	71	+ 48
Stanine	3	6	+ 3
Performance			
Descriptor	Below Average	Average	+ 1
National			
Profile Level	1-2	3-4	+ 2
Reading Age	7.10	10.1	3.9

The posttest for comprehension indicated her reading age was 10.1 years, an increase of 3.9 years. Kim’s performance descriptor changed to *average* over the span of the study and she was at a Year 3-4 level on the National Profile. The posttest indicated an improvement of two school years for reading comprehension.

The Neale Analysis of Reading Ability (1999) pretest scores for reading accuracy for Kim are presented in Table 4.11. The pretests indicated that Kim’s reading accuracy age was 7.10 years. Her performance was described as *below average* and she was performing at a Year 2 level on the National Profile for reading accuracy.

Table 4.11

The Neale Analysis of Reading Ability Standardised Tests Reading Accuracy Score Summary for Kim

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Accuracy	Accuracy	Accuracy
Raw Score	38	42	+ 4
Percentile Rank	21	22	+ 1
Stanine	3	4	+ 1
Performance			
Descriptor	Below Average	Average	+ 1
National			
Profile Level	2	2-3	+ 0.5
Reading Age	7.10	8.3	+ 0.5

The posttests indicated , there was a 0.5 year increase in accuracy age for Kim. Kim had not received any instruction to improve her reading accuracy skills during the study.

Kim’s score summary for the pre and posttest for reading rate are presented below in Table 4.12. The pretests of the Neale Analysis of Reading Ability indicated Kim’s reading rate age was 6.7 years. Her performance was described as *very low* and she was at a Year 1 level on the National Profile for reading rate. The posttest indicated four months increase in reading rate age for Kim although she did not receive instruction to improve her reading rate.

The results demonstrate that Kim’s general reading comprehension improved and the next section examines improvements in the levels of her comprehension.

Table 4.12

The Neale Analysis of Reading Ability Standardised Tests Reading Rate Kim Score Summary for Kim

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Rate	Rate	Rate
Raw Score	29	32	+ 3
Percentile Rank	7	6	- 1
Stanine	2	2	0
Performance			
Descriptor	Very Low	Very Low	0
National			
Profile Level	1	1	0
Reading Age	6.7	6.11	0.4

**Literal Comprehension**

The percentages of literal comprehension questions answered correctly by Kim over the three phases of the study are presented in Figure 4.31.

Three sessions of baseline data were collected to establish Kim’s ability to answer literal comprehension questions before intervention. These data are illustrated in Phase A. The first session involved reading a narrative genre. Kim’s responses were 17% correct. The next two sessions were both expository genres and Kim’s responses to these were 40% and 50% correct respectively.

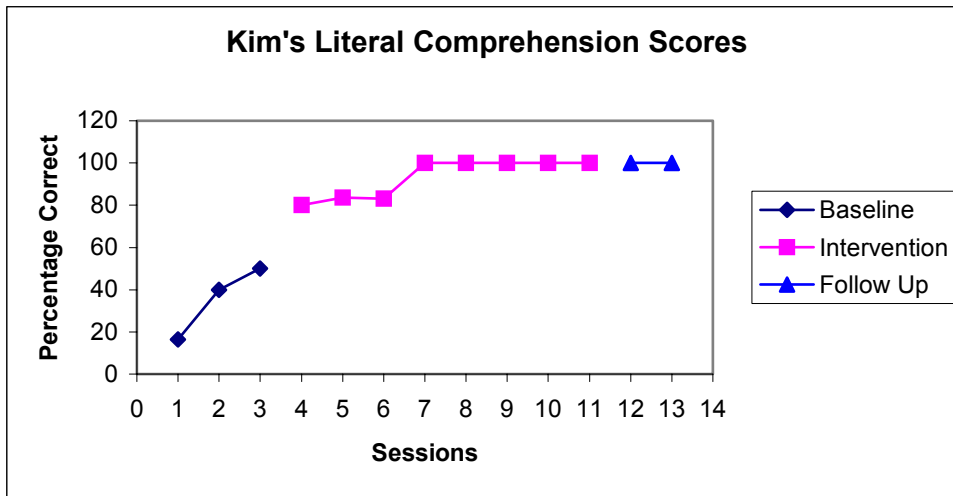


Figure 4.31 Kim's performance on literal comprehension for baseline, intervention and follow up phases.

Two sessions of teaching took place before the first session of testing in which Kim received instruction on the QAR strategies and its cued directive, 'Find the Facts'. Kim's responses were 80% correct for the first session with a narrative genre. The second and third sessions involved reading expository genres and Kim's responses were 84% correct for the first and 83% correct for the second. For the next five sessions, her responses were 100% correct irrespective of genres.

A mean difference between intervention and baseline phases indicates an increase of 56%. The data implies that the QAR strategies for literal comprehension led to comparable improvement for Kim.

Data for text difficulty are presented in Figure 4.32. Although baseline data indicated some text difficulty for narrative genres, the data for the intervention phase indicated insignificant text difficulty between narrative and expository genres. The data indicates that the QAR strategies whilst improving both genres made a greater impact on narratives.

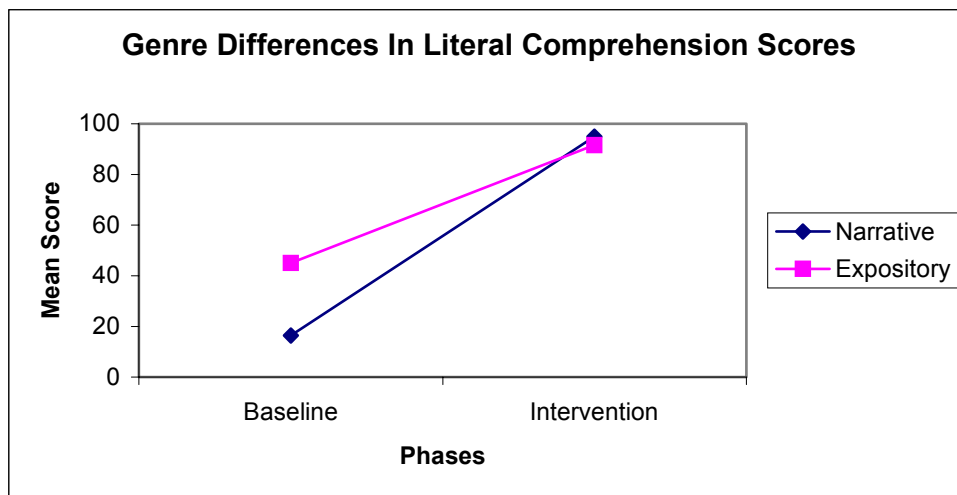


Figure 4.32 Kim’s mean literal comprehension scores as a function of genre across baseline and intervention phases.

Two sessions of follow up testing were implemented a week after intervention ceased. Kim’s responses were 100% correct for both of these sessions with narratives. The data illustrated in Phase C of Figure 4.31 demonstrated that Kim was maintaining her ability to use the QAR strategies for literal questions after intervention had been stopped for a week.

### **Inferential Comprehension**

Kim’s responses to inferential comprehension questions across the three phases of the study are illustrated below in Figure 4.33.

Three sessions of baseline data were collected to establish Kim’s prior knowledge on answering inferential comprehension questions and are illustrated in Phase A. In the first session, her responses were 50% correct with a narrative text. In the second and third sessions with expository texts, her responses were 60% correct for the second session, and 58% correct for the third.

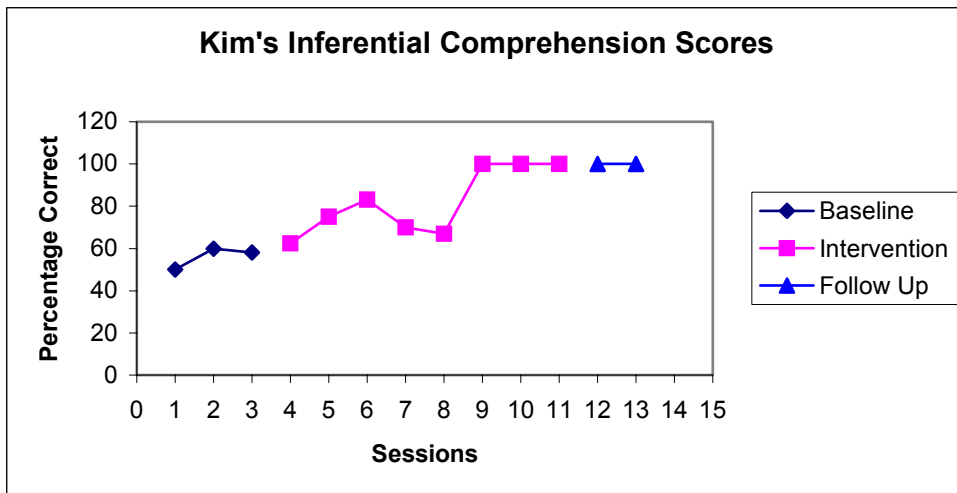


Figure 4.33 Kim's performance on inferential comprehension for baseline, intervention and follow up phases.

During the intervention phase, Kim was instructed with the QAR strategies and its cued directive for inferential comprehension, 'Use the Clues' mentioned in the Method chapter. Tests were administered after two teaching sessions had occurred. The results of the tests are illustrated in Phase B of Figure 4.33. In the first testing session with a narrative genre, Kim's responses were 63% correct. The second and third sessions involved the reading and comprehending of expository genres and Kim's responses were 75% correct for the second and 83% correct for the third. The next two sessions were both narratives, and Kim's responses were 70% and 67% correct respectively. For the last three sessions which used both narratives and expository texts, Kim's responses were all 100% correct for all sessions. The mean difference between Phase A and B was an increase of 26% for Phase B demonstrating that the QAR strategies for inferential comprehension led to improvements for Kim.

Means were calculated for narrative and expository genres in baseline and intervention phases to ascertain whether there was a text difficulty in inferential comprehension for genres. The results are presented in Figure 4.34.

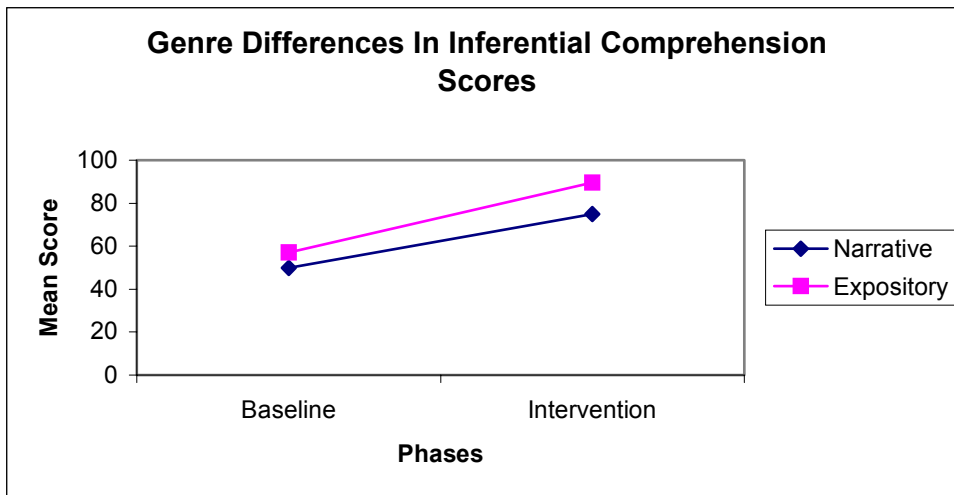


Figure 4.34 Kim’s mean inferential comprehension scores as a function of genre across baseline and intervention phases.

A comparison of narrative and expository means in baseline indicate a slight text difficulty for narratives. This difficulty was sustained during the intervention phase although the data indicated that the QAR strategies for inferential comprehension improved both genres.

In the two follow up sessions presented in Figure 4.33 Kim’s responses were 100% correct for both sessions with narrative genres. The data indicate she was maintaining her command of the QAR strategies for inferential comprehension.

**Critical Comprehension**

Kim’s responses to critical comprehension questions across the three phases in the study are illustrated in Figure 4.35.

Kim’s existent knowledge on answering critical comprehension questions was established by the three testing sessions in baseline. The results of these tests are

illustrated in Phase A. Kim's responses to the first session with a narrative genre were 33% correct. The second and third sessions were 50% and 22% correct for expository genres.

