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The Individualistic Nature Of Self-Regulated Reading Comprehension: A New Approach To Understanding Good Reading

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ABSTRACT

The development of reading comprehension is a complex task that is often made to look almost effortless by its finest exponents. The ability of individuals to regulate their own reading is one that is vitally important in today’s world. Unfortunately there is a relatively large group of students that do not develop this ability. In the New Zealand context there is a significant and persistent tail of underachievement in reading that is in contrast to overall high levels of achievement.

Much is already known about the skills and abilities required for good reading and the behaviour of good readers, and there exists a large number of programmes designed to teach those skills. However, studies have shown that the issue for improving levels of student achievement in reading and closing the gap is not more or better teaching of reading comprehension strategies. The vital factor is the development of self-regulation. Unfortunately to date there has been little research specifically into self-regulated reading comprehension, and what there has been has identified isolated aspects rather than investigating the process as a whole.

The current study presents a Discontinuous Model of Self-Regulated Reading Comprehension. This model draws on previous research into both reading comprehension and self-regulated action. Using verbal protocols gathered through a method developed for the current study that utilises immediate video-cued retrospective reports, data is collected to offer support for the Discontinuous Model. In addition to supporting the model, the current study also emphasises the individualistic nature of good reading. The study identifies and introduces a number of individual reading styles that are described using case narratives.

The outcomes of the current study emphasise the need for effective modelling for students of the metacognitive processes involved in reading comprehension. Both the narratives of individual reading styles and the Discontinuous Model of Self-Regulated Reading Comprehension provide a new understanding of these processes. Both have the potential to improve the instruction of reading by enhancing the ability of teachers to effectively model good reading for their students.
For my Father.
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My EdD has been a long and at times difficult journey. I wish to take this opportunity to thank all of those who have supported me throughout this process. Not everybody will be mentioned here but my thanks go to all those who have offered even the smallest word of encouragement over the years; it has all helped!

Firstly and most importantly I would like to thank my wife and daughter. The length of time involved has been greater than we imagined at the start and their encouragement, patience, and willingness to leave me alone at the weekends are greatly appreciated. I could not have done it without them. I am looking forward to having my weekends less encumbered and being able to spend more time together. I would also like to thank my mother and late father for taking care of my daughter for many weeks of school holidays so that I could focus on my doctoral work – I know this may not have been a chore, but without your time I could not have made as much use of mine.

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Those whose names appear as pseudonyms for participants should view this as recognition of support, regardless of the ability of the reader! Unfortunately there were not enough to use more. Thanks to everyone!
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CHAPTER ONE

Introduction

This chapter provides an overview of the thesis. Its initial purpose is to provide background for the researcher’s interest in the research topic and the reasons why it was pursued. This chapter also provides a context for the study within current educational concerns, outlines its potential significance, and subsequently clarifies some terminology related to major concepts frequently referred to within the thesis. A justification for the current research follows, and the specific research questions are made explicit. The chapter then culminates in a brief overview of later chapters.

1.1 Reasons for the Researcher’s Interest and the Desired Outcomes From the Current Study

Since the beginning of my career as a teacher I have held a particular interest in developing the literacy skills of students. Initially as a teacher of five and six year old students, this interest was focussed primarily on surface level behaviours, those that involved students ‘getting words off the page’. At this time the school at which I was (and still am) teaching was a involved in the Strengthening Education in Mangere and Otara (SEMO) initiative and as part of this was involved in the Early Childhood Primary Links Literacy (ECPL) project (McNaughton, 2007; G. Phillips, McNaughton, & MacDonald, 2001). This was led by Dr Gwennyth Phillips and was perhaps my first introduction to a more ‘scientific’ approach to teaching. It demonstrated to me the value of practice based on solid research foundations. Soon after, I trained as a Reading Recovery teacher further confirming for me the need for research to underpin teaching decisions.

Towards the end of my time as a Reading Recovery teacher I began working with withdrawal groups of older students (aged 9-11) that were achieving poorly in literacy. Also at this time I became more involved with looking at school-wide literacy assessment data and looked at literacy learning across a greater time-span than I had as a classroom teacher. What became apparent to me was that as a school we were adept at teaching students the skills they need to decode, and as a result our students appeared to perform well until around the end of year three, or age seven to eight. Even those students I was working with at year six and who were
up to three years behind in their reading were often able to decode well, in fact, that was often all they did. A number of our students were not developing the skills required to gather meaning from what they were reading. Others were developing some of these in order to use them effectively, but only when prompted to do so. Our students’ difficulty lay not with reading words, nor with the use of strategies, but with making sense of texts independently, with self-regulated reading comprehension.

I have often asked a question of a student who has read a passage with apparent ease only to be greeted with a look of blank confusion. This confusion is often closely followed by amazement that I should have expected them to have noticed the information in the text they have just finished reading. These students lack some basic understandings about what reading entails and about what it is meant to achieve, as well as how it should happen. When questioned they often see reading as being about getting words right (i.e., they do not understand that reading is primarily about meaning), and nor do they recognise that they have to do something to make comprehension happen.

I subsequently worked as a Primary Literacy Advisor with TEAM Solutions at the University of Auckland and found during my work with a number of primary schools that most were encountering a similar problem. During this time I began to look for ways to address this issue, both for my own professional development and also to assist those schools and teachers I was working with at the time. I found there was a significant body of literature on the explicit teaching of comprehension strategies such as inference (e.g. Block & Pressley, 2003; Duke & Pearson, 2002; National Reading Panel, 2000; Van Keer, 2004), but that there was less information available on how good readers orchestrate their use of those strategies.

What I was looking for, and what teachers were asking me for, didn’t seem to exist. There was no explicit model or statement that set out how good readers make decisions on strategy selection. Without this, how could we as teachers be sure that we were truly teaching our students to be good readers? It was this question that led ultimately to the research that is presented in this thesis. The current research is an attempt to find support for a model of self-regulated reading comprehension that makes the process used by good readers explicit. A model of self-regulated reading comprehension that makes clear the processes used by good readers is designed to facilitate the explicit teaching of self-regulated reading comprehension.
This will aid all students, but particularly those who do not develop self-regulation in the context of current teaching of reading.

1.2 Student Achievement in New Zealand

Improving the reading achievement of students is an issue of interest around the world, and it has been a topic of considerable discussion in New Zealand since the publishing of results from the Programme for International Student Assessment (PISA) and the Progress in Reading Literacy Study (PIRLS). While these studies indicated that New Zealand students perform relatively well internationally, and our best students perform extremely well, they also indicated that there was a notable area of concern. As well as having some of the best performing students, New Zealand also had one of the largest disparities between higher achieving students and those at the lower end of achievement (Caygill & Chamberlain, 2005; May, Cowles, & Lamy, 2013; Sturrock & May, 2002). The need to reduce this disparity has directly or indirectly prompted several studies (e.g. Alton-Lee, 2003; Lai et al., 2003; McNaughton, 2007) to further clarify the issue and attempt to provide answers.

The use of, and control over, reading comprehension strategies is recognised as being of significant importance in any attempt to raise the achievement of low achieving students (McNaughton, 2007). Indeed, in New Zealand the area of difficulty that separates high-achieving students from low-achieving students appears to be their relative control over (rather than knowledge of) reading comprehension strategies (McNaughton, 2007). The discrepancy between high and low achieving students could be explained in two general ways, either it is a failure of decoding and/or fluency, or it is a failure of comprehension. It is known that low decoding ability and poor fluency can result in poor comprehension (National Reading Panel, 2000).

However, research that has been completed in South Auckland, an area highly representative of the groups that comprise the set of low-achieving students of reading achievement (low socio-economic status, Maori and Pacific Island backgrounds) suggests that the problem is one of comprehension. The possibility that the cause of the disparity is poor decoding and/or fluency has been largely ruled out as Lai et al. (2003) found scores for these students on the Word Recognition subtest of the Supplementary Tests of Achievement in Reading (STAR) were equivalent to the norms for the New Zealand population. STAR results of this kind suggest that not only are the students in this area able to decode words as effectively as their
peers in the higher achieving groups, but also that they are able to do this quickly as the Word Recognition subtest is timed. Conversely, scores on the STAR subtests that measure comprehension were significantly lower, particularly those for paragraph comprehension (Lai et al., 2003). This pattern of achievement is not restricted to South Auckland, or to New Zealand, as similar patterns have also been seen elsewhere (Buly & Valencia, 2002).

In response to the results of Lai et al (2003) and subsequent data collected in the schools involved, McNaughton (2007) suggested that there was a need for explicit instruction in reading comprehension strategies as students were failing to use these appropriately. However, it was subsequently found that there was a great deal of explicit instruction in strategies such as inference occurring in classrooms. What became apparent was that while students were being taught about comprehension strategies and how to use them, they were not being taught when to use those strategies and how to exercise independent control over them (McNaughton, 2007).

The primary issue for reducing the gap between good and poor readers in New Zealand is therefore not improving the teaching of how to decode words and read fluently, nor with explicit teaching of reading comprehension strategies (although these are necessary), but with teaching students how to control their use of those strategies (McNaughton, 2007). More recent studies also suggest an indirect relationship between explicit strategy instruction and achievement (Atkins, 2013).

It is within this context that the current study should be viewed. There is a section of New Zealand’s student population that is not well served by the reading instruction provided to them currently. The model that is developed in Chapter Three of this thesis is designed specifically to address this issue. It is a direct attempt to provide support for a model and a framework for selfregulated reading that can be placed into current best practice pedagogy. Teachers and students can then know explicitly what it is they need to be teaching and learning, enabling a greater proportion of our student population to become self-regulating.

1.3 The Significance of the Research Topic

This research has the potential to be significant in a number of ways. It provides an opportunity to learn more about what it is we should be teaching our students to address the “tail” of achievement and make an important difference to those students who are struggling
with literacy, and with reading in particular. The discontinuous model of self-regulated reading comprehension that is proposed in the current research also provides an opportunity to expand our knowledge of the form control of strategy use takes and to clarify our understanding of how the concepts of metacognition, executive function, self-regulation, and self-regulated learning relate to each other in the context of reading comprehension.

1.4 Clarification of Terminology

It should be noted here that for the purposes of this thesis the term ‘reading comprehension’ is used in its broadest sense and not simply in the more narrow sense of referring to developing sufficient knowledge of a text to be able to answer questions. This is similar to Kintsch’s (1998) differentiation between ‘remembering a text’ for the purposes of correct reproduction, and ‘learning from’ a text which requires deeper understanding, resulting in a connection between the text and other aspects of the reader’s life therefore enabling the information to be used and thought of in new ways. It is intended to imply that reading is the kind of activity referred to by Duke and Pearson (2002), for good readers, “comprehension is a consuming, continuous, and complex activity, but one that is satisfying and productive” (Duke & Pearson, 2002, p. 206).

Two other terms that will be used frequently and which it is therefore important to define clearly relate to the psychological nature of the research. The first is that of executive control processes and the second is metacognition. Executive control processes (or executive function) refer to those processes that regulate other aspects of an individual’s cognitive processes, such as the use of reading comprehension strategies. This stems from the work of Kluwe (1982) who referred to executive processes and their place in the control of cognitive functions.

Metacognition is another term that occurs frequently in the literature, and is integral to this thesis. However, metacognition is a construct that has been defined in many ways in the past (Dinsmore, Alexander, & Loughlin, 2008; Jacobs & Paris, 1987). Some of the reasons for the various definitions will be discussed in the next chapter. While all are valid definitions, they have been written from differing perspectives and therefore are attempts to define slightly differing things. Rather than attempt to argue for the adoption of one definition of metacognition over another, it has been decided to accept them all for the purposes of this thesis. In the context of this thesis then, references to metacognition should be considered as
referring to a ‘catch-all’ definition for any mental functioning that occurs above the cognitive level. Such a definition would therefore include the widest definition of metacognition as thinking about thinking as well as control over and awareness of thinking. This catch-all definition is then so broad that its use to clarify understanding of something as complex as reading comprehension would be limited. However, its use is necessary to avoid contributing further to the confusion regarding a definition by utilising a narrow definition that immediately excludes as metacognition processes and functions that other authors have included and vice versa. Where more specific definitions are required, other terms will be utilised.

In the literature review and discussions that follow in later chapters, specific aspects of metacognition will therefore be defined and referred to separately. The term metacognition then can be considered as referring to a broad construct derived from a variety of theoretical backgrounds that will be broken down into its more precise aspects, such as declarative knowledge of cognition or executive control processes.

The automaticity of processing is frequently discussed in relation to reading comprehension and the current study is no exception. In the context of the current study automaticity is most frequently discussed in relation to comprehension strategy use, often in connection to default strategies. It is therefore useful to distinguish clearly between the two at this point. A default strategy is one that is chosen without conscious decision from the reader, and is generally connected to a prototypic definition of the task (McKoon & Ratcliff, 1992). Automaticity and automatic strategy use refer to the manner in which a strategy is applied, regardless of whether it was chosen consciously or by default. An automatic strategy is used without further consideration or thought by the reader, while considered strategy use refers to occasions where the reader consciously decides which strategy to use in a particular situation.

There are also numerous references to self-regulated learning and self-regulation within this thesis. These are terms that have often not been clearly defined within previous research (Dinsmore et al., 2008; Kaplan, 2008) and the differences and similarities between them (and indeed metacognition) have not been clear as a result (Kaplan, 2008). In an effort to resolve some of the difficulties associated with this and to encourage researchers and writers to be clear, Kaplan (2008) has introduced the concept of “self-regulated action”. This concept is intended to encompass metacognition and self-regulation as aspects of self-regulated action.
Within the context of this thesis, an individual’s independent development of reading comprehension should be seen as a specific self-regulated action. Within this definition, self-regulation refers to the series of behaviours, or the process, involved in carrying out that action. Similarly, in this thesis executive control or executive function refers to the regulatory mechanisms that readers employ in order to control that process and carry out the act of regulating their own reading comprehension. The term metacognition includes not only executive control but also to a reader’s knowledge of the strategies they use and of their own thinking. As referred to earlier the difference between the two is significant in this research as some readers have significant declarative knowledge of reading comprehension strategies but lack the ability to complete the self-regulated action of developing reading comprehension. While they have some important knowledge, they are lacking in one or more other aspects of self-regulated reading comprehension such as the process required for self-regulation or the ability to exercise executive control effectively. A conceptualisation and model that separates these concepts and their effects from each other will assist in the diagnosis of reading difficulties and the application of teaching where it is most needed.

1.5 Issues and Specific Research Questions

1.5.1 Issues

There is one overarching question that began the process that has culminated in the current study, and that is:

“What is it that some students not only learn how to use reading comprehension strategies, but also develop the ability to use them independently while others do not?”

We know that there are many effective ways of teaching metacognitive reading comprehension strategies that have been well proven in terms of teaching students how to use those strategies (e.g. National Reading Panel, 2000). However, teaching students how to go through the mechanics of using a strategy is not sufficient. Many students learn to use a range of comprehension strategies well, but do not use them without some teacher or situational prompting. Block and Pressley (2003) suggest that more emphasis on the teaching of self-regulation may alleviate this problem and also lead to the transfer of reading comprehension strategy use to novel texts read in less supported environments. The contention here is that before we can be sure we are effectively teaching students to be self-regulating we need to know more about the process used by those students who are self-regulating their comprehension.
The current study investigates the processes used by good readers as they work through the process of reading. Specifically it will address the processes that relate to the independent use of reading comprehension strategies, and how good readers determine which strategy is to be used and when. Although the focus is on the behaviour of good readers, the study will also include a sample of poor readers to facilitate the identification of what it is that good readers do that poor readers do not.

1.5.2 Specific Research Questions

In general terms the current study has been designed to address the question identified above. More specifically however it is an attempt to answer some narrower questions on the way to answering that larger question. These more specific questions can be articulated as follows:

1. What is the metacognitive process by which good young readers regulate their use of reading comprehension strategies?
   1(a). Do young good readers make use of a default strategy for solving reading comprehension difficulties? If so,
   1(b). Is that default strategy related to the goals set for reading? If so,
   1(c). If there is a default strategy, what do good young readers do when that default strategy fails?

2. Is there support for a discontinuous model of self-regulated reading comprehension?
   2(a). Do young good readers work through a “preparation for reading” phase prior to reading that determines text selection, goals for reading, and a plan of attack that predicts the form of subsequent reading?
   2(b). Is subsequent reading continuous and automatic until such time as the default strategy fails to result in satisfactory comprehension?
   2(c). Is continuous reading then interrupted to enable the use of a separate regulatory process?
   2(d). Does that process result in a change of goals and/or plan of attack in order to resolve such an issue?
1.6 *Organisation of the Thesis*

This section provides an outline of the organisation of the thesis. This thesis is organised into eight chapters that builds a picture of the development of this research and its contribution to and implications for our knowledge of self-regulated reading comprehension.

*Chapter Two: Literature Review*

*Good readers and Constructively Responsive Reading*

These sections will provide an overview of the many identified characteristics of a good reader and what is known about what distinguishes them from poor readers. Also discussed is the Constructively Responsive Reading model (Pressley & Afflerbach, 1995) and how this relates to and incorporates those characteristics of a good reader. The implications of the constructively responsive reading model and associated characteristics for self-regulation are discussed. This is done both in terms of what it can tell us but also reflects on what it leaves unknown. A chapter summary identifies the aspects that are to be carried through into later chapters.

*Achievement in Reading Comprehension*

In this section patterns of achievement in reading and how these relate to the self-regulation of reading comprehension are examined. Gaps in student achievement that relate specifically to reading comprehension will be identified.

*Metacognition and Executive Function and Self-regulation*

The interrelated areas of research into metacognition, executive function, self-regulation, and self-regulated learning are discussed in this chapter. Their ability to shed light on the specific area of reading comprehension, albeit with a wide definition of reading comprehension as utilised in this thesis, is discussed. Also discussed is the relationship of these concepts to each other when the concept of self-regulated action (Kaplan, 2008) is used as an overarching concept to draw these areas together. The conclusion of this chapter compares the knowledge gained from the review of self-regulation and metacognition literature with that from the preceding sections and sets out the remaining gaps in our understanding, and the implications for this research.
Teaching Programmes

This section will briefly outline some of the more popular approaches to teaching reading comprehension and discuss whether they are in accordance with the research included earlier in the chapter.

Methodological Considerations

The investigation of mental processes can be difficult. In this section the process for gathering this type of data, and the inherent risks of attempting to make internal states and thoughts visible will be considered along with ways to mitigate those risks and ensure reliable and valid as well as rich data is collected. This includes a justification for the procedures used to gather data in the current study.

Chapter Three: A Discontinuous Model of Reading Comprehension

Following on from the identification of current knowledge and gaps in the relevant literature, a rationale is developed for the development of a model of self-regulated reading comprehension. This proposed model is firstly an attempt to clarify the control processes involved in reading comprehension and secondly an effort to do so in a way that can usefully inform both research and pedagogy. It sets out graphically a process that may be followed by effective self-regulating readers in the course of engaging with and developing their understanding of texts.

Chapter Four: The Research Process

The overall research process is laid out in this chapter, including reasons for the process used in selecting participants, and for the analysis subsequently carried out. Ethical principles and issues as they relate to the current research are addressed.

Chapter Five: The Self-regulation Processes of Young Readers

This chapter reports on the research findings. Findings are discussed in terms of what they mean for our knowledge of the metacognitive processes involved in the regulation of comprehension-related behaviour. This includes a discussion of how these results fit with and extend what is already known of executive functioning, particularly in the context of reading comprehension.
Chapter Six: The Metacognitive Control Processes of Young Readers

In this chapter results will be discussed with respect to the discontinuous model of self-regulated reading comprehension introduced in Chapter Three. In particular the degree of support for the model is evaluated and the model’s ability to further clarify our understanding of self-regulated reading comprehension is considered.

Chapter Seven: The Individualistic Nature of Reading and its Implications for Education

The results are then discussed in a wider context and related to current understandings of self-regulated reading comprehension. A wider picture is drawn of what we know about the behaviour of good readers following the current study, and how this relates to the teaching and learning of reading comprehension.

Chapter Eight: Conclusions and Recommendations

This final chapter draws on the preceding chapters to discuss the themes that have emerged from the current research and to summarise these and the significance of the current research for our understanding of the causes of success and failure in reading comprehension amongst our students.
CHAPTER TWO

Evaluation of Current Literature

2.1 Introductory Comments

This chapter reviews the literature pertaining to the current study as well as a review of the relative strengths and weaknesses of existing knowledge, models, and theories. As mentioned in the previous chapter the purpose of the current study is to assess the value of a model of self-regulated reading comprehension to help us better understand how good readers process and comprehend text. This model is designed to reflect the knowledge we have of good readers and their behaviour, but it is most significantly an attempt to provide an explicit model that addresses some of the unknowns with regard to effective reading.

The to-be-presented model represents an action-specific way of looking at the executive control of reading comprehension behaviour rather than simply as an extension of self-regulation or self-regulated learning. This requires that a review of the literature not only identifies what is currently known, but also begins to frame this in such a way that its significance for what is to come in following chapters is clear. As a result the evaluation of current literature that follows focuses primarily on building a picture of the known and unknown relating to reading comprehension, metacognition, and self-regulation. It also identifies the features of each that need to be included in the discontinuous model of reading comprehension or that need to be addressed if any new model is to further our understanding of the processes involved.

The separation between these areas of our knowledge is somewhat contrived as what we know about metacognition and self-regulation obviously contributes to what we know about good readers. Historically much research has focussed on one or another without explicitly linking to the others. This has resulted in some confusion in places. For example, authors that have focussed on reading and the behaviour of good readers have tended to include monitoring as a strategy for developing meaning (e.g. National Reading Panel, 2000) alongside other strategies such as making predictions. At the same time, researchers with a metacognitive focus saw monitoring as a part of the regulatory process or executive function (e.g. Jacobs & Paris, 1987). In the last 10-15 years or so this has begun to change with a
greater number of authors (e.g. Baker, 2002; Gaskins, Satlow, & Pressley, 2007; Kaplan, 2008; Kennedy, 2014; Pressley, 2002) recognising that the relationships between metacognition, reading comprehension, and self-regulation need to be considered and could provide significant insights into the complex activity that is reading. The following sections review the literature relating to each particular area as each contributes to the form of the model in different ways. These contributions will be identified in the course of this chapter and summarised at its conclusion.

The next section attempts to draw a picture of what we currently know of good readers and particularly how they go about constructing an understanding of a text they are reading. While the focus of this thesis and also of this chapter is ultimately on the self-regulated action of reading comprehension, the ability to develop self-regulation and related metacognition is dependent on some lower level understandings such as those at the letter and word level. The following section on good readers therefore provides an overview of reading as a whole, rather than of self-regulation or the metacognition of reading comprehension. These will be covered in later sections.

2.2 **Good Readers**

What are the distinguishing characteristics of a good reader? The easy answer would be that a good reader is one that has the word level and higher-level skills, knowledge, and strategies necessary for getting words off the page and for developing meaning from them. However, this would be a gross over-simplification of what is a very complex activity. While the type of skills and text level strategies alluded to in the preceding statement are important, and they will be discussed in the following sections, they would not be sufficient on their own. Vacca (2002) has described the majority of students in the middle grades (from about age 12) as being skilled in the mechanics of reading but insufficiently strategic in exploring text and developing meaning. There is more to the good reader than simply having more skills, more knowledge, or more well-taught cognitive reading strategies. Good readers are very involved with their reading from before they start until well after they have finished reading the text, and they are strategic. They control their behaviour in a way that facilitates the achievement of a reading goal.

In the late 1990s and early 2000s several studies identified a number of features of good readers (e.g. Block & Pressley, 2001; Duke & Pearson, 2002; National Reading Panel, 2000;
Pressley, 2002; Pressley & Afflerbach, 1995) that have remained essentially unchanged since. These features are summarised as follows:

- Good readers are active readers.
- They have clear goals in mind, and they constantly evaluate their progress towards these.
- Good readers look over the text before reading, they look for structural features and sections of the text that may be relevant to their goals.
- They make frequent predictions or hypotheses, not just prior to reading.
- They read selectively. They are constantly making decisions about whether to read carefully, quickly, what not to read, whether to re-read sections, or to jump forward or back in the text, although they generally read texts from beginning to end.
- Good readers construct, revise, and question the meanings and understandings they develop as they read.
- They try to determine the meaning of unknown words and concepts they encounter in the text, and find ways of dealing with inconsistencies or gaps in their knowledge.
- They use, compare, and integrate their prior knowledge with what they find in the text.
- Good readers think about the author(s) of the text and their intentions as they are reading.
- They monitor their understandings, and alter their reading activity (such as the speed of reading or the strategies being used) as needed.
- They evaluate the quality of the text and its value, and react to the text both intellectually and emotionally.
- They change their approach to reading depending on whether they are reading narrative or expository text

As good readers move through the process of developing their understanding of a text they are active and goal directed (Pressley & Afflerbach, 1995). They have the ability to use the strategies they have been taught or developed independently, constantly and in a fluid fashion.
In order to do this they must have the cognitive ‘space’ to do so. This is not possible unless the letter and word level processes they are utilising are fluent. Both decoding and comprehension rely on short-term memory (Pressley, 2002) and this is severely limited in capacity (Miller, 1956). Tan and Nicholson (1997) have shown that teaching children to read words faster has a positive effect on comprehension that is greater than instruction (with the same group of words) based on word meanings. This may be because fluency in word recognition (sight words) allows students more short-term memory space for comprehension related activities. It essentially removes word recognition from conscious processing. Good readers have developed excellent skills and knowledge at the word level (Rasinski & Padak, 2013), but this does not necessarily mean instruction in word level processes to the point of fluency must occur prior to comprehension strategies instruction beginning (National Reading Panel, 2000).

A large part of what makes a good reader is that they are able to do all those things mentioned previously independently. Good readers are able to assess their own reading processes and products, and to do this without prompting or assistance (Afflerbach, 2001). Clay (1993) says the “ability to be independent relies on the ability to self-assess”, a skill which eludes many. One crucial aspect of the ability to self-assess lies in knowing what it is that is being assessed. We know that good readers are goal directed, and their self-assessments reflect this. Their self-assessments are a strategic activity, used to determine progress towards a planned goal.

While the ability to be aware of one’s own level of understanding, the strategies being used to develop comprehension, and to monitor the success or otherwise of those strategies is undoubtedly important (see Baker (2001) for a review), more is still required. Readers must become what Hacker (1998) called self-regulating. They need to be able to monitor and evaluate their own comprehension, but they must also do something with that information. As well as monitoring, readers must also regulate their reading to resolve any difficulties they encounter and facilitate their understanding of text. Students must become self-regulating if they are to become truly independent readers (Palincsar, 2003). In summary, good readers consciously use a variety of reading comprehension strategies and change them as necessary (Pressley, 2002).
2.2.1 Skills and Strategies

There are a number of ways in which the various strategies that will be identified in this section impact on the current study. Firstly, they are all things that the accomplished reader may be monitoring in order to ensure they are maintaining comprehension of what they read and may therefore be involved in the identification of what Klingner and Vaughn (1999) might have called the ‘clunk-point’. Secondly, they are all possible ‘fix-it’ strategies that may be utilised to correct an error, and could therefore be indicative of the decision making process involved. Thirdly, and possibly most significantly, they may also be a part of the decision making process and not just a precursor or an outcome of it.

It is possible that these strategies may be used first as ‘meaning gatherers’ while reading, secondly as ‘error indicators’ through monitoring, thirdly as ‘solution finders’, and finally as the ‘fix-it’ strategy, before the process begins again. For example in the following text extract a reader may use a variety of strategies in different stages of this process:

“In the darkness of the dungeon, he sat in his nest with the spoon atop his head. He set to work fashioning for himself a kingly cape made out of a scrap of the red tablecloth. And as he worked, old one-eared Botticelli Remorso sat next to him swinging his locket back and forth, back and forth, saying ‘You see what comes from a rat going upstairs? I hope that you have learnt your lesson. Your job in this world is to make others suffer.’”

(Di Camillo, 2004, p.120)

A student reading this text may be using the strategy of developing mental visual representations to develop their understanding of this story, this same strategy could also be the one used for monitoring as the reader identifies a problem in their understanding when they realise they do not know about (and therefore cannot picture) the red tablecloth which appears significant in the text. The student may then use questioning techniques as part of their decision making process to determine whether they need to find out more about the red tablecloth, and then rereading of a greater or different section of the text to discover more about the tablecloth so that it can then be included in their representation of this story. Alternatively, another student may be summarising the story as their primary strategy for developing meaning, subsequently identify a difficulty through monitoring when they can’t do complete a summary at the end of the passage. They may then use rereading to identify what is causing the problem (the word “suffer”), and then use a summarisation strategy to
identify what they know of the rats’ job in order to develop a sufficient understanding of 'suffer' to carry on with the story.

These hypothetical examples show how it is possible for a number of different strategies to be involved at different stages in the process, and also how one strategy can be used to perform a range of tasks depending on when the reader employs them. They also demonstrate how the various comprehension strategies have the potential to confuse the issue in relation to the current study. While any of these strategies may be utilised in the decision-making process, it is not the strategies themselves that are of interest. It is the executive functions, such as planning, that control the use of strategies and determine how the comprehension difficulty identified is addressed that are the real focus.

There are then two reasons why knowledge of the variety of strategies that may be used by readers is important for the current study. The first is that without knowledge of the strategies likely to be encountered it is quite likely that they could be confused for the decision-making process itself. Secondly, given that it is by no means certain that even good readers will be able to accurately relate the decision-making process they have used, these strategies may provide important clues as to the process that was actually used in deciding on a course of action for resolving a comprehension difficulty.

2.2.2 Letter and Word Level Skills and Strategies

The process of reading has most simply been described in terms of an equation representing the idea that reading is the product of word decoding and language comprehension (Gough & Tunmer, 1986). The obvious result of this is that if either part of the equation (R=D x C) is equal to zero then the result is zero reading ability. Without decoding there is no meaning (from reading), and without meaning there is no point to the decoding. This Simple View of Reading (SVR) has been validated as recently as 2011 (Florit & Cain, 2011).

Because both letter and word level processes and comprehension processes (especially monitoring) rely on the ability to work in the here and now and therefore require the use of short term memory (Pressley, 2002), students must learn decoding and word-recognition skills as early as possible and be able to use them as efficiently (fluently) as possible. Miller (1956) first demonstrated that the typical high school senior (17-18 years old) can only usefully hold seven pieces of information in their short term memory at any one time, and
there is no reason to suspect that younger students are able to hold more than this. As a result, students who find it necessary to devote a significant amount of attention to decoding and word recognition are unlikely to also be able to hold and monitor sufficient information to comprehend well. Decoding, word recognition, and fluency skills are therefore important for comprehension. Some researchers have described fluency as the link between decoding skills and comprehension (Bashir & Hook, 2009).

To take account of the influence of fluency, the SVR has been extended to include other aspects of reading and developed into the Component Model of Reading (CMR). The first aspect to be included was that of reading speed (S) or fluency, resulting in the equation reading \( R = D \times C + S \) (Joshi & Aaron, 2000). The addition of fluency to the simple view of reading explained significantly more of the variance in reading achievement than the SVR (Joshi & Aaron, 2000). Subsequent additions to the CMR have included aspects such as psychological and contextual factors (e.g., motivation, environmental factors, background knowledge, and vocabulary) that contribute to or detract from the success of reading (Aaron, Joshi, Boulware-Goodeen, & Bentum, 2008; Smith, 2013).

There are two schools of thought about the relationship between letter and word level processes (e.g., decoding) and the development of reading comprehension (see Engen & Hoiien, 2002; Mazzoni & Gambrell, 2003). The first is that students should learn decoding, word recognition and fluency before explicit instruction in reading comprehension is provided. The other is that the two are complementary processes and should be taught simultaneously. Constructivist theory rejects the first notion (Cambourne, 2002) on the basis that without a meaningful context (i.e., reading for meaning) students will learn to read in a manner quite different to those who do learn in a meaningful context. Of course, there is a middle ground between these two and a greater or lesser importance can be placed on one or the other at different stages of the literacy learning process. By necessity, a significant amount of instructional time in the early years must be devoted to the knowledge and skills necessary for decoding, word recognition and fluency, and consequently less time is available for the specific teaching of comprehension. Later in a student’s schooling, little or no time should need to be devoted to these skills and therefore more time is available for comprehension instruction. This does not mean that at some point there is a change from teaching decoding to teaching comprehension, but rather that there is a gradual shift from an emphasis on one to the other, the rate of which depends on the progress of individual students. As skills such as
decoding are constrained skills that have a limited amount that needs to be learned, there will at some point be no need to continue teaching them in any case. Other skills and knowledge associated with reading such as vocabulary and comprehension are barely constrained or are unconstrained (Paris, 2005).

There are many students who learn to decode effectively and still have difficulty understanding what they have read (Pickens, Glynn, & Whitehead, 2004). One explanation for this is that the context in which they learned to read emphasised accuracy above, or even to the exclusion of, meaning. Consequently, the understanding of what reading entails which developed among these students did not include sufficient emphasis on understanding what is being read. It simply was not seen as an important part of the process and hence was not attended to by the students as they were learning to read. Cambourne (2002) has identified three propositions that underpin constructivist teaching and learning:

1. What is learned cannot be separated from the context in which it is learned.
2. The purposes or goals that the learner brings to the learning situation are central to what is learned.
3. Knowledge and meaning are socially constructed through the processes of negotiation, evaluation, and transformation.

Reference to these shows that teaching which places heavy emphasis on the learning of decoding could not be expected to produce readers that are able to effectively understand what they are reading. Students would therefore have to change their understanding of what is important in reading once their teacher determines they are now ‘ready’ for comprehension instruction and changes the context in which they are learning.

Oakhill, Cain, & Bryant (2003) report that many studies show independence between word reading and reading comprehension. That is, students may have ability in phonemic awareness (and other word level skills) and yet have little ability to comprehend the texts they read and vice-versa. While the two are related to each other (by virtue of both being components of reading) they require different cognitive processes and one is therefore not necessarily predictive of the other. Cognitive processes related to comprehension are not related to the accuracy of reading (Oakhill, Cain, & Bryant, 2003). This matches a trend that has been reported in many schools (eg. Pickens et al., 2004), that many students are able to read text accurately but are not able to comprehend at the same level. This is supported by
Engen and Hoien (2002) who state, “Phonological awareness is a necessary but not sufficient condition for reading comprehension” (p.625). The National Reading Panel (2000) also found that while phonological awareness was positively related to comprehension at grade one, this relationship had become at best tenuous by grade four. In the first year of schooling there is a great deal of variability in students’ ability to decode text, and those who are better at it are therefore likely to understand what they read better. By grade four much of the variability in decoding has evened out and other factors (both at a word level and higher) must be involved in making the difference in comprehension (National Reading Panel, 2000).

There is a complicating factor in the relationship between word level processes and reading comprehension. Not all word level processes are devoid of meaning. As students begin to deal with bigger sections of words they become aware of the roots of some words and how the meaning of a new word can be deduced from these. Word morphology can be seen as the link between meaning (and therefore comprehension) and decoding. Although attention to morphological features of words is primarily used to assist with word reading, it often provides a link to the meaning of a text through giving clues to the meaning of a word. For example, a student who is familiar with ‘electric’ will find it easier not only to read but also to understand the meaning of ‘electrical’ (Oakhill et al., 2003). This view is strengthened by Nagy, Berninger, Abbott, Vaughn, and Vermeulen (2003) who say, “Meaning signalled by internal word parts may also be the key to unlocking higher order meaning…” (p. 741).

Many studies (Carlisle, 1995, 2000; Deacon & Kirby, 2004; Mahony, 1994) have found a relationship between morphological awareness and reading comprehension. Some (e.g. Carlisle, 1995) have found that phonological awareness is predictive of pseudoword reading, while morphological awareness is predictive of comprehension. Other studies (Carlisle, 2000; Shankweiler et al., 1995) have found that morphological awareness also contributed to word reading ability in addition to phonemic awareness alone.