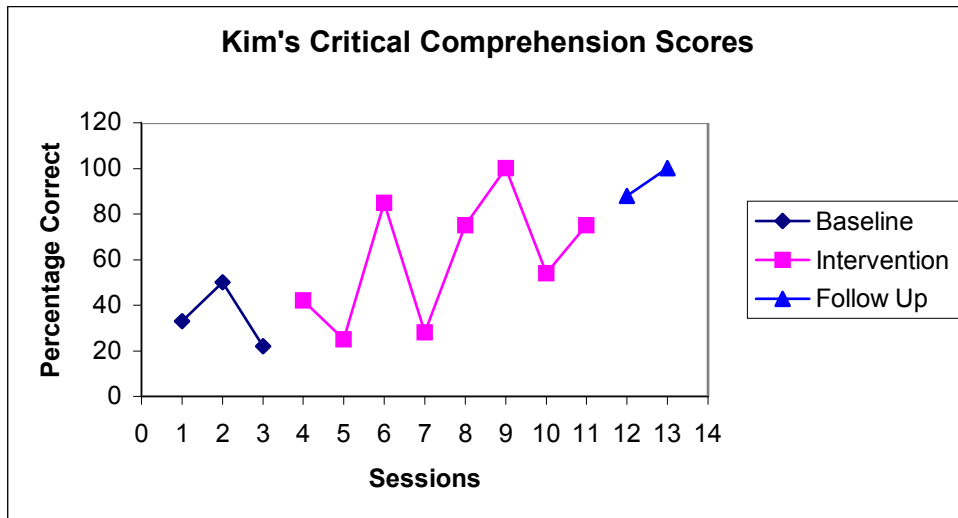


Figure 4.35 Kim's performance on critical comprehension for baseline, intervention and follow up.

During the intervention phase Kim received instruction with the cued directive for critical comprehension, 'Work it Out', as described in the method chapter of this study. Kim's responses for the first session with a narrative genre were 42% correct. The next two sessions involved expository texts. Kim's results were 25% correct for the first of these and 85% correct for the second. The fourth and fifth sessions were narrative genres and Kim's results were 28% correct for the fourth and 75% correct for the fifth. For the sixth session, Kim's results were 100% for an expository text. The seventh was a narrative reading passage and Kim's responses were 54% correct. The final session in Phase B involved an expository text and Kim's responses were 75% correct for this session.



A comparison of the means between baseline and intervention indicate a mean increase of 26% for the intervention phase demonstrating that the QAR strategies led to improvements in critical comprehension for Kim.

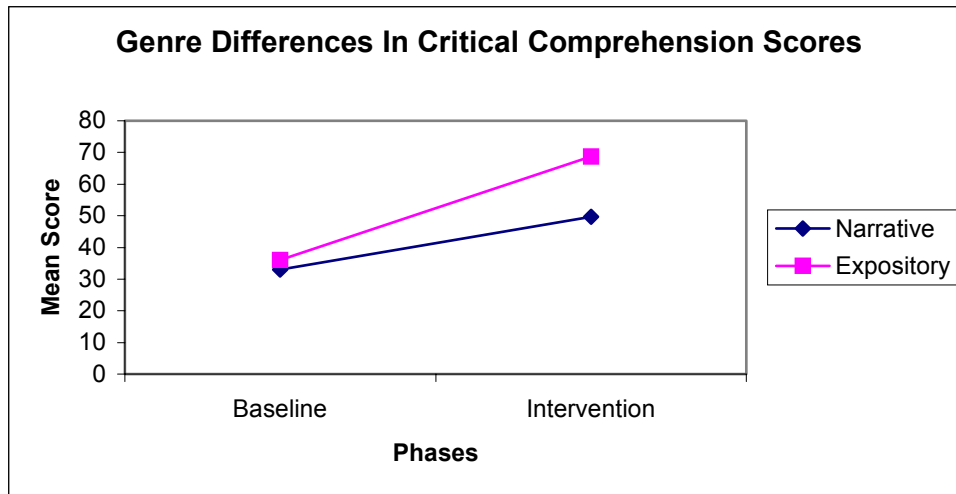


Figure 4.36 Kim’s mean in critical comprehension scores as a function of genre across baseline and intervention phases.

In the baseline phase, text difficulty between narrative and expository genres appeared to be insignificant for critical comprehension. However, in Phase B, the data indicates some text difficulty for narratives in critical comprehension. The QAR strategies for critical comprehension led to improvements in both genres, although in Kim’s case, it was slightly more successful for expository than narrative genres.

Kim’s responses to the two follow up sessions administered a week after instruction was stopped, were 88%, and 100% correct for narrative texts. This data presented in Phase C of Figure 4.35 indicate she was maintaining her command of the QAR strategies in answering critical comprehension questions.

### **Creative Comprehension**

Kim’s responses to creative comprehension questions across the three phases of the study are illustrated below, in Figure 4.37.

Three sessions of baseline data were collected to establish Kim’s prior knowledge on answering creative comprehension questions and are presented in Phase A, of Figure 4.37. Kim achieved a score of 30% with a narrative genre in the first of the baseline sessions. The next two sessions involved the reading of expository genres. Kim’s responses were 12% correct for the first and 50% correct for the second of these sessions.

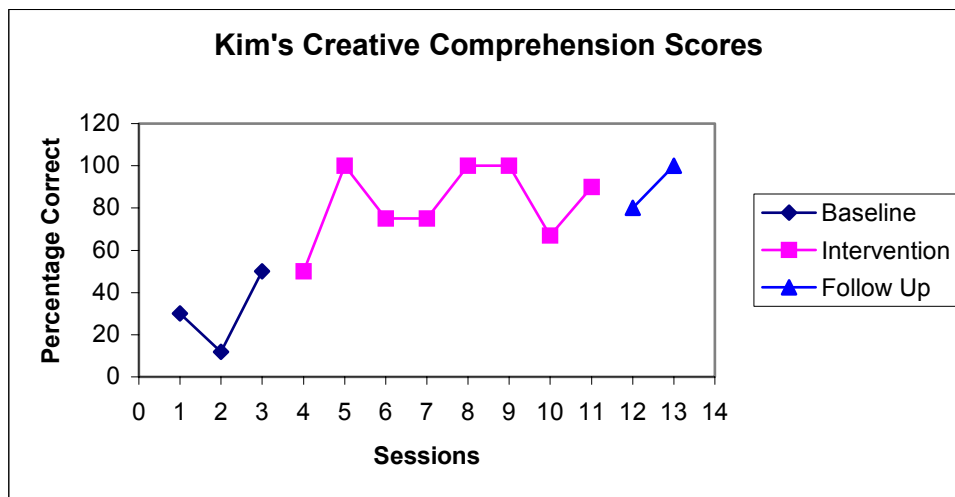


Figure 4.37 Kim’s performance on creative comprehension for baseline, intervention and follow up.

Kim received instruction on the use of the QAR strategies its cued directive for creative comprehension ‘What Do YOU Think?’ as described in the Method chapter. For the first session of testing in Phase B that followed two sessions of teaching, Kim’s responses were 50% correct for a narrative. The second and third sessions both involved expository genres for which Kim’s responses were 100% correct for the second and 75% correct for the third. For the next two sessions involving narratives, Kim’s responses were 75% and 100% correct. Her responses were 100% correct for an expository text in the sixth session. She achieved 67% correct in the seventh session with a narrative genre and for the final session of intervention, she achieved 90% for an expository genre. A comparison between the mean of baseline and intervention phases indicated an increase

of 51% for the intervention phase, apparently as a result of the instruction on QAR strategies for creative comprehension.

A mean comparison of narrative and expository genres in creative comprehension across baseline and intervention phases are presented in Figure 4.38. Baseline data indicated little significance between genres, but intervention revealed a text difficulty for narrative genres in creative comprehension. The QAR strategies improved the comprehension of both genres but appeared to be more effective for expository texts.

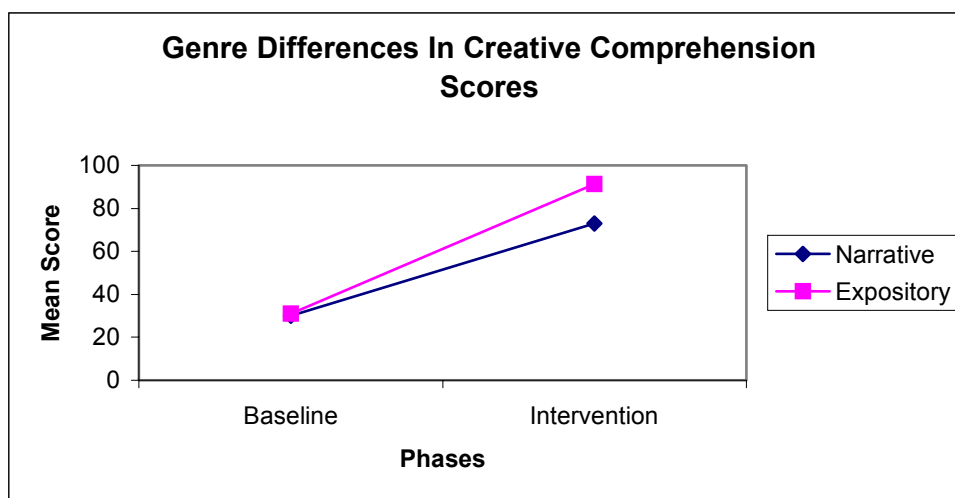


Figure 4.38 Kim’s mean in creative comprehension scores as a function of genre across baseline and intervention phases.

The data for the follow up presented in Phase C of Figure 4.37 implemented a week later indicate Kim’s responses were 80% correct for the first session and 100% correct for the second. Both sessions involved narratives. The data indicate that Kim was maintaining her command of the QAR creative comprehension strategies.

### **Summary of Outcomes Across Levels of Comprehension**

The QAR strategies led to improvements on all the four levels of comprehension as illustrated in Figure 4.39. The relative improvements are greatest for literal

comprehension (58%), followed by creative comprehension (51%), inferential comprehension (26%) and critical comprehension (26%).

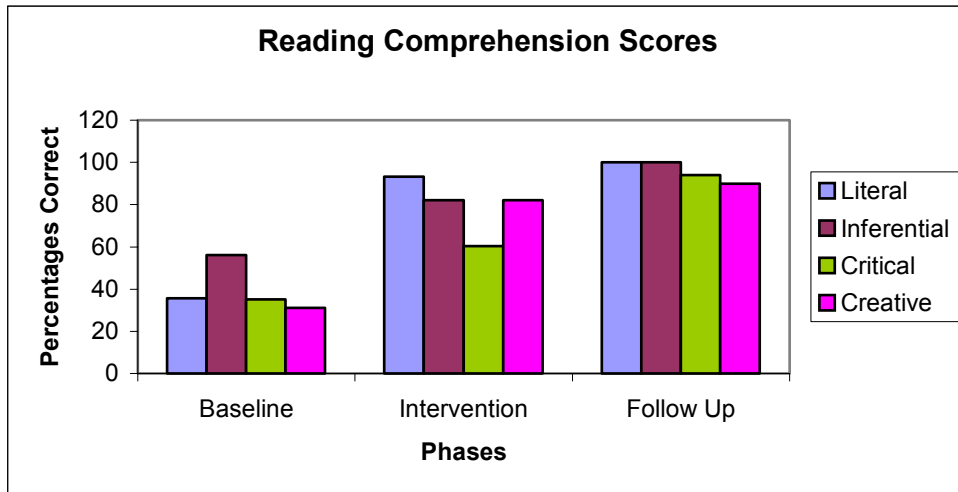


Figure 4.39 Kim's performance on the four levels of comprehension across baseline, intervention and follow up phases.

### **Anaphoric Pronouns**

The data for anaphoric pronouns are presented in Figure 4.40. Only the first session of baseline involved the resolving of anaphors. Kim's responses were 17% correct for this session.

During the intervention phase, only sessions one, three, four, seven, and eight required the resolving of anaphors. The third and eighth sessions involved reading expository texts, the other sessions' reading passages were narratives.

Kim's responses were 100% correct for the first and third session. Her responses were 40% correct for the fourth, 67% correct for the seventh and 100% correct for the eighth. A comparison of the mean between phases A and B indicated a mean increase of 54% for Phase B.

Follow up sessions implemented a week later indicated Kim's responses were 100% correct, for both sessions. This implies that Kim was maintaining her ability to resolve anaphoric pronouns after instruction on the concept had stopped.

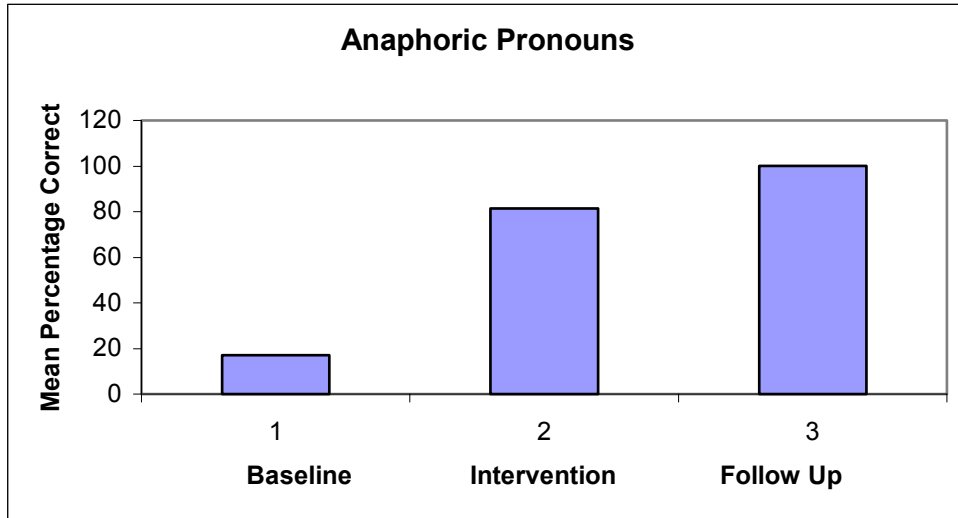


Figure 4.40 Kim's accuracy for anaphoric pronouns across phases.

### **Summary for Kim.**

The Neale Analysis of Reading Ability (1999) pre and posttests indicated an increase of 2.3 years in Kim's general reading comprehension age resulting apparently from the intervention of the QAR reading comprehension strategies.

The curriculum-based assessment graphs on the four levels of comprehension demonstrated a rising trend in the intervention phases and the maintenance levels in the follow up phases. The data indicate that the QAR reading comprehension strategies led to comparable improvements in reading comprehension for Kim.

Data on text difficulty regarding genres indicated that Kim experienced a slight text difficulty in narrative genres. The data on anaphoric pronoun resolution indicate that the QRA strategies made a difference to Kim's comprehension scores.

Over all the QAR strategies for reading comprehension improved Kim's comprehension on all four levels.

**Case Study 5:Amanda**

**Standardized Test Results**

The results of the Neale Analysis of Reading Ability (1999) standardised pre and posttests for reading comprehension are presented in Table 4.13.

Table 4.13

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Comprehension Score Summary for Amanda

	Pretest Reading Comprehension	Posttest Reading Comprehension	Pre/posttest Difference Comprehension
Raw Score	16	22	+ 6
Percentile Rank	36	51	+ 15
Stanine	4	5	+ 1
Performance Descriptor	Average	Average	0
National Profile Level	2-3	3	+ 0.5
Reading Age	8.3	9.5	1.2

Amanda's chronological age at the time of the study was 8.4 years. The pre-test indicate her reading comprehension age was 8.3 years. Her performance was described as *average* and she was at a Year 2-3 level on the National Profile.

The posttest of the Neale Analysis of Reading Ability (1999), indicate that her reading comprehension age was 9.5 years. Her performance was described as *average* and she was on a Year 3 level for reading comprehension.

Reading accuracy was assessed by the Neale Analysis of Reading Ability(1999). The Neale Analysis of Reading Ability pre and posttests score summary for Amanda’s reading accuracy is presented in Table 4.14. The pre-test indicated Amanda’s reading accuracy age was 8.4 years and the posttest identified Amanda’s reading accuracy age at 9.6 years.

Table 4.14

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Accuracy Score Summary for Amanda

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Accuracy	Accuracy	Accuracy
Raw Score	44	60	+ 16
Percentile Rank	32	51	+ 19
Stanine	4	5	+ 1
Performance			
Descriptor	Average	Average	0
National			
Profile Level	2-3	3	0.5
Reading Age	8.4	9.6	+ 1.2

The pretests of the Neale Analysis of Reading Ability (1999) reading rate indicated Kim's reading rate age was 7.3 years. The posttest revealed that her reading rate age was 8.0 years at the end of the study.

Table 4.15

The Neale Analysis of Reading Ability (1999) Standardised Tests Reading Rate Score Summary for Amanda

	Pretest	Posttest	Pre/posttest
	Reading	Reading	Difference
	Rate	Rate	Rate
Raw Score	40	49	+ 9
Percentile Rank	14	26	+12
Stanine	3	4	+ 1
Performance			
Descriptor	Below Average	Average	+ 1
National			
Profile Level	1	2	+ 1
Reading Age	6.7	6.11	+ 0.4

The results demonstrate that Amanda's general reading comprehension improved and the next section examines her improvements in the levels of comprehension.

**Literal Comprehension**

Amanda's responses to literal comprehension across the three phases of the study are illustrated in Figure 4.41.



Three sessions of baseline data were collected to establish Amanda's prior knowledge in answering literal comprehension questions. The data are illustrated in Phase A, of Figure 4.41. Amanda's responses were 32% correct for a narrative text in the first session. Her responses were 60% and 50% for the second and third session with expository texts.

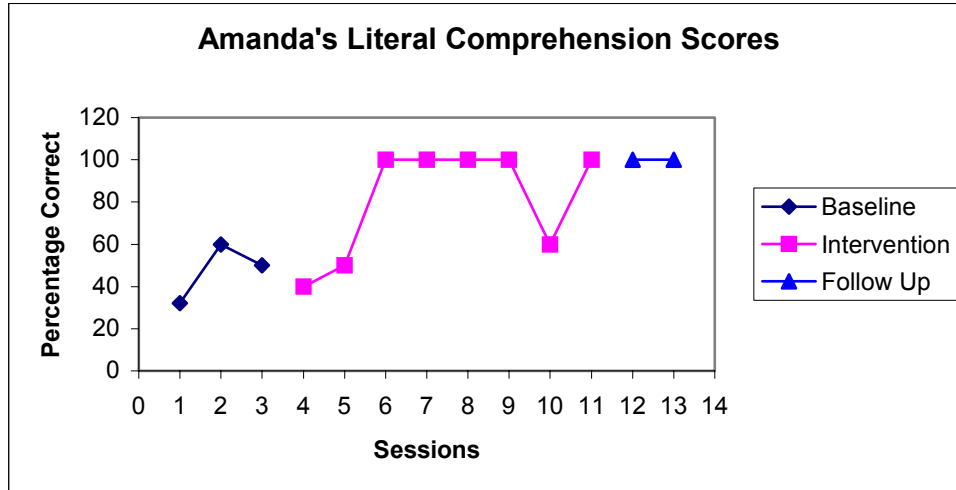


Figure 4.41 Amanda's performance on literal comprehension for baseline, intervention and follow up phases.

Amanda received instruction on the QAR strategies and its cued directive for literal comprehension, 'Find the Facts'. Her responses to the first session in the intervention phase were 40% correct for a narrative. The second and third sessions were expository genres and Amanda's responses were 50% correct for the second and 100% correct for the third. The fourth and fifth sessions were narratives for which her responses were 100% correct for both sessions. Amanda's responses were 100% correct for the sixth session with an expository genre. The seventh session involved a narrative genre for which her responses were 60% correct. Amanda's responses were 100% correct for the eighth session with an expository genre. A comparison of the means between Phases A and B, revealed a mean increase of 40% for Phase B. Apparently, the QAR strategies led to improvements in literal comprehension for Amanda.

In order to ascertain whether there was a text difficulty for genre, means were calculated for each genre in the baseline and intervention phases. The data are presented in Figure 4.40. The mean for genres was 32% for narratives and 55% for expository genres indicating that in the baseline phase, Amanda was experiencing difficulty with narrative genres. The data indicate that Amanda found the comprehension of expository texts to be easier than narrative texts before and during intervention. The QAR reading comprehension strategies for literal comprehension led to improvements in both genres.

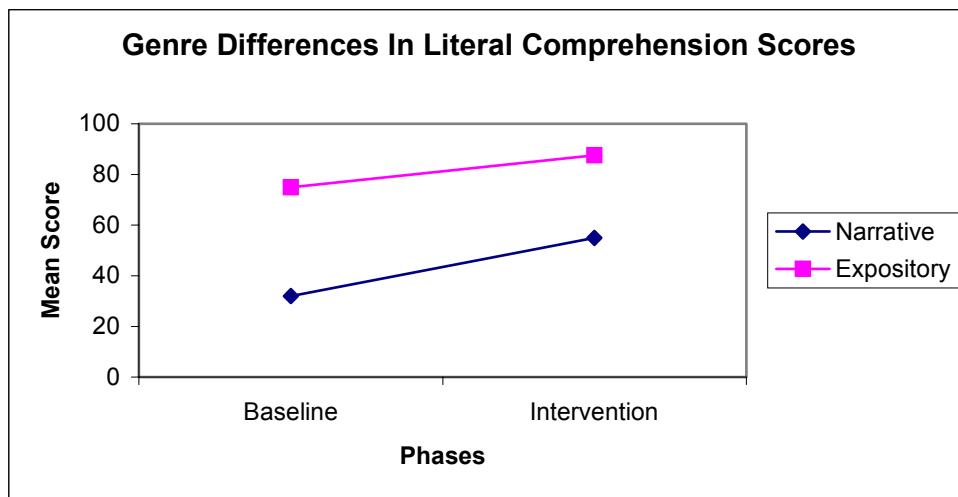


Figure 4.42 Amanda’s mean literal comprehension scores as a function of genre across baseline and intervention phases.

In the two follow up sessions administered a week later, Amanda’s responses were 100% correct for both sessions with narrative texts. The data for the follow up sessions are illustrated in Phase C of Figure 4.41. The data indicate that Amanda was maintaining her command of the QAR strategies for literal comprehension taught during intervention.

### **Inferential Comprehension**

Amanda’s responses to inferential comprehension across the three phases of the study are illustrated in Figure 4.43.

Three sessions of baseline data were collected to ascertain Amanda's prior knowledge on answering inferential questions. The data for baseline are illustrated in Phase A of Figure 4.43. Amanda's responses were 25% correct for the first session with a narrative genre. Her responses were 40% correct for the second session and 42% correct and for the third session. The second and third sessions involved the reading of expository genres.

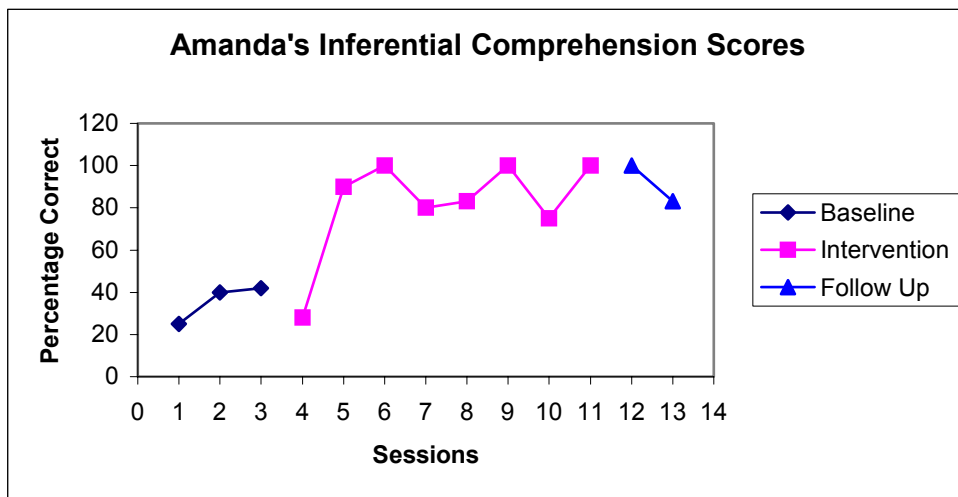


Figure 4.43 Amanda's performance on inferential comprehension for baseline, intervention and follow up phases.