The National Reading Panel (2000) pointed out that the benefit in understanding text is only gained from applying letter-sound correspondences if the resulting oral representation is a known word in the learner’s oral vocabulary. This, presumably, can be extended to include a situation where a student’s morphological awareness allows them to gain sufficient understanding of the word’s meaning even if it was not previously familiar to them. One thing seems likely, morphological awareness does contribute to reading comprehension more than
phonological awareness (Deacon & Kirby, 2004) and that it is the meaning component of this awareness that makes this possible.

One other important aspect of word level knowledge that has been mentioned only in passing so far is that of vocabulary. Many studies (see Oakhill et al., 2003) have found a strong relationship between vocabulary and reading comprehension. The question, however, is whether having a good vocabulary makes for good comprehension, or being able to develop good comprehension leads to a good vocabulary. Some researchers have noted that both seem to be correct. Daneman (1991) mentioned that vocabulary is partially an outcome of comprehension skills, and reading comprehension is partially an outcome of vocabulary. There is a fairly obvious relationship between the two, as a child’s vocabulary grows so does their ability to comprehend text; as well as that, as their ability to comprehend text improves their ability to learn new words from that text also increases. As (relatively) recently as 1998, Rupley, Logan and Nichols (1998) indicated that vocabulary instruction has not been a focus of professional writing and instruction to that time. Since then vocabulary has become more widely considered, not so much as an issue in its own right but as its place in developing reading comprehension has become more understood. A significant amount of work has now been published on the teaching of vocabulary (Nation, 2000; Stahl & Nagy, 2006), much of which stresses the importance of teaching word meaning and how individual words relate to each other and to greater concepts. This contrasts with simply the teaching of words, a much lower level activity and one rather divorced from, but not without positive effects on, comprehension (Tan & Nicholson, 1997). Pickens, Glynn, and Whitehead (2004) provide several examples of how knowing words without having an understanding of the full range of their usage can cause difficulties. For example, when reading a text about All Black Jonah Lomu, which included a section on Jonah being ‘hungry’ to put on the black jersey, many students thought this meant that Jonah needed a breakfast of McDonalds before a game. It is this type of problem that led Oakhill, Cain and Bryant (2003) to say that it is not vocabulary as such that is the issue, but rather the richness of semantic representations for each word, “…individuals who possess a rich and interconnected knowledge base may comprehend text better than those whose representations are sparse” (p. 463). So, vocabulary is important for reading comprehension, but largely only in as much as the known words are connected to all their possible meanings.
Nagy, Berninger, Abbott, Vaughan, & Vermeulen (2003) found that phonological awareness, morphological knowledge, orthographic knowledge and oral vocabulary all contributed to reading comprehension, but that even combined they were not enough to explain all the variance in reading comprehension displayed by the students involved in their study. There is also one potential difficulty with much of the research that shows a positive relationship between letter and word level processes and reading comprehension. They have tested reading comprehension by asking the students to read text independently either before testing or embedded within the test. The difficulty with this is that students unable to accurately read the words of a text are unlikely to subsequently perform well on a test of their comprehension, regardless of their skills at using otherwise successful comprehension strategies. A fact also commented on by the National Reading Panel (2000) who found that phonemic awareness training also produced positive effects on reading comprehension. They went on to state that this is not surprising given how much the task of reading is dependent on effective word reading. Snow, Burns and Griffin (1998) commented similarly, saying “… the ability to obtain meaning from print depends so strongly on the development of word recognition, accuracy and reading fluency…” (p. 323).

Of course many students sometimes have difficulty comprehending texts that they find easy to decode, and some even when the text is read to them (Dymock, 1993), removing decoding difficulties from the picture as an explanation for comprehension problems altogether. These skills, strategies, and knowledge have a role to play in the development and maintenance of understanding while reading. They may also be used at or around the clunk-point in the manners discussed earlier, but it is perhaps those that are more closely connected to meaning (morphology) that are most likely to appear at this time, and may need to be considered in relation to the current study in the ways mentioned at the beginning of this skills and strategies section. The current research is primarily concerned with application of higher-level activities however, and assumes that word level skills, strategies, and knowledge will have been mastered by able readers. Paris (2005) considers that word level skills are finite and can only have a limited ongoing impact on reading ability as once mastered they enable the further development of reading comprehension, but further instruction in word level skills will not further enhance reading ability. Comprehension related skills on the other hand develop before, alongside, and after word level skills. Comprehension instruction should therefore take place alongside instruction in decoding from the beginning of schooling (Kennedy, 2014).
2.2.3 Higher Level Skills and Strategies

The preceding section has looked closely at the role of letter and word level processes in reading comprehension. While those processes are undeniably important, much is left to explain in terms of identifying what it is that makes good comprehension possible. Oakhill, Cain and Bryant (2003) argued that the cognitive skills related to the accuracy of reading were not related to comprehension. That is, a different set of cognitive skills is required for good reading comprehension to be possible. So what are they?

There have been many studies that have identified a variety of comprehension strategies. The following list reflects much of the research in this area:

1. Making connections
2. Making predictions
3. Asking questions or wondering
4. Recalling
5. Inferring

(Pearson, 2004)

Others have classified strategies slightly differently. For example, Duke and Pearson (2002) identified six “Effective Individual Comprehension Strategies”, prediction, think-aloud, story structure, visual representations of text, summarisation, and questions/questioning. The National Reading Panel (2000) identified these same six strategies but also included comprehension monitoring and co-operative learning. These strategies appear consistently throughout the research (National Reading Panel, 2000; Pressley, 2002) although sometimes with differing names. Each of these strategies has been shown to be an effective tool for developing good comprehension of text. As research in the last 10 years or so has seen little development or change to the generally accepted strategies, there appears to be a degree of agreement on the strategies involved in reading comprehension. This is evidenced by the number of references to studies from the 1990’s and early 2000’s that are seen in current literature (e.g. Kennedy, 2014) when discussing the characteristics of good readers. Despite the apparent lack of new research and the implied agreement among researchers, some issues remain.

One of the issues that become apparent in a review of the literature in this area is the tendency of different researchers to use different names for what is essentially the same strategy, or the
same name for different strategies, depending on the focus of their research. For example, Block and Pressley (2003) define questioning as “the ability to monitor ones reading.” That is, readers are asking questions of themselves (e.g., “Have I misunderstood a word that has caused me to become confused?”) while others (Palincsar, 2003) have used the term questioning to mean asking questions of the text or author (e.g., “Is that sentence supposed to mean…?”) in order to further develop their understanding. Another issue is connected to what is meant by the term ‘strategy’. Many have identified activating prior knowledge as an important strategy used by good comprehenders (Pressley, 2002), and have studied the effect of this as if it is a distinct strategy on its own. Other researchers see the ability to activate prior knowledge as a skill which is not a strategy on its own but rather as a single aspect of a larger strategy such as inference (Cain, Oakhill, & Lemmon, 2004).

All of the strategies identified so far involve a number of component skills that enable the use of each strategy. This means that while one researcher may be studying what they call inference and its contribution to reading comprehension, another may be studying the influence of using prior knowledge on comprehension. Depending on how each is defined and the context used the two researchers may in fact be studying the same thing. The effective use of prior knowledge to derive meaning from a novel text is often used as an example of inference. In addition, the sets of skills required are not necessarily differentiated between strategies. That is, there is a significant degree of overlap between strategies, meaning that while a study may report two strategies as being separate entities, they may both be dependent on a single underlying skill or lower level strategy. For example, both making predictions and summarising are dependent on the reader’s ability to identify what is important and relevant. This overlap is also true of the executive or control functions. Many of the skills necessary for effective use of comprehension strategies are also important for effective control of these strategies. For example, the ability to identify salient information is again important for planning a way to reduce the comprehension difficulty encountered.

Another issue is that much of the research into reading comprehension strategies has until recently focused on narrative text (Williams et al., 2005) and that the types of strategies identified reflect this. Williams et al (2005) suggest for example that non-fiction or expository texts require a different approach from the reader, and therefore different strategies are required. They have identified two additional strategies, which are related to the way in which expository text is read; 1) identifying key words and searching for and focusing on those key
words while reading, and 2) finding ‘target paragraph(s)’ which relate to the information being searched for, or the question(s) the reader is trying to answer (Williams et al., 2005). Students who utilised these strategies performed much better on subsequent oral comprehension tests. Cain, Oakhill, and Bryant (2004), identified a student’s ability to focus on relevant words and sections as being important. Williams et al (2005) have effectively divided what Cain, Oakhill, and Bryant (2004) treated as a single strategy into two separate ones. The intention in this section is not to suggest that that any of the examples discussed are right or wrong, but rather to demonstrate the difficulty inherent in trying to identify a definitive set of comprehension strategies from the research.

It is perhaps these problems that have led some to identify a much smaller number of relatively broad strategies. Cain, Oakhill and Bryant (2004) identified three “component skills of comprehension”: inference making, comprehension monitoring, and story structure knowledge. Hannon and Daneman (2001) also used three skills, the ability to integrate long-term knowledge with text information, the ability to make text-based inferences, and the ability to recall text. In these cases it is accepted that each of these skills require a variety of underlying knowledge and abilities in order to be used successfully.

Another approach to the problem of the multiplicity of strategies that it is possible to identify is to place them into categories. While this does not reduce the number of strategies involved it does begin to overcome the problem of overlap between individual (or differently named) strategies by grouping them together according to the types of skills or abilities involved. Van Keer (2004) has divided strategies into two categories, cognitive strategies and metacognitive strategies. Cognitive strategies are defined as mental and behavioural strategies such as re-reading, activating background knowledge, and adjusting reading speed, used to increase the likelihood of comprehending. Metacognitive strategies are defined as self-monitoring and self-regulating activities focusing on the process and product of reading. In other words, cognitive strategies are the things that one does to facilitate understanding, and metacognitive strategies are how readers check whether it is working or not and adjust their strategy use accordingly. This categorisation does not in itself simplify or reduce the number of strategies involved in reading comprehension, but it does begin the process of organising them which may in time lead to a more structured understanding of how the many strategies are interrelated and where the differences are. It would be possible, for example, to begin to divide the category of cognitive strategies into subcategories such as those that require the
integration of prior knowledge and text information and those that focus attention on relevant words or sections in text.

Pearson and Raphael (2003) have also made a beginning in this area by classifying six comprehension strategies under three headings. Under ‘Background knowledge’ they placed prediction, under ‘Text processing’ there were summarising, sequencing, and identifying importance, and finally under ‘Monitoring’ were clarifying and planning.

Although these beginnings have been made, this is an area that would benefit from further consideration as the same issues appear to persist today. Analysis of the definitions and methods used by researchers studying reading comprehension strategies may provide a useful framework for understanding and working with the range of strategies identified. It may also mean that past and future research could be more easily compared and contrasted if a more standard way of placing these strategies into the overall category of reading comprehension were to be developed.

In a similar fashion to the word level processes discussed earlier, these strategies are not themselves the focus of the current research; rather this study is focusing on the mechanisms of their control. However, an understanding of what it is that the reader is attempting to control is undoubtedly important for reasons discussed earlier. To study the mechanism of executive control without knowledge and understanding of the object of the control would likely be futile and almost certainly meaningless. In a constructivist framework such as that being used here, context is important. The current study is not about decision-making in isolation, it is about decision-making in the context of reading comprehension and in particular the decisions relating to the control of cognitive and meta-cognitive comprehension strategies. The model most closely connected to the current research in terms of the way it too looks at reading comprehension as a complex cognitive activity is that of Constructively Responsive Reading (Pressley & Afflerbach, 1995).

2.3 Constructively Responsive Reading

Following a review of the body of research using verbal protocols to investigate reading, Pressley and Afflerbach (1995) characterised the type of reading displayed by good readers as being “constructively responsive reading” (p. 83). Constructively responsive readers are those who are very involved in their reading and are actively constructing meaning as they read and
respond to information contained in text and that this occurs while they are reading for a purpose. The last part of this definition is important in the context of the research discussed here. It reinforces the idea that actively constructive readers are goal-driven; the meaning they construct and their response to texts are guided by the purpose they have for reading. Further development of this model has led to the inclusion of the concept of a plan of attack for reading.

A number of authors (e.g. L. M. Phillips, 1988; Pressley & Afflerbach, 1995; Pressley & Gaskins, 2006) have identified that competent readers employ a large range of cognitive strategies to achieve their goals and understand the text they are reading. The expectation that individual readers will have available, and use, a significant number of strategies is an important part of constructively responsive reading. What is not clear from these studies is whether individual readers regularly use a number of these strategies or whether individuals have preferences for a smaller number of strategies, and whether the strategy used in a particular situation is determined by circumstance. In fact, those studies that have used quantitative analysis in connection with this kind of question leave this open to interpretation. For example, Phillips (1988) identified a large number of comprehension strategies used by young readers and gave the mean number of times each strategy was used. Even the most commonly reported strategies had standard deviations that were large in comparison to their average, these varied from a standard deviation that was equivalent to 21% of the mean to a standard deviation that was 160% of its related mean. Some of the readers in the study must have used particular strategies repeatedly while others did not use them at all. Did individuals repeatedly use a restricted number of strategies, or did they each use a range of strategies? The model to be introduced would suggest the former. Individuals will use different strategies based on their individual preferences and on the goals they set for their reading. They would be less likely to use a wide range of strategies determined ‘on the run’ as they read. This is an important point of departure from constructively responsive reading.

In terms of the constructively responsive reading model, the plan of attack relates to the larger mechanics of reading such as which parts of a text to read (Pressley & Gaskins, 2006). The model proposed in the current research also includes a ‘plan of attack’ but suggests that this plan includes reference to the use of cognitive strategies such as inference. This in part reduces the degree of emphasis placed on the responsive nature of reading, in that there is a certain amount of premeditation in the use of comprehension strategies if the plan of attack
includes a plan to use a particular strategy. It would, however, explain why attempts to identify the processes used to determine strategy use has met with such difficulty.

Constructively responsive readers do make use of the plans they develop but the point is also made that they are not slaves to their plans. If the plan does not work then a constructively responsive reader will change his or her approach to the text (Pressley & Afflerbach, 1995). This preparedness to diverge from the plan appears to be in conflict with the idea that it is the plan of attack that predicts strategy use, unless readers do not abandon their plan as it fails, but rather re-evaluate it and alter it to include different strategies that the reader believes will be more suitable for the text they are currently reading.

2.3.1 Constructively Responsive Reading: Relation to the Current Study

Good readers are very active as they read (Pressley & Afflerbach, 1995) and are involved in making decisions and controlling their reading behaviour throughout the reading process. This active nature is something that any model of reading comprehension must incorporate if it is to be consistent with our existing knowledge of good reading. Good readers are proactive in that they set goals before reading and develop a plan for achieving those goals that they then monitor in order to recognise and be able to address any issues. As a result of their monitoring good readers are also reactive in that they respond to issues as they arise during reading and are identified by monitoring. Good readers react to the current issue identified in order to ensure success in achieving their goals. To do this they must be able to be flexible in their approach and be able to utilise a range of strategies dependent on the situation at hand.

As a result, a model of self-regulated reading comprehension must include mechanisms that allow for both types of activity, there must be a place for proactive control of reading (planning) and also for a reactive control response when the initial plan has failed to produce the desired effect and a change or adjustment in approach is required.

Any model must also allow for individual differences in strategy use. The quantitative studies of reading comprehension strategy use discussed so far suggest that there are likely to be differences in the number and type of strategy used and a model of self-regulated reading comprehension therefore needs to include mechanisms that allow for readers to use either a range of strategies or a single strategy as their needs and preferences dictate.

Individual differences will stem from the different approach readers take to their reading, and from the number of different points at which a number of different decisions can be made. If
two readers behave differently at any one point in the reading process then their subsequent reading will take a different form. In order to allow for individual differences and to understand how the different processes used by readers develop, an understanding of how those behaviours are controlled and how decisions are made must be developed.

2.4 **Cognitive Models of Reading Comprehension**

There have been a number of attempts to capture the cognitive processes related to reading comprehension in a descriptive model. In an analysis of seven notable models (Construction-Integration, Structure-Building, Resonance, Event-Indexing, Causal Network, Constructionist, and Landscape) McNamara and Magliano (2009) identified eight dimensions that were either significant features of or central to all seven models.

1. Connectionist architecture: Models assume that comprehension involves the activation and integration of information available to the reader from the text and also from other source, and that these sources of information are linked together in a network.

2. Spreading activation: As concepts in the network are activated the idea of spreading activation assumes that they will in turn activate related concepts. This spreading activation is assumed to be controlled in some fashion that leads to the activation of connected concepts that are also relevant to the current context.

3. Automatic unconscious processing: The models reviewed assume some information and processes are automatic and unconscious, and that the product of those processes is available to the reader’s consciousness.

4. Discourse focus: Models assume that readers’ have an attentional focus on particular aspects of a text or its meaning. This focus can shift over time and has an impact on the mental representation of the text and a reader’s ability to recall particular information.

5. Convergence and constraint satisfaction: Which concepts become consciously available to the reader are the result of the spreading activation concept above. Those concepts that receive more activation as a result of having more connections to other activated concepts will become conscious to the reader. Activation will converge on related concepts, thus restraining the concepts available to the reader to those that are related to already activated concepts.

6. Mapping: Mapping refers to the process that gives the reader a sense of continuity. It is the result of relating current text to previous knowledge and context, either from the text or prior knowledge. A failure of mapping may lead a reader to remedial action.
7. Text-based inferencing: Mapping or the process of developing coherence is generally considered to be achieved through the use of text-based inferencing relating to other parts of the text or to prior knowledge.

8. Memory constraints: Although there are differences between the different models in terms of the theoretical basis for the inclusion of constraints on memory, comprehension models in general assume that the reader can only process about 2-4 ideas or propositions at a time. (McNamara & Magliano, 2009)

2.4.1 The Construction-Integration Model

The origins of the Construction-Integration (CI) model (Kintsch, 1988) lie in the earlier work of Kintsch and van Dijk (1978) that shifted the focus from schema-based models toward the processes and strategies involved in comprehension. It intended to outline the iterative processes involved in mapping immediate or current discourse content to earlier discourse context, including both earlier text-based discourse and that related to the reader’s prior knowledge.

The process of mapping described by the CI model was a break from earlier models, but is now considered to be a key aspect of comprehension (McNamara & Magliano, 2009). However, the main purpose of the CI model was to describe and explain learning from a text, and consequently much of the research instigated by the CI model has focussed on expository text, with relatively little relating to narrative comprehension. While a powerful beginning, the CI model does not refer to some other processes that have been shown to be important in reading comprehension such as the influence of reader goals and metacognitive process (McNamara & Magliano, 2009). Some other models include, or at least allow for the inclusion of, a greater range of processing.

2.4.2 The Landscape Model

The Landscape model (Van den Broek, Young, Tzeng, & Linderholm, 1999) is a more encompassing model than most in that it covers a wider range of reading scenarios and also allows for individual differences through a greater flexibility. It also combines a number of assumptions and aspects of other models, making it a move towards a comprehensive model of reading comprehension.
The main focus of the Landscape model is on the mechanisms involved in the activation of concepts while reading, and assumes that there are two types of mechanism: cohort activation and coherence-based retrieval. Concepts that are connected as a result of previous concurrent activations form a cohort. Cohort activation refers to the activation of related concepts as a result of a concept in the same cohort being activated. Cohort activation reflects memory-based comprehension development (Van den Broek, Rapp, & Kendeou, 2005) similar to the memory-based influences described in the Resonance model (McNamara & Magliano, 2009). Coherence-based retrieval on the other hand is an active and strategic action, and reflects the reader’s search for meaning and understanding. The desired level of coherence is determined by the individual and the goal(s) he or she has set for reading. Superficial reading goals stimulate a lower level of related activity (Van den Broek et al., 2005). Coherence-based retrieval simulates the search/effort after meaning mechanism included in the Constructionist view of reading (Graesser, Singer, & Trabasso, 1994).

The Landscape model provides a more comprehensive view of reading comprehension, incorporating assumptions from a number of models including the Construction-Integration model, the Resonance model, and the Constructionist model. As a result, it is able to be used to describe a wider range of reading contexts and has the flexibility to be able to account for individual differences more easily than earlier models (McNamara & Magliano, 2009).

2.5 Metacognition and Executive Function

2.5.1 Historical approaches and differing definitions

In its most general terms, metacognition is thinking about thinking. In dealing with thinking about thinking, metacognition deals with both knowledge about and also the regulation of thinking, that is, what individuals know about their own cognition and how individuals control their own cognition. This makes it a significant concept with respect to any field involving human behaviour. Because of this significance, it has become a concept of wide interest and discussion in the field of education where the need to understand what and how individuals are thinking is of paramount importance. However, despite its wide use, or perhaps because of it, metacognition has developed into a widely used but variably (and often indistinctly) defined concept (Dinsmore et al., 2008).

Those who have attempted to define metacognition have often disagreed on some fairly basic points, for example some have defined metacognition as being generally intentional and
dispassionate, while others believe that metacognition can sometimes be largely unconscious and laden with emotion (Jacobs & Paris, 1987). It may be because of these disagreements that many researchers have continued to define metacognition largely through the behaviours they have studied. These ‘definitions’ have fallen into two general categories. The first involves knowledge of ourselves, the kinds of tasks we engage in and the strategies used whilst engaged in those tasks, the second involves experiences that occur before during and after a task such as reading (Thomas & Barksdale-Ladd, 2000). Another way of approaching the issue of a definition is by referring to two broad classes of metacognition (Jacobs & Paris, 1987); either knowledge that one has about a cognitive domain (e.g., reading or memory) or executive strategies that regulate thinking (e.g., planning and monitoring). This is similar to the distinction between cognitive strategies and metacognitive strategies made by Van Keer (2004) discussed earlier.

Jacobs & Paris (1987) have made a more significant attempt to define metacognition as distinct from the behaviours that may demonstrate its existence, and it is one that includes many of the aspects mentioned earlier. They have defined metacognition as “any knowledge about cognitive states or processes that can be shared between individuals (p. 258)”. At first glance this definition appears to be a very convenient one as it immediately removes a lot of the difficulty with measuring metacognition. If subjects are not able to share with researchers the mental processes they used then they were not metacognitive in nature. One possible criticism of this definition is that this resolution of the problem of measurement almost seems too tidy. But is it a fair one? Jacobs and Paris (1987) say that metacognition is “…knowledge about cognition (that) can be demonstrated, communicated, examined, and discussed (p. 258)”. This makes a valid point, in that if an individual is not sufficiently aware of the cognition they are experiencing to be able to carry out the processes identified by Jacobs & Paris then it may not be considered metacognition under a definition that requires metacognition to be declarative.

The wider definition of metacognition has been divided into two categories by Jacobs and Paris (1987): a) self-appraisal of cognition, and b) self-management of thinking. These reflect the broad classes or categories of metacognition such as that of Van Keer (2004) mentioned earlier. It is the second aspect that is of particular interest in this thesis. How do good readers manage their own thinking in a way that consistently produces positive outcomes for them as readers? Self-management refers to the active process of turning knowledge (in this case
knowledge of a difficulty with understanding a text) into action. Three types of executive processing are included in the category of self-management of thinking by Jacobs and Paris (1987). The first is planning or “the selective co-ordination of cognitive means to a cognitive goal (p 259)”. The second is evaluation, the ability to evaluate one’s own understanding, and this is an ongoing process that occurs continuously throughout reading. The third type of processing is that of regulation. This is the ability to monitor progress towards a goal and to revise plans or strategies as necessary.

The requirement that metacognition be available to be related to others would appear valid if one is considering the knowledge component of metacognition, in that if one is unable to relate something, then it is unlikely that one really knows it. However, things become more problematic if we are considering the regulatory aspects of metacognition. It may be that an individual is able to relate the way in which they control their cognition, but equally even young children who are unable to relate how they control their thinking, and may be unaware they are doing so (Flavell, Green, & Flavell, 1995), must be controlling their cognition in some way. Given the emphasis in the current study on the regulatory aspects of metacognition, the requirement for the knowledge to be declarative may not remain. The Jacobs and Paris definition, and others that emphasise the declarative nature of metacognition generally stem from a developmental approach to metacognition. Definitions such as this have developed from the work of Vygotsky (1978) and emphasise the language associated with thinking and hold that metacognition is learned by social means through learning from an expert.

An alternative view of metacognition is that mentioned in Chapter One that has developed from the work of cognitive psychologists. This view is based on theories of information-processing and considers the regulation of cognitive processes rather than an individual’s developed ability to relate their thinking to others. Because of this differing focus, it is not that an individual be able to relate their use of the process that makes something metacognitive but rather the fact that it controls cognition. In this perspective it is the self-regulatory activities of the cognitive system that are referred to as metacognition. The processes involved have been inferred from subjects’ responses during a problem-solving task, often through asking subjects to think aloud whilst processing (Larkin, McDermott, Simon, & Simon, 1980; Reeve & Brown, 1985). Contrary to a developmental definition of metacognition this type of definition does not require an individual to be able to directly relate
their own cognitions to others. In information-processing models the practical knowledge required to put a cognitive strategy to use is referred to as procedural knowledge. The knowledge needed to be able to identify when to use a strategy is conditional knowledge.

This leads to the definitions to be used in this thesis. As mentioned in Chapter One, the term ‘metacognition’ is to be used as a general term for all forms of metacognition; in effect it includes all things that have previously been defined as metacognition by others. In order to be useful in the context of this discussion specific definitions are required. The regulatory aspects of metacognition that exert control of cognitive functions will be referred to as executive control processes or executive functions. It is not considered that this metacognition need be known in such a way as to make it available to the individual for discussion with others, although it may be. It is the control it exerts over cognition that makes it metacognitive. Executive processes refer to the overall processes involved, the knowledge required to initiate and use those processes is referred to as procedural knowledge and conditional knowledge. Executive function, procedural knowledge and conditional knowledge are evidenced by their application, not an individual’s ability to describe them.

The second aspect of metacognition to be used here is the knowledge of cognition. This is to be referred to as declarative metacognition. It is assumed (and indicated by the nomenclature) that this knowledge is available for discussion or relating to others. Without an awareness (or knowing) of something that is clear enough to be related to others then knowledge would not usefully be available to the individual.

The terms discussed in this section and their definitions will be used from this point on. Defining a concept is not sufficient in this context however. The next sections consider the way that metacognition is involved firstly in controlling behaviour generally, and in reading comprehension in particular.

2.5.2 The Role of Metacognition in Controlling Behaviour

Metacognition has become popular because of its emphasis on individuals as active in their thinking and learning (Jacobs & Paris, 1987). The distinction made between declarative metacognition and executive function is significant when the actual behaviour of individuals is considered. In itself, knowing is insufficient to determine the form of subsequent behaviour. It is possible to know a significant amount about a topic without being able to put that
knowledge into useful practice. In the case of learning to drive for example, many young people will be able to relate in great detail what needs to be done to get a car moving successfully some time before they are able to use that knowledge in a way that does not cause a general outbreak of nervousness.

In the case of reading comprehension, as a teacher I have seen many examples of students that have more than a little declarative knowledge of reading comprehension strategies such as re-reading or inference, but appear unable to use those strategies without encouragement or prompting from someone else. Indeed, it is this observation that began the process that has led to this thesis. McNaughton (2007) has found that students in South Auckland schools are receiving significant amounts of instruction in reading comprehension strategies but remain unable to exercise control over those strategies. Presumably the instruction those students have received has given them a certain amount of declarative metacognitive knowledge of those strategies and yet they are unable to utilise them independently. These students have the procedural knowledge but not the conditional knowledge required to initiate their use. They know how these strategies are used, but are not able to control them independently.

The development of research in executive function is in part an attempt by researchers to address this issue. Executive function research attempts to explain why some students present as poor students despite being apparently able in terms of intelligence and cognitive measures such as perception, memory, and language (Denckla, 1996). Executive function determines whether or not an individual is able to make use of their declarative metacognition in order to control their behaviour in an orchestrated and strategic way. The focus of this thesis on executive function does not devalue declarative metacognition. Without this knowledge base there would be little ability to control anything. As will be discussed in more detail later, the emphasis on executive function here is on the basis that we need to know more about the actual processes used by good readers to control their reading behaviour so that we can assist less able readers to make use of the declarative knowledge they already have to become better readers.

2.5.3 Metacognition and Executive Function in Reading Comprehension

Almost as soon as the concept of metacognition was introduced in the 1970s researchers looked to differences in metacognition as a reason for differences in reading achievement (Baker, 2002). Initially the focus of metacognition research was on the awareness and use of
monitoring (Dinsmore et al., 2008) but over time has broadened into a research area that incorporates interest in a wide variety of knowledge types (declarative metacognition) and processes for the use of and control over that knowledge (executive function).

If students are to develop the ability to exert executive control over their own cognitive processes then they will need to have developed knowledge of those cognitive processes. It is very difficult to exert control over something of which one is unaware. This does not necessarily indicate that they need declarative knowledge of the executive processes used to control those cognitions, simply that they need to have knowledge of what it is they are controlling. Gaskins (2005; Gaskins et al., 2007) has identified five categories of information about which readers must have a significant amount of knowledge if they are to successfully develop the ability to develop an effective executive function. It is the knowledge contained in these five categories over which an individual must exert control if they are to develop the ability to orchestrate their use of strategies and become active and successful readers and learners. These five categories of information are (1) knowledge of strategies, (2) knowledge of motivation and volition, (3) content area understandings, (4) person, situation, task, and text variables, and (5) knowledge and understanding of how the brain works and how learning takes place.

The first of these categories is a fairly obvious one. For students to develop the ability to control strategy use during reading they must have a good understanding of those strategies. At its most basic level, students must know what they are. They need to have knowledge of a range of strategies that can be of use to them in developing comprehension of a text. These strategies range from workable strategies for decoding words and garnering an understanding of the meaning of unknown words, through to knowing about the higher-level strategies discussed in the earlier section on the strategies used by good readers. In addition to knowing a range of strategies, students need to have knowledge about which ones are the most appropriate in differing situations. It is also important they understand that using such strategies is not an intermediate phase that students are being taught to help them until they become able readers, but rather that this is what good readers do (Pressley & Afflerbach, 1995).

Another aspect of the category relating to knowledge of strategies is the ability to recognise when the need to make use of a strategy arises and whether the strategy chosen is effective in
resolving the difficulty. Associated with this is the ability to utilise strategies flexibly and to drop the use of a particular strategy if it has proven ineffective or too difficult and to employ a different strategy. In order to do this, students need to be able take the initiative in their use of strategies (Gaskins & Pressley, 2007). It is important they know how to independently begin the use of a strategy and that they not require prompting or assistance to begin the implementation of strategy use.

The second category of knowledge relates to motivation and volition. Students need to come to know how to manage their own motivation through understanding what can help them with that. For example, a student that finds it difficult to maintain their motivation for a long and involved task may find it beneficial to break the larger task down into a series of more manageable tasks (Gaskins & Pressley, 2007). If students have knowledge of what they find motivating and also what makes it difficult for them to remain motivated, then that knowledge gives them the opportunity to control their own motivation and the decisions they make relating to initiating action.

Knowledge of content areas is also important, but it should be noted here that what is referred to is not knowledge of content area fact, but rather understandings (Gaskins & Pressley, 2007). This knowledge relates to conceptual understandings that can be generalised or otherwise be of use in another context. For example, students learn much about the environment in science lessons in the classroom. It is not the direct knowledge of the environment (e.g., the sun makes water evaporate) that would be considered metacognitive, but rather the awareness of that knowledge and the recognition of it as a concept that can be applied in other contexts. Knowing that the sun makes water evaporate is a fact that only becomes truly useful if the student also understands that it is a part of system (the water cycle), and that changing one part of a system affects other parts. Understanding how systems work is a concept that can be used to help understand a number of differing situations, not least in developing an understanding of the consequences of events within a narrative story. Students need to understand that learning is not about remembering bunches of facts, it more about the relationships between those facts and developing knowledge of the conceptual understandings that link those facts (Gaskins & Pressley, 2007). Knowing these concepts rather than (or in addition to) the facts, allows the reader to generalise the use of that knowledge and so it becomes available for use in a wide variety of situations.
Perhaps one of the most significant of the categories of knowledge is that relating to person, situation, text, and task variables. It is important that students know a lot about themselves. A reader needs to know much about the things that may affect their own reading, these may be personal (“I know that if I don’t try hard to remember what I’m trying to find out then I lose interest and don’t find anything.”), situational (“I can’t concentrate if there’s too much noise.”), textual (“This is hard, it’s not going to be easy to understand.”) or task related (“I’m not sure what I’m supposed to be doing.”). If an individual understands how they learn and the strategies that work for them when reading, then they are able to act on those understandings to manage their reading in a way that suits them (Gaskins & Pressley, 2007). This makes reading a very personal experience, with individuals prone to working in different fashions depending on their personal preferences and the context in which they find themselves. Such an implication is a significant one for those that may be attempting to research reading comprehension and especially if attempts are being made to develop a model that can be generalised across readers. This literature review is primarily to identify the things that are known about readers in general which need to a part of any model. The other function of this review is to identify what is not known, and this is often to do with what individual readers do to manage their reading.

As was seen in the earlier section on good readers, much is known about what good readers do, but this is almost entirely in general terms. Statements such as “The findings of the study also showed that high achievers outperformed low achievers in employing all the strategic behaviours assessed, thus corroborating previous research” (Dermitzaki, Andreou, & Paraskeva, 2008) do little to further our knowledge of the exact ways in which individuals manage their reading. Other studies (e.g. L. M. Phillips, 1988; Pressley & Afflerbach, 1995) have identified numbers of strategies used by good readers, without indicating whether individuals use all of those strategies identified or whether good readers as a group used those strategies but individual good readers used only one or two, or whether individuals also used a variety of strategies while reading. This is an issue that will be addressed by the current study and included in the model of reading comprehension to be introduced in the next chapter.

The final category of information about which individuals must have a good knowledge if they are to become metacognitively able relates to knowledge and understanding of how the brain works and how learning takes place. This does not mean that students need to be
schooled in neurobiology, but rather that they develop understandings about learning that will enable them to control their own learning and reading. This includes such things as understanding that what is being read often relates to what is already known and that recognising this can make comprehension easier and more effective in a learning context. It also means that students should understand that one cannot become an instant expert but that learning takes time and that developing a series of goals and taking small steps can result in significant improvement over time.

In summary, students need to understand how all these variables and areas of knowledge affect reading and learning how they relate to each other. If they have this knowledge and the associated understandings then they have the necessary tools to be able to regulate their own behaviour.

2.5.4 Executive Function in Reading

Reading is an interaction between the reader, the text, the task, and the situation that results in the construction of meaning (Gaskins, 2005; RAND, 2002). To make sure that he or she is understanding the text being read, the reader makes use of executive control. This is a deliberate volitional process that enables the reader to be in conscious control of his or her own reading. The ability to exercise executive control may be the single most important capacity relating to reading comprehension (Wagner & Sternberg, 1987) as without the ability to exercise control over a conscious and deliberate effort to garner meaning from text then the development of full understanding is unlikely. Executive control processes make use of the declarative knowledge outlined earlier in order to control cognitive behaviour through applying a number of separate processes to make use of that knowledge.

There are five processes that are most often referred to in the literature discussing executive function. These are not always referred to by the same names or given quite the same definitions, but nevertheless their appearance in the literature is consistent. The most often cited processes include planning, prioritising, organising, shifting mindsets flexibly, and self-checking or monitoring (Gaskins et al., 2007; Meltzer, Sales Pollica, & Barzillai, 2007). Gaskins (2005) has also included the ability to self-assess as a sixth executive control process. Another that might be considered either independently or as a part of the planning process is that of goal setting. Combined and used well these processes enable the reader to arrive at a point where they understand a text sufficiently to have achieved whatever it was they set out
to do. It is the intelligent use and application of these processes that is the role of executive function (Schumacher, 1987).