Two teaching sessions preceded each session of testing. Amanda received two QAR lessons on inferential comprehension strategies with the use of the cued directive, 'Use the Clues'. Her responses to the first testing session in Phase B were 28% correct for a narrative reading passage. The second and third sessions were both expository genres and her responses were 90% correct for the second and 100% correct for the third session. The fourth and fifth sessions were narratives and Amanda's responses were 80% and 83% respectively. The reading passage for the sixth session was an expository text for which her responses were 100% correct. This was followed by a narrative passage for which Amanda scored 75%. The final reading passage in the intervention phase was an expository text. Amanda's responses were 100% correct for this. A comparison of the

mean across Phases A and B indicates an increase of 40% for Phase B. Apparently, the QAR strategies for inferential comprehension led to these improvements in Amanda's comprehension.

Means were calculated for narrative and expository genres in baseline and intervention phases to ascertain whether Amanda experienced text difficulty for either of the two genres and are presented in Figure 4.44.

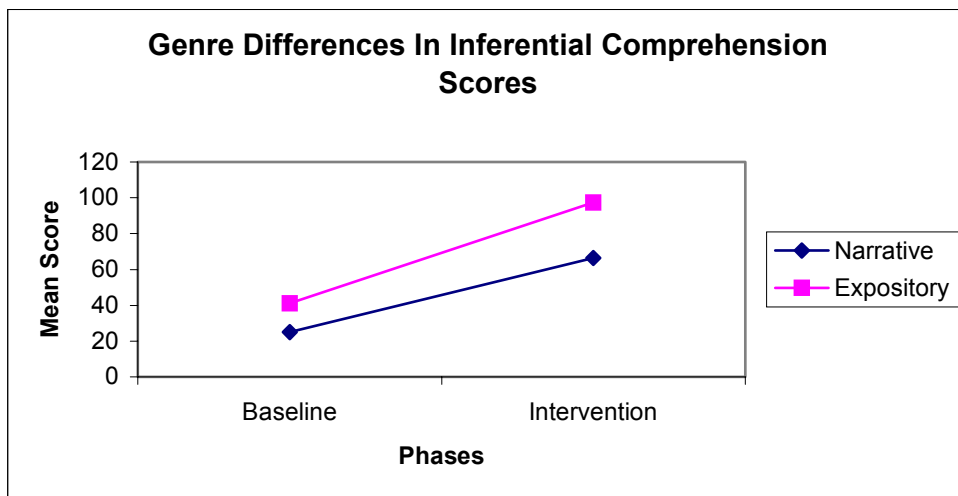


Figure 4.44 Amanda's mean inferential comprehension scores as a function of genre across baseline and intervention phases.

The data for genres indicate some difficulty for Amanda in narrative genres in both phases. The QAR strategies led to improvements in both genres although the improvement between Phases A and B are noticeably higher for expository genres.

Amanda's responses to the two follow up sessions implemented a week later were 100% correct for the first and 83% correct for the second. The reading passages in both sessions were narratives. The data in Phase B of Figure 4.43 indicate that Amanda was maintaining her command of the QAR strategies for inferential comprehension learned in the intervention phase.

## Critical Comprehension

Amanda's responses to critical comprehension across the three phases of the study are illustrated below in Figure 4.45.

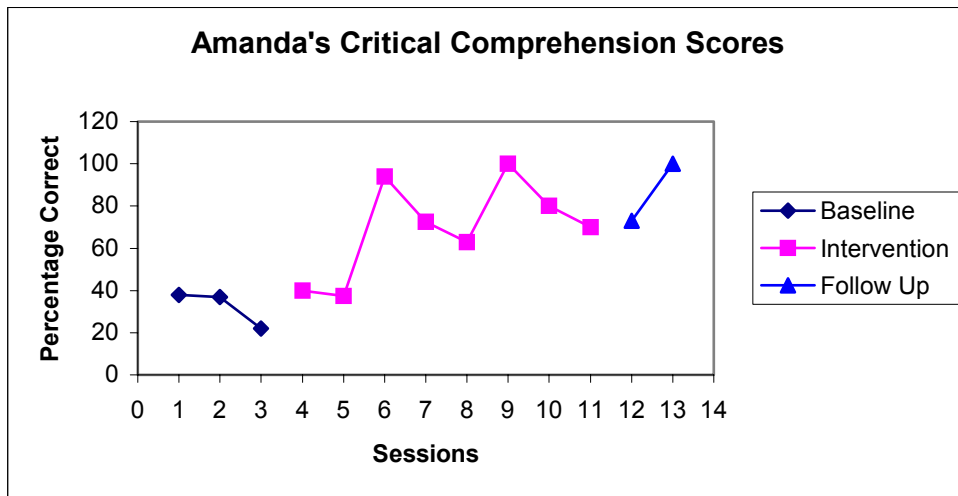


Figure 4.45 Amanda's performance on critical comprehension for baseline, intervention and follow up phases.

Three sessions of baseline data were collected to establish Amanda's prior knowledge on answering critical comprehension questions. Baseline data are presented in Phase A. Her responses were 38% correct for a narrative passage, 37% and 22% correct for the second and third expository passages.

Amanda received two sessions of instruction to one session of testing in the intervention phase. She learned the use of the QAR reading comprehension strategies for critical comprehension and its cued directive, 'Work It Out'. Her responses were 40% correct for the first session with a narrative genre. The next two sessions involved the readings of expository passages. Amanda's scores were 38% for the first and 94% for the second. Her responses to the fourth and fifth sessions were 73% and 63% correct with narrative genres. The sixth session involved the reading of an expository passage and Amanda's scores were 100% correct. Her responses were 80% correct with a narrative passage for the seventh session followed by 70% for the final session of intervention with

an expository passage. The mean increase between Phases A and B was 41%, indicating that the QAR comprehension strategies had improved Amanda's critical comprehension.

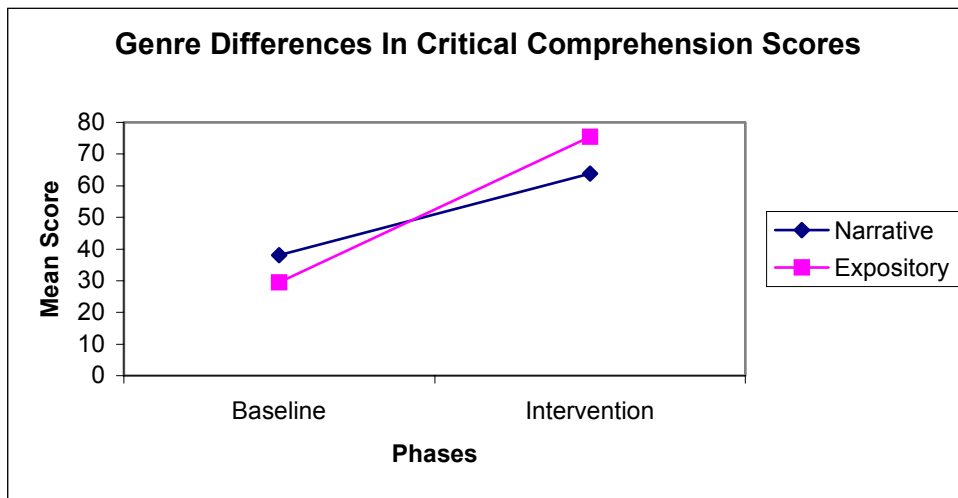


Figure 4.46 Amanda's mean critical comprehension scores as a function of genre across baseline, intervention and follow up phases.

A comparison of the means according to genres presented in Figure 4.46 indicate that although a slight text difficulty was apparent for expository genres in baseline, there is evidence of a slight text difficulty for narrative genres in the intervention phase. The QAR appear to have improved the reading comprehension of both genres at varying levels.

### Creative Comprehension

Amanda's responses to creative comprehension across the three phases of the study are presented in Figure 4.47.

Amanda's prior knowledge of creative comprehension was tested for three sessions of baseline. The results are illustrated in Phase A, of Figure 4.47. Her responses to the first session were 20% correct with a narrative passage. The next two sessions involved expository genres and her responses were 37% and 50% correct respectively.

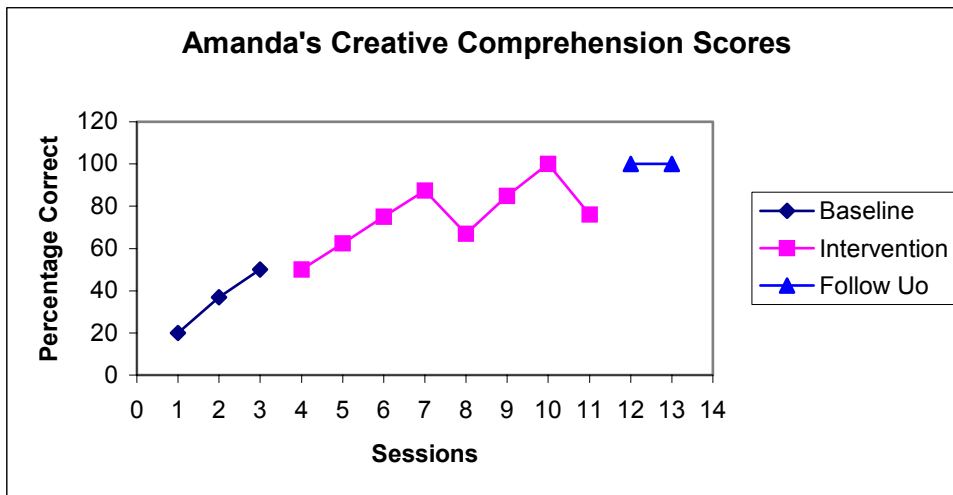


Figure 4.47 Amanda's performance on creative comprehension for baseline, intervention and follow up phases.

Amanda received two sessions of instruction to every session of testing on the QAR strategies for creative comprehension and the use of its cued directive, 'What Do YOU Think?' Her responses to the first session were 50% correct with a narrative text. The second and third sessions required the reading of expository passages. Her responses were 63% and 75% correct respectively. Narrative passages were read for the fourth and fifth sessions and Amanda's responses were 88% and 67% correct for these sessions. Her responses were 85% correct for the sixth session with an expository genre. A narrative followed in the seventh session for which Amanda's responses were 100% correct. For the final session of intervention, her responses were 76% correct for an expository text. Mean differences between Phases A and B revealed an increase of 43% indicating that the QAR strategies for creative comprehension led to improvements for Amanda.

Mean differences were calculated to check whether there was a text difficulty regarding genres. The data for text difficulty regarding genre are presented in Phase C, of Figure 4.48. The data indicate that Amanda experienced text difficulty with narrative genres in both phases. Although the QAR strategies effected improvements in both

genres, the scores for expository genres indicate Amanda found it easier to comprehend expository genres.

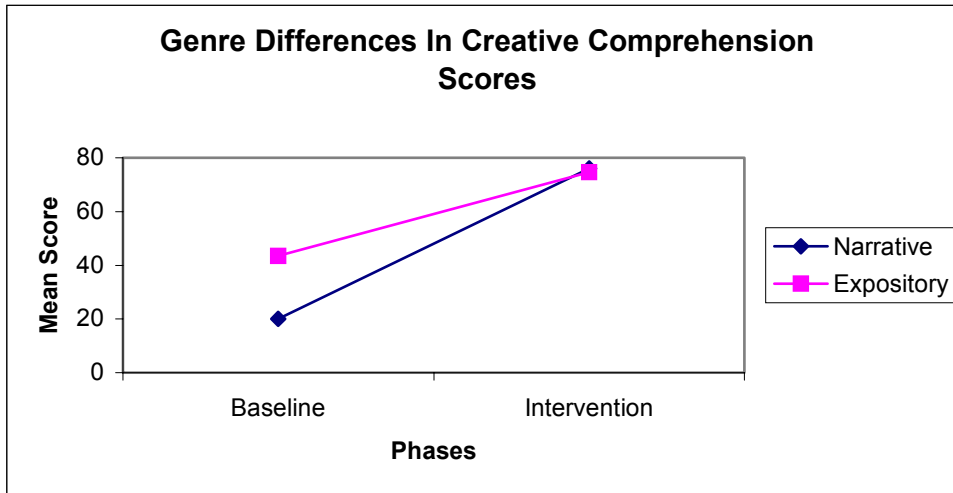


Figure 4.48 Amanda’s mean creative comprehension scores across baseline and intervention phases.

Amanda’s responses were 100% correct for the two sessions of follow up, both narrative genres. The data in Phase C Figure 4.47 indicate that Amanda was maintaining her ability to use the QAR strategies for creative comprehension.

### **Summary of Outcomes Across Levels of Comprehension**

The intervention implementing the QAR strategies improved Amanda’s comprehension at all four levels. Her performances over the three phases of the study are presented in Figure 4.49.

It is evident that the QAR strategies led to improvements on all four levels of comprehension. The relative improvements are greatest for creative comprehension (43%), followed by critical comprehension (41%), literal comprehension (40%) and inferential comprehension (39%).



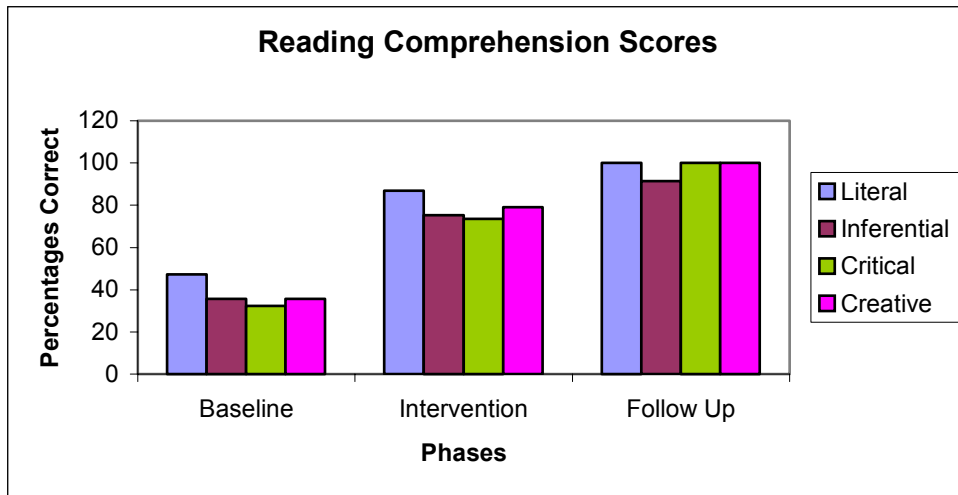


Figure 4.49 Amanda's performance on the four levels of comprehension across baseline, intervention and follow up phases.

### **Anaphoric Pronouns**

Amanda's mean percentages for the resolution of anaphoric pronouns are presented in Figure 4. 50. Amanda's responses were 17% correct for the single session of baseline on the resolution of anaphors.

In Phase B, Amanda was taught how to resolve anaphoric pronouns as an aspect of the QAR strategies for critical comprehension. Only the first, third, fourth, seventh, and eighth sessions presented the opportunity for the resolution of pronouns. Amanda's responses to the first session were 70% correct with a narrative. Her answers for the third session were 66% correct with an expository text. Sessions four and seven required the readings of narrative passages for which Amanda's responses were 100% correct. Her responses to the last session were 80% correct with an expository genre.

Amanda's responses were both 100% correct for the two follow up sessions implemented a week later. The data indicated that she was maintaining her command of the QAR strategies for resolving anaphors.

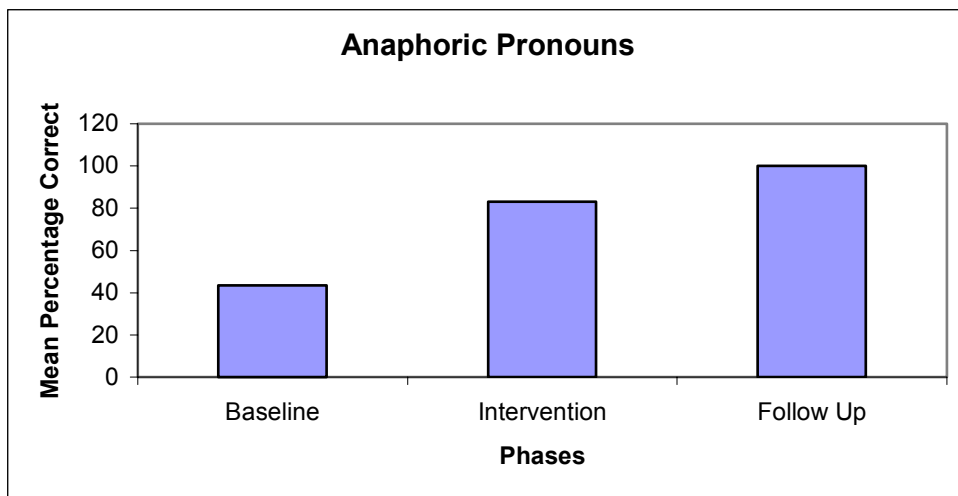


Figure 4.50 Amanda's accuracy for referencing pronouns across phases.

### **Summary For Amanda**

A comparison of the results of the Neale Analysis of Reading Ability (1999) pre and posttests indicated an increase in general reading comprehension age of 1.2 years, apparently resulting from the intervention program using QAR reading comprehension strategies.

The curriculum-based assessment carried out in a teach-teach-test format indicated a rising trend in Amanda's understanding of each of the four levels of comprehension. Baseline data portrayed on the curriculum-based assessment graphs in each of the four levels identified and indicated varying levels of prior knowledge on Amanda's ability in answering comprehension questions. Intervention data illustrated in Phase B on the curriculum-based assessment graphs indicated a rising trend for each of the four levels of reading comprehension at varying levels.

The data on text difficulty across the four levels indicated that Amanda found narratives to be slightly harder to comprehend than expository texts. Regarding the resolution of anaphoric pronouns, Amanda's data indicated a reasonable level of

understanding in the baseline phase. The intervention improved her ability to resolve anaphors as indicated in the follow up data.

The implementation of the QAR strategies for comprehension led to commendable improvement in all the four levels of comprehension for Amanda.

### **Overall Summary of Results**

The objectives of this study were:

- (1) To investigate the effects of the developmental reading approach known as the ‘Question Answer Relationship’ on the comprehension of students with reading comprehension difficulties.
- (2) To investigate whether developmental levels of comprehension namely literal, inferential, critical and creative will predict the performance difficulty of comprehension tasks for students with reading difficulties.

The effects of the QAR a developmental reading approach on the reading comprehension of students with reading difficulties will be summarised first by the Neale Analysis of Reading comprehension as an indicator of general comprehension, and second, considers reading comprehension in each of the four categories or levels namely, literal, inferential, critical and creative comprehension.

### **General Comprehension**

Since the comprehension questions of the Neale Analysis of Reading Ability (1999) were not categorized into literal, inferential, critical and creative levels, the outcomes of the pre and posttests will be summarized as the students’ general comprehension abilities according to reading ages. The pre and posttests reading ages and the differences between these ages for each student are presented in Table 4.16.

Table 4.16

Neale Analysis Of Reading Ability (1999) General Comprehension Reading Ages

Name	Chronological Age	Pre-test Reading Age	Posttest Reading Age	Pre/Posttest Difference
James	9.9 years	6.9 years	10.7 years	3.10 years
Sam	9.10 years	7.3 years	10.4 years	3.1 years
Crystal	9.0 years	7.6 years	8.7 years	1.1 years
Kim	9.3 years	7.10 years	10.1 years	2.3 years
Amanda	8.4 years	8.3 years	9.5 years	1.2 years

The data of the standardised tests indicate that the students were of varied chronological ages and were comprehending at varied levels as indicated by the pre-tests. The posttests indicate improvement in general comprehension for all students again at varied levels. The improvement was apparently a result of teaching the QAR strategies to develop literal, inferential, critical and creative comprehension. It is important to note that with the exception of Amanda, the students were performing at more than two years below chronological ages. Students performing two years below level for no apparent reason are usually considered as having learning disabilities or as in these case studies students with specific reading difficulties. It is also interesting to note that in the posttest all the students' reading comprehension ages (with the exception of Crystal) were noticeably higher than their chronological ages.

### **Literal Comprehension**

The mean scores for literal comprehension scores (% correct) for the five students across the three phases of the study are presented in Table 4.17.

Table 4.17

#### **Mean Percent Correct For Literal Comprehension Across Phases**

---

Name	Phase A Baseline (%)	Phase B Intervention (%)	Phase C Follow Up (%)	Baseline Follow Up Difference (%)
James	38	90	100	62
Sam	40	84	84	44
Crystal	42	86	100	58
Kim	36	93	100	65
Amanda	47	88	100	53

---

Although individual data indicate varying levels of existent knowledge in Phase A and varying levels of improvement in Phase B, the QAR cued directives and the strategies for literal comprehension assisted the students in improving their comprehension of reading at a literal level. The fourth column on the table portrays the difference between the baseline phase that portrays the students' levels of knowledge before intervention was implemented and the follow up phase which depicts the students'

level of maintained knowledge of the QAR comprehension strategies. The QAR strategies for literal comprehension made the biggest improvement for Kim (65%), followed by James (62%), Crystal (58%), Amanda (53%) and Sam (44%). The data indicate that the QAR reading comprehension strategies appear to have improved the students' abilities in literal comprehension.

### **Inferential Comprehension**

The mean inferential comprehension scores (% correct) for all students across the three phases of the study are presented in Table 4.18.

Table 4.18

Mean Percent For Inferential Comprehension Across Phases

Name	Phase A Baseline (%)	Phase B Intervention (%)	Phase C Follow Up (%)	Baseline/ Follow Up Difference (%)
James	13	73	90	77
Sam	35	71	50	15
Crystal	34	69	75	41
Kim	56	82	100	44
Amanda	36	75	92	56

Varying levels of existent knowledge on the concept was conveyed through the data in inferential comprehension as in literal comprehension. The levels of improvement (also varied) are indicated in Phase B, the intervention phase, implying that the QAR strategies and its cued directives assisted the students in their answering of inferential questions. The levels of improvement between baseline, which indicated the student's prior knowledge, to follow up, which indicate the level of knowledge maintained after the implementation of the QAR comprehension strategies, are presented in column four in Table 4.8.

The greatest improvement in inferential comprehension were made by James (77%), followed by Amanda (56%), Kim (44%), Crystal (41%) and Sam (15%).

The data for inferential comprehension indicates that the QAR strategies assisted these students in overcoming their difficulties with reading comprehension.

### **Critical Comprehension**

The mean scores (% correct) for all students for critical comprehension across the three phases of the study are presented in Table 4.19. The baseline data indicate that the students were experiencing difficulties in critical comprehension before the intervention program was implemented. Differences between baseline and follow up phases presented in column four indicate the growth in the understanding of critical comprehension strategies developed by QAR.

The greatest improvements in critical comprehension were made by James (945%), followed by Sam, (70%), Amanda, (68%), Kim, (65%), and Crystal, (58%).

Table 4.19

Mean Percentage For Critical Comprehension Across Phases

Name	Phase A Baseline (%)	Phase B Intervention (%)	Phase C Follow Up (%)	Baseline/ Follow Up Difference (%)
James	5	71	100	95
Sam	5	61	75	69
Crystal	18	66	77	58
Kim	35	61	100	65
Amanda	32	83	100	68

**Creative Comprehension**

The mean scores (% correct) for creative comprehension for the three phases of the study are presented in Table 4. 20. Again, improvements are apparent in Phase B, for all the students. Differences between baseline and follow up phases presented in column four indicate the progress made via the QAR strategies for creative comprehension.

The greatest improvements in creative comprehension were made by Sam (73%), followed by James, (65%), Amanda, (64.4%), Kim, (59%), and Crystal (57%).



Table 4.20

Mean Percent For Creative Comprehension Across Phases

Name	Phase A Baseline (%)	Phase B Intervention (%)	Phase C Follow Up (%)	Baseline/ Follow Up Difference (%)
James	25	71	90	65
Sam	27	56	100	73
Crystal	33	64	90	57
Kim	31	82	90	59
Amanda	36	79	100	64

**Anaphoric Pronouns**

As mentioned earlier the resolution of anaphoric pronouns was an aspect of critical comprehension and the students' success with critical comprehension, as well as the other three levels of comprehension was dependent on this skill. The mean scores (% correct) for all students for anaphoric pronoun resolution across phases are presented in Table 4.21. The data demonstrate that the QAR instructional strategies are associated with improvements from baseline to intervention. Differences between baseline and follow up phases presented in column four indicate the levels of improvement effected by the QAR strategies for the resolution of anaphoric pronouns.

The greatest improvements were made by James and Kim (83%), followed by Crystal, (77%), Amanda, (57%), and Sam (26%).