These control processes must be skilfully used if they are to effectively orchestrate the use of a variety of cognitive processes in order to read successfully. Gaskins, Satlow, and Pressley (2007) have outlined the use of executive control processes as being generally coordinated in the following fashion that begins before the reader begins their reading. Initially the reader develops goals relating to their comprehension, and also constructs a plan of action to achieve these goals and to monitor progress towards them. This goal setting and planning activity is the beginning of the reader being in control of the process of developing comprehension. This is in contrast to being a ‘passive’ reader who decodes words effectively but does not make a deliberate, conscious, and significant attempt to develop understanding and monitor that while they are reading. This planning process may include a prioritising aspect (particularly in the case of reading for study purposes), and this prioritising may relate to what is more important to read, or to the allocation of time and effort (Schumacher, 1987). Following this the reader considers the strategies that are likely to be most useful in putting their plan into action and for organising the information that is found within the text. While actually reading the reader self-checks or monitors their progress towards their goals, and also evaluates the effectiveness of the strategies they have chosen to use. Where a discrepancy is identified between the necessary progress for achieving goals and the actual progress being made, then the reader makes further use of their executive function and self-modifies (Costa & Kallick, 2004) or re-evaluates their goals and/or plans. He or she may shift mindset and look at the information in a new way such as shifting from looking at main ideas to details (Meltzer & Krishnan, 2007) before continuing reading. Finally the reader self-assesses (Gaskins, 2005) the success or otherwise of his or her attempts to achieve their reading goals. This self-assessment process differs from the self-checking process that occurs earlier in the activity. Self-checking is monitoring the effectiveness of current attempts to achieve a goal, while self-assessment is an evaluation of the overall efficacy of the process used by the reader, and whether he or she could do something better next time.

Many students fail to effectively manage their reading in this way. There is a sizeable group of students who are able decoders but who do not make use of comprehension strategies to further their understanding (Pickens et al., 2004). Avoiding this issue means that instruction
in both the types of reading comprehension strategies that may be used and also in the control processes required to regulate their use is needed.

In a discussion of how executive control can be included in primary school level education, Gaskins, Satlow, and Pressley (2007) have identified seven principles that underpin the relationship between reading comprehension and executive function. Without these basic understandings students are unlikely to develop the ability to effectively use executive control processes. These principles are present in the literature both prior to and following the publication of the article by Gaskins et al. (2007) but this is the most coherent presentation of them in one place and hence is used as the basis for the following discussion.

The first of these principles is the expectation that reading must make sense. This is an understanding that appears obvious to those of us who are already reasonably proficient readers and it is an understanding that most developing readers will develop of their own accord. However, some do not, and these are the ‘extreme decoders’ such as those mentioned in the example presented earlier. These students are entirely focussed on accurately reading each word that the find before them. Their only criterion for success is that the word looks like the one they have said. Students such as this do not notice when an error reduces a sentence to nonsense. If it looks and sounds right as a single word then that is sufficient. Developing the understanding that what they read must make sense on a larger scale (i.e., phrases, sentences, paragraphs etc.) is the first step towards being able to develop reading comprehension. Without an understanding of this principle there is no knowledge that there is anything there to understand, let alone any idea of how or why one should go about finding it.

The second principle is that understanding is the result of planning to understand. Reading comprehension does not happen spontaneously simply as a result of reading the words on the page. It occurs as the result of a deliberate decision to understand and as a result of planning how to address a text in order to achieve the goals a reader has set. The ‘involved active’ reader has been described as one that is metacognitively self-regulating (Zimmerman, 1989) and actively engaged with their reading. Gaskins, Satlow, and Pressley (2007) outline a process for initiating the engagement of readers. They suggest that following the ‘survey – predict – set-a-purpose’ strategy where students survey a text to get an idea of what it contains, predict what they will learn from or see in the text, and set a purpose or goal for their reading will result in students becoming actively engaged with their reading. This
reflects what was discussed in the earlier sections on good readers and constructively responsive reading (Pressley & Afflerbach, 1995) in that good readers engage with a text before they start to read and set goals for themselves. In the case of constructively responsive reading the plan referred to by Pressley and Afflerbach (1995) relates to the larger mechanics of reading such as selecting which sections of a text to read, whereas in the context of executive function a plan would refer to deciding which cognitive and metacognitive strategies to employ to assist with developing comprehension.

Related primarily to the reading of non-fiction texts (Gaskins et al., 2007) is the principle that prioritising leads to a maximisation of time and effort. That is, if a student makes deliberate decisions as to which goals are the most important and also which will require the greatest time and effort to achieve, then they will be able to make maximal use of the time available to them. Without prioritising in this way significant amounts of time may be spent on reading about concepts that are already understood, or that are of limited value to the achievement of a student’s study and reading goals.

A strategy that is particularly useful for, but certainly not limited to, understanding non-fiction texts is relating what is read to what is known. Activating prior knowledge is one of the most long-standing and commonly reported strategies used by good readers in developing their comprehension of text (e.g. Duke & Pearson, 2002; Pearson & Johnson, 1978). Underlying this undoubtedly useful strategy is the principle that accessing background information helps organise new information (Gaskins et al., 2007). Earlier in this section it was stated students need to have declarative metacognitive knowledge of essential content area understandings. The principle that accessing pre-existing knowledge helps organise new information and the associated strategy of relating new information to old is why that declarative knowledge is needed. If you do not know what you know, it is difficult to access that knowledge and subsequently use it to help make sense of what is currently being read.

As a good reader makes their way through a text, adhering to those four principles outlined so far, it is important that they also recognise that despite having done everything right so far, things can still go wrong. The fifth principle is that self-checking enhances goal achievement. A reader must be active in self-checking, or monitoring, his or her understanding in order to check not only that they are understanding what they are reading, but also the relative importance to their goals and even whether it is relevant at all. As well as being a means for
identifying problems with understanding, self-checking is also important for continuing engagement (Gaskins et al., 2007) as it means that students will be actively involved in looking for information that is related to their goals and be considering how well they are progressing toward those goals. Where issues are identified as a result of self-checking, what is to be done? It may be that the strategies considered in the planning stage will be sufficient to resolve any problems, but a significant issue may require more of the reader.

In order to be able to meet such a challenge a reader must be able to try something different. A problem that has not been resolved with a reader’s planned strategy requires a reader to be able revisit his or her plan or goals. The fourth principle listed by Gaskins, Satlow, and Pressley (2007) is the idea that “having a flexible mindset provides opportunities for increased understanding (p. 202)”. This principle is closely related to the idea contained in constructively responsive reading that good readers are able to change their approach to a text and alter their plan of attack as they encounter difficulties with comprehension. Being able to react to issues in a flexible manner enables a reader to become truly self-regulating. Regulating one’s own behaviour through advance planning and preparation is a useful exercise, but it is a far more powerful and, in the short term, useful thing to be able to change these plans and to regulate behaviour on the run rather than to come to a complete stop and begin all over with a new plan.

In the long term of course, it is preferable that the initial behaviour regulation, in the form of planning, be as effective as possible and ideally not need later adjustment to achieve a reader’s goals. To this end, the sixth principle is that understanding is improved by self-assessing. As mentioned earlier self-assessing differs from self-checking in that self-checking is essentially a monitoring of the current situation and whether action taken to develop comprehension and resolve any confusion is effective, while self-assessment relates to a ‘review’ process. This review process is to determine whether or not the reader’s goals were achieved and what factors impacted on this. Identification of which person, situation, text, or task variables had either a positive or a negative effect on comprehension can be used to modify the reader’s approach in the future and hopefully result in more effective and efficient use of cognitive resources in later reading.

Taking control of the person, situation, text, and task variables that affect comprehension is essentially the role of executive function. If an individual has the declarative knowledge
required, and an associated understanding of the seven principles (Gaskins et al., 2007) just discussed then he or she has the potential to take charge of those variables. This would enable them to make best use of positive aspects of those variables and to at least moderate any negative impact from them sufficiently to enable their goals to be met.

### 2.5.5 Metacognition and Executive Function: Relation to the Current Study

Models of reading and teaching practice need to bear in mind the distinction between metacognition as declarative knowledge and as regulatory action. Teaching students declarative knowledge (such as the ability to talk about how to use a particular strategy) is not sufficient to be considered as producing metacognitively able readers. In order to do that, students must also be given the means to exert independent control over that knowledge. Such a requirement means we as educators need to have an understanding of the types of knowledge required to utilise that declarative knowledge. Any model of successful reading comprehension therefore needs to make explicit reference to regulatory metacognition. Procedural (how) and conditional (when) knowledge are what underlie the production of successful self-regulation of reading behaviour.

Because we are talking about the psychology of individuals, any model that is to be relevant to more than a few individuals needs to allow for individual differences. It is extremely unlikely to be possible to develop a model that says exactly what comprehension strategy any individual will put into practice in a given situation. Both the enormous number of possible situations involving different text types, background knowledge, vocabulary, etc. and the number of strategies involved make this extremely unlikely. As a result a useful model of reading comprehension will clarify the process by which individuals control their behaviour and how they use the comprehension strategies they choose, rather than to attempt to predict which strategy will be used.

### 2.6 Self-Regulation

The executive function is the active, intentional aspect of the self (Baumeister & Vohs, 2012), ever present in human endeavour and as such is involved in the initiation and control of actions as disparate as peeling an orange and performing brain surgery. The executive function is ultimately responsible for the deliberate planned and intentional actions of the individual. In evolutionary terms, the reason for the development of the executive function is considered most likely to be to improve the fit between the self and the environment.
Self-regulation is not as broad as the executive function and involves the individual initiating or controlling their actions with the intention of achieving a particular outcome or goal (Baumeister & Vohs, 2012). In the context of this study, the process of self-regulation is considered to cover those aspects of the self that are involved in overriding natural, habitual, or learned behaviours and responses through the alteration of behaviour, thoughts, or emotions. This process may alter or interrupt a particular behaviour by either modifying it, replacing it, or by blocking the initial behaviour (Baumeister, 1998; Baumeister, Heatherton, & Tice, 1994; Baumeister & Vohs, 2012). Self-regulation is most often related to behaviours that are designed to achieve a particular goal the individual has in mind [although the process of self-regulation does not need to be consciously initiated (Chartrand & Bargh, 1996)].

Models of self-regulated learning describe a process by which an individual controls his or her own behaviour in order to reach a goal. Theide et al. (2003) focused on the effects of monitoring on the self-regulation of study behaviour. They point out that the accuracy with which the discrepancy between the current state of learning and desired state of learning is monitored is a crucial factor in determining not only the continuation or otherwise of study behaviour, but also in determining the strategy selected for use in the continuing study (e.g., allocation of greater time or selection of specific text fragments for re-study). According to such a model, the learning goal(s) set prior to study commencing, in combination with subsequent monitoring, plays a significant role in determining how study behaviour is controlled over time. Ultimately this impacts on the quality of learning of the material being studied.

The relationship between setting goals, subsequent monitoring, and strategy use has been made more explicit in other models of self-regulated learning. In a further discussion of Winne and Hadwin's (1998) model of self-regulated learning, Winne (2001) related a self-regulated learning model composed of four phases. The first is “defining the task” in which learners develop a definition of the task at hand before they approach it. Winne suggests that learners probably generate at least two types of definitions of a task. One is a 'default' or prototypic definition that characterises the task under 'usual' circumstances. He suggests that this definition probably includes a routine tactic or strategy for addressing the task. From this point his strategy will be referred to as the default strategy in this thesis. The second
definition describes the components of the task when atypical conditions are perceived to apply. The second phase is “setting goals and planning how to reach them”. It has been suggested that once goals are active, memory may automatically retrieve tactics or strategies coupled to the goals (McKoon & Ratcliff, 1992) and that this is a common sign of expertise. The third phase in Winne’s (2001) model is that of “enacting tactics”, whereby learners put their plan developed in phase two into action. This phase can lead to a loop back to phase two if the plan appears to require further development to be successful. The fourth relates to “adapting metacognition” and refers to a process whereby learners adapt or improve their metacognition for future use. This last phase is comparable to the self-assessment principle identified by Gaskins et al. (2007) relating to executive function.

In the conception of self-regulated learning used by both Theide et al. (2003) and Winne (2001) the overall process is discontinuous. The learner engages in periods of learning that utilise strategies included as part of the action plan developed in the initial stages of learning. When monitoring shows those strategies and plans are unsuccessful, or insufficiently successful, the process of learning is interrupted by evaluations of progress and/or changes to the learner’s action plan before another period of learning.

As discussed earlier a model that specifically describes how this process might fit into the complex and ongoing task that is reading comprehension is needed. The models discussed do not do this; rather, they provide a general regulatory process that may be applied to the context of reading comprehension. The difficulty with using research and models that have been developed in relation to other contexts is that we cannot assume that we can apply those outcomes to reading comprehension (Massey, 2009). Unfortunately this leaves a lack of research specifically relating self-regulation to reading comprehension (Massey, 2009). The purpose of the current study is to propose a model that explicitly places what we know of good readers’ behaviour within a self-regulation model of reading comprehension. This would extend our understanding of the links between individual behavioural aspects of the reading process, and how they fit into the overall process of fluent reading comprehension.

2.6.1 Self-regulated Action and Reading Comprehension

Historically there has not been clarity as to the relationship between the concepts of metacognition, executive function, self-regulation, and self-regulated learning. This has led to the Educational Psychology Review devoting an entire issue to clarifying the concepts and
their relationship (Schunk, 2008). In this same issue Kaplan (2008) introduced the concept of “self-regulated action”. This concept is intended to encompass metacognition, self-regulation, and self-regulated learning as subtypes of self-regulated action. Self-regulated reading comprehension can be viewed as a specific self-regulated action. In this context, executive function and self-regulation are related but separate constructs that co-exist and interact to develop self-regulated reading comprehension. Self-regulation refers to the series of behaviours, or process, by which the action of self-regulated reading comprehension is achieved. Executive function on the other hand, refers to the knowledge and mechanisms used to regulate that process. A conception of this kind not only clarifies the relationship between these concepts and consequently enhances our understanding of self-regulated reading comprehension, but it also provides a new framework for future research.

Models such as constructively responsive reading (Pressley & Afflerbach, 1995) that highlight issues of cognitive control are fundamentally theories about agency, and therefore self-regulation. That is, the reader is in control of his or her own success or failure. These theories put the origins of that control in the early stages of the reading process with goal setting and monitoring activities, but assume decision-making occurs contemporaneously with the problem or comprehension breakdown. In addition, this model does not specify the mechanisms involved in the executive control process. In both self-regulated learning and self-regulated reading comprehension, successful goal related monitoring provides the basis for instigating strategy use. This process is in the realm of executive control of cognitive and metacognitive strategies.

As stated earlier, we do not know all we need to know about individual’s strategy use. A number of authors (e.g. L. M. Phillips, 1988; Pressley & Afflerbach, 1995; Pressley & Gaskins, 2006) have identified that competent readers employ a large range of cognitive strategies to achieve their goals and understand the text they are reading. What is not clear from these studies is whether individual readers regularly use a number of these strategies or whether individuals consistently use a single strategy or very small number of strategies in the reading of a particular text, and whether the strategy used in a particular situation is determined by circumstance. Clarifying this is necessary for knowing how we should teach students to use the strategies we teach them, or which they develop for themselves. Should we be expecting and teaching students to be using and choosing between large numbers of strategies, or should we be encouraging them to be judicious in their choice of a single or
small number of strategies? That is, perhaps good readers are not better in their use of a range of strategies; maybe they simply manage the complexity better by limiting the range they apply in a given situation, or perhaps it is both.

Strategy use is strongly influenced by text, and Magliano, Trabasso, & Graesser (1999) state that strategy use is also influenced by strategic processing [such as goal setting, evaluating and monitoring (see Veenman, Wilhelm, & Beishuizen, 2004)]. In the model proposed in the present study, and for specific texts, individuals would use different strategies based on their individual preferences and on the goals they set for their reading. They would be less likely to use a wide range of strategies determined ‘on the run’ as they read. The argument in this model is that an individual reader is likely to use a single or small number of strategies in any given situation. This assertion is based on the work of Winne (2001), McKoon and Ratcliff (1992), and also Chartrand and Bargh (1996). Their work suggests a default task definition would automatically result in the retrieval of a small number of associated strategies. This likelihood has a strong influence on the form the new model takes, and it is the mechanisms proposed for strategy selection that suggest that reading may be a continuous process rather than a continuous activity. This distinction indicates that while the process of developing comprehension may be ongoing, the activities that are engaged in by readers are interrupted and changed in the course of that process.

In their study Theide et al. (2003) found that more accurate monitoring leads to better regulation of study behaviour (i.e., strategy choice). This in turn was associated with better test performance. Indeed, Theide et al. (2003) refer to their study as providing evidence for the need to improve monitoring accuracy “as a means of improving reading comprehension” (p. 71). Although their particular study (and model) addresses only a single narrow aspect of reading comprehension (learning a factual text in order to answer test questions), more general implications are apparent. The self-regulated learning studied by Theide et al. (2003), for example, could be viewed as a subset of the broad definition of self-regulated reading comprehension in use in the current study. Both forms of reading (knowledge of study material in the first and understanding of a text in the second) are reliant on successful ongoing monitoring in order to utilise an appropriate strategy to further advance or maintain that state.
Other studies have suggested that the relationship between monitoring and executive control is less straightforward. As in the examples given here, it is often assumed that metacognitive monitoring is goal-driven and guides control operations and that this is essentially the reason for the relationship between effective monitoring and learning. However, Koriat et al (2013) have shown that a reciprocal relationship exists between monitoring and control. The predominant hypothesis that monitoring affects control (MC) has been supported by a variety of studies and manipulations (see Son & Metcalfe, 2000 for a review; Thiede et al., 2003), however, there is also evidence that the relationship between the two can also function in reverse. Some studies have suggested that at least in some cases monitoring follows rather than precedes control processes (see Kelly & Jacoby, 1998). In this situation, monitoring is based upon feedback received from the implementation of executive control processes. Koriat (1993) indicates that in self-regulated learning learners devote differing amounts of study time to learning an item depending on the difficulty involved in committing that item to memory. The harder an item is to memorise, the more time is devoted to it. In this model monitoring is data-driven. It is the application of metacognitive control and data from its outcome that informs monitoring rather than the reverse. Feedback from control operations informs monitoring (CM).

Self-regulated learning models talk of feelings of knowing (FoK) (see Koriat et al., 2013) as being the awareness of monitoring outcomes. In the more traditional MC model feelings of knowing drive the application of executive control to produce or maintain a favourable feeling of knowing and further progress towards the learner’s goal. In the context of reading comprehension, a comparable construct would be a feeling of understanding (FoU). The MC hypothesis would hold that monitoring produces a positive or negative FoU and this then results in the application of executive control. In this model readers are monitoring their understanding and maintaining or altering their behaviour on this basis. In the CM model however, the application of executive control precedes the monitoring. A reader exercises some form of control over their reading activity (e.g., deciding to apply a particular strategy or attend to a particular section of text) and then monitors the success or otherwise of that action, leading to a positive or negative FoU. Information from the control mechanism (i.e., “That worked”, “that didn’t work”, or “That was hard to do”) drives the subsequent monitoring and FoU.
The MC and CM models are not mutually exclusive, (Koriat et al., 2013) have shown that students in grades five and six (10 to 11 years old) are capable of using both goal-driven (MC) and data-driven (CM) monitoring. In most cases young children only showed evidence of using either MC or CM in any given task, not both within the same task. Which form was evident was dependent on the task itself (Koriat et al., 2013). Differently defined tasks resulted in either data-driven or goal-driven monitoring. When ninth graders (approx. 14 years of age) were included in the study, there was evidence of both forms of monitoring occurring within the same task (Koriat et al., 2013). Indeed, an earlier study by (Koriat & Ackerman, 2010) indicates that their application can be sequential with monitoring based on feedback from control operations subsequently driving the use of another control operation. There is some evidence that this sequential loop (CM-MC) may be able to be used even by primary school aged children (Koriat & Ackerman, 2010).

The discontinuous nature of self-regulation models (e.g. Thiede et al., 2003; Winne, 2001) whereby learners interrupt their learning to evaluate progress and how to move forward towards their goals, underlies the model proposed in the current study. This idea that decisions relating to strategy use are made separately to reading behaviour, and that actual reading is interrupted in order to do so is not intended to suggest that the overall process of reading is interrupted, but rather that there may be a real separation between actual reading and strategic decision-making. The preceding discussion relating to goal-driven and data-driven monitoring provides an insight into the possible mechanism at work. Where feedback from the use of a control mechanism is negative, (e.g., “That didn’t work”), the reader may need to pause reading in order to consider an alternative approach. Also, the model presented here in this study is intended to reflect the process used by good young readers. The process is still being developed and learned by younger readers and as a result may not be as smooth and automatic as that used by expert adult readers.

2.6.2 Self-Regulation: Relation to the Current Study

There are two key aspects to self-regulated action: executive control and monitoring. Both of these features are relevant to the current study and both will need to be included in the model proposed in the next section. The discussion in the previous section raises a number of issues that the current study attempts to clarify relating to control and monitoring. The interaction between the two is a primary concern. As we have seen, children of an equivalent age to the participants in the current study are capable of using both data-driven and goal-driven
monitoring, possibly even within a single task. The relative prevalence of each and/or the interaction between the two forms of monitoring and executive control will be pivotal in understanding the self-regulation of reading comprehension.

As discussed in the introduction, many students display patterns of achievement that show they are able to decode well but are not using reading comprehension strategies to develop their understanding of text (Buly & Valencia, 2002; Lai et al., 2003). It has also been shown that it is often not knowledge of the necessary strategies that is lacking, but students’ control over them (McNaughton, 2007). This is supported by studies that suggest that explicit teaching of strategy use does not result in comprehension gains (Atkins, 2013). Currently something is known about individual processes involved, such as monitoring, but little is known about the overall process as it relates specifically to reading comprehension (Massey, 2009). This is a problem as teaching is most effective when the subject of instruction and learning is made explicit (Alton-Lee, 2003) and it is therefore important that the process used by good readers is known to teachers in order that it can be made explicit to students. We need to know what the process of control is supposed to look like before we can be sure we are teaching it. The discontinuous model of reading comprehension would provide such a basis for explicit teaching of metacognitive control over reading comprehension.

Teaching of metacognitive skills has been shown to be beneficial (Perkins & Grotzer, 1997). Metacognitive skills account for 54% of learning variance in grade four (Veenman et al., 2004) and have a high correlation with reading comprehension (Veenman et al., 2004). Veenman et al. (2004) describe metacognitive skills as skills which “concern the procedural knowledge required for actual regulation of and control over one’s learning activities” (p.90). They also indicate that metacognitively skilled students focus on relevant information that allows them to develop detailed action plans containing goals and directions for activities. It is this that makes process control during task performance possible. Veenman, Wilhelm, & Beishuizen (2004) go on to say that evaluation and monitoring activities are more productive when utilised within the context of such a plan, and that activities such as drawing conclusions that assist with comprehension are more helpful when used in order to further a set plan.

Explicit teaching of goal setting, the strategies required for comprehension such as inference, monitoring, and other behaviours related to self-regulation has for some time been considered
best practice (Block & Pressley, 2002; Duke & Pearson, 2002; Mazzoni & Gambrell, 2003), yet many students still do not develop the ability to self-regulate their reading comprehension. An additional complication is that all of this takes place within the reader’s head. Any methodology used to study such phenomena must therefore be capable of drawing out the thoughts of readers. A later section will focus on methodological considerations relating to a study of this type.

2.7 Teaching Programmes

“Becoming fully literate means, among many things, being able to use strategies independently to construct meaning from text, draw upon texts to build conceptual understandings, effectively communicate ideas orally and in writing, and possess an intrinsic desire to read and write.” (Mazzoni & Gambrell, 2003, p. 11)

They go on to say, in something of an understatement, “…literacy and instruction have become complex, multifaceted tasks.” (Mazzoni & Gambrell, 2003, p. 11)

There is ample research that demonstrates that reading comprehension instruction can be effective (National Reading Panel, 2000; Snow, 2001), but what is it that makes reading comprehension instruction effective and what is it that it actually teaches? Does it currently teach students to exercise control over their strategy use?

Mazzoni and Gambrell (2003) identified eight principles of best practice in a review of the literature:

- Learning is making meaning
- Prior knowledge guides learning
- The gradual release of responsibility model and scaffolded instruction facilitates learning
- Social collaboration enhances learning
- Learners learn best when they are interested and engaged
- The goal of best practice is to develop high-level, strategic readers and writers
- Best practices are grounded in the principle of balanced instruction
- Best practices are a result of informed decision making.
These principles of best practice are not an instructional programme in and of themselves. They do however show that within the realms of what constitutes best practice currently there is scope for the inclusion of control processes. This is almost made explicit in the sixth point, if readers are to be high-level and strategic they must be making deliberate decisions on how best to achieve their goals, otherwise they are not being strategic. Knowledge of the nature of good readers’ decision-making processes can only assist in teaching students to become strategic.

The earlier section on word level processes makes clear the importance of these processes in enabling comprehension. Any instructional programme that intends to produce students who are able to effectively read and comprehend texts independently must include word level instruction, both in terms of breaking the code and in accessing the meaning associated with individual words. Specific attention should therefore be given not just to decoding but also to morphology and vocabulary (Block & Pressley, 2003). However, the focus in this section is on the instruction of higher-level processes.

2.7.1 Single Strategy

Much of the earlier research into whether the teaching of comprehension strategies is effective focused on the teaching of a single strategy at a time, and often in artificial circumstances (Guthrie et al., 2004). More research is needed on how multiple strategies can be combined in long-term comprehension instructional programmes (Snow, 2001) as this is where gains in the teaching and learning of control and self-regulation are likely to be made. However, having said this, a significant beginning has been made and our understanding of what makes effective comprehension instruction is developing quickly. While the focus of this section (and hopefully of future research) will be on multiple strategies instruction, the research on single strategies remains important. It is from this that we can make informed decisions as to which strategies should be included, although this is not necessarily as easy as it may sound owing in part to the difficulties with the nomenclature of strategies outlined earlier. Looking at single strategy instruction research also gives an indication of how best to teach each strategy. Even multiple strategy instruction must still teach each strategy within an overall programme.

Duke and Pearson (2002) have proposed a model of comprehension instruction they believe is best supported by research. They suggest that instruction needs to be more than simply
instruction in specific strategies and opportunities for practice through reading, writing, and discussing texts; it must connect and integrate varied opportunities into an overall programme. They suggest such a programme should contain five components:

1. An explicit description of the strategy and when and how it should be used.
2. Teacher and/or student modelling of the strategy in action.
3. Collaborative use of the strategy in action.
4. Guided practice using the strategy with gradual release of responsibility.
5. Independent use of the strategy.

This model, while not making it explicit, suggests that strategies be introduced one at a time. There is no doubt that teaching comprehension strategies in this way is effective (Block & Pressley, 2003; National Reading Panel, 2000; Snow, 2001) however it can take a long time to introduce a significant number of strategies and there is no guarantee that the range of strategies will be used effectively and efficiently after this time (Pressley et al., 1992). While teaching strategies in this way has value in terms of learning strategies, the model does not present easy opportunities for addressing executive control processes. Control processes relate to making decisions between multiple available strategies, and a teaching programme that focus on one strategy at a time does not immediately facilitate the development of those processes.

2.7.2 Multiple Strategies

For reading instruction to result in readers who are literate in the sense that Mazzoni and Gambrell (2003) outlined in the quote at the beginning of this section, students need to develop the ability to exercise control over their use of a variety of comprehension strategies. This would seem to be best done in a programme that teaches and/or encourages the use of a variety of strategies, and therefore requires some decisions to be made.

One of the earliest approaches of this type is that of reciprocal teaching (Palincsar & Brown, 1984). This is an instructional procedure intended to produce a dialogue between students and their teacher that results in a jointly constructed meaning of the text. It is not the intention here to provide a detailed description of the mechanics of the programme (see for example Palincsar, 2003; Palincsar & Brown, 1984) as this review is interested in whether a
programme allows for teaching of executive control processes. Reciprocal teaching involves the use of a range of comprehension strategies used opportunistically, i.e., when the text supports the use of each. The four strategies involved are questioning (of the text or author), clarifying, predicting, and summarising. Reciprocal teaching has been shown to be effective in raising the comprehension ability of a range of students, varied both in terms of age and ability (Hacker & Tenent, 2002).

Reciprocal teaching is an example of what Duke and Pearson (2002) call comprehension routines, made up of an integrated set of routines that can be applied regularly to texts. Because of the routine nature of reciprocal teaching and its components there is a danger that the classroom use of the programme becomes focused on the routine of reciprocal teaching and rather than the flexible and appropriate use of the strategies involved. This could result in the strategies being used in a routine manner ‘because it’s what we do when we do reciprocal teaching’ rather than students choosing to use each strategy as appropriate for them to gain meaning from the text. This often results in the original purpose of learning the strategies, reading authentic texts for meaning, becoming lost. Brown and Campione (1998) were concerned enough to say “The surface rituals of questioning, summarizing, and so forth are engaged in, divorced from the goal of reading for understanding that they were designed to serve. These strategies are sometimes practiced out of the context of reading authentic texts.” Others have noted that a potential problem is that teachers and students can become overly focused on the strategies themselves and lose sight of the meaning of what is being read (Beck, McKeown, Hamilton, & Kucan, 1997). This is not an issue that is necessarily confined to reciprocal teaching. However, because of its relative age and popularity it is the most well researched example of multiple strategies instruction. Nor are these problems a symptom of reciprocal teaching itself, but rather they reflect poor execution of, or ill-informed changes to, the intended instructional programme. Alexander and Murphy (1998) suggest that having students memorise and routinely use a set of strategies is not likely to result in independent and strategic readers, and nor is it likely to improve students’ ability to control the use of strategies effectively in different contexts.

Another way of addressing the issue of multiple strategies instruction is the transactional strategies approach. This approach emphasises the dialogue and transactions among teacher, student, and text in accordance with constructivist principles and could therefore provide a suitable context for the teaching of executive control. One example of this approach is the
Students Achieving Independent Learning (SAIL) programme. This approach contains a number of strategies that are divided into two categories, cognitive strategies and interpretive strategies and includes all four of the reciprocal teaching strategies under cognitive strategies along with thinking aloud, constructing images, story grammar analysis, and text structure analysis. Interpretive strategies included are character development, creating themes, reading for multiple meanings, creating literal/figurative distinctions, looking for a consistent point of view, relating to personal experience, relating one text to another, and responding to text features such as point of view, tone, or mood (R. Brown, Pressley, Van Meter, & Schuder, 1996).

In SAIL the main emphasis is on assisting students to learn when to use which strategy, through a mix of teacher think-aloud and explicit teaching, including prompting students to use strategies as appropriate to the text. Students are not pointed to a particular strategy, but the types of prompts used ask for particular kinds of information that require students to use one or more of the strategies listed. Because of the number of strategies involved (sixteen as compared to four in reciprocal teaching) students are required to be more strategic in their choice of strategy. Evidence for the efficacy of this approach is relatively recent (R. Brown et al., 1996; Duke & Pearson, 2002), but it has been shown to be effective in raising student achievement on standardised comprehension tests. Students involved in SAIL classrooms also remembered more content from their reading lessons. This approach has the potential to avoid the possible pitfalls outlined earlier. Like any other intervention, the actual form it takes will depend on the philosophy and training each teacher brings to their teaching (Hacker & Tenent, 2002). Presumably students are being taught to make decisions (or at least are having to) in the course of this programme simply because of the number of strategies involved. Certainly, if the form executive control takes in good readers is known, there is plenty of scope for including its teaching in a programme such as SAIL.

Another programme, and one which is tied to a specific premise, is that of Questioning the Author (QtA). QtA is based on the idea that attempting to identify the message an author was trying to get across in the text would have benefits in terms of understanding the text. Developed by Isobel Beck, Margaret McKeown and others (see Beck, McKeown, Hamilton, & Kucan, 1997) QtA involves a set of questions that can be used by a teacher as the teacher and a group of students read through a text. The questions are aimed at achieving five goals: 1) to initiate the discussion, 2) to help students focus on the author’s message, 3) to help
students link information, 4) to identify difficulties with the way the author has presented information and ideas, and 5) to encourage students to refer to the text either because they’ve misinterpreted a text statement or to help them recognise that they’ve made an inference. Although QtA does not involve the direct instruction of strategies, it is designed to encourage the use of a variety of approaches to understanding text. Beck, McKeown, Sandora, & Worthy (1996) have found some encouraging results after studying the classroom use of QtA over the course of a year. They found that the discussions about text became more student-centred and interpretive (rather than recitative) and that students took a far greater and more active part in the discussion than in those classes not using QtA. Most importantly they also found that students were far more proficient at higher order comprehension and were also much more active at monitoring their comprehension.

It is becoming clear that motivation and student engagement play an important part in the development of reading comprehension (Dolezal, Welsh, Pressley, & Vincent, 2003; Guthrie et al., 2004). This connection is perhaps not surprising, but it does provide another means for evaluating potential success of a programme for reading comprehension. The finding that QtA enhances student engagement is therefore a positive factor in evaluating this particular routine. One programme that has been developed specifically to address this issue is that of Concept Oriented Reading Instruction (CORI) (Guthrie et al., 2004). This approach not only directly teaches several reading comprehension strategies (activating background knowledge, questioning (of the text), searching for information, graphic organising, and story structure), it also deliberately addresses the classroom context to provide an environment that is both motivating and promotes engagement. It includes the following practices in order to do this: 1) using content goals in instruction, 2) providing hands-on activities, 3) giving students choice 4) utilising interesting texts, and 5) promoting collaboration in reading instruction. This approach proved to be more successful than either single strategy instruction [taught in a way consistent with the best practice outlined by the National Reading Panel (2000)] or traditional reading instruction at increasing students’ comprehension, level of motivation for reading, and their use of strategies (Guthrie et al., 2004). Because of the importance of reading goals in both QtA and CORI, the opportunity for teaching deliberate and goal-directed decision-making is increased. Strategy use, monitoring, and difficulty resolution should all be directed toward a single goal, and the decision-making involved in reading should support this.
Although these approaches have been around for some time, they are still the most commonly referred to programmes or routines (J. L. Vacca et al., 2012) and there does not appear to have been significant development of those programmes or new approaches that vary greatly in form or efficacy. There is also no concrete evidence that an explicit programme of teaching for reading comprehension results in better outcomes for students than a less explicit one (Atkins, 2013) in a typical classroom setting as opposed to an experimental one. The terms reading skill and reading strategy have often been used interchangeably in the literature (Afflerbach, Pearson, & Paris, 2008) and this may give an insight into the reason for the lack of evidence for a lasting effect outlined by Atkins (2013) and for studies that show evidence of teaching of strategies but little evidence of subsequent strategy use by students (McNaughton, 2007). Afflerbach et al. (2008) clarify the difference between the two as being one of expertness. Once an individual has become sufficiently expert in a reading strategy that it can be carried out automatically and requires little conscious effort and control from the reader then it can be considered a skill. The research referred to (Atkins, 2013; McNaughton, 2007) suggests that we do not need to be just teaching strategies, but also to be teaching them until they become a skill.

There is then a range of multiple strategy comprehension instruction routines or programmes, of which only a few have been addressed here. While this type of approach has been shown to have some effect, it is not clear that they have a lasting effect over and above other forms of instruction (Atkins, 2013) and they do not (at least explicitly) currently teach executive control. Some however, have the potential to do so if enough is known about the process to make the teaching of executive control explicit. Given that executive control strategies can be taught, and that they support gains in other comprehension abilities (A. L. Brown, Campione, & Day, 1981; Garner, 1994) it remains for the form executive control takes in good readers to be identified so that teaching of this process can be included in classroom reading programmes.

2.8 Methodological Considerations

This section considers the literature relating to the collection of the types of information of interest to the current study. This section will include a focus initially on two specific studies that have had a particular influence on the methodology used in the current study, and then consideration of other literature that has influenced the final form of the methodology to be used in the current study. Finally, this will be followed by a discussion of the relative
strengths and weaknesses of the data collection methods appropriate for studies of psychological phenomena such as executive control.