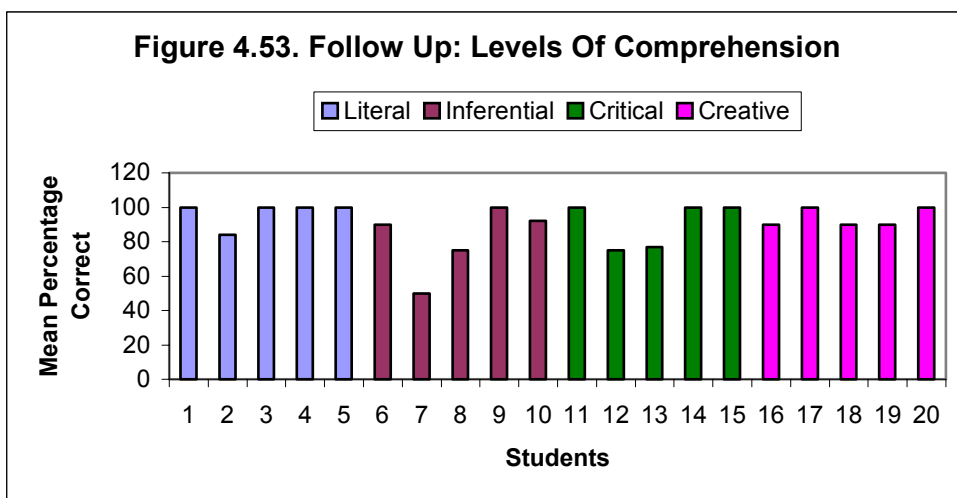
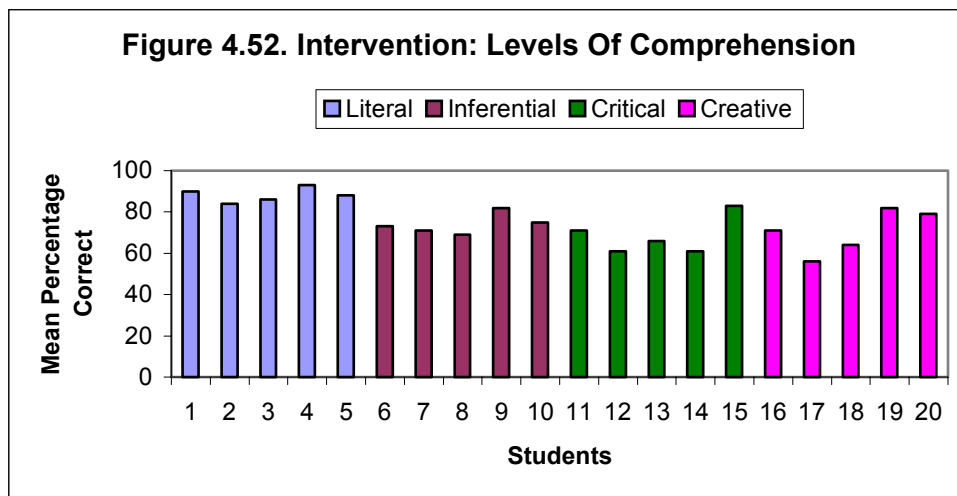
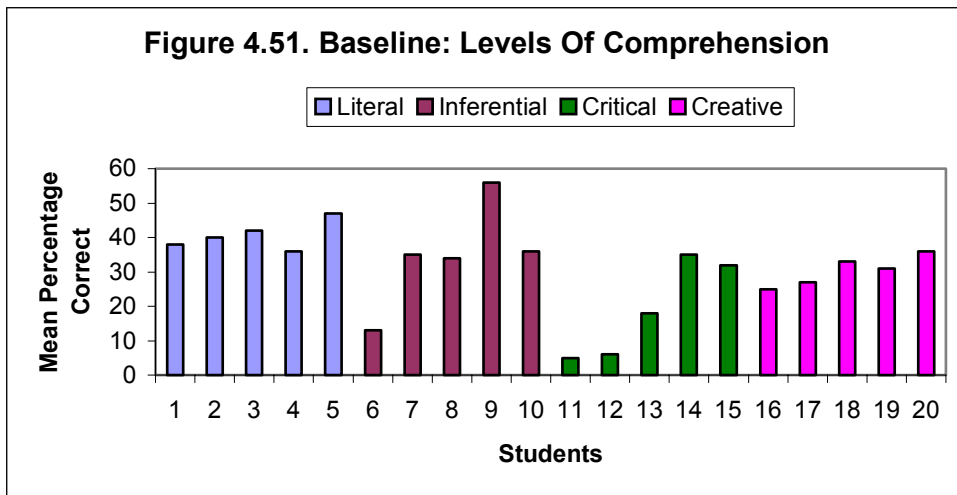
Table 4.21

Mean Percentage For Anaphoric Pronouns Across Phases

Name	Phase A Baseline (%)	Phase B Intervention (%)	Phase C Follow Up (%)	Baseline/ Follow Up Difference (%)
James	17	82	100	83
Sam	34	83	60	26
Crystal	17	67	94	77
Kim	17	81	100	83
Amanda	44	83	100	57

**Performance Difficulty Of The Four Levels Of Comprehension**

The data for the performance difficulty of the four levels of comprehension are presented in Figure 4.51 for baseline, Figure 4.52 for intervention and Figure 4.53 for follow up.



Figures 4.51, 4.42 & 4.53 Mean scores in levels of comprehension for baseline, intervention and follow up phases.

Note: Data bars 1, 6, 11 & 16 = James'; 2, 7, 12 & 17 = Sam's; 3, 8, 13 & 18 = Crystal's; 4, 9, 14 & 19 = Kim's and 5, 10, 15 & 20 = Amanda's.

Regarding the performance difficulty of the four levels of comprehension, it is evident literal achieved the highest scores for all but one student in baseline. In the intervention phase it was evident that literal was the easiest. It was also the easiest of the four levels in the intervention and follow up phases for all the students in the study.

Critical comprehension scores tended to be the lowest in the baseline phase for four of the five students, but that difficulty was addressed when the QAR strategies for critical comprehension were implemented in the intervention phase and follow up phases. There is no evidence of systematic variation in the performance difficulty as a function of level with the exception of these trends

A comparison of the text difficulty of genres revealed that there was little variation between the comprehension difficulty of narrative and expository genres. Although most of the students in this study appear to have comprehended expository genres with slightly higher levels of success than narrative genres the differences were small and require further research. However, it is evident that all the students despite their differences in background knowledge or learning needs, benefited from the five weeks intervention program that implemented the QAR reading comprehension strategies.

# **Chapter V**

## **Discussion**

This study was designed to evaluate the effectiveness of the reading comprehension approach known as the Question Answer Relationship on students with reading comprehension difficulties, and to identify the performance difficulty associated with the four levels of comprehension. The outcomes of the study will be discussed in relation to each research objective followed by a discussion of their implications for further research and teaching practice.

The first objective investigated whether the developmental reading comprehension approach known as the Question Answer Relationship (QAR) strategy would assist students with reading comprehension difficulties to improve their reading comprehension of a variety of texts and genres at a specified level of reading difficulty. Overall, the effects of the QAR strategy on reading comprehension were positive with all five case studies.

### **QAR and the Four Levels of Comprehension**

The general learning behaviour of each child in baseline and intervention phases for each level of comprehension will be described followed by the QAR strategies instruction for each level.

### **Literal Comprehension**

Observations of James' behaviour in baseline and in the early stages of intervention indicated that he was highly distracted and had difficulty in following instructions. James was a hard worker but answered questions randomly. He appeared to think that word recognition and participating in discussions were the major purposes of reading. He had no idea that answers could be wrong. James was quick at learning the use of keywords, but had some difficulty understanding the word 'facts', in the cued directive 'Find the Facts', which clearly limited his application of the cue. However,

after five or six sessions of instruction his capacity to locate facts improved and led to better literal comprehension.

Sam had a poor self-concept, and exhibited a low profile. He was cooperative and tried to follow instructions but would not ask for help. His work needed close monitoring especially during the phasing out stage of scaffolding. The variance in Sam's data for literal comprehension indicated that Sam was not consistent in the use of the QAR strategies for literal comprehension. He understood the term, 'Find the Facts', but often appeared to disregard the QAR strategies and would revert to his random reading behaviour apparent in the baseline phase. This is consistent with the Brown (1980) study which found that students with reading difficulties often fail to use the strategies they have been taught to assist them overcome their difficulties. Sam needed continuous reminding to use the QAR strategies for literal comprehension and to keep him from reverting to his previous reading behaviours.

Crystal's learning behaviours during baseline and in the early intervention phases demonstrated she had some attention problems. She was eager to participate in the study but was easily distracted. She needed to be reminded constantly to focus on the task and would rush into her work when redirected. Crystal was in the phonetic stage of spelling and this affected her written answers, not because correct spelling was part of the score, but because she knew her spelling was incorrect and this added to her distraction. Her initial attempts at literal comprehension were random but she soon mastered the keyword strategy and relied on it heavily when answering literal comprehension questions. Her work samples also indicated uncertainty since many of the initially chosen multiple-choice answers for literal comprehension were scratched out and new ones chosen. Crystal had poor vocabulary knowledge and needed support in defining the meaning of individual words. For example, she could not understand why the word 'whom' was part of the text and insisted it was a printing error. This lack of word knowledge apparent in Crystal could have contributed to her poor general comprehension skills and supports the statement by Rosenshine (1980) that vocabulary development plays an important role in reading comprehension.

Kim had good study behaviours. She was aware of her difficulties in reading comprehension and was a keen student. She was organized and neat and did not appear troubled with work organization or presentation, as is often prevalent in students with learning difficulties. Kim appeared to have some prior knowledge in answering literal comprehension questions. She was quick to learn and apply the cued directive and the strategies relevant to literal comprehension. Kim's reading comprehension failure in literal comprehension is difficult to explain and may be related to a lack of teaching of reading comprehension as indicated by and Dymoch and Nicholson (1999) and Maria (1990). Kim's school background differed from the rest of the students in the study. She had recently moved from Melbourne, her parents had been divorced for several years and these family issues may have affected Kim's learning, especially in her early years of reading.

Amanda also had well developed learning behaviours. She was cooperative, listened attentively, and tried hard to following instructions. Amanda's baseline data indicated the highest level of prior knowledge on literal comprehension amongst the five students. Amanda had some problems internalizing the cued directive and strategies for literal comprehension. This could be due to the ingrained nature of the strategies she had been using prior to the study and suggests she was slow to apply the new strategies she had learned in the instructional sessions. This slower rate of transfer has been proposed by Brown (1980) to be a likely behaviour of students with reading comprehension difficulties. However, as the new reading comprehension strategies were gradually introduced, Amanda's literal comprehension improved.

The five case studies indicate substantial improvements in literal comprehension for all five students and the outcomes are consistent with the results of Ezell et al (1996). The QAR strategies appeared to be effective for different reasons with different individuals. James benefited from instruction in locating 'facts'. Sam and Crystal benefited from the more structured approach, Kim and Amanda appeared not to have received instruction previously and benefited from its introduction.

### **Inferential Comprehension**

James' had poor prior knowledge in answering inferential questions in the baseline and intervention phases. He kept scratching out the multiple-choice answers to inferential questions in the early stages of intervention indicating he was unsure of his answers but knew that a random selection was not enough. This suggests that James was starting to monitor his comprehension (which he had not done in baseline) and indicates a growing understanding of the purpose of reading.

Sam took a much longer time to select his answers to multiple-choice questions in inferential comprehension when he was unsure of himself in the early stage of intervention. However, he did not scratch out previous attempts as James had done, which indicates his responses were not random and he was playing the role of the reading detective as prompted by the cued directive for inferential comprehension. His progress was steady during the intervention phase demonstrating he was applying the QAR strategies systematically.

Crystal's lack of attention and poor work habits affected her performance in inferential comprehension. Her baseline performance was erratic and the variability in her performance continued into the intervention phase. She needed more support and redirection than the other students in the group. Her performance overall was erratic suggesting that she found inferential comprehension difficult, consistent with other studies demonstrating that poor readers often experience difficulty in making inferences from texts and integrating the ideas in them (Kamhi, 1997; Yuill & Oakhill, 1991).

Kim started out with a reasonable understanding of inferential comprehension. In fact, it was her strongest level. Her learning behaviours mentioned for literal comprehension were similar to those in inferential comprehension. She appeared to be quite knowledgeable at making inferences from text and demonstrated an appropriate integration of background knowledge. A gradual improvement in her understanding of



inferential comprehension during the intervention phase revealed that Kim was using the QAR strategies, which improved her ability to achieve inferential comprehension.

Amanda appeared to have some understanding of inferential comprehension strategies before the intervention program. The implementation of the intervention program instructing her on the QAR strategies had no positive effects in the early stages, and it was evident that Amanda was reverting to the strategies she had been using before the intervention, again demonstrating the ‘resistance’ that has been noted elsewhere (Brown, 1980). However, her scores improved as she adopted the QAR strategies more effectively.

Observations of the students’ learning behaviours during the baseline, and intervention phases suggest that several aspects of the QAR strategies contributed to their improvement. The cued directive for inferential comprehension was ‘Use the Clues’ suggesting that the answers were not text explicit as in literal comprehension. A prompt question “Who uses clues?” elicited the answer, “A detective”. Students learned that they had to be reading detectives in searching the text and apply their own understanding of the topic to answer the questions. A brief discussion of the meaning of the question followed a student’s reading of the question. The students would then select a multiple-choice answer and give reasons for the choice of their answer in relation to the question and the text. In the instructional sessions, the teacher used think aloud strategies and revisits to the text to model choosing the correct answer.

The five case studies indicate substantial improvements in inferential comprehension for all the students and confirming that the QAR strategies were effective, consistent with the results of Ezell et al (1996).

### **Critical Comprehension**

James’ understanding of critical comprehension before intervention was very poor. His answers to critical comprehension questions in baseline were random and had little relation to the question. Often his answers were a repetition of the last word in the

question that clearly indicated James' poor understanding. James did not use background knowledge in producing his answers and observations indicated that James disassociated himself from the text. It is difficult to know whether this was related to his significant history of reading deficit or whether it was partly attributed to his indigenous social and cultural background. Whilst some of the expository reading passages in the study were on Australia, and indigenous Australians, the authors were indigenous Australians (Abu Rabia, 1998).

Sam demonstrated very little prior knowledge in critical comprehension. The accuracy of his answers in critical comprehension fluctuated throughout the intervention. He needed constant reminders to use the back-chaining strategies for resolving anaphors in critical comprehension. He often did not back-chain enough for a correct resolution of the anaphor but would settle for the nearest noun, a tendency noticed by Yuill and Oakhill (1991) in their study on the resolution of anaphors. Sam also appeared to overuse his background knowledge, sometimes applying it out of context. This was noticed when Sam focused on single words in the question rather than the overall meaning in the question. Sam had a good understanding of certain subject specific vocabulary and this strength was used to draw him out and get him to be more involved in the discussions.

Crystal's prior knowledge in critical comprehension was poor. She took a long time in learning to apply the strategies for critical comprehension. Crystal had difficulty deciding whether a statement was a fact or an opinion, and evaluating the accuracy of texts. She also had some trouble understanding the strategies in resolving anaphors. The concept was eventually grasped with repeated modeling and scaffolding by the teacher and by her observations of Kim and Amanda as they worked on the concept. The variance in data indicates that Crystal did not internalize the QAR strategies until the sixth session. The data indicated that she found critical comprehension a difficult concept. Besides the inconsistency of her learning behaviours, observations indicated that Crystal was not applying her background knowledge in answering critical comprehension questions. This may have been due to her lack of conceptual or world knowledge and could have been a major factor behind Crystal's difficulties as suggested

by Kamhi (1997). Another factor that may have added to her difficulty was that students had to produce written answers rather than select them, since multiple-choice formats were not used as in literal and inferential comprehension questions. However, with repeated modeling of the QAR strategy and extra support from the teacher and peers, Crystal's critical comprehension did improve towards the end of the intervention.

Kim's baseline data for critical comprehension indicated that she had some understanding in answering critical comprehension questions before the intervention. Around the fifth session, Kim was able to identify character traits by applying background knowledge to text in answering critical comprehension questions. Kim learned back-chaining strategies to resolve anaphors and appeared to monitor her understanding. The reasons she gave to back up her answers indicated Kim had started to successfully apply the QAR strategies for critical comprehension around the sixth session of intervention. Kim's difficulty in critical comprehension before intervention was possibly due to her poor anaphoric resolution (Yuill & Oakhill, 1991). The developmental comprehension strategy known as the awareness strategy worked on developing conceptual knowledge, (EDWA, 1995) and assisted Kim in overcoming her difficulties in critical comprehension.

Amanda's baseline data indicated some prior knowledge on critical comprehension, especially in the resolution of anaphors. Intervention of the QAR strategies indicated a steady improvement. As mentioned earlier Amanda was the student with the least problems and her difficulty could have been a result of the inadequate teaching of reading comprehension strategies in the classroom as mentioned by Dymoch and Nicholson (1999) and Maria (1980).

The findings of this study indicate that the QAR strategies for critical comprehension were highly successful for all students. In fact, critical comprehension was the level in which the greatest improvements were achieved. This contradicts the study by Ezell et al (1996) who found that the QAR training for critical comprehension was less effective than it was for literal and inferential comprehension.

The variance in data for all the students in critical comprehension is seen as an indicator of the level of complexity that critical comprehension posed to the students, until the QAR strategies were mastered. A brief review of the QAR strategies for critical comprehension follows.

The QAR cued directive for critical comprehension was ‘Work It Out’. Students had to comprehend beyond the text since critical comprehension was text implicit and background knowledge and personal values could be involved in answering critical comprehension questions. Students also had to evaluate the quality and accuracy of text. They identified character traits, by revisiting the text to search for implicit information on characters in the reading passages and applied conceptual knowledge. Students also learned back-chaining skills to resolve anaphors and this was a new skill for the students. The success of the QAR strategies in critical comprehension relative to the text Skill Builders: Reading Comprehension, was that the concepts were staggered. Skills were introduced gradually moving from simple to complex skills. Mastered skills were maintained as new skills were introduced so the students experienced success with the previous skill as they learned the new ones. The consideration of student success kept the students motivated when difficult concepts were introduced.

### **Creative Comprehension**

James’ baseline data for creative comprehension indicated a descending baseline. He demonstrated a steady improvement during the intervention phase. Once James learnt that the answers to creative comprehension were related to his own perspectives and an expression of new ideas, he grew quite comfortable in answering creative comprehension questions. He learned that the ideas of his peers were often different to his and that there could be more than one correct answer. In the early stages of intervention, his answers were rather random but he caught on to the concept by observing the modeling of individualized answers and listening to the reasoning behind the answers. James learned that he had to apply background knowledge to text and analyze the questions carefully.

Sam's baseline data for creative comprehension indicated a downward trend, suggesting that Sam may have found it difficult to understand and use the QAR strategies for creative comprehension. He took time to understand that his answers to creative comprehension could be different to the others. He tried to revisit the text to find the answers and had to be redirected to express his own ideas. Sam would ask to be the last one chosen to give his oral answers during the instruction sessions. This may have been due to his uncertainty with the concept. Perhaps, he needed to hear the answers of the other students before making his decision or his low self-concept may have caused him to doubt himself. Sam needed a lot of scaffolding and drawing out in creative comprehension until he understood the QAR strategies for creative comprehension. The instructional scaffolding may have assisted Sam in understanding and applying the QAR strategies for creative comprehension and also in resolving his personal uncertainties in responding.

Crystal's baseline data for creative comprehension is not as variable as in her inferential and critical comprehension. This suggests that she found creative comprehension less difficult than inferential or critical comprehension. The discussions and the cued directive 'What do YOU think?' assisted Crystal in stating her opinions in response to the question. Initially there was an inappropriate use of background knowledge but with explaining and modeling, Crystal was able to produce answers that linked her background knowledge to text. The lack of conceptual knowledge (Kamhi, 1999) could have been the major reason for Crystal's initial difficulty in creative comprehension.

Kim's baseline data for creative comprehension indicated she had some knowledge of the concept. She improved steadily during intervention and did not need the extra support or scaffolding, probably because she was attentive, had good study habits and had a keen desire to learn. Once Kim had internalized the QAR strategies, her applications of the strategies were noticeable, especially the integration of background knowledge and text. The explicit instruction in QAR strategies for creative comprehension apparently led to her improvement.

Amanda's baseline data for creative comprehension indicate an ascending trend. The intervention of the QAR strategies produced a steady improvement although she sometimes over relied on background knowledge and applied it out of context, as mentioned in previous studies by Yuill and Oakhill (1991). Amanda took time to learn that she had to analyze the questions more carefully before answering the questions. She sometimes took the QAR cued directive for critical comprehension 'What do YOU think?' too literally.

The five case studies indicate substantial improvements in creative comprehension for all five students and indicate that the QAR strategies for creative comprehension were effective, contradicting the findings of the Ezell et al. (1996) study that found training did not help with creative comprehension since the answers did not depend on the text but on prior knowledge. This difference may have occurred because the students in this study received instruction on how to apply their background knowledge in answering creative comprehension questions.

Yuill and Oakhill (1991) state that prior knowledge used inappropriately inhibits rather than extends reading comprehension. Therefore, it is important that students receive guidance in their application of background knowledge. Students in this study received guidance and scaffolding during the instruction sessions. Differences in background knowledge amongst students were valued in the discussions that occurred during the instructional sessions and each child contributed to the reading topic. The students learned that answers could be different and yet considered correct when students gave reasons for their answers from their own perspective. The answers to creative questions were not short answers and were supported by written explanations. Schema building (Choate et al, 1995) and awareness strategies (EDWA, 1995) were two main strategies used to develop the creative comprehension skills of the students in this study.

It is clear that some of the students (James, Kim and Amanda) learned how to use the strategies earlier than the others. Although there were differences in the number of

lessons it took for each student to understand and employ the QAR strategies for creative comprehension, the strategies did improve the ability of all the students to answer creative comprehension questions. A brief review of the QAR strategies for critical comprehension follows.

The QAR cued directive for creative comprehension ‘What Do YOU Think?’ allowed the students the freedom of expressing new ideas and the application of issues raised in real life situations. For example, questions such as, ‘What would you have done if you had the same problem?’ helped the reader to focus on the problem from his/her point of view. More than one correct answer allowed the reader freedom of thought but within a context. Individual perspectives and opinions were valued and the range of answers promoted discussions during the instructional sessions as stated by Kamhi (1997).

The Australian qualities of the text also contributed to the success of the program since its reading passages were socially, culturally and geographically linked to the students and increased the probability that the students had some background knowledge related to the reading passages.

### **QAR and the Transactional Model of Reading**

The three principles of the transactional model of reading strategy instruction were apparent in the instructional sessions when the QAR strategies were taught in this study and merit recognition.

- (a) Long term instruction requires an active thinker to use the text as a starting point for constructing meaning (Kamhi, 1997). The literal comprehension strategies of QAR reflected this principle since literal comprehension is categorized as text explicit and students often returned to the text in order to refer to facts that were explicitly stated, and to substantiate some of their answers in critical and inferential comprehension levels.
- (b) Interpretation can differ depending on the reader or group of readers (Kamhi, 1997). The differing interpretations were apparent when issues regarding cultural and personal

values were included in the critical comprehension questions. For example, one pair of questions on a reading passage on 'Boy Convicts' asked, "What word in the passage tells us that most of the prisoners were unable to read or write? Does this tell us anything about the sort of people who became convicts?" (Aylward, 1983).

(c) There are lively discussions of text when students are exposed to diverse reactions to the text (Kamhi, 1997). During instructional sessions, lively discussions did occur especially when a student rationalized his/her choice or response to a question. This rationalizing was apparent in Kim and Amanda in the early stages of the intervention phase since they were quicker to imitate the modeled behavior of the instructor during the scaffolded instruction as described by Meyer (1993). James, Sam and Crystal were noticeably influenced by peer modeling rather than adult modeling and when they observed watched their peers instead of the instructor. The size of the group allowed for quality interaction between its members and group size also contributed to individual feedback during discussion and enabled the drawing out and eliciting of individual answers from less verbal students like Sam (Maria, 1980).

### **Performance Difficulty and the Four Levels of Comprehension**

The second objective of this study was to investigate whether the developmental levels of comprehension literal, inferential, critical and creative would predict the performance difficulty of comprehension tasks for students with reading difficulties.

At baseline, the order of difficulty was from literal, inferential, creative and critical comprehension. The students found critical comprehension was more difficult than creative comprehension because it involved the resolution of anaphors and required the reader to evaluate and draw conclusions from the text using prior knowledge. Creative comprehension on the other hand required an expression of new ideas on the topic which meant that the students could relate to past experiences, other incidences or stories they had heard in relation to the topic. In brief, the reader needed to explore out of the text for creative comprehension, whereas for critical comprehension they needed to focus into and analyze the text.