2.8.1 Young Readers’ Inference Strategies in Reading Comprehension. (L. M. Phillips, 1988)

This study was one of the first that the author of the current study encountered that directly attempted to uncover the underlying thought processes behind successful reading and to attempt this with relatively young children. As such it played an important role in shaping the approach taken in the current study.

Phillips’ (1988) study was designed to address three questions:
1. What inference strategies are used by sixth-grade readers, and how do these strategies differ from those used by adults?
2. Do low- and high-proficiency sixth-grade readers use similar inference strategies?
3. Is there a strategy use difference based on whether sixth-grade readers are familiar or unfamiliar with text content?

(L. M. Phillips, 1988, p. 202)

While they do not correspond directly with those in the current study these questions are relevant in some ways to the questions posed in the introduction. Phillips’ (1988) study used participants of a young age, very similar in fact to the age group considered desirable for the proposed study. It was therefore of interest in that there might have been lessons to be learned with respect to gathering verbal reports of reading from this age group. Secondly, it addresses the issue of what happens at what Phillips called ‘impasse’, or what has been referred to here as the ‘clunk-point’, which relates to question 1(c) and also to question 2(c) relating to the model in the current study.

The questions asked by Phillips (1988) also differ in some important ways. While this study is looking at the same point in time as aspects of the current study, it was interested in cognitive strategy use (inference) at this point rather than the metacognitive control processes that led to the use of a strategy which is what the current study is aimed at addressing.

Phillips’ (1988) study addresses these questions in a strongly information-processing based way. The verbal protocols were analysed in terms of how the participants dealt with the
information they were working with and how they attempted to use inferential strategies to make sense of the text they were reading at the time.

Phillips (1988) used sixth-grade participants from two Canadian cities and equal numbers of high-proficiency readers and low-proficiency readers as determined by the use of standardised testing (Canadian Test of Basic Skills). The six texts used were passages of about 100-150 words on a range of topics judged to be either familiar or unfamiliar to participants based on their city of origin. Each text was accompanied by a set of inference and clarification questions that were specifically intended only to elicit further information from participants when they were not clear in their initial reports. Texts were carefully constructed to ensure that participants would need to use a number of strategies to build meaning as they worked through the text. For example, the texts were not titled and the topic was not explicitly mentioned until near the end of the text so readers would need to construct and evaluate interpretations of the text as they read through each passage and would not be cued by overly explicit information too early in the text. Each text was divided into a number of ‘goal structures’ or parts of the passage in which a particular goal or objective of the story setting or characters is specified, and a final segment that specified the outcome of the preceding sections.

The procedure employed meant that participants were initially seen in groups of five to read a practice text in order to familiarise them with the procedure and to answer any questions they may have had. Following this each participant was met individually for a session lasting approximately 30 minutes. Students were asked to report verbally what they were thinking immediately following the reading of each goal structure (1-3 short sentences). The inference and clarification questions (e.g., “Why did you change your mind?” or “Why do you think that [specifically] might happen [or was possible]?”) that accompanied each text (L. M. Phillips, 1988, p. 201) were used only if participants did not independently report making inferences or when they did not provide sufficient information to be fully understood. This process was called “limited probing when necessary” by Phillips (p. 198). These questions were used in an attempt to ensure that the information gained from each participant was full and that the researcher had understood their intended meaning. However, using prompts and questions in this way raises some concerns about the data being gathered.
While the method utilised in this study is largely consistent with the ‘best practices’ laid out in Pressley and Afflerbach (1995) there are two aspects of it that may give cause for concern. The first of these is the “limited probing when necessary” (L. M. Phillips, 1988, p. 198) that occurs. These questions have the potential to encourage participants to engage in thought processes they otherwise would not have (which may be why they did not report using any and hence the question being asked) or to encourage participants to later report and/or engage in the types of processing they believed the questions encouraged, thereby distorting following data. While it is important to encourage participants not to self-censor what they report, this is better done at the start of the session as part of the instructions given. Even apparently very general questions may be seen by participants as encouraging a particular type of response, and rather than ensuring participants do report fully, may in fact encourage this self-censorship. It is one of the criticisms of verbal protocol analysis that this self-censoring takes place and researchers can never really stop it, or know what has been censored. However, research into the efficacy of verbal protocol analysis and its results has not suggested this is a significant issue (Kucan & Beck, 1997; Pressley & Afflerbach, 1995), though it remains something that needs to be given careful consideration in research design.

The second concerning aspect is the lack of corroborating data such as behavioural observations that may support the verbal protocols. Collection of another form of data that can be used as potential corroborating data has a number of useful attributes. Firstly, it may allow the researcher to confirm or clarify what it was that the participant intended where verbal reports are unclear. This may have meant that the probing questions used by Phillips were unnecessary. Secondly it can help to confirm the researchers’ interpretation and classification of verbal protocol data. An example of the use of corroborating information can be seen in the research of Garner, Wagoner, and Smith (1983).

By the very nature of the subject matter being studied and the inability to directly observe and measure it, data gathered in the area of metacognition has been necessarily qualitative. Access to the metacognition and cognition of a study’s participants is always mediated by one or both of two things, either by the participants’ ability to relate accurately and effectively their own internal mental states, or by the ability of the researcher to infer these states from some other measurable behaviour such as text look-backs. In the case of Garner et al (1983) the researchers collected a mixture of qualitative (audiotape) and quantitative (observational notations) data. The primary data source remained the audiotape data and the resulting
transcripts; the notational records of participants’ behaviour were gathered as a source of potentially corroborating data.

While the work of Phillips (1988) and her use of verbal protocol analysis was the initial impetus for moving toward a form of verbal protocol analysis for the current study, a number of other studies encountered since have played a part in the final form, either directly or indirectly. The Garner et al (1983) study for example did not provide significant influence on the final form of the current study’s method, but the efforts made in that paper to maintain a naturalistic context and to avoid researcher effects while still ensuring the collection of rich data certainly influenced the thinking that led to the final research design for the current study. One work which did have a direct and significant impact on the current research was that by Michael Pressley and Peter Afflerbach (Pressley & Afflerbach, 1995)

### 2.8.2 Verbal protocols of reading: The nature of constructively responsive reading.

*(Pressley & Afflerbach, 1995)*

In their seminal work, Michael Pressley and Peter Afflerbach achieved two things. They produced what is probably the most detailed description of the kinds of behaviours exhibited by proficient readers, and they also determined to a large extent the shape of future research into the metacognition of reading. Their description of constructively responsive reading (Pressley & Afflerbach, 1995) played a very significant part in the development of the current study and is discussed in some detail in other parts of this thesis. At this point in this thesis the focus is on the methodological concerns and recommendations they raised.

Following their review of verbal protocol studies relating to reading, Pressley and Afflerbach (1995) reported that a great many of the studies they reviewed were lacking in the detail given of the methods employed (see Ericsson & Simon, 1993). In the process of determining the method to be used in the current study efforts were made to identify the methods used in other studies of a similar type. Identifying the specifics of methods used in studies was often difficult or impossible. Pressley and Afflerbach (1995) reported that this not only meant that they could not be certain of the methods used, but also that they could not be sure of the researchers’ interpretations of their data, and nor could they have confidence in their own interpretations of these studies.
In response to this lack of clarity, Pressley and Afflerbach (1995) summarised what they considered to be the minimum points that should be included in any description of method. These points are described in the following discussion and they provided a blueprint for the methodological approach employed in the current research.

The first point made by Presley and Afflerbach (1995) is that there needs to be a full description of the characteristics of the participants in the study. They were particularly clear that specific reference should be made to the reading abilities of participants, and of the individual differences that may be relevant. These differences should not be masked behind generalisations such as ‘graduate student’ or ‘good reader’. Also, any other personal characteristics that may impact on their reporting should be disclosed such as whether they are familiar with verbal reporting and the task they are to complete. Their second point was that the characteristics of the texts used should also be reported clearly, and that these text characteristics should be reported in relation to the characteristics of the participants involved in the study.

The remaining points related more directly to Ericsson and Simon’s (1993) recommendations for verbal protocol collection in general rather than being specific to studies of reading. Pressley and Afflerbach (1995) felt that given the importance of directions and prompts given to participants that these should be reported in some detail. Without this detail it is difficult or impossible for subsequent readers to draw their own conclusions about the impact of those directions and prompts on the response of the participants and consequently the validity of any data gathered subsequently. This is particularly significant for Ericsson and Simon (1993) and Pressley and Afflerbach (1995) as they make a significant issue of their belief that concurrent data (i.e., the contents of a participant’s short term memory) is preferable to the reporting of data that has been interpreted or self-censored by participants. The instructions or prompts given to participants may impact on this and contribute to participants considering the value or relevance of their thoughts prior to reporting them. More recent research (e.g. K. L. Taylor & Dionne, 2000; van Gog, Paas, van Merrienboer, & Witte, 2005) has contributed to the belief that retrospective data can be valid and reliable, and that rather than providing less worthwhile data than concurrent data collection retrospective data provides different information about the metacognitive processing of participants. These developments and their relationship to the current study will be discussed in the next section of this chapter.
The analysis of verbal reports is an interpretive act, and because of this it is necessary that a full account of the methods of analysis used is provided. This enables any conclusions drawn on the basis of that analysis to be interpreted in the context of the analysis made, and for the researcher’s interpretations to be reviewed fully. At a minimum it is suggested that any categories developed and used in the coding of verbal protocols need to be fully described, preferably with illustrative examples.

2.8.3 Verbal Protocols
As an approach to studying cognitive activity, information-processing theory focuses on and emphasises the structures and processes that underpin knowledge use (K. L. Taylor & Dionne, 2000). Within this approach complex behaviours (such as developing reading comprehension) can be broken down into a number of smaller component processes and knowledge states. These components can then be ordered in an attempt to model the active pathways involved in cognitive processes (Palmer & Kimchi, 1986). The ability of information-processing theory to break down a larger cognitive process into its component features means it can be applied to understanding those processes and can also be used as a basis for setting out theory-based criteria and methods for the collection of reliable and valid verbal protocol data (Ericsson & Simon, 1993).

In essence there are two basic types of verbal protocols. Concurrent verbal protocols are gathered through requiring participants to think aloud as they are engaged in cognitive activity. Retrospective protocols ask participants to provide an account of their thoughts and actions as they are remembered after the activity has been completed. Each of these approaches has its advantages and disadvantages, and there may be additional merit in an approach that makes use of both forms of data (K. L. Taylor & Dionne, 2000; van Gog et al., 2005).

2.8.4 Information-processing Theory and the Collection of Concurrent Verbal Protocols
Concurrent verbal protocols ask participants to report their cognitive activity as it occurs. This “thinking aloud” requires the development of a “constructivist theory of mind” (Schwanenflugel, Fabricius, & Alexander, 1994) which allows participants to not only have the awareness necessary to successfully make external verbalisations of internal states, but also to have the language with which to do so. In effect, it requires the “verbalisation of the inner language of short-term memory activity during the problem-solving process” (K. L. }
Taylor & Dionne, 2000, p. 414). The primary advantage of collecting data in this fashion is its immediacy, and therefore the reduced likelihood (assuming careful research design) that the participant will have censored their reports or that the data will have been otherwise distorted (Ericsson & Simon, 1993; Pressley & Afflerbach, 1995).

The relatively limited capacity of short-term memory places demands on the research design to carefully limit placing an additional load on the short-term memory of participants. Fortunately, the aspects of research design that increase the reliability and validity of the verbal protocols are largely the same as those that reduce the load on short-term memory. The aspects of research design that need to be considered include the instructions given, the use of warm-up exercises, the tasks themselves and the use of prompts or probes by the researcher.

In studies such as this one, where the aim is to reflect as closely as possible a natural problem solving process, instructions to participants should be designed to avoid encouraging participants toward a particular type of strategy or to censor their reports in any way, including justifying their reasoning (Ericsson & Simon, 1993). In contrast the instructions given should emphasise the need to report everything they are thinking, to be accurate in their reports and specifically to avoid self-censorship (Ericsson & Simon, 1993; Pressley & Afflerbach, 1995). Requiring participants to directly report their thinking from their short-term memory without censoring, justifying or explaining their reports minimises the demand on short-term memory and is essential to the value of the data gathered subsequently (Ericsson & Simon, 1993). Asking participants to go further than direct reporting and to make some form of judgement while reporting have been shown to overload short-term memory and, crucially in the context of the current study, to change the way in which processing occurs (Ericsson & Simon, 1993; Pressley & Afflerbach, 1995). Therefore, if the current study is to shed light on the metacognitive control processes used by good readers then care will need to be taken to ensure any instructions given prior to the collection of concurrent verbal protocols neither cause undue load on short-term memory nor suggest to the participant that anything other than direct reporting is desired.

As summarised by K. L. Taylor and Dionne (2000) warm-up exercises have an important role to play in ensuring quality data is gathered from concurrent verbal protocols. These exercises need only be brief (less than 15 minutes in duration) and can produce several benefits. Firstly, including some form of warm-up exercise enables the researcher and participant to be sure
that the instructions given have been understood and that both have a shared understanding of what should be in the verbal reports (Ericsson & Simon, 1993). Warm-up exercises can also help to reduce anxiety and therefore assist participants to feel more comfortable with reporting during the task and increase the likelihood of a more complete report. Thirdly, and possibly because of the effects mentioned, warm-up exercises reduce the need for interruption or prompting by the researcher during data collection.

The task itself will have a significant impact on the worth and richness of any data collected. The task (in this case the texts) must be sufficiently demanding so as to avoid the participants being able to read them without difficulty. This is particularly so within the current study. One of the research questions refers to the possible existence of default strategies for the development of reading comprehension. If the good readers do indeed make use of default strategies and participants were to be presented with a relatively easy text, then it is likely they would read the entire text without experiencing a failure of this strategy. In this case the data would consequently provide little if any information on this aspect of reading comprehension. In addition to this risk, simple or overly familiar tasks are conducted using processes that are automatic. Verbal protocols are unlikely to contain significant amounts of information on processes such as these (Ericsson & Simon, 1993) while tasks that require verbal encoding, that is they ask the participant to be conscious of their behaviour, will provide richer data. Tasks should therefore be moderately difficult in order to require the participant to make use of conscious processing (Afflerbach & Johnson, 1984; Ericsson & Simon, 1993), however not so difficult as to preclude useful processing or to overload short-term memory and result in reporting becoming impossible or significantly reduced. In the context of reading, this means that the texts should be carefully selected according to the experience and expertise of the readers involved (Pressley & Afflerbach, 1995).

A fourth significant issue that needs to be considered in the collection of concurrent verbal reports relates to the presence and input of the researcher during the task. Prompts (actions of the researcher in order to prompt the participant to continue reporting) and probes (requests by the researcher for further information) should be kept to an absolute minimum during the task. They should be infrequent and neutral, care needs to be taken to ensure that prompts by the researcher do not encourage or discourage particular types of behaviour (Ericsson & Simon, 1993). Prompts should only be used if the participant has ceased to verbalise their thinking for at least 10-15 seconds (Afflerbach & Johnson, 1984; Ericsson & Simon, 1993).
In order to reduce the possible effects of researcher prompts, they should be kept as neutral and unobtrusive as possible (e.g., “Keep talking” is better than “What are you thinking about?”), and can be standardised so that all participants receive the same prompts and/or can be made at specific intervals during the collection of verbal report data (Ericsson & Simon, 1993; Pressley & Afflerbach, 1995).

2.8.5 Information-processing Theory and the Collection of Retrospective Reports

In contrast to the collection of concurrent verbal reports, retrospective reporting involves the reporting of remembered cognitive activity (Ericsson & Simon, 1993). Because of this difference, retrospective reports are subject to different constraints in terms of the quantity of data that is available and also result in the collection of different types of information.

Information that is available to be included in retrospective reports need to have been heeded not only in short-term memory as in concurrent reporting, but must also have been transferred to long-term memory in order to be available for subsequent reporting. The extra processing involved in both storing and retrieving the information means that differing types of information may be available when compared to concurrent reporting. The types of information that may be stored and retrieved from long-term memory contain less detail of specific activities and are ‘big picture’ information. Retrospective reports may contain information such as instructions remembered, goals set, information attended to and strategies used (Ericsson & Simon, 1987; Pressley & Afflerbach, 1995; K. L. Taylor & Dionne, 2000). Retrospective reports do not necessarily reflect the specific problem-solving activity utilised in a particular instance, but they do represent the strategic knowledge of the participant and may represent a generalised conceptualisation of the type of processing used (Ericsson & Simon, 1993).

In short, information-processing theory supports the use of retrospective report data as it does concurrent verbal protocols, but it also highlights some aspects of concern that need to be addressed during the collection of retrospective report data. There are a number of ways that the processing of the information to be reported during the collection of data can be affected by the methods used to collect that data. The collection of retrospective reports necessarily increases the interaction between research participant and researcher, leading to an increased possibility of introducing bias into the report, and the reported information must have been available to long-term memory, meaning that less information is available to be reported than
was heeded at the time the processing took place. The time delay, even if brief, also makes
the data susceptible to embellishment and to rationalisation on behalf of the research
participant.

Retrospective report data is therefore potentially subject to a range of difficulties. Any data
collected is potentially susceptible to incompleteness, embellishment and researcher bias and
is therefore subject to questions of its validity and reliability (K. L. Taylor & Dionne, 2000).
As with the collection of concurrent verbal protocols the risks associated with the collection
of retrospective reports must be minimised through careful research design and defended
against criticism of the methods involved. The collection of retrospective data is supported by
the initial theoretical work from Ericsson and Simon (1993) and the methods strengthened by
subsequent empirical studies (Garner, 1988; Pressley & Afflerbach, 1995). Many of the issues
affecting the collection of retrospective reports (e.g., task nature, participant expertise and the
use of probes) are common to the collection of concurrent verbal protocols and the research
measures that can be taken to ameliorate the risks associated with these have been discussed
in the previous section. The additional issues that are specific to retrospective data also
require some further methodological care to maximise the reliability and validity of

As retrospective reports involve more interaction between the research participants and the
researcher they are also more prone to influence from the participants’ perceptions of the
kinds of information being sought by the researcher. Ericsson and Simon (1993) therefore
point out that restricting instructions to a straightforward request to report everything that can
be remembered about the specific task just completed is particularly important when
collecting retrospective reports. In addition it is also recommended that accuracy and
completeness in the reporting of memories connected to the completion of a particular task
should be emphasised to the participants (Ericsson & Simon, 1993; Garner, 1988; Pressley &
Afflerbach, 1995), and that retrospective reports should be elicited as soon as possible
following completion of the task (Ericsson & Simon, 1993; Garner, 1988; Pressley &
Afflerbach, 1995). One further recommendation in relation to the eliciting of retrospective
reports is that multiple tasks should be avoided where possible, but that if multiple tasks
necessarily precede reporting then those tasks should be dissimilar in nature (Ericsson &
Simon, 1993).
Probes play a much more significant role in the collection of retrospective reports than in the collection of concurrent verbal protocols and this can be seen as either a benefit in terms of the collection and verification of data (Ericsson & Simon, 1987) or as a threat to the reliability and validity of the data owing to the possible intrusion of the researcher into the reports themselves (Garner, 1988; Van Someren, Barnard, & Sandberg, 1994). On the beneficial side, the collection of retrospective reports and the use of probes allows the researcher to dig more deeply into the particular cognitive processing that occurred during a specific event and which may not have been fully disclosed (or disclosed at all) in concurrent verbal protocols. It also allows the researcher to verify their interpretation of specific incidents contained within the concurrent verbal protocols, a strength of the method in that it allows the researcher to improve the validity of the data (Poulisse, Bongaerts, & Kellerman, 1987; K. L. Taylor & Dionne, 2000). Referring to and enquiring about specific moments in the preceding processing and concurrent verbal reports can also add to the richness and accuracy of the resultant data by serving as retrieval cues (Ericsson & Simon, 1987; Poulisse et al., 1987).

In summary, the use of probes in gathering retrospective data has potentially significant advantages. However, the very aspects that provide those advantages are also those that carry risks for the validity and reliability of the data. Probes have the potential to affect the reporting of participants in three main ways. If probes create bias through the use of leading questions, ask for more information than the participant is able to provide, or impinge on the ability of participants to report spontaneously then the use of probes impacts negatively on the validity of the data (Ericsson & Simon, 1993; Garner, 1988; Poulisse et al., 1987; K. L. Taylor & Dionne, 2000). As with the collection of concurrent verbal protocols and other forms of research interviews the general principles of avoiding these pitfalls are fairly simple and straightforward. There should be an emphasis on “what” or “which” questions rather than “why” questions for encouraging participants to report. The researcher should take a neutral, non-evaluative position throughout the process. Also, the use of puzzled responses or requests for clarification should be used rather than a push for further information. Finally, questions should remain general (Can you recall what you were thinking?”) rather than specific (“Can you recall how you planned your solution?”) (K. L. Taylor & Dionne, 2000). In practice this means ensuring retrieval and reporting is maximised while ensuring any probes used do not influence the data collected. Following these principles means that it is possible to gather valid and reliable retrospective report data (Ericsson & Simon, 1987; Poulisse et al., 1987; K. L. Taylor & Dionne, 2000).
2.8.6 Combining Concurrent Verbal Protocols and Retrospective Reporting Within a Single Data Collection Procedure

Both concurrent verbal protocols and retrospective reports provide opportunities for gathering useful information relating to cognitive processes. Each method has its advantages and potential perils in relation to the type of information likely to be gathered and in terms of the risks associated with the validity and reliability of data (K. L. Taylor & Dionne, 2000). Combining the two has the potential for some advantages in terms of both richness of data and also the reliability and validity of that data if suitable methodological practices are followed.

The primary reason for combining the collection of concurrent data and retrospective reports is the ability of such a methodology to collect a greater variety and depth of information (K. L. Taylor & Dionne, 2000; van Gog et al., 2005). As was alluded to earlier, concurrent verbal protocols often contain more detailed information, often relating to the actions carried out in attempting to solve a task and the outcomes of those actions (K. L. Taylor & Dionne, 2000; van Gog et al., 2005). In comparison, retrospective reports contain more “references to strategies that control the problem solving process” and “information such as the conditions that elicited a particular response” (K. L. Taylor & Dionne, 2000, p. 414). Making use of both forms of data collection should therefore provide a fuller picture of the overall process involved in the completion of a task (in this case reading). In the context of the current study making use of both forms of data collection will therefore allow more detailed analysis of the metacognitive processes involved in reading comprehension.

The focus on gathering metacognitive information means that a methodology that gives the greatest likelihood of producing significant amounts of data describing the nature and course of processes involved is the priority for the current study. There is less concern with what is done (e.g., which particular strategy is used) and a much greater interest in how. A methodology is needed that will provide information on how the process unfolds and how it is controlled. One possibility is to simply combine the use of concurrent verbal protocols and retrospective reporting (Ericsson & Simon, 1993; K. L. Taylor & Dionne, 2000). While combining the two is likely to result in a full report that combines both types of information, there is an inherent risk involved in reporting retrospectively on the same task that was carried out while reporting concurrently. The risk is that the retrospective reports will be reports not of a memory of the actual process but rather a memory of what was verbalised during the
concurrent reporting (van Gog et al., 2005). In response to this risk, a third form of reporting has been developed. In cued retrospective reporting (van Gog et al., 2005) participants are asked to report retrospectively, but this report is based not only on the memories of the participant but on some form of information (such as a record of observations or eye movements) which is shown to the participants in order to help cue their memories of the process involved. This leads to the collection of better information because the cues result in less of the process being forgotten by the participant and there is a reduced likelihood of fabrication because participants are reporting on the basis of a cue that records (some) aspects of what actually occurred during the completion of the task (van Gog et al., 2005; Van Someren et al., 1994). Moreover, cued retrospective reporting can lead to greater reporting of the type of information usually associated with concurrent reporting provided the cue used includes reference to the participants actions in solving the task (van Gog et al., 2005).

Cued retrospective reporting appears to combine the advantages of both concurrent verbal reporting and retrospective reporting in terms of the data collected, but there are other methodological advantages to using a combination of concurrent and retrospective reporting. The advantages of using concurrent and retrospective reporting as complementary methodologies have been collated by Taylor and Dionne (2000) who identified five different potential advantages to using concurrent and retrospective reporting in combination. Of these five, three are primarily related to the richness of the data collected. The first of these is potential to use the concurrent verbal protocols to guide the collection of retrospective reports through using the concurrent data as cues to promote the accurate recollection of a particular event. Further, retrospective data collection can be used to elaborate on the data collected concurrently (which tends to be focussed on action information) to give a fuller picture of the event and allow the researcher to gather more data related to higher-level processes than would be collected using concurrent verbal protocols alone. Finally, the collection of two different forms of data means that while there is generally close agreement between what people say they will do, what they do, and how they report what they did (Ericsson & Simon, 1993; Pressley & Afflerbach, 1995), it is likely that there will be times when there is disagreement between the two. Where there is conflict between the two an opportunity exists to consider the relationship between participants’ knowledge and awareness and their actions. Using the two methodologies in combination then provides an opportunity to gather richer data and also has the potential to highlight inconsistencies between individuals’ declarative metacognitive knowledge and what they actually do, an opportunity that may allow the
researcher to garner an insight into the development of the skill under investigation and its relationship to the development of the awareness of that skill.

2.9 Concluding Comments
This chapter has covered a variety of approaches to the understanding of reading comprehension. While each approach contributes to our knowledge in this area none provides a full picture of the behaviour good young readers engage in that enables them to read more successfully than many of their peers. The next chapter introduces a model of reading comprehension that attempts to explicitly draw this knowledge together into a single model.

This model is based on the review of the literature included in Chapter Two of this thesis. This review has identified four main concepts that will be included in the model proposed in Chapter Three. Those four ideas are firstly, the possibility that control of strategy use may not occur at a breakdown in comprehension, but as part of a separate process and one that is tied to goal-setting; secondly that individual readers may be likely to draw upon a default or small number of strategies dependent on context; thirdly the idea that monitoring is crucial to the processes controlling strategy use and strategy use also impacts upon monitoring; and lastly the overall process of reading and reading comprehension is discontinuous (interrupted) and cyclical. The model proposed in the next chapter draws these concepts together in a visual representation of good reading.
CHAPTER THREE

A Discontinuous Model of Self-Regulated Reading Comprehension

3.1 Introductory comments
The proposed model attempts to demonstrate that it is possible to elucidate the metacognitive processes involved in the self-regulation of reading comprehension. The model draws heavily on two separate but related fields of research. The two fields include the research on information processing models of good readers [in particular the work of Pressley and Afflerbach, (1995) in developing the constructively responsive reading model and related research] and research on models of self-regulated learning [in particular the work of Winne (2001); Winne and Hadwin (1998)]. There are four major issues identified from the review of the literature that are addressed in the new model. They are:

1. The possibility that control of strategy use may not occur at a breakdown in comprehension, but as part of a separate process and one that is tied to goal-setting,
2. That individual readers may be likely to draw upon a default or small number of strategies dependent on context,
3. Monitoring is crucial to the processes controlling strategy use and strategy use also impacts upon monitoring, and lastly,
4. The overall process of reading and reading comprehension is discontinuous (interrupted) and cyclical.

3.2 A Discontinuous Model of Self-Regulated Reading Comprehension
In the model shown in Figure One it can be seen that the model proposes that the reader becomes active before actually beginning to read. In the ‘Preparation for reading’ phase the first things that happen are connected to text selection and to goal setting. These two aspects, while separate processes, are interconnected. A good reader who sets out with a goal to achieve a particular purpose will attempt to select texts that fit that goal. Similarly a reader who has chosen to read a text will subsequently set themselves goals that they believe are appropriate to that text. Following the decision to read a particular text and the setting of goals to be achieved in that reading, the reader then develops a plan of attack for their reading.
This aspect of the preparation for reading phase is a significant part of the attempt to explain the difficulty experienced to date with specifying the executive control processes at work in the strategic use of reading comprehension strategies. According to this model, the strategy may already have been chosen prior to reading beginning. In constructively responsive reading the plan of attack referred to large-scale considerations such as which parts of a text to read (Pressley & Gaskins, 2006). The plan of attack in this model also includes these things but goes further. In line with earlier discussions on the work of Winne (2001), McKoon and Ratcliff (1992), and Magliano, Trabasso, & Graesser (1999) it is suggested that a reader will develop at least one (prototypic) definition of the task at hand. The reader will then bring into their plan of attack the strategy that they feel is most likely to be of use in the context of their task definition and the specific text they are reading. Consequently, before they begin to read readers have already determined the likely strategy they will use providing the task continues to fit the definition they are using. It is also expected that for proficient readers this strategy will likely be a default strategy that is connected to the prototypic task definition (McKoon & Ratcliff, 1992) and that there may not therefore be a conscious decision involved in strategy
selection at all. This mechanism is also similar to the cohort activation mechanism described in the Landscape model of reading comprehension (Van den Broek et al., 1999), in that once a reader activates a concept relating to their reading other related concepts (such as strategies) are also activated. In addition, the goal set for reading relate to the concept of coherence-based retrieval in the Landscape model and search/effort after meaning in the Constructionist view (Graesser et al., 1994; Van den Broek et al., 2005). If a reader has set a superficial goal that is not challenging then they are unlikely to make a significant effort to comprehend the text.

Following the setting of goals and determination of a plan of attack, the reader begins the cyclical process of reading and monitoring their progress toward their goals. Each period of continuous reading is a relatively seamless process of reading and monitoring, which is interrupted only by the relatively (depending on the expertness of the reader) automatic use of the strategy associated with their plan of attack. In the case of expert readers or those reading in a context with which they are very familiar, this use of a default strategy may not even be conscious. In this part of the reading process the relationship between monitoring and control is the more traditional conception (Koriat et al., 2013) whereby the reader is monitoring progress toward the goal they set prior to reading. Feedback from this monitoring determines the way the reader exercises control over their strategy use. Depending on the difficulty of the text, or achievability of their goals, a number of possibilities arise beginning from the point labelled ‘1’ in Figure One. If the text or the goals set are sufficiently easy, monitoring may not identify any issues that require the specific attention of the reader. In this case the first period of continuous reading may also be the last; continuing until either the text is finished or the goal is achieved. Reading of this sort would be the simplest conception of reading in Constructively Responsive Reading (Pressley & Afflerbach, 1995), in that while the reader is active in their development of reading comprehension there is little or no requirement for conscious executive control over a reader’s procedural knowledge. At this point the reader finishes reading and subsequently disengages from the text. In this simplest of possibilities, it is unlikely that verbal protocols, focussed on the actual act of reading, would have revealed the process that decided upon a strategy to be used in an eventuality (comprehension difficulty) that did not occur.
A more likely outcome is that at some time during the continuous reading, monitoring will identify a discrepancy between actual progress towards the reader’s goal and the desired progress that needs to be remedied. In this case at point one in Figure One, the initial response of the reader will be automatic. They will utilise the default strategy that is connected to their prototypic task definition, evaluate the success or otherwise of that strategy, and arrive at point two. This potentially automatic process is hypothesised to be part of a period of continuous reading because the reader does not pause in order to consider their options. According to this model there are three possible outcomes from that evaluation. If the strategy used is evaluated as having been successful, the reader will move back to reading and monitoring without pause. If the evaluation suggests more work is needed, there are a further two possibilities. Either the reader will utilise the same strategy again (this may occur where there is only a minor remaining discrepancy) and subsequently go back to reading and monitoring, or they will end the current period of continuous reading as insufficient progress toward their goal is being made – that is they have become stuck. This is the point of real comprehension difficulty, only to be found if previous parts of the model (goal-setting, monitoring) have been fulfilled. If the reader has not set goals and/or monitored then there will be no discrepancy identification and therefore no strategic action related to reading comprehension. This is one point of convergence between previous conceptions of the development of reading comprehension (e.g. Pressley & Afflerbach, 1995) and self-regulation models such as that of Winne and Hadwin. Such a comprehension difficulty requires the reader to be active and flexible as in Constructively Responsive Reading, but it also requires the preparation aspects of self-regulated action to have been fulfilled in order for this to occur. It is at this point in the model that the alternative hypothesis of the relationship between monitoring and control appears (Koriat et al., 2013). The exercise of executive control in order to resolve a negative feeling of understanding affects what is monitored subsequently (i.e., the outcome of the control). In the context of this study, monitoring that occurs following the exercise of executive control is referred to as evaluative monitoring to clarify the difference between the two conceptions of monitoring. Evaluative monitoring is directly tied to evaluating the success of strategy use, rather than monitoring the development of understanding.

In the regulatory phase of reading activity, it is proposed there are two possibilities. Either the reader disengages from the text (perhaps the text is too hard for the reader or unsuitable for
the goal it was intended to achieve) or they proceed to consider their next step. This process is
similar to the preparation for reading phase in that it is related to goal setting and/or the
development of a plan of attack. This reconsideration may involve one or both of these
aspects. If, for example, the reader has decided that the goal they set was unachievable or
inappropriate for the text but wishes to continue with the text, they may alter their goals to
suit the text. They may perhaps incorporate a lower level of desired understanding and
continue with the current plan of attack. Alternatively, the reader may decide that their plan of
attack was faulty. Perhaps they were reading the wrong section of the text or attempting to
utilise an unsuitable strategy. In this case they may continue with unchanged goals but alter
their plan of attack. It is also possible the reconsideration may involve change to both goals
and the plan of attack. This mechanism is very much drawn from self-regulated learning (e.g.
Winne, 2001; Winne & Hadwin, 1998) but here it is related to the specific self-regulated
action of developing reading comprehension and as such draws into a self-regulation model
the actions of the Constructively Responsive reader (Pressley & Afflerbach, 1995).

This brings the reader to point three in Figure One. At this point they have two options,
depending on how the reconsideration that occurred as a result of regulatory activities
unfolded. If changes made to the goals mean that there is no remaining discrepancy between
the current state of progress and that required to achieve their new goals, the reader may
simply begin a new period of continuous reading and monitoring, in the same way they began
after the preparation for reading phase. This does not necessarily mean the reader begins the
text again with new goals. It may mean that they continue reading from where they were, but
with new goals suited to the text and/or their current understanding of it. The second
possibility is that there is still a problem to be resolved and the reader has a new plan of attack
(and possibly accompanying strategy). In this last case they would make use of the new plan
of attack (perhaps making it the new default or perhaps as a one-off strategy use to resolve
this particular issue) before evaluating its success and continuing with reading and
monitoring.

This process is discontinuous, in that there are periods of reading activity that are
“consuming, continuous, and complex, but also satisfying and productive” (Duke & Pearson,
2002, p. 206) which are interrupted by regulatory reading activities required for the
modification of goals and or plans of attack as difficulties with the text are encountered. The
process is also cyclical, as a reader may repeatedly move between continuous reading and regulatory activity in order to achieve a satisfactory outcome. This structure draws heavily from self-regulated learning models but here is specifically applied to reading comprehension. It contains aspects which are comparable to the first three of Winne’s (2001) four stages (“defining the task”, “setting goals and planning how to reach them”, and “enacting tactics”), and the fourth “adapting metacognition” could also be contained in the regulatory reading activities, either as part of the re-evaluation or disengagement from text processes. Winne (2001) has also said that adapting metacognition is an optional phase and can occur in a number of ways. This fourth phase would occur at different times and places as appropriate, rather than at particular times, given while reading the reader is most often focussed on reading rather than on improving their metacognition. The structure is also consistent with Winne and Hadwin’s model (1998), in that it is a “recursive, weakly sequenced system” (Winne & Hadwin, 1998, p. 281). It includes the possibility that readers would revisit goals and task definitions as reading progresses and monitoring shows discrepancies between task definition, goal states, and reality. These reconsiderations would result in a change of metacognitive plan (Winne & Hadwin, 1998) in a similar way to that proposed in this model. It is the deliberate and careful application of wider implications of self-regulated learning models to self-regulated reading comprehension to further clarify the metacognition involved that sets this model apart from earlier models such as Winne and Hadwin’s (Winne & Hadwin, 1998).

In the literature review in Chapter Two, the concept of self-regulated actions as introduced by Koriat et al. (2013) was discussed. The model presented here is a model of self-regulated action, rather than a model of general self-regulated learning. As such it is specific to the purpose and action of developing reading comprehension and so means that the specific knowledge, actions, and processes involved in reading comprehension can be explained within the framework of self-regulation. This makes the executive control processes involved in reading comprehension more explicit and therefore more available to researchers and to teachers. As a result, this model can be argued for based upon existing research, at least in so far as it specifically includes what we know from discrepancy-reduction models of self-regulated learning and information processing models of reading such as constructively responsive reading.
Research is required that attempts to describe the mechanisms and pathways included in this model. The only available method for investigating the metacognitive processing of others is that of verbal protocol analysis (Kucan & Beck, 1997; Pressley & Afflerbach, 1995). Unfortunately this is the method that has not been successful in identifying specific executive control processes. However, if the discontinuous model is used as a reference point when looking for control processes in verbal protocols then data that may otherwise have appeared inconsistent or unclear may show patterns that shed light on the control of reading comprehension. In addition, much previous research has involved the reading of very short passages. In order to assess this model it would be necessary to make the reading process as natural as possible. This would begin with participants being given at least some ability to choose the text they are to read, and involve texts that are long enough, challenging enough (without being too hard), and complete enough to enable participants to work through the process laid out in the discontinuous model of reading comprehension discussed earlier. Verbal protocols gathered in such research would then be analysed to determine whether the patterns of goal setting, strategy use, and regulatory activities were consistent with the discontinuous model.

If the present study is supportive of the discontinuous model of reading comprehension and further research indicates that this model is a valid description of reading comprehension then a teaching programme that explicitly teaches students to follow that process could prove to be particularly beneficial in raising reading achievement levels. It would enable teachers to put the strategies they have taught into an explicit framework of the entire self-regulated action of reading comprehension that could guide students in developing the procedural and conditional knowledge required. It would also assist teachers and students to develop an understanding of the overall process of reading rather than focusing on individual points in time. In this way, instruction based on the discontinuous model would directly address the gap between explicit teaching of strategies and students’ development of the ability to use those strategies independently that is an issue for raising achievement in reading comprehension (Atkins, 2013; McNaughton, 2007).

3.3 Relation to the current study

While there is a large body of research on the explicit teaching of reading comprehension strategies, teaching programmes based on that research are effective at teaching students how
to use reading comprehension strategies but do not appear to provide sufficient guidance on when to use them in the wider context of reading a text. Nor do they explicitly look at the earlier actions that serve as precursors to strategy use and that are required for successful development of reading comprehension. This is ultimately one of the issues that remain to be confronted if we are to reduce the number of students under-achieving in reading. The proposed model is a deliberate attempt to place what is known about good reading into a framework that clarifies the action of self-regulated reading comprehension. If held true the discontinuous model of self-regulated reading comprehension represents a significant opportunity to address an important issue in education today.

The research questions introduced in Chapter One are all related to the model proposed here. It was necessary to assess the first questions prior to investigating the second set of questions. The answers to the first set of specific questions may have meant that the second set became redundant, as significant revision of the model may have been needed in some circumstances. In the case of a negative answer to question 1(a) for example (“Do young good readers make use of a default strategy for solving reading comprehension difficulties?”), then questions 2(a) (“Do young good readers work through a “preparation for reading” phase prior to reading that determines text selection, goals for reading, and a plan of attack that predicts the form of subsequent reading?”) and 2(b) (“Is subsequent reading continuous and automatic until such time as the default strategy fails to result in satisfactory comprehension?”) would have required reconsideration.

The proposed model is based on self-regulated learning models, which are then applied to the specific action of self-regulated reading comprehension. Therefore it is necessary to ensure that comparable aspects of self-regulated learning apply in reading comprehension. To this end the first set of questions relate to specific aspects of self-regulated learning (the use of default strategies) that need to be considered before the model as a whole can be assessed. In the case that the answers to questions 1(a) to 1(c) are consistent with self-regulated learning models then the second set of questions can then be assessed.

The literature review indicates that more is known about the other aspects of strategy use in reading comprehension than the use of default strategies. The proposed model incorporates this existing knowledge, meaning that if the answer to question one is consistent with the
discontinuous model of reading comprehension then it would be worthwhile continuing to
investigate the model itself. The next chapter lays out the process used to address these
questions.
4.1 Introductory Comments

This chapter describes those aspects of the current study directly related to the gathering and analysis of data. Firstly, the research question will be restated and broken down into the smaller component questions that influenced the design of the current study. This is followed by an overview of the research design which sets out in general terms the type of data to be collected and why. The bulk of the chapter will then refer to the details of the process and design, including the participants involved and the materials used in the collection of data as well as how the data was collected. The concluding section of the chapter will set out how and why the data was analysed and will also refer to its validity and reliability.

4.2 The Research Question

The research question addressed in the current study is:

“What is the metacognitive process by which good young readers regulate their use of reading comprehension strategies?”

In order to address this question fully, it needs to be broken down into more manageable component questions. The information-processing and self-regulated learning theory underlying the current study has resulted in the following questions:

1. What is the metacognitive process by which good young readers regulate their use of reading comprehension strategies?
   1(a) Do young good readers make use of a default strategy for solving reading comprehension difficulties? If so,
   1(b) Is that default strategy related to goals set for reading?
   1(c) If there is a default strategy, what do good young readers do when that default strategy fails?

Question one addresses some aspects relevant to the model discussed in Chapter Five, but there are some remaining questions that relate specifically to the structure of this model:
2. Is there support for a discontinuous model of self-regulated reading comprehension?
2(a) Do young readers work through a “preparation for reading” phase prior to reading that determines text selection, goals for reading, and a plan of attack that determines the form of subsequent reading?
2(b) Is subsequent reading continuous and automatic until such time as the default strategy fails to result in satisfactory comprehension?
2(c) Is continuous reading then interrupted to enable the use of a separate regulatory process?
2(d) Does that process result in a change of goals and/or plan of attack in order to resolve such an issue?

If these four questions (2 a-d) were to be answered positively then that would provide a degree of support for the model in its current form. Consequently, it may be possible to provide a representation of the development of understanding during reading that could assist with the development of appropriate classroom pedagogy. There is clearly overlap between these two sets of questions, however they will be dealt with separately in later chapters in a general discussion in Chapter Five: Self-Regulation Processes of Young Readers, and in further discussion in the same chapter related specifically to the model.

4.3 The Research Design

The current study requires the gathering of more detail and richness than would be possible using a large sample study. For this reason, a small sample was utilised. The case study approach allows for the closer observation of each case and for a more intensive analysis of the data (Flyvberg, 2011). Case studies are also better suited to the investigation of processes [“process tracing” (Flyvberg, 2007)] particularly cognitive processes.

Criticisms of case study methods have been discussed in the literature and considered to be based upon misunderstandings of what a case study entails (Cresswell, 2007) and of the potential significance of data provided by such methods (Flyvberg, 2011). It is not the choice of a case study approach that determines the strength or weakness of a research design, but the subsequent decisions that are made relating to data collection and analysis methods that impact upon the reliability, validity, and ultimately the value of the research. Methodology is determined by what is being studied (Cresswell, 2007; Flyvberg, 2011), and so the decision to
study the cognitive processing of young readers determines the need to take a case study approach. For the purposes of the current study, the term ‘case’ refers to the reading of a single text, not to an individual participant (de Vaus, 2001). Individual participants completed between one and four separate cases depending on their availability and willingness to continue.

Methodological decisions are based upon the theory underlying the study. Information-processing theory focuses on and emphasises the structures and processes that underpin knowledge use (K. L. Taylor & Dionne, 2000). Within this approach complex behaviours (such as developing reading comprehension) can be broken down into a number of smaller component processes and knowledge states. As in the model discussed earlier, these components can then be ordered in an attempt to model the active pathways involved in cognitive processes (Palmer & Kimchi, 1986). The ability of information-processing theory to break down a larger cognitive process into its component features means it can be applied to understanding those processes and can also be used as a basis for setting out theory-based criteria and methods for the collection of reliable and valid verbal protocol data (Ericsson & Simon, 1993).

The current study aims to probe the metacognitive processes used by young readers. The internal nature of these processes requires the research design of the current study to make the internal external. To gather data that was as rich as possible, a research design that included both concurrent and retrospective verbal protocols was developed. These two types of verbal protocol tend to gather different types of information (K. L. Taylor & Dionne, 2000; van Gog et al., 2005). Including both therefore provides the opportunity to gain a more comprehensive picture of the underlying metacognitive processing. The current study also attempts to be naturalistic in order to gain data on the processes good readers actually use rather than those they think they should or have been forced into because of the difficult nature of the text.

Concurrent verbal protocols were included in the design because they provide data that is gathered in ‘real time’ and so provide an indication of the timing involved in the processing of information. Concurrent verbal protocols also provide information relating to participants’ actions and their outcomes. In contrast, retrospective reports provide information relating to
control of the problem solving process and contextual information that relates to a particular response (K. L. Taylor & Dionne, 2000).

It is clear that using verbal report data, whether collected concurrently, retrospectively, or a combination of the two, is not only the best way to investigate the cognitive behaviour associated with reading but when collected in accordance with best practice guidelines it is also a robust and defensible methodology. It is also consistent with information processing theory that is reflected in the questions being investigated here and underpins the model under consideration.

4.4 Participants
The current study required participants between 11 and 12 years of age and a combination of low and high achieving readers. In order to control for the potential confounding effects caused by whether English is the participant’s first language, only participants for whom English was their first language were invited to participate. In addition, only one school continued through to the experimental phase, meaning all participants came from that school. Having these restrictions on the identification of potential participants has the disadvantage of limiting the generalisability of the study findings, but does have the advantage of helping to ensure that the two groups within the study are comparable in ways other than their reading ability.

For the purposes of the current study there are two groups of participants, a group that has high reading comprehension skills (HC group) and a group that has low reading comprehension skills (LC group). A number of criteria were used to identify these groups. Firstly, a standardised test of reading ability was used. Either the Assessment Tool for Teaching and Learning (asTTle) or the Progressive Achievement Test (PAT) of reading comprehension was used. Both of these tests allow for scores to be distributed using stanines. In general terms, a stanine score of one to three is considered low, stanines four to six are in middle range, and stanines seven to nine are considered to be indicative of higher achievement. In the current study, a good reader is defined as someone who has a stanine of seven or higher, and a poor reader as someone with a stanine of three or lower. However, for the purposes of sampling these criteria were restricted further. For the LC group, only readers who had achieved a stanine of three (and not lower or higher) were included. For the HC
group, only readers who had achieved a stanine of seven (and not higher or lower) were included. In the former case, the restriction was to ensure that the LC readers had sufficient decoding ability to read a text and basic reading comprehension skills, but that these skills were not well developed. In the latter case, the restriction was to ensure that HC readers were very proficient but not exceptional readers. As individuals become more expert their behaviour becomes more automatic, and therefore less available for reporting. These restrictions were employed because the ultimate intention of this study is to inform the teaching of average and below-average readers, and including extremely poor readers and exceptional readers would reduce the applicability and generalizability of the results. Limiting the range in each group also has another benefit, the groups were more homogeneous and this greatly simplified the selection of the texts to be used, particularly for the HC group.

In summary, participants were to be as homogeneous as possible (from one school, and having English as their first language) and either good (but not too good) readers (stanine seven) or poor (but not too poor) readers (stanine three).

Because of these requirements, initial approaches were made to a number of mid-decile, intermediate schools\(^1\) in Auckland. Schools of this type were selected as it was felt they would have the greatest likelihood of being able to provide a number of participants of the ages and levels of ability required. Ultimately, while three schools responded to the initial approach, only one school continued to be involved throughout the process and therefore self-selected as the participating school. All participants involved in this study therefore belonged to a single school. This school is an intermediate school located in central Auckland and has a decile rating of 4.

A total of 12 prospective participants agreed to take part in the study, all were aged 11 at the time of initial contact. The HC group consisted of seven participants. All female, five of the HC group were of Pacific Island heritage and the other two were New Zealand Europeans,\(^1\) In a New Zealand context, schools are rated for funding purposes using a decile system to describe parental income ranging from decile one (low income) to decile 10. An intermediate school sits between primary and secondary schooling, and educates students in their seventh and eighth year of schooling.
they all considered English to be their first language. All seven had achieved stanine seven on a recent Progressive Achievement Test (PAT) of reading comprehension. The LC group (stanine three on the PAT) consisted of a total of five participants, comprised of two male and three female students, all were from Pacific Island backgrounds but considered English to be their first language. As mentioned earlier, the relatively homogenous background of these participants has the disadvantage of limiting the ability to generalise from the results of the current study, but it does have the advantage that the participants in the study are largely representative of successful readers that are similar in cultural background to those that make up the tail of achievement in New Zealand.

Participants were found through two rounds of selection. The response rate in the first round was low, only two good comprehenders agreed to take part in the study, a response rate of 10%. All five participants in the LC group came from the first round, a response rate of 25%. The low response from the HC group necessitated a second round of participant selection. This second round was carried out after the first group of participants had completed the data collection phase of the research. The second round provided five further good comprehenders (at a response rate of 25% and giving a total of seven) and this was considered sufficient.

Participants in the current study provided differing numbers of cases. All participants were initially expected to provide two cases (or texts) each. However, as some participants later exercised their right to withdraw from the study and others were prepared to continue, some participants provided a single case while others provided more. As a result of the number of participants choosing to withdraw, some participants provided up to four cases.

4.5 Materials

4.5.1 Trialling

All materials were trialled prior to the experimental phase of the research. With regard to the materials involved there were two main issues to be addressed. The first was whether the script employed by the researcher to ensure all participants were given the same instructions was sufficient for participants to gain an understanding of what was being asked of them, the second was to assess the suitability of the reading materials to be used. This trial involved a total of eight students (four HC and four LC) that met the same criteria as the study participants.
4.5.3 Researcher Script
The overall process in the trial was somewhat more interrupted than in the experimental phase as each aspect was assessed during the trial itself to allow for the researcher to take notes and make changes to the script and prompts to be used during the study. There were a few modifications and additions made to the script following the first few runs as those involved indicated aspects that were not clear to them, or where they had remaining questions that were not answered within the instructions they were given. No changes were made during or following the final four participants in the trial. See Appendix D for the script used when giving instructions to participants.

4.5.3 Materials
Assessment of the materials included two phases. Firstly an assessment of the tangram puzzle to be used as a practice task was carried out. All the trial participants made a number of verbal reports during this activity, and indicated that they found it relatively easy to report their thinking. Some indicated that they felt an initial shyness as they weren’t sure whether they were “right” or not, but that this feeling had quickly passed. All indicated they found it a useful exercise to practise verbal reporting and to get used to the prompts used by the researcher.

Secondly, the texts to be used needed to be assessed for their suitability. The texts used covered a range of topics with the intention of meaning there should be at least one that was of interest to participants. Each text was levelled using the noun-frequency method (Elley & Croft, 1989) of assessing readability. The group of good-comprehenders were given texts with a reading age of 11-13 years and the group of poor-comprehenders were given texts with a reading age of approximately nine years (see appendices D and E for texts). During reading all of those taking part made some verbal reports of what they were thinking. The good comprehenders indicated that while they found the texts challenging to follow they felt they were able to understand the texts. The low comprehenders reported markedly less than the good comprehenders, and although they appeared to have developed minimal understanding of the texts when asked to retell or summarise the text all indicated that they felt they had understood the text. The low comprehenders also indicated that they did not find the text overly difficult, and indicated that it was about the same level as most of what they read. Following the trial the texts were deemed to be sufficiently easy to read that processing
related to decoding the text would not make undue use of short term memory or require too much of the participants’ attention, yet challenging enough to require participants to be active in their reading. It was concluded that the texts were suitable for use in the study.

4.6 Research Procedure

4.6.1 General Principles and Intentions
There were two general principles underlying the method developed for the present study. The first of these was that the researcher should be involved as little as possible. The second was that the processes captured should mimic as closely as possible the personal reading styles of the participants when they are reading for their own purposes, as opposed to reading to achieve an external goal such as one set by a teacher. While it is accepted that no research procedure using the methods currently available can be completely naturalistic, the procedure used was designed to create as little external influence as possible on the internal processes of participants’ reading.

4.6.2 Trialling of the Procedure
As well as testing the researcher script and materials, the third aspect of the trial was to provide the researcher with an opportunity to ensure that the research process could be carried out in the way anticipated and to give an opportunity to become familiar with the process prior to the experimental phase. While it proved to be relatively simple to follow the research process, restricting prompts and comments to those determined to be acceptable was more difficult. The different role involved (researcher vs. teacher) created some tension. The researcher initially found it quite difficult to avoid the use of the type of comments or prompts that might be used in a teaching situation, thereby running the risk of influencing the verbal reports. A sheet containing a small number of prompts was developed and these were then used exclusively in order to avoid directive prompts.

4.6.3 Initial Contact and Practice
To promote the likelihood of achieving the first general principle and to inform participants of the second, it was important that participants knew what was being asked of them and how this was to be done. Initial contact with the 12 potential participants took place in a vacant classroom at their school. This meeting was with all potential participants present and was to
provide participants with further information about the process involved, introduce them to the equipment to be used and to answer any questions they had.

The information sheets given to prospective participants had included a full description of the process to be followed before, during, and after the data gathering. Following a review of the process that would be followed the participants had few questions about the research. Most of these questions revolved around practical issues such as whether they could choose the times when future contact would occur. Participants were also reminded that they had the opportunity to continue or withdraw from the research at any time.

Although all participants indicated that they understood what was being asked of them, a brief introduction to the process of thinking aloud was carried out. This was completed using a puzzle-solving activity rather than a reading activity. It was thought that using a different type of activity would provide the opportunity to discuss the process of thinking aloud in more detail and to provide more feedback to participants while reducing the potential to confound the research data to be collected later through giving participants preconceived ideas as to what is wanted.

The researcher initially modelled the process of thinking aloud while working on this puzzle, and then a number of the participants volunteered to take a turn. These participants appeared to find it a relatively natural process and reported a number and range of thoughts during this activity. Encouragingly, they reported several metacognitive thoughts relating to the process of deciding what to do next. They also reported a number of thoughts not directly related to actual problem solving or actions. These reports were mostly indicative of being ‘stuck’ (e.g., “ummm…” or “I don’t know”) and in some cases even included mild profanity, the inclusion of which would suggest that participants had taken seriously the request not to censor their reports, or had become largely oblivious to the presence of the researcher.

Finally, participants were reminded of the aim of the research and of what they would be asked to do the next time they met with the researcher. In some previous research (Afflerbach, 1990) participants have been asked to consider their thinking for a time prior to actual data gathering as a way of increasing participants’ mindfulness of their thinking and therefore increasing their ability to report during think-alouds. In the current study participants were
given the instruction to “pay attention to (their) thinking while reading” over the period (approximately one week) between this initial meeting and when they would next meet individually with the researcher.

4.6.4 Collection of Concurrent Verbal Protocols

At the next meeting, participants met with the researcher individually in the same room as the previous meeting. The recording equipment to be used consisted of a webcam that was attached to the top of a laptop computer screen. The recording could be seen on the screen as it was being recorded, and for this reason the participants could see only the back of the laptop computer and the webcam sitting on top. The decision to use a webcam was made for two reasons. The first is that the ability to record directly to the computer meant that the recording was available for immediate replay on the screen and this greatly facilitated the immediate collection of the cued retrospective reports. The second reason was that both laptop computers and webcams are a form of technology with which the participants were likely to be familiar and it was expected that it would therefore be less distracting or intimidating than if a video camera and tripod arrangement were to be used. Support for this second reason was given when all participants indicated at the first meeting that they were very familiar with this type of arrangement.

Once participants were seated and indicated they were comfortable and ready to proceed, they were given instructions as to what they were being asked to do. These instructions were based on a set format [developed from Cromley and Azevedo (2006), see appendix D] in order to ensure as much consistency as possible, although the actual instructions given to each participant varied slightly as participants were encouraged to ask questions or seek clarification as they felt necessary. Participants were then given a short warm up passage to read. In order to increase reliability (Ericsson & Simon, 1993), these warm up materials were of a similar length to the experimental materials and were presented in the same form. There was a red dot placed at the end of each sentence. These dots were there as a reminder that participants should be reporting their thinking rather than as an indicator that there was a requirement to report at the point. Participants were told that this was a practice exercise and that the researcher would ask them to stop reading once it appeared they were reporting their thoughts regularly. During the warm up exercise the researcher provided verbal reminders and prompts to the participants in addition to the red dots. Such prompts were kept neutral and as
short as possible, (e.g., “Keep talking” or “Think out loud”) in order to reduce the risk of intruding into participants thinking and to avoid cueing particular responses (K. L. Taylor & Dionne, 2000). The overall aim of the warm up activity was to reduce the need for researcher input during the experimental task. The recording equipment was in place during the warm up activities, however, they were not recorded. Following the warm up task, participants were given a final reminder of the task instructions. At this point recording (both audio and video) was begun.

This research is concerned with the overall reading process, so aspects of an individual’s preparation that occur prior to reading of a text were also to be captured. Specifically, it was hoped that participants’ thinking related to text selection, goal setting, and planning could be captured. To this end participants were initially presented with a page that gave them a choice of texts to read (see appendices D and E). On this page there were only text titles, each of which was accompanied by a one-line précis. Participants were asked to think aloud from the moment they received this selection sheet and to report everything they were thinking while selecting the text they wished to read and from that point on. Some prompts were needed to remind participants to verbalise their thinking at this point. These prompts were kept as neutral as possible; variations on “remember to keep talking” were used.

Once participants had made their choice they were presented with the text they had chosen and given a final reminder to “Please say everything that comes into your head”. As discussed in section 4.5, participants had to choose from texts that were of a difficulty related to their reading ability. Each of the experimental texts also had a small red dot at the end of each sentence. As with the warm up texts, participants were told that the dots were there as a reminder they should be thinking out loud, and not as a requirement to report their thinking at that particular point.

Participants were asked to read out loud while reading the texts. This was for two reasons, the first was to encourage talking and therefore hopefully to encourage them to keep talking when they were thinking about the text. Secondly, having the participants read out loud meant that the researcher knew where the participant was in the text, this is something that becomes much more important in the next stage of data collection. A few of the participants required further reminders to think out loud at some point during the reading of the text. As much as
possible, the same prompts that were used in the warm up were used here. These were again kept neutral so as to avoid prompting particular responses, or encouraging participants to report when there was nothing to report. These reminders were given under particular circumstances. Participants were given a reminder if they had completed an entire paragraph and had not reported anything (other than reading out loud), where they had paused in their reading but were not reporting any thinking, and where their body language (facial expressions, eye movements etc.) suggested confusion or thought but nothing was being reported.

Following the completion of the text, recording continued for at least thirty seconds after the last reported thinking before the researcher became involved (other than to give participants a reminder to report their thinking). This was to allow participants to disengage from the text in the way they would normally and to capture any processing that occurs after the text itself has been completed. At the conclusion of this period, the participants were asked to give a brief summary of their understanding of the text, this was primarily to look for consistency between their understanding and the verbalisations given earlier (this was the explanation given to participants), it also provided an opportunity for the researcher to judge whether the participant’s processing of the text had been successful in developing a full understanding of the text as the ability to summarise a text relies on the reader having understood the text.

4.6.5 Collection of Cued Retrospective Reports

Immediately following the collection of the concurrent verbal protocols, the participant and the researcher moved to be in a position where they could both see the computer screen. The collection of retrospective reports was recorded through the use of a portable voice recorder for subsequent transcription and the researcher also made notes. Participants were informed that the recording of their reading would be reviewed with the researcher and that this was being done in order to gain a “better and clearer” understanding of what the participant was doing while they were reading.

Instructions were given that made it clear there were three ways in which this could happen, the researcher could ask the participant for clarification of something they had reported earlier, the researcher could ask about periods where there appeared to be a lack of reporting (particularly if the participant appeared to be thinking), or the participant could pause the
video in order to add to what they had already reported without waiting for the researcher to prompt them. It was indicated to participants that they should say anything that occurred to them as they were they only ones who really knew what they had been doing while they were reading.

In accordance with the recommendations of K. L. Taylor and Dionne (2000), any prompts that were used were again kept as general as possible, particularly initially. There was a focus on asking very general “what” questions such as “Can you tell me what you were thinking about there?” and “What did you mean?” (Rather than “Can you tell me how you decided to do that?” or “Did you mean …?”). Prompts and questions sometimes became more specific following these general ones in the context of following a line of reporting that had been initiated by the participant, either spontaneously or as a result of a general probe.

Following these instructions the video of the just-completed reading task was replayed. During this part of the process there was a mixture of participant- and researcher-led interactions, some participants quickly began to spontaneously add significant amounts of information to their accounts, while others were more likely to respond to researcher prompts. During this process, participants were able to refer to the text they had read, and several made use of this to put their thoughts into context. This was particularly true where the researcher asked for clarification on a particular point. Participants would often refer to the text and the sections immediately preceding that being referred to at the time. Because participants had read aloud it was an easy process to connect their verbal reports to the portion of text being read and subsequently for them to put their reports into context when clarifying them.

At the conclusion of the collection of the cued retrospective reports, participants were asked whether they thought the way they had read the text was typical of the way they would normally read. This question was included as a simple way of making some assessment as to the validity of the research, given that the current study is attempting to identify the processes used by able readers when they are reading as they usually would, rather than to identify the process used or assess their ability to read in a particular context or circumstance (whether intended or implied) such as when expecting a test.
At this point, participants were also given the opportunity to continue with the research and to read another text at another time, or to opt out and take no further part in the research. The provision of this choice, and the participants’ subsequent decisions, resulted in participants providing different numbers of cases.

4.7 **Data Analysis**

4.7.1 **General process and justification**

Initial analysis was conducted using the concurrent video data alone to provide an outline of the reading process. Subsequent coding of the additional retrospective data was added to this outline thus providing significantly more detail. The concurrent data provided information relating to the behaviour group and often of the behaviour code of each processing event, but rarely provided enough information for a behaviour modifier to be determined. The extra detail and richness provided by the retrospective data enabled clarification of behaviours and determination of the modifiers. Each case was therefore passed over at least twice, once using the concurrent data alone, and a second time using the retrospective data to provide further detail. In reality, most cases received more passes than this minimum number. Data collected from the concurrent verbal protocols and subsequent retrospective data was analysed through the use of a coding scheme. The coded data was subsequently developed into ‘narratives’ that describe the overall process used by the study participants that could be used to look for procedural similarities and differences between the participants.

Quantitative analysis was also carried out to determine differences in the frequency of behaviours. As the cases are not independent as some participants were involved in up to four separate cases, while other were involved in as few as one, it was not possible to use statistical analysis to assess the significance or otherwise of these differences. The data is therefore presented as frequencies, means and ranges.

Before any analysis could be carried out, the data needed to be coded to enable any data analysis to take place.

4.7.2 **Development of the coding scheme**

Grounded theory approaches (Glaser & Strauss, 1967) to qualitative data analysis hold that a coding scheme should be grounded in the data itself. That is, codes should be developed from
the observed behaviour itself, and not be predetermined by the researcher. This inductive approach is appropriate where little is known about the processes under investigation. In the current study there are two factors that led to a more deductive approach being taken. Firstly, a large amount is already known about the behaviours engaged in by readers and so much was known about the individual behaviours that were expected. Secondly, one purpose of the current study is to investigate whether there is support for a particular model of reading. Consequently, behaviours consistent with that model were included in the coding scheme. An initial coding scheme (appendix G) was therefore developed prior to data coding beginning. This scheme was consistent with both the model being considered and with expected behaviours. As the current study is interested in reading comprehension, the coding scheme did not contain codes for behaviours for other reading behaviours such as text decoding.

Following the development of the initial coding scheme, a number of cases were selected for initial coding. The purpose of these first codings was to determine whether the initial coding scheme was sufficient or whether there was a need to adapt it through the addition or removal of codes. During the analysis of cases a number of changes were made to the coding scheme. The initial analysis was continued until three further cases had been analysed without the need for the addition of any further codes. At this point it was considered that saturation (Strauss & Corbin, 1990) had been reached. This process resulted in a coding scheme divided into three behaviour groups that relate to the three sections in the proposed model (Preparation for reading, Continuous development of reading comprehension, and Regulatory reading behaviour). Each of these behaviour groups was divided into a number of behaviours, and each behaviour subsequently divided using modifiers. This meant there was a total of 13 behaviours divided by 29 total modifiers (see appendix H for the full coding scheme). Coding of all cases (including revisiting those cases previously considered) was then undertaken using the final coding scheme.

4.7.3 Behaviour groups

Observed behaviours were divided into three behaviour groups, these groups were effectively defined by their place in the process of reading as predicted by the model discussed in Chapter Three. The first, “Preparation for Reading”, includes those behaviours that take place prior to the reader actually beginning to read the text. The second, “Continuous Development of Reading Comprehension”, includes those behaviours that are observed while the
participant is reading, but only while their reading is progressing as the reader had planned it to. The behaviours in this group represent reading that is going well and the reader does not have to modify or change their behaviour or plan.

The third group, “Regulatory Reading Behaviour”, includes behaviours that are observed either at the conclusion of reading or where the reader has encountered a comprehension difficulty such that they need to alter the approach they are taking to their reading.

4.7.3 Behaviours and Modifiers

Each behaviour group was subsequently divided into a number of different behaviours, and those behaviours split using either two or four modifiers. This section provides a brief overview of the basis for the divisions of behaviour groups into behaviours and the subsequent division of those behaviours through the use of modifiers. For the full list of behaviours and modifiers along with definitions and examples see appendix H.

Each behaviour group is divided by the observable behaviours that make up each aspect of the reading process. The first behaviour group (Preparation for Reading) is divided into four behaviours: Text selection, Goal setting, Planning, and Task definition. These behaviours are then broken down in terms of the focus of each behaviour type. For example, Text selection is modified by whether the focus is on the difficulty of the text or on the interest it holds for the reader. The second behaviour group, or Continuous Development of Reading Comprehension, is divided into six behaviours: Reading, Evidence of monitoring, Discrepancy identification, Strategy use, Evaluation, and Missed or ignored error. These behaviours are divided based on the form each behaviour takes. The third behaviour group (Regulatory reading Activity) is split into 3 forms of behaviour: End of reading episode, Disengage from text, and Re-evaluation. These behaviours are modified in terms of the outcome of each behaviour.

Once the coding scheme was considered to be finalised (i.e. saturation (Strauss & Corbin, 1990) had been achieved) the coding scheme in appendix H was applied to the full data set, including those used in the initial analysis.
4.7.3 Application of coding scheme to data

Each case was initially coded using the concurrent verbal protocol data (videos). A first pass was made that identified the timing of individual behaviour events and often the behaviour group as well. Following the development of this time scale a second pass was made to identify the behaviour group (where still necessary), the behaviour code, and the modifier for each behaviour event. While some behaviours could be fully coded from the concurrent verbal protocols alone there were many that could not. The extent to which this occurred varied greatly from case to case, dependant on the fullness of the protocol and also the complexity of the behaviour. A third pass was then made using the retrospective data to both validate the codings already made and also to code those behaviours that were unable to be fully determined using the verbal protocol data alone. Although transcriptions were made of the retrospective data, the audio recordings were used in this third pass. The audio recordings were used because the original video recording could be heard in the background, and the reading that could be heard enabled the retrospective data to be easily placed in context with the concurrent data. This was an unforeseen consequence of the data collection methods used but proved to be a significant advantage. Following this process each case therefore had a timeline showing the behaviours that occurred, when and for how long.

4.8 Reliability and Validity

4.8.1 Combining Concurrent Verbal Protocols and Retrospective Reporting Within a Single Data Collection Procedure

It is possible to simply combine the use of concurrent verbal protocols and retrospective reporting (Ericsson & Simon, 1993; K. L. Taylor & Dionne, 2000). While combining the two is likely to result in a full report that combines both types of information, there is an inherent risk involved in reporting retrospectively on the same task that was carried out while reporting concurrently. The risk is that the retrospective reports will be reports not of a memory of the actual process but rather a memory of what was verbalised during the concurrent reporting (van Gog et al., 2005). In response to this risk, cued retrospective reporting (van Gog et al., 2005) was used. The use of cues results in less of the process being forgotten by the participant and a reduced likelihood of fabrication as participants are reporting on the basis of a cue that records (some) aspects of what actually occurred during the completion of the task (van Gog et al., 2005; Van Someren et al., 1994) thus increasing the reliability and validity of the data.
Taylor and Dionne (2000) have indicated that using both concurrent and retrospective data collection methods has benefits for the quality of the data collected. Having two different forms of data covering the same event has two reciprocal benefits. Retrospective data can be used to clarify and validate the researchers interpretation of the concurrent data, particularly where it is necessary to infer from the protocol what is actually occurring (Poulisse et al., 1987). The reciprocal benefit is the ability to compare retrospective data against directly observable behaviours (Ericsson & Simon, 1993). Both of these opportunities add to the defensibility of the data collected by allowing consideration of the validity and reliability of each. This ability to triangulate, compare, and contrast the two forms of data greatly increases the researcher’s ability to make reliable and valid judgements when coding the raw data. The ability to use two different forms of data to consider the same phenomena enables reliability to be enhanced through the use of what Denzin and Lincoln (1994) call parallel forms. Each observed behaviour can be coded using both concurrent and retrospective data, and agreement between the codes based on each increases reliability.

In order to ensure reliability it is also necessary to ensure that the researchers judgements are stable over time (Denzin & Lincoln, 1994). Doing so requires the operationalisation of the observations so that what is considered as evidence is consistent, unambiguous and valid. For the current study this meant that for each behaviour modifier in the coding scheme, examples and definitions were required to ensure that the researcher’s view of those modifiers was consistent over time.

4.8.2 Inter-rater reliability

Denzin and Lincoln (1994) mark inter-rater reliability as being a way of ensuring replicability within qualitative research. For the purposes of the current study a simple percentage measure was utilised:

\[
\text{Inter-rater reliability} = \frac{N^1}{N^2} \times 100
\]

Where \(N^1\) refers to the number of times the raters agree, and \(N^2\) is the total number of possible agreements (in this case the total number of behaviours coded by either or both raters). Defining the total number of possible agreements in this way was expected to produce a relatively conservative reliability result as the total possible was greater than the total number
of behaviours coded by a single rater as individual raters may identify and code behaviours where the other did not consider a behaviour met any of the definitions in the coding scheme.

The second observer was an experienced Primary Literacy Facilitator whose role entailed working with teachers and schools to raise student achievement. She was therefore familiar with the types of behaviours expected in good reading, and was used to observing readers closely to identify what an individual is and is not doing. This meant that familiarisation with the coding scheme was all that was required prior to coding of the cases selected.

In the current study, three related but separate measures of inter-rater reliability were used. These effectively related to the passes made over the data during coding. Firstly, those behaviour groups, behaviours, and modifiers coded from the concurrent data (videos) alone were considered. Secondly, subsequent codes made using the retrospective data were assessed, and finally an overall measure of inter-rater reliability combining all codes was made. In order to include the possibility of observer drift in these measurements, a random case was selected from each of the third of cases coded by the primary researcher. This represents slightly more than ten percent of the cases in the study. Doing so should show a change in the inter-rater reliability between the cases if the primary researcher had altered their coding behaviour during the course of the analysis.