During the intervention phase the easiest level of comprehension was literal followed by inferential, creative and critical. At the follow up phase, literal, critical and creative were maintained but inferential dropped for two of the five students.

Overall, the data indicates that literal comprehension was the easiest level before, during and after intervention. Literal comprehension may have been the easiest for these students due to the exposure of literal questions in the classroom. Dymoch and Nicholson (1999) reported that the majority of questions asked by teachers in most classrooms were literal comprehension questions.

Although there was a marked difference in difficulty for critical comprehension in three of the students during the early stages of the study, this difficulty was less apparent toward the end of the intervention sessions. This indicates that the intervention for critical comprehension was effective and the resolving of anaphoric pronouns, (one of the strategies used in critical comprehension) may have played an important role for the students' changes in understanding of critical comprehension.

By the end of the intervention phase inferential, critical and creative comprehension indicated approximately the same level of difficulty with some individual differences. This indicates that the intervention was very effective, and the QAR cued directives and strategies for the comprehension of each level together with the scaffolding and modeling assisted the students in improving their reading comprehension.

### **Text Difficulty**

This study also investigated the variation in comprehension associated with narrative and expository genres. The reason this was investigated was because the literature suggested that many students experienced reading comprehension difficulty with expository texts (Dymoch & Nicholson, 1999). This difficulty according to Beck and McKeown (1989) was due to the imbalance between narrative and expository texts in the early years of schooling. Apparently, narrative texts were used far more often than

expository texts in the early years of schooling and the limited exposure to expository texts resulted in reading comprehension difficulty with expository texts for skilled and poor readers. Maclellan (1997) suggests the poor knowledge on the structures of expository genres inhibit the use of extant knowledge, while Cook and Mayer (1988) state that a knowledge of common expository texts structures assists readers to focus on high and low levels of comprehension.

The findings of this study however, indicate that this particular group of students experienced little text difficulty with narratives relative to expository texts. The results for expository genres were positive, and this was contradictory to the literature on genre difficulty for students with reading difficulties. These contradictory results could be because the reading levels were the same for both genres. Instructional strategies also pre-taught new vocabulary encountered in the passages and this could have eradicated one of the factors known to be related to the difficulty of comprehending expository texts. Another reason for the difference in findings regarding expository genres could be related to the text. The text used in this study was an Australian text. The students in this study may have experienced more difficulty with American or English texts or reading passages related to other countries or cultures.

Moreover, the failure to comprehend expository texts (Dymoch and Nicholson, 1999; Maria, 1990; Maclellan, 1997) and could be related to the reading difficulty levels of content area texts such as science and social studies texts. Many content area texts are one to two reading levels higher than reading material generally used in the classroom (Lerner, 1997). For students who experience reading difficulty at the generally accepted year level, comprehending texts that are one to two reading levels higher would be problematic for any genre, whether narrative or expository. As mentioned in the Method chapter, the reading text used in this study was a Year 3 level text although the students were in Year 4. This lower level was selected to meet the students reading ability levels for both accuracy and comprehension.

The findings related to text difficulty suggest that if the reading material of content area expository passages is at an appropriate reading level and if new vocabulary were pre-taught there could be fewer instances of reading comprehension failure with expository texts.

### **Limitations of the Study and Implications for Future Research**

Although the results show that the QAR strategies improved reading comprehension at all levels, there are several limitations to the study. The first limitation is the case study method since it does not permit the generalizations of outcomes as some other methods of research that include larger numbers of students do. There was no control group in the study and the students' progress was measured against their own data from previous sessions. However, students with reading disabilities are a diverse group and reading comprehension failure stems from many different factors. In situations like that of the present study, where the learning problems and needs are diverse and individualistic, or when there are a limited number of students participating in the study, case studies are an acceptable method of investigation (Felton, 2001).

The QAR strategies were not compared to other comprehension strategies and there could be other strategies that are better, or just as good. Further research is necessary to evaluate the effectiveness of the QAR in comparison to other reading comprehension strategies.

Instructions on the QAR strategies in this study were implemented with students in the middle years of primary years of school (ages 8-10). Suggestions that successful meta-cognitive training require a certain level of students' maturity in development (Ackerman, 1984; Miller, 1985) and previous research on strategy training, (Dermody and Speaker, 1995) influenced the author to choose students at a Year 4 level. Further research is required to investigate its effects on younger students to ascertain the appropriate age level for the introduction of the QAR strategies. The QAR strategies may prove dysfunctional for younger students in relation to their developmental level if

there is insufficient cognitive development to support strategy instruction. On the other hand, the QAR strategies may be ideal for older students with chronic reading comprehension failure. The QAR strategies may provide a cost effective strategy for students experiencing reading failure in upper primary and high school. The QAR strategies de-emphasize the role of oral reading and focus on reading comprehension as the primary purpose of reading, in line with the requirements and expectations of upper primary curriculum.

The study was limited to exploring the QAR strategies at receptive levels. The next stage of this research is to shift from receptive to expressive levels i.e. to train the students to ask questions of a reading passage on the four levels, *literal*, *inferential*, *critical* and *creative*, to ascertain whether the teaching of the QAR strategies will be as successful with expressive as receptive levels.

The QAR strategies were taught to only five students in a small group setting with just one reading text. Future research is necessary to investigate the effects of the QAR strategies on complete mainstream classes that include students with specific learning difficulties. Research in mainstream classes could also trial content area texts such as science and social studies texts that utilize expository genres.

Lastly, there are some limitations associated with the implementation of the study in the field. For example, four baseline sessions using two narratives and two expository texts would have produced more accurate baseline data. Follow up sessions inclusive of both genres, should have taken place after a longer lapse of time to better ascertain the retention levels of the students. However, constraints on time and availability in applied settings had to be considered in the implementation of the study.

### **Implications for Practice**

The study shows that reading comprehension instruction can assist students with comprehension difficulties. To ensure that students do not experience reading comprehension difficulties the explicit teaching of reading comprehension strategies is

necessary and should be included as an integral part of regular reading programs. Just providing material and time for reading is not enough to promote meta-cognitive skills of strategy development in students (Brown, 1980; Dymoch & Nicholson, 1999; Maclellan, 1997). The pre-tests indicated that Amanda's reading comprehension age was similar to her chronological age, yet her classroom teacher believed she was experiencing difficulties in reading comprehension. Overall, Amanda's performance demonstrated the least variance indicating she found the comprehension strategies less difficult than the rest of the group. Amanda's results indicate that the QAR strategies would assist the students in mainstream classes as well as those with specific reading difficulties although the latter students would require more assistance and longer periods of scaffolding.

The study shows that significant remediation of students with specific learning difficulties in reading comprehension could be achieved in a relatively short intensive period. Instruction targeted on comprehension also increased the students' motivation to read. There was a noticeable change in the attitudes of the students toward reading as they began to comprehend reading. Success was the key to motivation and the students grew confident in their answers to critical and creative comprehension questions as they achieved success. The intervention could be closely monitored because data-based approaches were used in a Teach-Teach-Test method (Choate et al, 1995). The data-based approaches indicate a students' levels of accuracy before intervention, whether the intervention was working, the progression of improvement and when the students achieved mastery. Data-based approaches also made it possible to inform the students of their scores and this created a desire in the students to succeed.

Similar data-based approaches can be used in mainstream classes using more teaching to testing sessions. For example, the teaching of the QAR strategies could be implemented for four days and the testing carried out one day a week. It is important not to carry out the testing sessions on Fridays as student fatigue could have negative effects. The time frame could be stretched out over the school year and include the teaching of reading comprehension strategies as part of the regular reading program. QAR strategies could be a part of science and social studies instruction using content

area text in integrated programs. This would work well in primary classes where the teacher teaches the majority of subjects. QAR strategies would also work well in self-contained classes in upper primary, which cater for the majority of students with specific learning difficulties. Peer-tutoring approaches are another solution to the provision of extra help with the QAR strategies for students with reading comprehension difficulties.

The results of the study show that the QAR strategies assisted all the students with different backgrounds, learning styles, prior knowledge and ability levels. Four of the five students achieved mastery levels in *literal*, *inferential*, *critical* and *creative* comprehension despite their individual differences. For one student (Sam) a longer period of intervention would probably have consolidated his understanding of the QAR strategies.

### **Conclusion**

Much of previous research has attempted to remedy reading comprehension failure through a range of individual reading comprehension activities that have focused on the teaching of one particular skill at a time (Gardhill & Jitendra, 1999; Jitendra et al, 1998; Rabren, Darch & Eaves, 1999; Shannon et al, 1988;).

Research using the QAR strategy has indicated higher levels of success than individualized reading comprehension activities such as retells, story maps story ladders, main idea etc. Previous studies have indicated that the QAR strategies are more successful in literal and inferential comprehension levels which are text explicit and higher level text explicit, than for critical and creative comprehension levels which are text and script implicit (Pearson & Nicholson, 1976; Rosenshine, 1980; Shannon et al, 1988). However, it is important that all levels of comprehension be addressed in the teaching of reading comprehension strategies.

In this study, the QAR strategies assisted the students *in literal*, *inferential*, *critical* and *creative* comprehension. Minor changes to instructional designs

implemented in this study proved that the QAR strategy is as effective for *critical* and *creative* comprehension as it is for *literal* and *inferential* comprehension if the pre-teaching of subject specific vocabulary, modeling and scaffolding approaches are used during instruction. Consideration and inclusion of the four levels of comprehension using the QAR strategies and its cued directives across learning areas are recommended as a means of reading comprehension instruction for students who are 'reading to learn'. The QAR strategies, properly implemented at appropriate stages of reading are recommended as an effective means of addressing reading comprehension failure in primary grades.

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## **Appendix A**

Skill Builders: Reading Comprehension (Aylward, 1983) narrative genre lesson sample

**APPENDIX A: Skill Builders: Reading Comprehension (Aylward, 1983) narrative genre lesson sample**

**Note: For copyright reasons Appendix A has not been reproduced.**

Aylward, Richard. (1983) *Skill Builders: Reading Comprehension*, Educational Supplies Pty. Ltd., Brookvale.

**(Co-ordinator, Curtin University of Technology, 03/09/03)**





## **Appendix B**

Skill Builders: Reading Comprehension (Aylward, 1983) expository genre lesson sample



**APPENDIX B:** Skill Builders: Reading Comprehension (Aylward, 1983) expository genre lesson sample

**Note: For copyright reasons Appendix B has not been reproduced.**

Aylward, Richard. (1983) *Skill Builders: Reading Comprehension*, Educational Supplies Pty. Ltd., Brookvale.

**(Co-ordinator, Curtin University of Technology, 03/09/03)**





**Appendix C**  
Consent letter for parents



180 Fisher Street  
Cloverdale Western Australia 6105

Phone: (08) 9277 2960

Fax: (08) 9479 1332

Dear Parents,

I am a teacher who is doing further study at Curtin University in the area of helping children overcome their difficulties with reading comprehension. In the next few weeks I will be undertaking some research as part of my Masters degree. My study will involve giving individual or small group instruction on developmental approaches in reading comprehension using the Question Answer Response strategy.

I am writing to ask your permission to work with your child. I believe that the experience will be interesting and highly beneficial for your child. All the materials used in the intervention program are published in Australia and many of the reading passages are taken from classic Australian literature.

I have spoken to the administrators at the Cloverdale Primary School explaining the intervention program and have received their kind consent. The intervention will be with Year 4 students and will take the student's reading level into consideration.

The teaching may take a total of 30 sessions. Each session will take around 40 minutes and will take place during the usual reading time. The program commences Monday. The one-on-one or small group instruction should prove highly beneficial. I will keep you informed about your child's progress. If for any reason you wish to withdraw your child from the study during these lessons, you are, of course, perfectly free to do so. If you have any concerns or questions, please don't hesitate to call me on 9277 2578 or my supervisor, Dr. Heather Jenkins, at Curtin University on 9266 2178.

Your child's identity will remain confidential. When I write up my thesis, I will use a pseudonym for each child. If you are willing to allow your child to participate, please sign the form at the bottom of this letter.

Yours sincerely,

Patricia Hope Kingham  
B.A. Education (ECE)  
B Ed (Honours) In Special Education

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I have read the information above and any questions I have asked have been answered to my satisfaction. I consent to my child \_\_\_\_\_ participating in the research, realizing that I may withdraw at anytime.

I agree that the research data may be published provided that my child is not identifiable.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date