Three cases were selected for inter-rater reliability checking. There were a total of 26 cases in the study, totalling 216 minutes and 51 seconds of video footage. In order to assess 10% of the video footage, three cases that totalled more than 21’ 41” needed to be checked for reliability. Observers can change their coding decisions through the course of coding a number of cases (Cooper & Schindler, 2001). In order to avoid observer drift, all cases were recoded by the primary researcher after the coding scheme had reached saturation. However, in order to provide a measure of the success of this approach, all cases were listed in the order in which they were coded by the primary researcher and one case was selected at random from each third of the cases. This provided the opportunity for comparing the reliability of the three cases, assuming that if the reliability between the second observer and the primary researcher was consistent across the three cases this would provide support for the contention that the primary researcher had been consistent in their judgements over time.
The three cases selected for comparison were cases E, J, and S. These three cases totalled 25’03”. The three cases included two from the group of good comprehenders, one fiction and one non-fiction, and one from the group of poor comprehenders (fiction). General results of the inter-rater reliability analysis are shown in Table One. It should be noted that the table includes only the total number of codes identified by each observer. The codes do not always represent the same behaviours, for example in case E both observers identified 30 behaviours, but they were not all the same, hence the 90% agreement rate.

Table One: Comparison between Primary Researcher’s and Second Observer’s coding of behaviours.

<table>
<thead>
<tr>
<th>Case</th>
<th>Codes from video</th>
<th>Codes from Retrospective data</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary Researcher</td>
<td>Second Observer</td>
<td>Percent agreement</td>
</tr>
<tr>
<td>E</td>
<td>52</td>
<td>51</td>
<td>98</td>
</tr>
<tr>
<td>J</td>
<td>16</td>
<td>17</td>
<td>94</td>
</tr>
<tr>
<td>S</td>
<td>8</td>
<td>8</td>
<td>100</td>
</tr>
</tbody>
</table>

As is seen in Table One there was a generally high level of agreement between the two observers, there was an overall agreement of 95% across the three cases. In case ‘S’ there was 100% agreement. Case ‘S’ case was the poor comprehender, and as a result there were not only far fewer behaviours to observe than in many of the good comprehender cases, but they were also less complex. Of the nine total behaviours observed in case ‘S’ seven were either fluent or less fluent reading, making the coding relatively straightforward. The other two behaviours were ‘selecting the text to be read based on interest’ and ‘task definition in terms of difficulty’; this last behaviour was coded from the retrospective data by both observers. Cases ‘E’ and ‘J’ were both cases from the good comprehenders group. Case ‘J’ was an example of what might be termed poor reading by a good comprehender. This was an example of a good comprehender who was essentially uninterested in what was being read, resulting in a relatively low level of activity. There were more observed behaviours in case ‘E’ than in the others combined.

In all cases the majority of behaviours observed were reading (78% in case ‘S’, 71% in case ‘J’, and 52% in case ‘E’) and there was almost 100% agreement between the two observers on these behaviours. There was no particular area of disagreement between the two observers.
There was a small number of disagreements (three) on whether strategy use was automatic or conscious, and two examples of one observer identifying evidence of monitoring where the other did not. These were from very small behaviours that one observer or the other did not consider carried enough information to be able to code them. These two examples accounted for the difference in total behaviours between the two observers in cases ‘E’ and ‘J’, and the example in case ‘J’ was the only difference between the two observers.

In summary, it can be concluded from the rates of agreement shown above that the behaviour coding carried out by the primary researcher is sufficiently reliable to be used for further analysis.

4.9 Ethical Considerations

A number of ethical issues stem from the design of this research, mostly arising from the age of the participants, the context for the research being within a school, and the researchers position within a school.

The current study focuses on the cognitive control processes of good and poor readers, therefore the study was not open to all students in a school or class. This raised issues for the potential participants and others in terms of having their relative ability or otherwise highlighted to others. To overcome this, schools identified potential candidates and the researcher met with them in a setting separate from their peers. Other students were not informed of the purpose of the study or the reasons for potential participants’ selection.

The age of the participants meant that consent of parents or guardians was also needed. An initial meeting was therefore held with potential participants to discuss the participant information sheet, answer any questions or provide any further information they require, and to determine whether the student wished to take part in the study. Where students indicated they wished to take part, an information sheet, a consent form requiring the signature of a parent/guardian, and an assent form for the participant to sign were provided to students to take with them. It was made clear to students that participation was entirely voluntary, and that non-participation would not affect their relationship with the researcher, their teachers or school. They were informed that their principal had given a guarantee of this.
Because both high- and low-ability readers were to take part in the study, it was likely that at least some students would have difficulty with reading and understanding the participant information sheet. This meant that giving informed assent could be difficult. Care was therefore taken to explain the information contained in the sheet, and to ensure it had been understood by potential participants. The researcher’s contact details were also provided so that any questions or concerns the participants or their parents or caregivers had could be discussed at any time.

Finally, it would have been possible to gather at least some participants from within the school in which the researcher was working. This would have resulted in further ethical issues arising from the pre-existing relationship with the students. For this reason it was decided that all participants would be selected from other schools.
CHAPTER FIVE

Results: The Self-Regulation Processes of Young Readers

5.1 Introductory Comments
This chapter begins to look at the data uncovered during the research process described in the previous chapter. In the first part of this chapter a description is provided of the data. This section, organised into three subsections, will describe the types of behaviour observed and the frequency of those behaviours. The subsequent section begins to make sense of what was seen. It places the observed behaviours into the context of the reading and describes a number of distinct reading styles observed in the current study.

5.2 Types and Frequency of Behaviours
In this section, the frequency and nature of differing behaviours is considered. Comparisons are made between the poor comprehenders and the good comprehenders groups.

5.2.1 Preparation for Reading: Types and Frequency of Behaviours
In the context of this research, preparation for reading is defined as those behaviours that occur prior to the participant commencing the reading of their selected text. It includes any behaviours relating to text selection, goal setting, task definition, and planning. Table Two shows the frequency of these behaviours across all cases. Cases A to M represent the group of good comprehenders, and cases N to Z the poor comprehenders group. The number associated with each case indicates the participant, i.e., cases A-D all involved the same participant.

There are two aspects of this data that are immediately of interest. One is the higher frequency of behaviours observed in the good comprehenders (frequency=47, mean =3.62, range 2 to 6) compared to poor comprehenders (frequency=17, mean =1.31, range 1 to 2) while preparing to begin reading a text. The other notable difference between the two groups is the nature of what is attended to.

The group of good comprehenders are primarily focused on interest and ideas, while the poor comprehenders are focused on the potential difficulty of a text. Good comprehenders more often selected a text based on interest (frequency=23, mean=1.77, range 1 to 5) and to define
the task based on their level of interest (frequency=8, mean=0.62, range 1 to 2) than poor comprehenders who rarely selected a text based on interest (frequency=6, mean=0.46, range 0 to 1) and never defined the task based on interest.

Table Two: Behaviour group: Preparation for reading.

<table>
<thead>
<tr>
<th>Case/Text/P</th>
<th>Text Selection</th>
<th>Goal Setting</th>
<th>Planning</th>
<th>Task Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difficulty</td>
<td>Interest</td>
<td>Level</td>
<td>Idea</td>
</tr>
<tr>
<td>A/1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>B/1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>C/1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D/1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>E/2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F/2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>G/3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>H/4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I/2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>J/2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>K/5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>L/6</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>M/7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>0.08</td>
<td>1.77</td>
<td>0.31</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Conversely, the group of poor readers more frequently selected a text (frequency=7, mean=0.54, range 0 to 1) and defined a task (frequency=4, mean=0.31, range 0 to 1) in terms of difficulty than good comprehenders. There was only one instance of a good reader selecting a text on text difficulty (case D) and no examples of defining the task based on
difficulty. Poor comprehenders are less likely to define the task in any fashion (frequency=4, mean=0.31, range 0 to 1) than good comprehenders (frequency=10, mean=0.77, range 0 to 2).

As well as approaching the selection of a text differently, there are also differences in how the two groups look at a text and prepare themselves for reading. Good comprehenders engage in goal setting (level and idea) (frequency=12, mean=0.92, range 0 to 2) with only two exceptions (cases D and J). Good comprehenders set a goal for their reading, either in terms of a level of understanding they wish to achieve (frequency=4, mean=0.31, range 0 to 1) or in terms of an idea goal (something they wish to find out about during reading) (frequency=8, mean=0.62, range 0 to 1). None of the poor comprehenders set a comprehension related goal in any of the cases. One area in which there was no real difference between the groups was planning for reading. In only one case (a good comprehender) was there any evidence that either group consciously planned ahead as to how they were going to develop their understanding of the text they were about to read. This result was unexpected as the place of planning in reading is well established in the research and will therefore be discussed in some detail in Chapter Six.

5.2.2 Continuous Reading: Types and Frequency of Behaviours

As with the Preparation for reading phase, there are some immediately noticeable differences between the two groups during the reading phase. Looking at the totals (see Table Three) indicates that the good comprehenders group showed a much higher frequency of reading behaviours (frequency=602, mean=46.31, range 10 to 131) than the poor comprehenders (frequency=110, mean=8.46, range 2 to 19). The good comprehenders were therefore much more active than the poor comprehenders. This could be somewhat misleading however as the totals used include the number of times that participants appeared to be simply reading the text, meaning that the difference between the two groups could be exaggerated because each instance of another behaviour can effectively be measured as two. This occurs because a period of reading broken by a single comprehension related behaviour is counted as three behaviours (e.g., reading-monitoring-reading) and a change from fluent to less fluent reading would be counted as two behaviours, whereas simply reading is counted as one. This anomaly in the way behaviours are counted has the potential to distort the difference in activity levels between the two groups, making the more active good comprehenders seem even more active than they really are. If we remove the behaviours coded as ‘reading’ from the measure leaving
only those that are behaviours directly related to comprehension development, there are obviously far fewer behaviours to consider (good comprehenders (frequency=235, mean=18.08, range 4 to 67) and poor comprehenders (frequency=21, mean=1.62, range 1 to 8)), but the factorial difference between the two groups actually grows.

Table Three: Behaviour group: Comprehension development

<table>
<thead>
<tr>
<th>Case/P</th>
<th>Reading Fluent</th>
<th>Less fluent Level</th>
<th>Evidence of monitoring Level</th>
<th>Discrepancy ID Level</th>
<th>Strategy use Auto</th>
<th>Considered</th>
<th>Successful</th>
<th>Un-successful</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/1</td>
<td>41</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>25</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>B/1</td>
<td>39</td>
<td>16</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>21</td>
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<tr>
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<td>5</td>
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<td>14</td>
<td>3</td>
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<td>6</td>
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<td>6</td>
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<tr>
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<td>3.85</td>
<td>1.00</td>
<td>1.31</td>
<td>0.31</td>
<td>9.31</td>
<td>1.46</td>
<td>0.69</td>
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</table>

Looking at the two groups in more detail, there are also differences between them on some important behaviours. Good comprehenders displayed more behaviours related to monitoring...
their comprehension development (frequency=63, mean=4.85, range 1 to 17) than poor comprehenders (frequency=1, mean=0.08, range 0 to 1). There is also a very noticeable difference in the number of times each group made use of comprehension related strategies (auto and considered) with good comprehenders (frequency=140, mean=10.77, range 0 to 31) using strategies on a much more regular basis in the course of reading each text than poor comprehenders (frequency=5, mean=0.38, range 0 to 3). Only three cases from the poor comprehenders groups (three in one case, one in another two cases) showed any evidence of strategy use and all of these were automatic.

There was a less noticeable difference between the two groups on discrepancy identification other than that good comprehenders showed evidence of discrepancy identification relating to both an idea goal and level of understanding while poor comprehenders only showed this behaviour in relation to a level of understanding. On the evaluation of strategy use, it is noticeable that the poor comprehenders never reported evaluating the success of their comprehension strategies while good comprehenders did (frequency=11, mean=0.85, range 0 to 5).

As can be seen in the table and frequency results above, there are some noticeable variations within the groups, particularly the good comprehenders, during the comprehension development phase of reading. The range of total behaviours (including reading) within this group is from 10 observed and coded behaviours to 131. When simple reading behaviours are removed from the totals the range is from 0 (i.e., no observed comprehension related behaviours) to 55. Not surprisingly given the lower number of overall behaviours there is less difference within the poor comprehenders group, this group has a range from 0 to 19 including reading, and from 0 to 6 not including reading. In the poor comprehenders group 7 of the 13 cases contained no coded comprehension related behaviours. The biggest within group differences are in two behaviour types, and both were within the good comprehenders group. The largest difference is in the strategy use behaviour group (auto and considered), total number of coded examples of strategy use ranged from 0 to 31. The other behaviour group with a large range is evidence of monitoring (level and idea goals), here the range was 17 (from 0 to 17). There was also a big range in the number of behaviours coded as reading, but this range essentially reflected the variations mentioned above. As well as differences
within the participant groups, there are variations between behaviours within behaviour
groups for the good comprehenders.

These within behaviour group differences were significant in two areas. Where there was
evidence of monitoring observed in the good comprehenders group, that monitoring was more
often monitoring of the level of comprehension or how well the text was being understood
(i.e., level goals) (frequency=50, mean=3.85, range 0 to 14) rather than of progress toward an
idea goal (frequency=13, mean=1, range 0 to 3). This held true whether the participant had set
idea-related or level-related goals for their reading. Also within the good comprehenders
group automatic strategy use (frequency=121, mean=9.31, range 0 to 25) was more common
than considered strategy use (frequency=19, mean=1.46, range 0 to 6). This indicates that able
readers of this age are already sufficiently expert for much of their reading to be automatic,
only on the occasions where a particular approach doesn’t work does the reader make a
considered decision about what to do.

5.2.3 Regulatory Reading Activity: Types and Frequency of Behaviours
At the end of the last section the point was made that the automatic use of a default strategy
was significantly more likely to occur than a considered choice. In light of this observation it
is not surprising that there is a relatively small amount of regulatory reading behaviour where
the reader has paused in their reading to consider what action to take. In fact (see Table Four)
there were no examples of this type of behaviour from the poor comprehenders group. In the
good comprehenders group there were a number of examples of this type of behaviour
(frequency=40, mean=3.08, range 0 to 10), but with great variations across cases.

There were 23 examples of a participant ending a reading episode and identifying whether
their goals had been achieved or not. Of these examples, 13 related to the end of the text, and
10 to stopping reading within the text. There were 11 examples of a good reader consciously
disengaging from the text. In these cases the participants identified whether or not they had
been successful in achieving their goal(s). In four cases there was no evidence of this. Three
cases showed evidence of the participant re-evaluating their plan of action relating to the
strategy to be used for reading comprehension. There were no examples of good readers re-
evaluating their plan of action relating to the mechanics of reading (e.g., deciding to read a
different part of the text) even during reading of non-fiction texts. Only two cases showed
evidence of a re-evaluation of the participants’ goals, and both of these related to a change in a level goal.

**Table Four: Behaviour group: Regulatory reading behaviour**

<table>
<thead>
<tr>
<th>Case/P</th>
<th>End of reading episode</th>
<th>Disengage from text</th>
<th>Re-evaluation</th>
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<tbody>
<tr>
<td></td>
<td>Goals achieved</td>
<td>Goals not achieved</td>
<td>Successful</td>
</tr>
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<td>8</td>
<td>1</td>
</tr>
<tr>
<td>B/1</td>
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</tr>
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<td>C/1</td>
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<tr>
<td>Mean</td>
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</tr>
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</table>

**5.2.4 Summary of observations**

As expected, the good comprehenders proved to be more active in developing their understanding of text, while the poor comprehenders were almost completely inactive. Apart from actual reading activity (whether fluent or not) the group of poor comprehenders
averaged only three (range: 7, from 1 to 8) reading comprehension related behaviours in all behaviour groups in the course of reading an entire text. Given this low level of activity it is unsurprising that they fail to develop a useful level of understanding. The activity of the LC group was focused almost entirely on decoding behaviour. Much effort was spent on decoding individual words, including those not critical to the meaning of the story. A number of important errors in decoding were missed despite having a significant impact on meaning where the error and the text appeared similar. It is possible that this lack of reporting of comprehension related behaviour is due either to a lack of strategy use or to a lack of metacognitive ability and therefore a lack of ability to report behaviour rather than a lack of behaviour. However, at the conclusion of reading all participants were asked to review the text they had read, and the low comprehenders were essentially unable to do this. This inability fits with a lack of comprehension related activity. Once asked however, some returned to the text and reread aspects of the text, developing at least a rudimentary understanding of the text, and were able to report their reading behaviour as they did this.

In contrast to the lack of activity reported by the poor comprehenders, the good comprehenders group had an average of 25 comprehension related behaviours across all behaviour groups (not including fluent and less fluent reading behaviour). The good comprehenders were more active across the reading task; they set goals for reading and were more likely to define the task for themselves before they started reading.

Good comprehenders approached text differently, being focussed on their interest in the text and on the understanding they wished to gain from reading while poor comprehenders were almost exclusively concerned with the apparent difficulty of the task. Once reading was initiated the difference between the two groups became even more dramatic. The good readers were very active in trying to make sense of the text they were reading in monitoring their success and making use of a range of strategies to achieve their aims. Much of the comprehension related reading behaviour engaged in by good comprehenders was automatic, indicating that even at this fairly young age they have become relatively expert readers, and do not need to think about each action they undertake.

As seen in some of the behaviour categories discussed earlier, there was a much greater variation (range: 63, from 4 to 67) in the totals of good comprehenders group reading
behaviours than in the poor comprehenders group. Some of the variation within the good comprehenders group appears to be connected to particular patterns of reading. There were cases where the pattern of reading appeared more similar to the patterns observed in the poor comprehenders group than those in other cases within the good comprehenders group. This variation also occurred within cases from the one participant. Case ‘I’ for example was a non-fiction text read by one of the otherwise more active participants who indicated that they didn’t like reading non-fiction and wouldn’t normally unless required to. While there was evidence of goal setting and task definition, there was no evidence of strategy use during reading. These participants indicated they weren’t concerned with developing understanding because they “didn’t care”. As a result nine of the 13 behaviours observed were either fluent or less fluent reading, and these amounted to two periods of reading broken only by one example of monitoring behaviour.

5.3 Individual Reading Styles

The data discussed in the preceding sections provides a large amount of information regarding the differences and similarities between good and poor comprehenders of text, and will be discussed in more detail in forthcoming chapters. What is not provided by the raw data as discussed so far is an overall picture of how the development of comprehension does or does not progress during the reading process. That is, its continuous or discontinuous nature. The following section describes the next stage in the process of analysing the data gathered in the current study. During the coding of the data and subsequent analysis it became apparent that there were some consistent patterns emerging in the way participants developed their reading comprehension emerging. Some of these patterns were consistent across a number of cases, suggesting processes common to a number of readers. Other patterns were repeated in only some cases, while others showed different patterns. These differences and similarities appeared to the researcher to represent a number of differing ‘styles’ of reading. The results presented in this section consist of the narratives that were observed in the current study, it is possible that additional styles exist that were not observed here. The narratives are an attempt to capture the fluid nature of the reading process, and to assist in making sense of the coded data by creating a picture of the overall structure and process involved in the development of text comprehension.
Whereas the preceding sections present the data as discrete events that can be counted and analysed accordingly, these narratives were developed by combining the information gathered from both the concurrent and retrospective verbal protocols into a longitudinal description of the reading event. As well as simply including the behaviours, other information from the participants such as feelings of confusion or frustration are also included to give a fuller description of the participants’ experience of reading.

There were seven different styles identified, four successful and three that were not associated with good comprehension. Each style is defined primarily by two things; the first is the automatic comprehension strategy that is used, and the second is the deliberateness of the actions. The four successful styles came in pairs, each pair was connected by the strategy being used and the two styles within each pair were distinguished by the nature of the actions involved.

The first pair of successful styles used questioning as the comprehension strategy. The first is termed the “Wondering” approach. Readers using this style used a questioning strategy and asked themselves a number of questions as they read. The questions asked were not used to prompt a search for related information; rather they reflected the reader wondering what will happen next, or testing of a hypothesis (“I wonder if…”). The questions provide focus for the reading and are used by the reader to monitor their understanding. A second style also makes use of questioning as a strategy. The “Hunter Seeker” approach differs in the specificity of the question(s) involved, but the major difference is in the intentionality of the approach to answering them. In contrast to the “Wonderer”, the “Hunter Seeker” deliberately sets out to answer their question. They read quickly through the text, searching deliberately for key words or another signal that indicates when they may be able to answer the question. They are less interested in the text as a whole and more in seeking an answer. This strategy was primarily seen when reading non-fiction texts but was also observed in one case of fiction reading.

The second pair of styles uses visualisation strategies. One is termed the “Movie maker” and the other “Movie watcher”. While both talked about watching a movie, different participants arrived at this position in different ways. The movie maker could be considered as analogous to a film director. Individuals using this style actively used the information in the text to build
their own movie, looking for the information they needed and including predictions as to what the movie was going to look like. At times the movie they were constructing appeared to be predictive of the text, their movie appeared to be ahead of the text they were reading, and this enabled them to monitor their success through checking whether or not the movie in their head matched what they were reading. The Movie watcher style was less active. While still involving a movie, the involvement of the reader in this style is more like that of the audience. The reader is watching a movie and waiting to see what will happen next. In this style the movie was built from the text being read and was not predictive of upcoming text.

The three styles that resulted in poor comprehension all showed lower levels of involvement from the reader. The first of these styles (“Passive”) was observed as an example of poor reading by a good comprehender as well as by poor comprehenders. This style can largely be characterised as bored reading. At first glance it may appear to be good reading as the reading is largely fluent. There is little or no attempt to make sense of the text however, the general impression is of a reader reading without purpose and waiting for the text to end. The other two styles associated with poor reading are different, in that the reader is relatively active, but is no more focussed on understanding. In the first of these, the “Fluent decoder” the reading is again fluent, but the reader is focussed on reading accuracy. They stop to correct mistakes that would be ignored by a good reader and ignore errors that look correct but would affect meaning. The fluent decoder is focussed on a goal (accuracy) and is sufficiently skilled that they can read fluently, and understand that this is important. The extreme decoder is focussed on accuracy to the exclusion of all else. They read word by word, attempting to ensure each is pronounced correctly with no real attempt to understand what they are reading, neither is there a concern with fluency.

5.3.1 Exemplar narratives
This section provides narrative type descriptions of the reading in a number of cases. They are an attempt to capture the flow of the reading and to provide an illustration of how the behaviours observed and outlined in the previous section come together during reading. The participants have all been given pseudonyms. All cases from the GC group are presented, and three representative cases from the PC group.
5.3.2 Fiction Texts: Good Readers

“Wondering” approach; Case A – “Hannah”

Hannah considered the possible choices of text separately. She read the title and précis of the story and quickly considered what each one might be about. This was in contrast to some other participants where all the options were read and then considered together. She indicated in the review that she wasn’t sure what the stories were about, but that she chose the one she did because it attracted her interest more than the others; she wanted to “know more about it”.

After she had selected her text Hannah began by again reading and considering the title and synopsis, she set a goal for reading that was an ‘idea goal’ in that it was related to the content or ideas in the text rather than a ‘level goal’ related to how well she wanted to understand the story. This did not take the form of a specific question to be answered but was more general in nature “I wonder what’s going to happen?”

As she began to read the story, Hannah almost immediately began to ask herself questions about the text she was reading. Some of these questions were essentially repeats of her initial wondering about the story and what was coming, others were more specific and related to particular incidents in the text “Why would you need a screwdriver?” while still others, also related to specific events, appeared to be used as a strategy to focus Hannah’s attention on a perceived lack of understanding. Hannah indicated in the review that she doesn’t generally attempt to answer these questions at the time but waits to see, “I look for answers as I’m reading”. These questions came frequently throughout her reading (averaging nearly three per minute throughout the text, and more frequent at times) and appear to the observer to be quite intrusive. For Hannah however, they were anything but, helping her to focus and to move through the text in a purposeful fashion. This type of ‘wondering’ questioning approach is Hannah’s default strategy. She stated in the review that she doesn’t plan for her strategy use, saying “I don’t usually think about it much, I just do what I always do.” when asked whether this was always the case she said, “If (the text) looks strange I might (think about what to do).”

There were a number of examples where Hannah used a different strategy, however, and the form of Hannah’s response depended on the type of difficulty. On a total of seven occasions Hannah misread a word or words in the text. Her response to this differed from the other able
readers in the study in that she appeared more concerned with accuracy than the others. In general terms the other able readers made a similar number of decoding errors as Hannah, but unless these errors disrupted meaning they tended to be ignored. Hannah left none of these errors uncorrected but this did not significantly disrupt her reading, as there was an immediate reread of the word in question. In the review, Hannah indicated that she is not really aware of doing this at the time. If on the other hand she has not immediately noticed the mistake itself but rather her monitoring has alerted her to the fact that an entire sentence or phrase does not make sense, then she pauses in her reading. This is also true where she has not made an error, but has simply not understood the meaning of the sentence or phrase.

These pauses were significant in terms of the process Hannah used to solve problems of understanding. In the review of the video, Hannah indicated that during these pauses she was actively engaged in deciding what to do next. She is not simply wondering about the story, but is focused on her own thought processes and deciding which strategy she should use to resolve her problem. In the case of a sentence or phrase which has not made sense or which “didn’t sound right” she reread the sentence on every occasion, sometimes more than once, to resolve her uncertainty.

A similar process also occurred when Hannah’s monitoring indicated that she was not able to make sense of the text. In these examples decoding errors are not the problem, but rather that she does not understand why something has occurred. In this situation she also paused to consider her next move. Just how she responded appears to depend on whether she feels she should already know about the plot development that she has encountered. In those cases where she decided she shouldn’t, she used her default strategy (i.e., she wondered (or asked herself “Why?” or “What?”)) and continued to read to find out, but where she decided she should know she responds differently. If she considered that she should already understand this development she then decided how best to resolve her lack of understanding. This decision involved a conscious consideration of the strategies she has at her disposal, in this particular text there were five examples of this. In two of these examples Hannah decided to think back through the text and “try to remember” what it might be about. In another example, Hannah said in the review that she had decided to picture the scene in her mind. She indicated this was because she hadn’t considered that the protagonist in the story was close enough to interact with an object in the way the text indicated, as a result she wanted to
picture the required aspects of the scene using what she knew in order to get a better feel for where everything was. She did not go back into the text to do this; rather she used what she already knew. This strategy required around two to three seconds to complete, a much more significant break in her reading than the other strategies needed. In the fourth and fifth examples of her use of a considered strategy, Hannah related the text to her own prior knowledge in order to better understand the character’s situation.

As the story drew to its conclusion, Hannah began to find the answers to her wonderings “Oh, it’s a lizard, that’s what he should have told her.” It was not until this point that she really appeared to the observer to be enjoying her reading, having often looked concerned or frustrated by her lack of answers whereas at this point she is appeared more relaxed and was smiling as she read the last few paragraphs. As she finished, she disengaged from the text using her default strategy (“I wonder what it is?”) considering what the story’s protagonist might be planning.

Hannah’s reading was much more broken up than others, although this was often simply by the correction of a misread word or the asking of another question rather than by the need to pause and do any significant processing. The result of this was that the longest period of continuous reading was 13 seconds.

In her reading of this text, Hannah demonstrated the use of a wider range of strategies than the other readers in this study. She used five different strategies related to making meaning; ‘wondering’ or questioning, mental imaging, relating to personal experience, looking (or thinking) back through the text, and re-reading specific sections she had trouble understanding. In addition to this, she was much more concerned with reading accuracy than the other able readers. Despite this, it did not affect the time it took her to read the text.

“Wondering”; Case B – “Hannah”

In this case Hannah began by reading the titles and précis of the choices and then attempted to “weigh one against the other” in order to decide which was more appealing. Once she had selected a text based on her level of interest she set an idea goal for her reading that related to “getting to know “ the characters in the story. Although it wasn’t apparent to the observer at this point it became clear later in the reading that Hannah also had a level of understanding
that she wanted to achieve. This may have been connected to a prototypic definition of the

\[ \text{task rather than a conscious goal setting.} \]

Once she began reading the text Hannah again began to ask herself questions. In the early

\[ \text{stages of this text there are a number of characters involved, all of whom are members of a}\]

\[ \text{single extended family. Hannah’s questions at this stage relate primarily to the relationships}\]

\[ \text{between these characters as Hannah is attempting to determine who each person is, and how}\]

\[ \text{they are connected to the main characters. Similarly to Case A Hannah was again quite}\]

\[ \text{concerned with accuracy, re-reading and correcting misread words whether the errors affected}\]

\[ \text{meaning or not.} \]

For the first one and half minutes Hannah’s reading is often relatively less fluent than her

\[ \text{normal reading as she asks a lot of questions and is focussed on identifying the various}\]

\[ \text{relationships. After one minute and 34 seconds Hannah encounters a word that she does not}\]

\[ \text{know. Hannah pauses and asks, “What does that mean?” She decides to continue reading and}\]

\[ \text{see if she can identify the meaning with more contextual information. She does not identify}\]

\[ \text{the meaning, however she decides that it was not significant to her goals and so continues}\]

\[ \text{reading.} \]

After two minutes and 12 seconds there is an indication that she is not happy with the

\[ \text{progress she is making towards her goals (“Err”) associated with another period of less fluent}\]

\[ \text{reading and another question relating to the relationships between characters. Fourteen}\]

\[ \text{seconds later Hannah says “Ohh!” and pauses in her reading. During the review Hannah}\]

\[ \text{indicate that this was the point she felt she understood the relationships between characters.}\]

\[ \text{She then asked herself whether she understood the text so far well enough, and spent three}\]

\[ \text{seconds reviewing the text she had read to date now that she knew how the characters were}\]

\[ \text{connected to each other. Following this Hannah continued reading, more fluently than earlier.}\]

\[ \text{She continued to use her automatic strategy of questioning, although the questions were now}\]

\[ \text{developments in the story or the motivation of characters rather than the relationships.}\]

\[ \text{Hannah asked herself questions at frequent intervals within the text, never more than 36}\]

\[ \text{seconds apart and at times every few seconds depending on the importance or difficulty of the}\]

\[ \text{text passage.} \]
After almost seven minutes of reading, Hannah paused in her reading for two seconds. She indicated in the review that she had stopped reading as she had thought of something unconnected to the text. This was not because of any similarity to the text or other connection; it was just something that had “popped into her head”. After this she began reading again, less fluently than before as she was “bringing (her) self back to the story”. The pattern of reading and asking frequent questions continued for another three minutes and 31 seconds before a brief pause. Hannah indicated in review that this pause was because she had become aware that the text was nearing the end and that she “needed to be thinking”. Hannah continues reading and questioning for another one minute and 45 seconds before she smiles. Hannah indicated in review that she knew at this point that she was about to find how the text ends. Six seconds later she completes the text (which has something of a cliff hanger ending) with “Eww!”. Hannah then spent some time disengaging from the story. She indicated in review that she was considering earlier parts of the text and “putting some of it together better” and that she was now able to understand much of the text better once she knew the ending.

In this case Hannah did not use the range of strategies that she did in the previous example. This case does however show the flexibility of the questioning strategy. Hannah was able to use this strategy to address issues as diverse as the relationships between characters and the meanings of individual words.

“Movie Maker”; Case E - Nicola
Nicola began by selecting the text to be read based on interest, commenting “I want to know more about that one, it sounds funny ‘cause it says ‘locked in the loo’.” In review Nicola indicates that she is already thinking about what that might look like and beginning to form a picture in her head. Nicola’s automatic strategy is to construct a movie of the text she is reading and she begins to do this as soon as she begins reading and frequently comments on aspects of the text (e.g., “That sounds scary” or “Oooh!”). Initially these comments refer to the text (“that sounds…”) but after less than 30 seconds this has changed. During reading she laughs in response to the text before continuing reading. In the review Nicola said, “When the toilet paper drops it’s like you’re there watching the thing.” Later in the text there are other indications that when her reading is successful Nicola places herself in the position of the main character. Nicola’s next comment is “That’s like my Nana and Graddad’s one”, and indicated in the review that this was again as if she was there looking at it.
Nicola continued reading in this manner for 43 seconds following the laugh referred to earlier. At this point she stops reading because “I wasn’t sure anymore, my picture was different to what I was reading.” As a result she paused her reading to address this issue. As her automatic strategy had failed, Nicola asked herself a question relating to the disparity between the text and her expectation that she immediately looked to answer. Nicola looked back in the text until she was sure she could accurately answer the question and therefore resume her movie.

Once she had resolved the difficulty Nicola resumed reading as before, again commenting on the movie in her head. This continued until 43 seconds had passed and Nicola made a decoding error that affected the meaning of the passage and therefore impacted on her ability to continue her movie. Nicola again paused to consider this and asked herself a question (“What does that mean?”) before rereading the passage to answer her question and realising that she had made an error and was now able to continue as before. Unlike Hannah, who corrected almost all decoding errors, Nicola only corrects an error if affects her ability to develop her movie, during her reading there are a number of decoding errors that are not addressed. Some of these errors are not noticed until the retrospective data collection process and others are noticed at the time but ignored (“If it fits with my movie then I ignore it.”).

Nicola’s reading continues in this fashion with a developing movie in her head that is interrupted when she becomes aware of an issue that prevents or interferes with the building of her movie, or where there is a conflict between her movie and the text. On every occasion where this happens she makes use of a questioning strategy to address the issue. She does this a total of seven times including the preceding examples. Towards the end of the text there are indications of how closely involved she is with the text. At one point a character asks the main character “Didn’t Michael tell you?” and Nicola responds with “I don’t think he did.” She adds to this in the review, saying “I couldn’t remember him saying it to me.” Not only is it now as if she’s there watching as she was earlier in the text, it is now as if she is the main character.

On completion of the text, Nicola reflects on the fact that she “quite liked that story” and thought back through the story and remembering some of the movie scenes in some detail and referring to those reminded her of events and places in her own experience.
Nicola began by selecting the text to read based on her interest levels. She then defined the task at hand. She did this in two ways, firstly she defined the task as interesting and secondly she defined it by text type, in this case a narrative. Immediately prior to beginning reading she set an idea goal. This was not a specific goal but was general “I want to find out what it’s about”. Once Nicola began reading her reading was fluent, but frequently interrupted (every 3-10 seconds or so) which gave her reading a stop-start feel. Viewed as a whole her reading did not appear fluent as a result of this but each period of actual reading (as opposed to other activity) was fluent. The automatic strategy employed by Nicola in the reading of this text was to develop a “movie” in her head. Nicola was quite clear during the review that this is not a series of pictures based on the ideas in the text, but rather a developing and continuous movie. As she read, Nicola added each piece of new information that she deemed relevant into her movie. While the strategy choice was automatic, carrying out this strategy was a very deliberate activity; each piece of new information was carefully assimilated into the movie and assessed for whether it fitted with the information already contained in the movie. There was also an almost constant stream of comments or responses to the movie (“Sounds scary”, “Oh my god!”). During her reading there were a number of decoding errors, some were ignored or not even noticed if they are not relevant to the movie, while others were corrected if they impacted on her ability to make the movie clearer.

After about one and a half minutes of this, Nicola identified a discrepancy in her level of understanding, in this case and because of her reading style this indicated she was unable to assimilate a new piece of information into her movie. As a result of this discrepancy, Nicola evaluated the success of her default strategy negatively and disengaged from the text in order to re-evaluate her plan. In this instance she decided to use a different strategy (questioning). After its use she decided that this strategy had been sufficiently successful for her to continue reading with her original default strategy. Interestingly, she did not find an answer to her question. Nicola indicated that what the question did do was enable her to define the part of the movie that was incomplete so that she could carry on with “a blurry bit” to be filled in later if needed or possible. Following this Nicola continued reading in the very active and interrupted fashion that appears to be her norm for over nine minutes. In the review Nicola indicated that she did not remove the “blurry bit” from her movie, but that it didn’t matter as
the progression of the story meant that it was not a lasting problem. Once the “blurry bit” was no longer in the movie it ceased to matter. After this time she encountered another discrepancy that she could not solve. Once again she stopped reading to re-evaluate her plan for reading. This time she decided the movie was getting too complicated (it is a period of significant plot development) and so changed her default strategy to one of questioning. Nicola then continued reading, asking herself a number of questions directly related to the text, and for which she sought answers in the immediately following section of text. After about two minutes there were occasional pauses of around two seconds. During the review, Nicola indicated that at these times she had stopped reading and was attempting to restart her movie, each time she was unable to do so, she asked another question before seeking an answer. After almost three minutes of reading using questioning as her default strategy, Nicola made another conscious attempt to return to her original strategy. This time it was successful so she returned to reading. The remaining text took her two minutes and eight seconds to complete. As she finished reading with a clear movie in her head, the goal was deemed to have been achieved. Nicola then reviewed her movie; she indicated that during this time the abbreviated movie included those sections during which she was using an alternative strategy while reading the text. Nicola completed her disengagement from the story by relating this story to one she had previously read “That was a bit like…”

“Movie watcher”; Case G – “Sally”

Sally began by looking at all the titles and précis of the texts. She identified the one that she found most interesting and selected that for reading. Sally set herself an idea goal that took a general form “I wonder what sort of trouble the magpie will get in to?” As part of her preparation for reading she makes a prediction as to what the answer to this question might be, and plans to use questions to check and see if she’s right. She also has a level goal in mind, although this is not explicit but rather qualitative, “I want to understand it well because it seems interesting.”

As she begins reading Sally begins to visualise the story. She does this automatically and without thinking about it. Sally indicates in review that the movie she develops is not consistently clear, as there are parts that are more in focus than others. As she reads Sally asks herself questions. These questions are not used to look for answers but are the mechanism used to focus her attention on relevant parts of her movie. In this way the questions she asks
are more similar to the comments that other participants who used visualisation strategies made. They are not questions that require an answer but merely serve to draw her attention to aspects of the story. Sally also makes comments “Eew!” and indicates in the review that she does not see them as different; rather the questions are more like comments.

Sally reads fluently in this fashion (with one question and one comment) for only 20 seconds before she encounters her first difficulty. She reads a phrase that she cannot understand and therefore she cannot build up a picture so stops reading, knowing that she is not understanding the story well enough. At this point she decided to read on and see if she could work out what the phrase meant. She reads the following section of text for a few seconds in the hope that this will make the meaning of the phrase clear. After reading for a few seconds she stops again, deciding that this strategy is not working. She decides that although she has been unsuccessful in resolving her difficulty the level of understanding she has currently will have to do and she will continue reading, hoping that her lack of understanding of this phrase is not too important in the long run.

Sally then returned to the point of difficulty and begins reading fluently again. After 31 seconds of reading she pulls a face at something in the text without pausing in her reading. After a further four seconds there is a brief pause, in the review Sally indicated she “just needed some time to build up” her picture at that point. This was followed by another 31 second period of fluent reading that included a number of brief indications of monitoring such as laughs or face-pulling. Sally then encountered another difficulty when she couldn’t reconcile a particular phrase from the text with her picture. Here again she chose to pause her reading and decided to make a prediction of what was coming in the text and match her picture to that so she could check whether she was right. After two seconds of reading she decided that she appeared to be correct and made another prediction before continuing reading. After 11 seconds of reading Sally paused, asked herself a question about the text and used her picture to answer it. When she found she was able to do so, Sally concluded that her understanding was sufficient again and returned to reading and visualising the story.

There was then a sustained period of fluent reading totalling three minutes and five seconds. This period of reading was dotted with evidence of understanding such as smiles and brief comments (e.g., “ooh”). There were also three further examples (identified in the review) of Sally using a prediction strategy to develop her picture. After the earlier success of this
strategy it appears to have become automatic and is the dominant strategy at points of difficulty. Sally indicated in the review that because it seemed to be working she did not really think about it and nor did she actively check on the success or otherwise of it. She assumed that if everything seemed to be OK then it probably was.

At the conclusion of the story however, Sally had to pause in her reading owing to an unexpected ending, saying “That’s funny, because I thought…” She indicated in the review that she needed to “rearrange” her picture to cope with the unexpected nature of the conclusion. This process took five seconds. Once she had the difficulty resolved Sally read for a further 15 seconds to finish the text.

Once completed Sally looked away from the text for a second and appeared to be finished with it. She then looked back to the text however, smiled and considered her final picture before predicting what the scene would look like and picturing that. Following this final visualisation, Sally disengaged from the text.

“Hunter-Seeker”; Case H - “Dot”

Dot began by reading through the titles and précis given. She selected a text to read based on whether or not the subject seemed interesting or not. Once she had selected the text to be read Dot set herself a specific idea goal, in reading this text she had a specific question she wanted to answer. Once she started reading, Dot read fluently for twenty-two seconds. At this point there was a pause of around eight seconds as she encountered a word she did not know the meaning of. Dot thought she knew what it might mean but did not attempt to make sure as she decided that it was not relevant to her goal question and therefore didn’t matter. This was followed by a very long period of sustained reading (three minutes and fifty seconds). This reading was rapid, interrupted only briefly by a second of less fluent reading after about 40 seconds. In the review Dot indicated that she had slowed as she had encountered another unknown word. The pause was not to work out the meaning of the word, in fact, Dot made no attempt to ascertain the meaning of this word. Dot indicated in the review that at this point she realised that there may be a number of context specific words she wouldn’t know, and she decided to ignore them until such time as she believed she was reading a section of text that would help her answer her question. The drop in fluency was due to this decision being made, not to strategy use. A number of decoding errors were also ignored following this decision.
Six minutes and twelve seconds into her reading Dot paused again as she encountered a key word in her question. Her reading at this point became slightly less fluent as she began to search for answers to her question. These periods of less fluent reading came immediately following a relevant section of text. She indicated in review that during these periods she was attempting to make predictions as to how her question would be answered. This strategy is automatic, in that Dot did not make a conscious decision to employ it nor does she pause reading, but it did interfere with the fluency of her reading as a result of the added cognitive load. There were also a number of times where mistakes were corrected or the meanings of unknown words were considered “because it matters”. Dot was also monitoring the accuracy of her predictions.

On one occasion the realisation that her prediction was incorrect resulted in the end of her reading episode. She stopped reading to consider her approach, as she felt that the prediction strategy was not working. Seven minutes and thirty-one seconds into her reading, Dot decided to change her plan for achieving her initial goal. Rather than attempting to make predictions, she changed her strategy began to ask specific questions relating to information she was seeing in the text as she read. Approximately seven seconds later she paused again before continuing to read. During the review Dot indicated that this was the point she realised she had achieved her goal. She then checked how much text was remaining and decided to complete the text. She indicated that had there been a significant amount of reading remaining she probably wouldn’t have bothered to read it unless she felt a need for further confirmation. Ten seconds later she finished reading the text, knowing that she had achieved her goal. Dot then spent a few moments thinking back through the text to “make sure I had it worked out” before disengaging finally from the text.

“Movie watcher” approach; Case K – “Jill”
Jill began by carefully considering all the possible choices, she read through the materials given at this point (Title and précis) and considered which appeared to be the most interesting. This was both a negative and a positive process, a combination of ruling out those possibilities that appeared uninteresting and discriminating between those that held more appeal. Jill indicated in the review of her video that the difficulty of the text is not usually something she considers when choosing texts to read, other than if something in particular makes her feel as if it might be too hard, such as if the title or précis contains words she
doesn’t know. She indicated that even in these circumstances the decision was largely related to her level of interest although at times “it’s hard to get interested when you don’t know what it’s about.”

Once the choice of text had been made and the actual text was in hand there was a significant period of fluent reading without any apparent prior thinking. In the review Jill indicated the only thing she really thinks about prior to reading fiction (and she said she reads non-fiction differently) is about how well she wants to understand the text, something she expressed as “The more interested I am the more I want to know about it.” Jill indicated that this was more of a feeling than an explicit goal, but that she definitely set out with an idea of how well she wanted to understand something. She did not however, have in mind any ‘idea goals’ as to what she was looking for or wanted to find out in advance (this is again different to the way she would read non-fiction).

After approximately 35 seconds of continuous fluent reading came the first pause in reading lasting about two seconds. This pause came after she had completed the first paragraph of the text, which contained basic information about the main character and the setting of the story. Jill indicated in the review that at this point she was trying to build up a picture in her mind “sort of like a movie” and that the pause was because she was thinking about what she had read already and that she was looking for more “puzzle pieces”. This approach to reading fiction is an example of a good reader having a default strategy, it’s not something she plans for explicitly each time she sets out to read – “It’s just what I do”. Following this pause Jill resumed reading fluently (with occasional pauses of a second or less to allow for adding more puzzle pieces to her movie) for about fifty seconds. At this point she encountered the first significant difficulty in achieving her desired level of understanding.

Around one minute and twenty-five seconds after Jill began reading she stopped, indicating in the review that she wasn’t satisfied with her progress, as she didn’t have a good enough picture in her head of the story. This pause and her explanation for it is an indication that she was actively monitoring the fullness of her movie and judging whether she needed to do anything to augment that movie. Having stopped reading as a result of this monitoring, she then needed to do something to solve the problem. In this case she decided to look back in the text to see if there was anything she had missed, for any missing “puzzle pieces”. The issue at
this point was contained in the text in the form of a phrase “outside there’s a giggle”, which indicated the presence of additional characters that were not present within Jill’s movie. At this point she decided to look back in the text to see if she could find anything to indicate who it might be. She couldn’t, so continued the movie (and her reading) with the presence of someone outside the door acknowledged, but remaining unseen.

After a further 10 seconds of reading Jill again paused, saying “I’m lost”. She indicated in the review that she didn’t feel that she really understood what was happening, but that she was getting there and just needed a bit more information. At this point she didn’t choose to do anything different to help the situation, possibly because she had used a different strategy very recently (looking back). It was perhaps not surprising that she is having difficulty with her movie at this point. In the story the protagonist was encountering her own difficulties, the complication in the narrative was unfolding at this point and neither the protagonist nor Jill had the information required to fully understand what was happening. Although she didn’t explicitly say so, Jill’s comments and behaviour at this point suggested there was some understanding of her situation. She indicated that while she didn’t really understand it she felt as if she was getting there and just “needs a bit more” and her response to this situation was to continue reading and add in more puzzle pieces to her movie.

The next and very brief pause came twenty-two seconds later accompanied with a slight smile. Jill said in the review of the video that this was the point at which she felt she knew “what is going on”. Reading then continued for approximately seventeen seconds with the occasional raised eyebrow or smile. Jill conveyed in the review these were at points of particular interest in the story, she didn’t pause reading or utilise another strategy at these points, but she was aware that they were significant moments of understanding. These brief gestures are indications that she is monitoring her understanding and they are the indications of ‘positive’ monitoring. They identify moments where new understanding is gained.

Following this period of reading there was a longer (one second) pause while Jill added another puzzle piece to her movie. She indicated in the review that she was aware this particular piece was significant and that it was connected to the complication and its solution. More time was therefore spent assimilating it into her movie with more detail.
The story began to unfold at this point and Jill’s reading reflected this. She continued reading fluently for nearly one and a half minutes with only one brief interruption about fifty seconds in to reread a single word she read incorrectly. Prior to this point Jill had made a number of small errors in her reading that she had not corrected. During the review she has stated that she was not even aware she had made them at the time although she picked them up herself when reviewing the video. This particular error appeared to have been corrected because it noticeably disrupted the meaning of the sentence and Jill’s monitoring alerted her to this.

After this period of mostly fluent reading Jill again stopped and reread a phrase (indicating in review this was because it “didn’t sound right”) after she had misread a word. During her rereading she again made a (different) mistake but this time the meaning of the phrase was not affected and so she continued. The second mistake was in fact much greater if one looked at it in terms of graphophonic reading, she completely omitted a word, but crucially her omission meant the phrase carried the same meaning as that in the text.

Twenty-two seconds later there was another pause in the reading, preceded by a smile. Jill indicated in her review that she smiled because of the picture that was in her mind after reading a particular phrase (“Her cousins are wetting themselves”) and the following pause is because she was not sure what this had to so with the story. She had misunderstood the phrase and thought the cousins are playing with water rather than laughing, and this behaviour appeared incongruous with the story. Jill indicated in review that during the pause in reading she decided to simply ignore this and focus on what was happening to the protagonist. She made a conscious discrimination between what she considered to be relevant and non-relevant information.

Following this brief interruption to her reading Jill then read fluently for the longest period during the reading of this text, one minute and fifty-eight seconds, which took her through to the end of the story. During this time there was no discernible pause in the reading, however in her review Jill indicated that she had needed to make an important change to her movie at one point as one aspect of the complication (a snake) turned out in fact to be a pet lizard.

Having finished reading the text, Jill leant back, smiled (she indicated in the review this was because she was happy she had followed and understood the story well, which was her goal) and appeared to be thinking for a few moments before she focused back on the researcher.
During the review, Jill indicated that she was thinking about what might happen next, and that she did this “as part of finishing the story”.

“Passive”; Case L – “Judine”
Judine began by reading the précis for all texts. She indicated in the review that having done this and found that none of the available texts caught her interest she had already defined the task as being of little interest and therefore one to be completed as quickly as possible. She selected a text apparently based on interest saying, “That one seems more interesting.” However, she indicated in the review later that it was actually a case of choosing the least uninteresting, and that a more accurate interpretation was that the one she had selected was less boring. Judine stated that under normal circumstances she would have been unlikely to read any of the texts available.

Having defined the task and selected a text Judine set a goal for her reading based on her intended level of understanding. This goal was an example of what has been referred to elsewhere in this thesis as an ‘anti-goal’ in that she was clear that she didn’t care whether she understood the text or not. This meant that there was no motivation for her to do any real work towards developing her understanding of the text. Aware of her lack of interest and motivation, Judine began to read.

The first 26 seconds of her reading were not particularly fluent, she appeared obviously bored and uninterested in the text. Judine continued reading fluently without interruption for a further one minute and 20 seconds. During this time there were two periods of less fluent reading (one and two seconds respectively) when Judine encountered an unfamiliar word. After a total of one minute and 46 seconds Judine ceased reading and looked around. In review, she indicated that she had not been thinking about the text at all during this four second break and was effectively looking for something more interesting. She also said that she would normally have discarded the text at this point (if she had started it at all) and considered doing so here.

She resumed reading however, and read for a further two minutes and 57 seconds of mostly fluent reading but with another two instances of less fluent reading. When finished, she sat up, put the text down and said “Done!” This was the full extent of her disengagement from
the text. Judine indicated she felt she had completed her task successfully as she had done what she wanted. She was aware that she didn’t really know what the text was about.

When asked, Judine could give only a vague outline of the story, and even this was achieved only with a large amount of referring back to the text. She was unable to make comment on what had happened or why the characters behaved in the way they had. She had read the words and this was all she had set out to do.

“Hunter Seeker”; Case M - “Fiona”
Fiona quickly read the title and précis for the three texts she had to choose from. Having selected the most interesting text, she was aware that she wanted to understand the text well as it had aroused her interest. She also set an idea goal relating to getting to know the characters and their relationships.

Once she started to read Fiona read fluently for 18 seconds before asking a question about two characters (“Are they friends?”) before deciding that they were and continuing. As she started reading again her reading was less fluent for a few seconds, Fiona indicated in the review that this was because “I need to get back into the story.” This period of reading between the first use of her default strategy (questioning) and the next was 61 seconds, longer than many of the other good readers. During this time there were two further periods of less fluent reading. These were of only one or two seconds duration and were related to difficult words or phrases in the text rather than cognitive processing related to comprehension development. Fiona indicated that she only really paid attention to parts of the text that related to her goal “otherwise it doesn’t really matter.” After 61 seconds a new character entered the story and this prompted Fiona to ask, “How does she fit in?” This question was followed by a period of less fluent reading lasting six seconds while she attempted to answer her question. The next use of her questioning strategy immediately followed this period of less fluent reading and was a more specific question “So are they friends?” Fiona said in review that she had “pretty much decided they were” but was “sort of checking by asking myself to look again.”

That question was followed by a period of 98 seconds of reading (including an eight second interruption when someone else entered the room). During this period there were another two periods of less fluent reading of one second each resulting from difficulty with specific words.
At this point (three minutes and eight seconds into the text) Fiona asked herself another question relating to the relationship between the characters, this time asking whether an event in the text would affect their relationship. Deciding that it wouldn’t, Fiona continued reading, this time for 56 seconds before a period of less fluent reading lasting five seconds was prompted by one of the ‘friends’ making fun of the other which caused Fiona to more carefully consider that section of text. She did not immediately ask herself a question, but just made sure she had understood what was happening. After a further period of six seconds of reading, Fiona did ask herself a question about that event and the relationship, saying, “Does that mean they’re not friends? This was followed by seven seconds of less fluent reading while she tried to answer that question. Fiona indicated in the review that she felt she had answered it successfully but that she was also aware that the end of the story was getting closer and that she needed to make sure she had everything “sorted out” before it finished.

The remaining one minute and 32 seconds of reading consisted of five periods of fluent reading (ranging from seven to 20 seconds) with four examples of Fiona using her default strategy of questioning. After five minutes and 58 seconds of reading Fiona completed the text. She indicated in the review that she felt she had read the text successfully in that she had a good feel for the characters and their relationships. She also spent a few seconds considering the possibilities stemming from a cliff-hanger ending before completely disengaging from the text.

5.3.3 Non-Fiction Texts: Good Readers

“Hunter Seeker”; Case C – “Hannah”

Before starting the data collection procedure Hannah indicated that she didn’t normally read non-fiction unless she had a particular reason to. This would most often be related to her school work and a task the teacher had set for her. She said this was not because she didn’t like non-fiction, rather that most of her reading is for enjoyment and relaxation and that fiction is better suited to this because “you can pick up any book without needing to have a special reason.” Reading non-fiction is purposeful and choosing to do this is based on having a particular goal in mind that drives text selection rather than the other way around. Because of this, the data collection procedure may be less naturalistic for non-fiction reading than for fiction.
Hannah selected a text based on interest. She set herself an idea goal for reading in the form of a question she wished to answer during her reading. She also indicated that she had some expectation of what the answer may turn out to be. In the review Hannah again pointed out that this was not the way it would normally go. She would usually have had a goal in mind first and then select a text to achieve that goal. In this situation, because the texts were provided she selected one on interest which meant the précis had suggested a question (or goal) to her.

Hannah then read fluently for 21 seconds without interruption. While her reading was not interrupted during this time, there were indications that she was monitoring the success of her reading. This took the form of a smile or “OK”. Hannah indicated in the review that this monitoring was not related to her goal but just that she was making sure that she was understanding the text well enough that she would be able to answer her question when she found some relevant information. After this time Hannah asked herself a question (in review she indicated this is what she does when reading non-fiction) in order to focus her attention. She continued reading as before with a few brief periods of less fluent reading when she encountered unfamiliar words. After 48 seconds she asked another question (“Why?”) before continuing. Hannah indicated in the review that she does not immediately seek answers to these questions; they are a way of focusing her attention on the immediate portion of the text. After a further 16 seconds, Hannah paused when a decoding error caused a loss of meaning and her monitoring identified this. She reread a small section of the text (a single sentence) before continuing.

After one minute and 13 seconds of reading (including the asking of three focusing questions) Hannah again paused when her monitoring indicated that her level of understanding was not as high as she would like. She then asked another question in response (“What?”) before continuing to read. Hannah said that in this case she was seeking an answer immediately, because this question was not about focusing her attention but about solving the problem of a lack of understanding. She read for a further 22 seconds before again pausing to check whether she had answered her question and whether she now understood the text well enough. Deciding that she did, Hannah continued reading for two minutes with two instances of monitoring her level of understanding (smiles) and only one example of asking herself a question. In review Hannah indicated this extended period of reading with relatively little
activity was because while she felt she was understanding the text well enough, there was nothing in this section that appeared related to her original idea goal. After those two minutes, Hannah asked “Why?” when she felt she wasn’t understanding the text. She read for a further two seconds before pausing again and saying “Oh, that’s why, because they didn’t have enough money.” Hannah said this was related to her level of understanding of the text and she knew she still hadn’t answered her original goal question.

Hannah then read fluently for a further 31 seconds before reaching the end of the text. At this point she stopped, knowing her goal was not achieved, and was “wondering what to do.” She then checked over the page to see if there was any more text. Seeing that there wasn’t she said “Yeah, that’s it.” before disengaging fully from the text. Hannah said that if she wanted or needed to find an answer to her original goal question then her next step would be to find another text that could answer it for her.

“Hunter Seeker”; Case D – “Hannah”

In this instance Hannah indicated that after reading all the précis she selected a text based on her estimation of their relative difficulty, she chose the one that looked easiest to read so it would be quicker. She was not interested in the texts, and defined the task as uninteresting and something to be completed as quickly as possible.

Once she started reading Hannah read for 25 seconds before rereading a single word to correct a decoding error that would not have affected meaning. She then read for only six seconds before asking “What?” and continuing to read without answering that question, seven seconds later she said “Umm?” before again continuing to read. To the observer it appeared that while she was not prepared to invest any effort in understanding the text Hannah was unable to ignore the resulting lack of comprehension entirely resulting in disjointed reading. This pattern continued for a further one minute and 29 seconds. Over this time she appeared to become more comfortable with a lack of understanding and the interruptions became fewer and less significant. After a total of two minutes and 13 seconds reading there was another interruption, in the form of a head shake. Following the head shake, Hannah resumed reading. In the review Hannah indicated that she “had a question in (her) head - it didn’t make sense to (her) so (she) was wondering what it meant but (she) wasn’t worried enough to work it out then.”
Hannah then continued to read for another one minute 30 seconds, only stopping once to ask “What’s that?” when the text referred to salamanders. She did not attempt to find out. Throughout this period and the entire text Hannah has sounded uninterested and bored, even during her most fluent periods of reading.

After three minutes and 43 seconds of reading Hannah briefly appears interested in the text when there is a section about schools (something she can relate to) before returning to her previous uninterested tone for a further 23 seconds. Once finished Hannah put the text down and waited. There was no disengagement from the text other than that she was happy to have finished it, she was aware that hadn’t understood it well but didn’t mind as she had not wanted to.

“Hunter Seeker”; Case I – “Nicola”

Nicola was clear even before this session began that she did not normally read non-fiction and generally did not enjoy doing so. She selected a text based on which of the choices seemed like it might provide some interest. She said in review that while she chose the one that looked possibly interesting she wasn’t really expecting it to be.

Nicola defined the task as being of little interest or importance and did not intend to expend any real effort. She did however set an idea goal for her reading. This was not as specific as a question to answer, but was quite vague (“Maybe I’ll find out some more about…””) and did not appear to result in an increased level of motivation.

Nicola began reading with relatively (for her) low fluency. She read like this for 36 seconds before asking, “I wonder what eradicate means?” She did not make any effort to find out, and continued reading, still with low fluency. After a further 20 seconds her reading became more fluent for a period of 23 seconds. This was followed by a short period of less fluent reading (eight seconds) and another seven second period of fluent reading. She then paused in her reading and passed a comment (“That’s a lot.”) on an item in the text before continuing to read. This was to be her last verbal report. The text was completed with two short periods of less fluent reading with a short period of fluent reading in between, before she completed the text with an unbroken period of fluent reading lasting three minutes and 22 seconds.
When she finished the text Nicola simply put it down and waited. She did not summarise or look back over the text, nor did she review her understanding in any way. When she was asked if she had learned anything (referring back to her goal), Nicola could not remember that that was what she was planning to attend to. She could not relate anything else that she had got out of the text.

“Hunter Seeker”; Case J – “Nicola”

Nicola’s second reading of a non-fiction text was similar to her first. She selected the text based on interest, and defined the task as one she was not prepared to invest much effort in. In this case her goal was related to the level of understanding she wanted to gain rather than the ideas she wanted to find out about. This was another example of an anti-goal however in that she set herself a goal of getting through it with “some idea of what it’s about.” She then began to read.

Nicola read fluently, with two brief periods of less fluent reading, for three minutes and 55 seconds before commenting “That’s like on Great Barrier.” This comment indicated that she was paying some attention to the text, but she also indicated in the review that she had not reported anything earlier because she was “not really thinking about it” but was simply moving through the text. Following this comment Nicola read through to the end of the text (a further nine minutes and 40 seconds) without making further verbal reports. On three occasions she reread and corrected single words that she had misread. These errors would not have affected meaning (if Nicola had been paying attention to that) and she would have been unlikely to have even noticed these errors in a fiction text. Nicola’s reading of this text appeared very similar to that of a poor reader.

When she had completed, Nicola disengaged from the text with a smile. In review she indicated that she was satisfied that she had achieved her goal, saying, “Yeah, it was about…” and nothing further.

5.3.4 Fiction Texts: Poor Readers

“Passive”; Case W – “Peter”

Peter began by selecting the text he was to read based on the perceived difficulty of each from the titles and précis he had at his disposal. Peter chose the text he thought would be easiest. Once he was presented with the text he looked at it and also defined the task based on his
perception of the text’s difficulty. This assessment was based primarily on the fact that Peter considered the text to be quite long. There was no indication that Peter has made any attempt to set goals at this point. During the review of his video Peter indicated that this is not unusual, he indicated that he is usually focussed on attempting to “get the words right”.

Once he began reading Peter read fluently for 39 seconds without pause, he then stopped and said, “That doesn’t make sense”. While this was coded as discrepancy identification, in that Peter identified that he had not understood what he was reading to his satisfaction, it is different to similar occasions in the previous examples. Peter had identified that he had a problem at the sentence level; he had not understood the sentence he had just completed. The discrepancy was not related to a larger goal for how well he wanted to understand the text as a whole. Having identified this discrepancy however, Peter did nothing to correct it. The pause in his reading was followed by a period (14 seconds) of less fluent reading before his reading became fluent again whereupon Peter continued reading fluently for a further one minute and 12 seconds, before another period of less fluent reading (18 seconds) was triggered by the appearance of a few more difficult words. This pattern continued for the remainder of the text, a further four minutes and 16 seconds. During this time there were four more examples of discrepancy identification (as per the first example) with no attempt to fix the issue, and one further example of less fluent reading triggered by a difficult word. During the reading of this text, there were a number of behaviours that were not coded because they were unrelated to the development of understanding. Peter spent some time correcting or checking his decoding of words. Often these words were not important for the comprehension of the story. Conversely, there were 13 missed errors that were of significance and in some cases would have severely disrupted the development of understanding where no attempt was made to correct the error. In all cases these errors either made sense at the sentence level (although not when read in conjunction with surrounding sentences), were not visually jarring in that the word Peter said was similar phonetically to that which was on the page, or both. When Peter had completed reading the text he simply put the text face down on the table with what might be described as a look of relief and looked up to see what was going to happen next. Peter did not go through a period of disengagement from the text.
“Fluent Decoder”; Case S – “James”

James began by selecting a text based on interest (“Because I like drawing”). Although he did not report this at the time, in review James said he wanted to see what sort of drawing the character might do. Once James had the text he made note of the length of the text and pulled a face. In review James indicated that he thought it looked “a bit long” (the text was approximately one and a half pages) and therefore might be hard. James then began reading fluently (his reading sounded like his own speech) and continued to do so for one minute and 28 seconds. During this time there were a few decoding errors that were either corrected quickly without overly interrupting the fluency of his reading or which were not noticed. James indicated in the review that if he had noticed he would have corrected them. After this period of fluent reading, James encountered two names in the text. He spent 22 seconds attempting to decode these two words, before carrying on once he was satisfied.

This was followed by a sustained period of fluent reading (two minutes and 21 seconds) with only a few pauses to decode difficult words. James’ phrasing and reading of punctuation is good. His fluent reading sounds like that of a good reader, except it is not broken by comprehension-related processing. In fact, because of the lack of processing, James’ reading sounds better than most of the cases in the good readers group. Following this period of fluent reading there is a brief period of less fluent reading (five seconds) triggered by the reappearance of one of the names that caused difficulty earlier. A relatively short period of fluent reading lasting 27 seconds is again followed by an 11 second period of less fluent reading which is triggered by the second of the names. The final period of fluent reading lasts three minutes and six seconds and takes James through to the end of the text.

At the conclusion of the text, James does not actively disengage from the text, but simply puts it down and waits. When asked, James has forgotten that he was interested in finding out about the drawing, and cannot remember anything from the text. When asked if this was because of his perceived difficulty of the text (due to its length) James replied “sort of” but that he expected reading to be hard and this was normal. He indicated that unless there was something that made him think it would be easier (“like my little brother’s reading books”) then he assumed it would be hard. James agreed that with the exception of the names this text had not been hard for him to read, but that his focus had remained on accurate decoding. When directed generally to a section of the text and asked to “think about the drawing”,

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James read it and commented, “Oh, it’s like a dream – she draws the things she wants.” This would appear to indicate James is capable of understanding text, but fails to do so without direction.

5.3.5 Non-Fiction Texts: Poor Readers

“Extreme decoder”; Case O – “Judith”

Judith selected the text that appeared shorter, saying she hoped that it would be easier to read. She began reading the text in a staccato fashion that paid little or no attention to punctuation and phrasing within the text. There were a number of brief interruptions where she said “Oh, that’s not right, go back” or similar. These comments were related to the accuracy of her decoding and all occurred immediately following an error. After each of these interruptions, Judith re-read the word in question and attempted to correct her error. She only reread the individual word, never a longer phrase, and was sometimes satisfied with a ‘correction’ that appeared visually accurate but was still erroneous. After one minute and three seconds of reading, Judith’s reading became more fluent but retained a similar pattern to her less fluent reading in that there were numerous rereads of single words. After a further one minute and two seconds, Judith’s reading again became less fluent following a particularly difficult word to decode. This period of less fluent reading lasted seven seconds before her reading became more fluent again. This next period of fluent reading lasted one minute and three seconds. During this period (after 29 seconds) Judith read an entire line of text twice. This did not interrupt her fluency, and nor did she give any sign of having noticed this. During the review of the video, Judith was surprised by this and indicated she had not been aware of it at the time. Following this period of fluent reading, Judith had a brief period of less fluent reading lasting two seconds while she decoded two words, before completing the text with two minutes and 31 seconds of relatively fluent reading. All through this text Judith appeared to be entirely focussed on the correct reading of words. At no point did she give an indication of comprehension strategy use, and nor did she identify the fact that she had read a line of text twice.

At the conclusion of the text, although she felt she had read well, Judith was unable to give even a brief idea of what the text had been about. She indicated that this was not unusual and that when she is reading she is focussed on individual words and getting them correct. If she
needs to (i.e., if asked by a teacher or required to by a test) she will go back and look for information after she has finished, but she does not consider meaning while reading.

5.4 Summary comments

The narratives presented in this chapter represent a range of individual reading styles. There are four styles that demonstrate the successful development of reading comprehension (Wonderer, Hunter seeker, Movie maker, and Movie watcher) and three that resulted in poor understanding of text (Passive, Fluent decoder, and Extreme decoder). They show quite clearly that while successful reading comprehension styles have much in common with each other (e.g., higher levels of activity, monitoring, strategy use) they are also quite different in the way the development of reading comprehension plays out in practice. Each of these styles resulted in different outcomes whether successful or otherwise, and each looked quite different to the observer. The participants’ experience of successful reading varied greatly depending on which style was adopted. Some participants consistently used a single style while others made use of more than one depending on the text they were reading and the goals they set.

The importance of the similarities and differences observed and how they relate to the questions posed earlier in this thesis, earlier research, and the model proposed in Chapter Three will be discussed in following chapters.
CHAPTER SIX

Discussion: The Metacognitive Control Processes of Young Readers

6.1 Introductory Comments
In the first sections of this chapter the research questions will initially be considered on their own and conclusions drawn on that basis. The consideration of these questions will shed some light on individual aspects of the executive control processes used by good young readers.

Following this discussion, the remaining sections of this chapter will consider the questions and their outcomes cumulatively and in combination with the behaviours observed during the current study. This discussion will be in terms of their support for the discontinuous model of reading comprehension. This section will revisit the model proposed in Chapter Three and consider how it compares to the behaviours observed in the current study.

6.2 Why is it that some students not only learn how to use reading comprehension strategies, but also develop the ability to use them independently while others do not?
In order to address this research question, two more precise questions and seven specific component questions were developed and have been presented in earlier chapters. These questions were designed to cumulatively address the primary research question. The first precise question and subsequent three specific questions are related to the information-processing and self-regulated action theories underpinning the current study, and the remaining precise questions and four specific questions are related to the discontinuous model of reading comprehension introduced earlier.

6.3 What is the metacognitive process by which good young readers regulate their use of reading comprehension strategies?

6.3.1 Do young good readers make use of a default strategy for solving reading comprehension difficulties?
Self-regulated learning models would suggest that experts in any activity are likely to make use of a default strategy to achieve their goals (McKoon & Ratcliff, 1992). Knowing whether
this holds true for students who are good readers is important for a number of reasons. We know that many struggling readers are receiving large amounts of reading comprehension strategy instruction (McNaughton, 2007) and yet are still unable to make use of their knowledge when reading (Lai, McNaughton, MacDonald, & Farry, 2004). McNaughton (2007) suggested that while students were being taught how to use a range of comprehension strategies they were not being taught how to control or when to use those strategies. If we are to teach struggling readers to read like good readers and subsequently to become good readers then the timing of strategy related decisions is significant. If good readers are choosing strategies or have already chosen (consciously or unconsciously) a strategy before they start reading then we need to be teaching all students to do this. It would not be enough (and may make the task of reading too demanding on short term memory) to teach students how to use a range of strategies and to decide which strategy to use repeatedly during a text. In the current study the strategy determined prior to reading is referred to through the use of two terms. A default strategy is one that is connected to a reader’s prototypic definition of the task and does therefore not need to be consciously chosen, and an automatic strategy is one that is used during reading without further consideration. A default strategy will be automatic during reading because it has been predetermined prior to reading beginning, but not all automatic strategies will be default strategies as some may have been determined consciously rather than being retrieved as a result of being connected to a prototypic definition of the task.

Evidence from the current study would suggest that good readers do make use of predetermined strategies. In this study strategy use behaviours were classified as either automatic or conscious with the difference between the two being determined by whether or not a participant made a considered decision about which strategy to use (at the time of difficulty) or whether a predetermined strategy was put into action without further consideration. The group of good readers in the study made use of an automatic strategy over six times more often than they consciously chose a strategy during reading. For this group of readers, automatic strategy use occurred on average 9.31 times during the course of reading a text, while conscious strategy use occurred only an average of 1.46 times. Furthermore, in no circumstances did a participant use a considered strategy without having previously used an automatic strategy. The automaticity of the strategy use does not necessarily mean that the automatic strategies used were default strategies. It does mean that they were chosen prior to reading.
The cued retrospective reporting and review of the videos used in the collection of the concurrent verbal protocols indicates that many of the strategies are indeed default strategies. Statements from the participants such as “I just do what I usually do” support the assertion that good readers use default strategies. It makes intuitive sense that, having found a strategy that works for them, individuals would return to that strategy on repeated occasions. One aspect of expertise is increasing automaticity and a need for less cognitive effort where conscious executive control is required as the individual becomes increasingly aware of what works (Chi, 2006; Ericsson, 2006; Schneider, 1985). This increasing automaticity reduces the complexity of the task for the reader and frees up short term memory for other activities, thus allowing for more attention to making meaning from a text rather than to deciding what to do.

For the good reader, having a default strategy at the ready greatly reduces the complexity of the reading task in comparison to needing to be continuously making conscious decisions relating to which strategy to use and when. Given that good readers do make use of default strategies the question arises as to whether a single default strategy is used or whether a different default is used in different situations. The second component question relates to this matter.

6.3.2 Are default strategies related to goals set for reading?

This question was intended to identify the mechanism that determines which default strategy is used. It was expected that the strategy would be determined by the goals set by participants, as different strategies would lend themselves to the achievement of particular goals. There is some evidence in the current study that supports an affirmative answer to this question, although much of it is indirect. In all but two cases (from two different participants) the good readers set some form of goal prior to beginning reading and subsequently made significant use of an automatic strategy. In the two cases where the good readers did not set a goal (in both cases after defining the task as uninteresting) there was relatively little use of an automatic strategy. In one of these cases (case J) there was only one instance of any strategy use (automatic) and in the other (case D) there were only five examples of automatic strategy use. These figures suggest that where a goal is not set, readers, even good ones, are much less active in their strategy use during reading.
There were four other cases where a good reader was less active. These include another from one of these two participants (case I “Nicola) meaning that both non-fiction texts read by this participant involve relatively low levels of activity. The other three cases are from different participants. In all of these the participant had set a goal related to a desired level of understanding, but the goal set was very low and requiring little or no effort to achieve it. In these cases, while there was evidence of goal setting behaviour, the goals set were almost ‘anti-goals’ in that there was a conscious decision to set a goal so easy as to preclude the need for strategy use. In three of these cases (I, J, (both “Nicola”) and L (“Judine”) the participant indicated that they would not have read the text under normal circumstances as they were so uninterested.

It would appear that default strategies are usually activated (or not) by the goals set for reading. In cases where there is no goal set, or where the goal set is an ‘anti-goal’, there is a much reduced likelihood of subsequent strategic activity.

The points made so far do not indicate whether the form the default strategy takes is also determined by the goal set. Self-regulated learning research would suggest that the goal set determines the subsequent default strategy. For example, McKoon and Ratcliff (1992) suggest that once goals are activated then strategies that have been coupled to those goals will be automatically retrieved. A number of participants used different default strategies for different texts, particularly between fiction and non-fiction texts, which appears to support the proposition that goals determine default strategies. There is also evidence that different participants will use the same or a similar default strategy where a goal is of a similar type. For example cases C, G, and I (from three different participants) included the setting of goals that related to looking for specific information. Two of these cases involved non-fiction texts and one a fiction text, and each was from a different participant. Despite the different participants and the differing text types, in all three cases a similar strategy was employed where the participant went looking for specific information that was related to their goal and disregarded other information contained within the text. This approach is described as the “Hunter-Seeker” in the previous chapter.

It would seem that it can be concluded that default strategies are related to goals in some way. At the very least it would appear that a default strategy is activated once a goal is set that
places some cognitive demand on the reader in order to achieve that goal. If a goal is such that it does not require significant cognitive effort (e.g., “I want to get this finished quickly”) then strategy related to the development of reading comprehension is unlikely to be activated. Furthermore, the behaviours observed in the current study indicate that comprehension related goals may have a determining part to play in which default strategy is employed. The word employed is used here deliberately as it appears that for the good reader group in this study the activation of the default strategy was automatic and not conscious. Good readers did not choose a default strategy to employ, rather, as one participant said “(They) just do what (they) always do” in contexts where a similar goal has been set. Setting a different type of goal appears to result in a different default strategy being activated.

6.3.3 What do good young readers do when that default strategy fails?

What happens at the “clunk point” (Klingner & Vaughn, 1999) is of key interest to the current study. It is also an important aspect of the discontinuous model, and as a result this rather broad question will be considered in more depth during the discussions relating to the model and the narratives introduced in the previous chapter. However, both the concurrent verbal protocols and the retrospective data provide clues as to what happens at this point, and also to how it is identified.

For the good readers, the development of reading comprehension using their default strategy is a fluid and largely successful exercise. Indeed it is to be assumed that repeated success using a particular strategy is what leads to an individual using it as their default (Schreiber, 2005; Winne, 2001). In order to begin to answer the question at hand here, we need to begin by considering how the reader knows their default strategy has failed. There is much research indicating that good readers monitor the success of their reading (e.g. Pressley & Afflerbach, 1995; Pressley & Gaskins, 2006). Data from the current study supports this, but also suggests that it takes different forms. For some, monitoring is not so much an active strategy that the participants were attending to but rather a general awareness of how they are progressing while for others active monitoring is the default strategy.

During the concurrent verbal protocols, one participant (participant two, a “movie maker”) commented, “Oh, that sounds like my Nana and Granddad’s”. This was initially coded as strategy use, but in the retrospective data collection the participant indicated that it was more
related to monitoring, saying, “It’s not really to help me understand, it’s just a comment on (my movie). Like showing myself that I know.” The degree to which participants demonstrated this type of awareness depended upon the default strategy in use, and the goals set prior to reading. Those participants developing pictures or movies (most common for fiction narratives) showed numerous instances. These could be comments as in the examples just given or smaller instances such as a laugh or a smile, even face-pulling. Participants often indicated in the retrospective data collection phase that they were not really aware of these actions at the time, but felt that they were a reflection of their engagement in the story and a reflection that they knew what was going on. They are examples of a positive feeling of understanding (FoU). When the default strategy fails (e.g., new information cannot be incorporated into the participant’s movie) the reader becomes aware that all is not well, and reading stops following the experience of a negative FoU.

Participants whose goal had taken the form of a question that required an answer and whose default strategy is questioning (the ‘hunter-seekers’) displayed few or none of these behaviours. These participants (including the participant who approached fiction narratives in this fashion) reported reading the text quickly and largely without understanding. This continued until such time as they had found something that could help them answer their goal question.

Monitoring in the two approaches described in this section is quite different. In the first, the default strategy is employed to construct meaning from the text. The reader’s FoU indicates when the default strategy has failed and should be paused. In the second approach, the reader is not initially constructing meaning while they read. In contrast to the first approach they are monitoring the text for relevancy. While this strategy has been called questioning here, in practice there are two parts to it. The first part is the asking of a question, and the second is a search for relevance. When they find something significant to their goal, a positive FoU indicates that they have met with some success. After the default strategy (questioning) is used monitoring still takes a different form than in the first approach. It is much more conscious in that the reader poses a question to themselves and attempts to answer it and the success or otherwise of this strategy is then evaluated before moving on to pose and answer another question. In one approach, monitoring is a general awareness that allows the continuation of automatic reading before a negative FoU initiates the cessation of reading,
and in the other it is a more conscious and directed process that indicates when default strategic activity should be initiated or continued.

Monitoring indicates when the default strategy has failed, and consequently initiates a change in behaviour. When monitoring indicates that the default strategy has failed to adequately construct meaning then reading stops. This decision to cease reading is a conscious one and readers are aware of the need to improve their understanding. One participant (a ‘movie-maker’ and therefore an example of the first type of monitoring) after pausing in her reading used a different strategy (in this case questioning). During the retrospective data collection she indicated that she had stopped because she “wasn’t sure anymore, my picture was different to what I read.” And so she asked a question to identify why there was a discrepancy between her movie and the story and to resolve the conflict. In this case (case E) and all other cases where the default strategy was a form of visualisation (either pictures or movies) the decision was made to use a different strategy. However, switching strategies did not necessarily occur when other default strategies were being used.

Where questioning was the default strategy, the usual response in this situation was to ask another often very specific question. While there was not a change in strategy, there were changes in the employment of the strategy. Readers using questioning as a default strategy read the text searching for information that could help them answer their question. This involved five cases and three participants, participants one and two both utilised this strategy for two non-fiction texts, and participant four utilised it for a narrative text. This rapid reading continued until the experience of a negative FoU. Following the pause in reading after a failure of the automatic strategy, there was often a change in this behaviour as they attempted to resolve the difficulty. These readers would often look elsewhere in the text (either forwards or backwards) in order to find the information they need. We can see then that while there are some commonalities across reading style, there will be no single comprehensive answer to the question as to what good readers do when their default strategy fails. In Winne’s (2001) model of self-regulated learning the third phase (enacting tactics) relates to the act of putting the plan into action, with a loop back to the goal setting and planning phase if difficulties are encountered. In the model proposed in the current study there is not a loop back to the earlier stage, but there is separate process for re-evaluation of goals and plans. Neither Winne’s model nor that proposed in the current study pretend to
predict the strategy to be used by a particular individual, but they do attempt to represent the process or patterns of behaviour that allow progress towards a goal.

At this point we can draw some general conclusions. Good readers are alerted to the fact that their default strategy is not working sufficiently well as a result of some form of monitoring. Following the identification of a discrepancy between their desired level of understanding, or progress towards a goal, and their actual position, good readers pause in their reading, take stock of their current state and change something. The form of this change depends greatly upon their goals and on their default strategy. This is consistent with previous research that portrays good readers as active, engaged, and strategic thinkers (e.g. Block & Pressley, 2001; Duke & Pearson, 2002; National Reading Panel, 2000; Pressley & Afflerbach, 1995).

The change in readers’ behaviour is directed by the use of executive control processes and represents the time during reading where the reader is consciously controlling their strategic behaviour. What this study and the narrative descriptions of individual reading styles add to current knowledge is that the differences observed between individual readers begin to give us a clearer picture of the actual mechanisms utilised by different readers. The depiction of individual differences provided by the narratives enables the theoretical picture proposed by the discontinuous model to be related to what happens in practice for individuals.

6.3.4 Summary of results relating to the first three specific questions:
Good readers do have a default strategy to which they turn in order to develop reading comprehension, providing a positive answer to the first specific question. The default strategy is used more or less constantly during reading in order to develop understanding, or to prepare for the development of understanding when the opportunity arises. Rather than this strategy being used to solve comprehension difficulties, it is the failure of this strategy that results in those difficulties and the need for alternative action.

The default strategy appears to be related to the goals set for reading. Certain types of reading goals seem to be linked to particular strategies over the range of cases observed in the current study. It would appear that the real determining factor however is the individual reader. Individuals may set similar goals but have a different default strategy connected to that goal. Individual differences such as this will be seen often as the results are discussed. There may
be a consistent process that takes place (e.g., goals set lead to a particular default strategy) but the actual form this takes depends on the preferences and reading style of the individual. While the answer to the second question is therefore positive, there is not a consistent direct relationship between goal and strategy as was expected. Rather, the goal set determines the strategy used, but only for an individual reader.

The relationship between goal setting and the default strategy is also complicated by the relationship between task definition and goal setting. Defining a task in a particular way affects both the goals that are set and the subsequent default strategy, but setting a particular goal can also influence the task definition. These two activities (task definition and goal setting) seem to be closely inter-related and mutually influential. In the current study all those participants that read non-fiction texts indicated that they would not normally do so unless they had a particular reason to do so. This situation meant that the task was defined as being of low interest and value. As a result of this definition, the goals set led to less active reading. The lack of interest resulted in anti-goals that resulted in fewer behaviours designed to develop understanding of the text and subsequently a poorer understanding of the text. A similar situation was seen with case L. In this case the participant selected the text to be read on the basis of interest, however none of the choices available were considered interesting so the least boring text was chosen. The participant in this case was open about the fact that she didn’t care whether she understood the text or not. As a result the goal she set was one that has been referred to in this thesis as an anti-goal in that it did not encourage active reading. The result of this was poor reading by a good reader. The participant read the text, seeming to take care that the text was decoded accurately but with only one example of comprehension strategy use. On completion of the text the participant was unable to relate what the text had been about, supplying only a vague outline of the story after a large amount of reference back to the text itself.

The answer to the third question is more complicated, due in part to the more open nature of the question itself. The first thing that good readers do when their default strategy fails is that they notice. Although there were a few examples of monitoring behaviours that indicated participants were aware of, or were checking on, successful reading behaviour the great majority of behaviours coded as monitoring related to the awareness that something was wrong. This is reflected in the fact that there were over four times as many monitoring
behaviours recorded as being related to the reader’s current level of understanding as compared to an idea goal that may have been set prior to reading. Monitoring is not so much about checking how well things are going as recognising when they go wrong.

Following the recognition that there is a problem, there are a number of possible mechanisms that may occur. These mechanisms appear to be determined by all that has occurred previously. Good reading (the development of understanding from text) is a complex chain of events initiated by the task definition and goal set prior to reading starting. This chain of events means that there is no single answer to the question as to what happens once the default strategy fails. What does appear to hold true across cases is that the reader pauses in their reading, takes stock of the situation and decides to do something different. What that different thing is depends on the reader’s own preferences, how they have defined this particular task, and what their goal for reading is. The important part of this, and consistent across cases, is that instead of using an essentially predetermined default strategy the reader decides what to do next. This is consistent with what was predicted, as once a reader’s automatic strategy has proved unsuitable for the solution a particular difficulty, something else is required.

The point at which things go wrong is the point at which conscious decision-making becomes a part of the development of understanding again.

In all cases in the current study where an automatic strategy was used, it was also a default strategy in that the readers did not have to consciously determine a suitable strategy. As discussed earlier a reader’s automatic strategy for use during reading a text may not be a default as associated with a prototypic task definition, it may be a consciously determined strategy (as some participants indicated may happen if they are unfamiliar with the text type or purpose for reading) that is subsequently used automatically. Once the strategy to be used during reading has been determined however, it does not matter whether it was a default or consciously determined, it use will be automatic.

The next four specific questions relate to the discontinuous model of reading comprehension introduced in this thesis and begin to place these results in that context and to evaluate the merits or otherwise of the model.
6.4 Is there support for a discontinuous model of self-regulated reading comprehension?

6.4.1 Do young good readers work through a “preparation for reading” phase prior to reading?

Based on self-regulated learning models such as that of Winne (2001) and others it was expected that behaviour prior to beginning reading would determine text selection, goals for reading, and a plan of attack that largely predicts the form of subsequent reading. Results of the current study show that good readers do prepare for their reading through employing a number of behaviours within this phase of reading. Poor readers also engage in some of these behaviours, but noticeably less often, and where they do their focus is also often different. As we saw in the previous chapter the focus of poor readers is largely on accuracy, while the good readers focus on interest and meaning.

Both groups consciously made text selections based on the criteria they see as most relevant. Good readers selected texts on the basis of their interest in the title and précis they had just read. Poor readers were more likely to assess the likely difficulty of the text than good readers. There were six examples of a poor reader selecting a text based on interest and seven examples of difficulty based text selection, but never both interest and difficulty. One participant from the poor readers group indicated she made her text selection based on the length of sentences contained in the précis. The result of this difference becomes starkly apparent when looking at the next aspect of the preparation for reading phase, goal-setting. It must be remembered that the model under investigation here relates only to comprehension related behaviours and so other behaviours are not identified. Only the good readers set any comprehension related goals. In all but two cases, good readers set goals for their reading. These goals were more likely to be related to an idea or something the reader wanted to find out about (nine cases), but in some cases there was a level goal that related to the level of understanding the reader wished to accomplish (four cases, including two that also had an idea goal). The poor readers set no comprehension related goals at all, their focus being solely on the accuracy of their reading.

A similar picture was seen when task definition was looked at. The difference between the two groups is quite apparent even before reading has begun. Good readers define a text with considerations of interest and understanding while poor readers are more concerned with
difficulty. In the current study, good readers defined the task before them in terms of their interest. In some cases they also included the text type they were about to read in their definition. There were five cases involving four participants from the good readers group where the task was not defined explicitly. In all of these cases the participant appeared to have activated a default definition (making comments like “I just do what I always do”) as their actions were related to an awareness of the task. Where a poor reader explicitly defined the task at all (four of 13 cases) it was done exclusively relating to difficulty. Even where a text was selected for its interest value, poor readers still defined the task in terms of difficulty. Of those four cases, three were cases where the text had been selected on interest. The subsequent definition of the task based on difficulty means that by the time the poor comprehension group actually began reading, in 10 out of 13 cases the participant had either been immediately or had become focussed on text difficulty.

The specific question being looked at here also asked whether the preparation for reading phase would include planning for subsequent strategy use or for the larger mechanics of reading referred to by Pressley and Afflerbach (1995) such as which sections to attend to or how fast to read. As mentioned in the previous chapter there was only one observable instance of any planning. While little direct evidence of planning was seen, this may be because the texts presented to the participants were all in a form that would have been familiar to them. In such a situation the readers would be able to rely on a prototypic definition of the task (McKoon & Ratcliff, 1992; Winne, 2001) which would enable them to “do what (they) always do” as one participant said, meaning that their default strategy can be used and therefore not requiring further conscious consideration. Whether conscious or not, there appeared to be a plan of action in place.

It may be that more evidence of planning would be seen where a reader is confronted with a text type or form that is unfamiliar to them as this would require them to decide how it should be approached. This was the case where evidence of planning was seen (case G) where the participant consciously planned the strategy to be used to address the goal she had set. When asked in the review sessions, all of the good readers indicated that they would make the planning process conscious if it was required. They indicated that this would happen if the text “looked weird” or where something about the text jarred with them in some way. They do not set out to evaluate whether they can make use of a prototypic definition, rather it seems
that good readers proceed on the assumption they can unless something interrupts that. Whether conscious or not, it is clear that good readers work through a comprehension related ‘Preparation for Reading’ phase that provides them with a text, goal(s) and a plan of attack, while poor readers generally only select a text.

6.4.2 Is subsequent reading continuous and automatic until such time as the default strategy fails to result in satisfactory comprehension?

The narratives introduced in Chapter Five give a better picture of the form of subsequent reading than just looking at the quantitative results. When reading the majority of the narratives from good readers it is clear that their reading is indeed usually automatic and fluid. Where possible, good readers make use of their default strategy almost without pause in their reading, and without conscious decision-making. When participants made use of their default strategy, the strategy use itself was often the first and only indication of any cognitive activity. The good readers would be reading, evidence of strategy use would be seen, and they would continue reading. An indication of the continuous nature of good reading is the sheer number of times a default strategy was used in the course of reading a relatively short text, over 20 times on a number of occasions. This number is much greater than the number of times a strategy was consciously selected. Default strategy use was apparently automatic in all cases for the good readers, although it did not always appear so at first.

Different default strategies appear more or less intrusive to the observer. Using a visualisation strategy as a default meant that reading appeared more fluid and the verbal reports that identified strategy use appear more directly connected to the text currently being read. Where a questioning strategy is being used it appears to the observer to be more intrusive, and is often asking about something that is not immediately apparent, which makes it seem to the observer that the reader has stopped reading and considered the next course of action. A number of questions were initially coded from the verbal protocols from the video as being a considered strategy and were later changed to automatic strategy use following consideration of the retrospective reports. In those reports participants indicated that this was an automatic process and they had not considered their actions. The experience of the reader was of a continuous and automatic process even if it did not initially appear that way to others.
The difference between appearance and experience is one that may have been manufactured by the methodology used for data gathering in the current study. The use of verbal protocols is designed to make internal cognitive and metacognitive phenomena observable. If the readers were not asked to verbalise their thoughts then it is likely that successful reading and default strategy use would have had the appearance of being continuous regardless of reading style. The questioning that made some reading appear less continuous and more broken was only apparent because of the experimental context in which it took place. To the readers the experience was the same in that there was no conscious activation of the default strategy, although they were obviously conscious of its use or they would not have been able to report it. Regardless of the strategy employed the interconnected processes of reading, monitoring, and default strategy use were continuous. However, they are not continuous and automatic, rather they are continuous because they are automatic. In the current study, participants indicated that they were not consciously aware of reading being interrupted for the use of automatic strategies and they considered this a normal part of the reading process, and therefore the reader does not need to pause reading to consider their next action. This is in contrast to those situations where for some reason the participants’ automatic strategy was not sufficient to produce a satisfactory degree of understanding.

Implicit in the question being considered here is the suggestion that a reader’s default strategy will only be used automatically until such time as it is no longer successful. If this is the case then it must be shown that the automaticity of reading and strategy use is interrupted when there is an issue with comprehension. The traditional monitoring – control (MC) model of metacognitive monitoring is applicable here. The assumption is that monitoring identifies that there is insufficient progress toward the reader’s idea goal or that the reader is not understanding the text sufficiently and that this leads to the interruption of automatic behaviour.

6.4.3 Is continuous reading then interrupted to enable the use of a separate regulatory process?

In the scenario in the last section, it is the knowledge that a failure or difficulty has been identified through monitoring that impinges on the consciousness of the reader and results in an interruption of the reading. While there was evidence that the good readers were monitoring during successful reading the behaviours observed were minimal and fleeting,
often only a smile or passing comment that the participant was not aware of at the time. It would seem that all monitoring is not equal, where the monitoring indicates that things are going well it has little or no impact on the consciousness of the reader and is not directly attended to by the reader. A favourable feeling of understanding (FoU) is perceived by the reader as a signal that there is no need for conscious intervention. A negative FoU can impinge on conscious thought and result in a decision that action is required.

A failure of the automatic strategy leads to a negative FoU that in turn results in an interruption of the automaticity of reading and strategy use. As well as negative feelings of understanding being more conscious than positive ones, they are also more specific. In their retrospective reports participants indicated that a positive FoU was a very general awareness and essentially reflects the “satisfying” (Duke & Pearson, 2002, p. 206) or enjoyable aspect of successful reading. There were a total of 44 examples of a positive FoU in the current study, with all but one occurring during reading where a visualisation strategy was being used, and took the form of brief comments (e.g., “Eeew”, “good idea”, or “I see”) or expressions such as a grimace, smile, or laughter. A negative FoU took a different form with participants reporting a much more specific awareness. The remaining 19 instances where evidence of monitoring was seen were related to negative FoU. In the case of those using visualisation strategies, either movies or pictures, they reported being aware of an identified disparity between their visualisation and what was in the text. Those using a questioning strategy were aware of missing information or an inability to answer a specific question. It may be the specificity of a negative FoU that results in conscious attention being directed towards it. Whatever the mechanism, and this will be discussed more later, once the automatic strategy fails reading ceases to be automatic and is therefore no longer continuous, but has been interrupted.

6.4.4 Does that process result in a change of goals and/or plan of attack in order to resolve such an issue?

It has been established that continuous reading is interrupted when a negative FoU remains following the use of a comprehension strategy to resolve a difficulty. The researcher’s interest then falls to what happens following this interruption. The interruption is caused by a failure of the reader’s default strategy and associated automatic processing of text. This unsatisfactory outcome for the reader may mean that an alternative approach needs to be
considered. In the model proposed in Chapter Three, the process of ceasing reading and considering how to deal with the reading difficulty is identified as “Regulatory Reading Behaviour”

Where a persistent negative FoU was encountered (one that was not resolved during the continuous reading process) the regulation or executive control of behaviour was conscious for the participants in this study. While their reading was successful the good readers’ verbal protocols did not directly comment upon their strategy use, or give any indication they were thinking actively about what to do next. Once a negative FoU is encountered this changes. Firstly they become aware of their situation, in case E for example (a movie-maker) one participant said “What?” in their concurrent verbal protocols and “I thought I could picture it but I couldn’t” when referring to the same event in their retrospective report. This episode referred to the participant encountering the phrase “The latch broke, you have to jimmy it with the screwdriver.” The issue was caused by the reader not understanding “jimmy” in this context, and therefore being unable to include this action in her movie. In this case the participant elected to use a different strategy in order to continue and asked a question (“What is jimmy?”) rather than continue with making her movie. She asked the question and immediately looked in the text (both forwards and backwards) for an answer. Once this question was answered and the strategy use subsequently evaluated as being successful (evaluative monitoring), which in this case meant she was able to restart her movie, she continued reading as before with her original default strategy. This illustration outlines a situation where the reader realised their default strategy could not be continued with, paused reading, and elected to use a different strategy to resolve the difficulty before evaluating the success of that different strategy and returning to reading as before with their original default strategy. There was a temporary change in the plan of attack being utilised.

The change in the plan was not always temporary. In another case (case A) the change in strategy endured for the remainder of the text. This was an example of a reader who began by constructing a movie in her head, but this broke down because she encountered events in the text that were not compatible with her movie. At this point reading was interrupted so an alternative strategy could be considered. The reader elected to ask a specific question about the difficulty she had encountered and deliberately sought an answer. As she continued to
read through the text this new strategy became her automatic strategy, and questioning continued throughout the rest of the text.

In the examples here the change resulting from the regulatory reading behaviour related to the strategy used. This did not always hold true, regulatory reading behaviour can also result in change to the goals set for reading. In one example (case D) the participant began reading the text with a default strategy (questioning) and a goal of attaining minimal understanding. This was a non-fiction text and the participant indicated that she would not normally read non-fiction texts unless she had to (for school work for example) and that she had decided not to invest a lot of effort in reading the text, and wasn’t really worried about developing her comprehension of it at anything other than a minimal level. As she read the text she initially read very quickly, only occasionally asking herself a question. Those questions she did ask were directly related to the text she was currently reading at a sentence level; she did not appear to be working at understanding the text as a whole. Towards the end of the text however, she encountered something more personal to her (a passage about schools) and became more interested. At this point she paused in her reading having noted the difference between how much she had understood the text and how much she was now interested in it. She continued to use the same strategy, but had changed her goals. She now had a much higher desired level of understanding. She then asked herself a number of questions relating to earlier parts of the text and how they related to what she had just read. Having answered these and satisfied herself that she now understood the text to a sufficient level she returned to continuous reading, but using her default strategy more frequently and with a different goal in place. All of these examples show that once continuous reading has been interrupted because of a difficulty in comprehension then a number of different outcomes are possible.

6.4.5 Summary of results relating to the second set of specific questions: Is there support for a discontinuous model of self-regulated reading comprehension?

The first of these specific questions asked whether good readers work though a preparation for reading phase before they start reading. The results from the current study show that this is the case and that good readers begin reading prepared for what lies ahead, and expecting that their reading will be continuous and automatic. They are able to do this because of the activity they have engaged in prior to beginning reading. The activity in this preparation for reading phase has three purposes: the selection of an appropriate text, the setting of a goal or goals for
reading, and the development of a plan of attack. All of these purposes also appear to affect and be affected by task definition. The task definition also impacts on the metacognitive processes engaged by the reader. Where a task is defined as being familiar then executive control is not required as the process is largely automatic, but where a task is defined as unusual or unfamiliar then the reader may need to make use of conscious executive control processes.

Good readers select a text based on content factors, either because they find it interesting in some way and wish to find out more, or because it will achieve a particular purpose such as providing required information. Poor readers on the other hand select texts primarily based on the perceived difficulty of the texts, and that perceived difficulty is not related to difficulty of understanding, but rather the difficulty of decoding accurately. The process of selecting a text is separate from but not independent of the setting of goals. There are two types of goals set by good readers, the first is an “idea goal” related to what the reader wishes to find out or know as a result of their reading and the second is a “level goal” related to how well the reader wishes to understand the text. Both types of goal varied in how explicitly they were set by participants. Idea goals varied from explicit examples such as “How can a kite save a life?” to the very general “I wonder what’s going to happen.” Level goals were more often implicit and related to whether the task was defined as interesting or otherwise. The more interested a reader is in the text the greater their desire for understanding. A level goal was made explicit on four occasions (by three different participants). On three of these occasions from different participants (Cases K, L, and M) it was as a result of a negative task definition. The text was defined as being of low interest and not something the participant would normally read. On one occasion the participant stated, “I don’t really care about this.” Poor readers showed no evidence of goal setting of any kind related to comprehension. Having selected a text and set goal(s) for their reading, good readers also prepared for their reading with a plan for achieving their goals.

For good readers the form of this plan varied in two ways. Firstly, there was variation in the consciousness of the plan depending on the task definition. If the reader is able to make use of a prototypic definition (Magliano et al., 1999; McKoon & Ratcliff, 1992) of the reading task (i.e., the text type and the form of their goal is sufficiently familiar) then the plan is not made consciously explicit. The reader simply does “what (they) always do” as a number of
participants indicated. This does not necessarily mean the reader always does the same thing however. Both good readers who took part in more than one case set different goals and employed different strategies from one text to another. In the current study this was observed in different approaches taken to fiction and non-fiction texts. One of the good readers participating in the study indicated she read non-fiction by choice, and this participant used different default strategies for fiction (visualisation) and non-fiction (questioning) texts, while the other used questioning for both fiction and non-fiction. In both cases the plan that resulted in the use of these different strategies was not developed consciously. They were again doing what they always do in a familiar situation. Another participant indicated that if the text appears “hard or strange” then she would consciously consider her plan of attack, and this was what she did when selecting and reading a non-fiction text.

The plans utilised by the group of good readers also varied in terms of the agency involved in the approach to developing comprehension. In some cases the reader planned to actively grow their understanding, while in others there was a less deliberate nature to the process to come. Some readers planned to take an active part in understanding the text and were consequently more proactive (seven cases and three participants) in terms of looking for answers to questions or finding the information needed for the successful use of visualisation strategies. Others had an expectation that they would come to understand the text but were less deliberate (six cases and five participants). These readers were prepared to wait and see what would come to them in terms of answers to questions or the form an internal movie or picture might take. One participant appeared in both groups taking a proactive approach when reading non-fiction (cases C and D) and a less deliberate approach when reading fiction (cases A and B).

The form of the plan also affected what happened subsequently. Where the text fitted a prototypic definition for the reader then the plan associated with that definition resulted in reading and comprehension development that was automatic and continuous. Where a prototypic definition (and consequently default plan) was not available to the reader because they were insufficiently familiar with text of the type they were reading then reading and strategy use was less fluent. The reading (even of good readers) of less familiar text types had a different appearance to that where a prototypic definition resulted in the application of default plan and strategies. There was no evidence that strategy use was not automatic once a
plan was in place, but there was a much greater proportion of less fluent reading where the plan was not a default. This suggests that while strategy use may still be automatic, the unfamiliarity with the text type still poses challenges for the reader that more familiar texts do not.

Whether their plan was developed consciously or was a default associated with a prototypic definition good readers read continuously and automatically until such time as they identified a failure of that plan. This finding provides a positive answer to the second specific question in this set. Following that failure continuous reading is interrupted and a conscious decision-making process ensues. In most cases the reader chose a different strategy to use at this point, before evaluating its success and continuing, either with the new strategy or returning to the automatic strategy. In some cases however the reader may also change the goals they have for their reading. This process can also result in cessation of reading. In one case in the current study, the participant indicated that they would normally have stopped reading part way through. This occurred when they encountered a difficulty within a text they had identified as being of very low interest and set a goal that reflected this. Once the reader encountered a difficulty and stopped continuous reading, her first inclination was to stop reading altogether. She continued only because of the experimental context. There was clear evidence of a regulatory process being used to resolve difficulties that is separate to the process of continuous reading.

In 10 out of 13 cases the good readers also overtly engaged in some activity at the completion of reading. This activity took the form of a review of the text they had read and subsequent evaluation as to whether their goal(s) had been met. The review was a continuation of the reading comprehension strategy the reader had been using. Those readers that had been developing an internal movie representation of the text watched an abbreviated version of their movie, sometimes adding in details that they had not been aware of until later in the text, to make sure they had understood the text. Those that had used a questioning strategy revisited their original question and checked they had identified an answer. The three cases (D, I, and L from three different participants) where there was no observed disengagement activity were all examples of reading with low levels of comprehension related activity. Cases D and I were the two cases with the lowest activity levels. Both are examples of non-fiction reading by uninterested readers who indicated their lack of interest at the conclusion of their
reading. The participant in case D indicated she knew she hadn’t understood the text but didn’t mind as she didn’t want to. In the fiction example (case L) where there was no disengagement the participant had also indicated a lack of interest and had commented that she wouldn’t have bothered to complete the text in a different context. On completion the participant announced “Done!” and put down the text. She did not review the success or otherwise of her reading, other than perhaps to view finishing it as success in a similar fashion to the poor readers. She did not reflect on her understanding of the text.

The summary in this section largely reflects the model proposed earlier in Chapter Three. There are two places where changes need to be made however. The way in which continuous reading and monitoring occur in conjunction with default strategy use mean some changes need to be made to the section of the model describing the continuous development of reading comprehension. In addition, the re-evaluation of a reader’s plan or goals do not necessarily result in the reader immediately returning to the continuous development of reading comprehension and the model needs to reflect this also.

6.5 Revisiting the Discontinuous Model of Reading Comprehension
The results discussed in this chapter to date generally support the model proposed in Chapter Three. There are some changes that are needed to ensure the model more closely reflects the nature of good reading. The experience of successful reading is not truly reflected in the earlier version of the model (presented again here) as the representation in that model is more complicated and seemingly more disjointed than the reported experience of the participants. Continuous development of reading comprehension is smoother and the reader is not consciously implementing their default strategy as is suggested in Figure Two. Both the model discussed in Chapter Three and again the updated model to be proposed here are intended to represent good reading that results in good comprehension of text. As such they do not represent poor reading or the behaviour of poor readers.

The process of strategy use and evaluation shown in the inner circle of the original model does not happen in the way indicated in this discussion. The concurrent verbal reports gathered during the current study did not indicate that readers initiated the use of their automatic (planned) strategy following the identification of a discrepancy between their current situation and their goals. The use of the readers’ automatic strategy is not distinct
from their reading and monitoring, in fact, for the good readers their experience of reading is one of constant use of the default strategy. They are not consciously aware of decoding text. For the good readers participating in the current study their default strategy is not something that is used to support their reading and the development of understanding when there is a problem. The use of their default strategy is their reading. For good readers the experience of successful reading is not one of retrieving information from a text and then making use of a strategy to gain understanding. As their reading proceeds successfully good readers experience a developing understanding as a positive FoU. The exact nature of that FoU is dependent on the nature of their automatic strategy. Readers who are focussed on visualisation experience reading as the viewing of pictures or the watching of a movie. Those using a questioning strategy have a different experience, seeing reading as a search or quest for something. The automaticity of much of their reading (both decoding and comprehension related) means they are aware less of the functionality of reading and more of the knowing or understanding.

Figure Two: The discontinuous model of self-regulated reading comprehension proposed in Chapter Three
Similarly, monitoring is not a distinct activity that the reader engages in as well as their reading. In the review of the literature it was suggested that a reader’s comprehension strategy may not only be the means of developing understanding but also the mechanism used to monitor the success of reading. In the case of successful reading this is indeed the case, the ability or otherwise of the reader to continue their reading is all that determines whether reading remains continuous or is interrupted. It must also be remembered here that as suggested earlier, the use of their automatic strategy is all that the reader is aware of as reading provided all is going well. These factors mean that the representation of the continuous development of reading comprehension in the revised model now being proposed is much simpler than in the earlier version. In fact, continuous development of reading comprehension consists solely of continuous reading (as automatic strategy use).

*Figure Three: The revised model of discontinuous reading comprehension*

As can be seen in Figure Three, continuous reading ceases with the identification of a discrepancy. This occurs when the reader is unable to successfully continue the use of their automatic strategy. The realisation that their reading is no longer successful is the trigger for the reader to become consciously involved in the regulation of their own behaviour. This is
the point at which the reader makes use of executive control processes to actively control their cognitive processing. This process takes a similar form to the development of the reader’s initial plan of attack, but is more conscious. Where the reader initially (prior to reading) defines the task in terms of reading the entire text, at this point the reader defines the task in terms of an immediate problem to solve. An example of this is from case E (a movie maker). In this case the reader realised there was something in the story of which she had previously been unaware, and was unable to include it in her movie. This issue prompted her to stop reading and identify the issue (missing information) and then to make use of an alternative strategy to solve the problem. Choosing an alternative strategy means that the reader needs firstly to have one or more alternative strategies available, and secondly to have the conditional knowledge to be able to select an appropriate strategy. This example reflects the re-evaluation of a reader’s plan as part of regulatory reading behaviour. In some cases this re-evaluation results in a change of strategy as in the example from case E, and in other cases it resulted in a change in the reader’s goal.

In the case of a change in the goal, the change observed in the current study related to level goals rather than idea goals. On two occasions (cases G and K) readers paused their reading following the identification of a discrepancy and changed their goal to include a higher level of understanding as they realised they had become more interested in the text than they were initially. It is not difficult to envisage a situation where a reader may also decide that they were less interested in a text and reduce the level of understanding desired. This may have been what happened in case L where the participant indicated she would not have completed the text in a different context. If the goal is reduced to the point where the reader can decide they have already achieved it then it is likely they would then disengage from the text at that point as the participant indicated she would have done in case L. A change in either strategy or goals requires that the reader adapt their reading to include those changes.

The implementation of the new plan of attack or the adoption of revised goals has now been explicitly included in regulatory reading behaviour. This change from the earlier model has been made to better reflect the observed behaviour of participants in the current study. In the previous model once a reader had identified a new strategy to use, it was indicated that the reader would then return to continuous reading, using the new strategy. In practice this proved not always to be the case. There were two possible outcomes to the adoption of a new
strategy. Either the reader used that new strategy on a single use basis until satisfied and then returned to continuous reading using their original default strategy, or they used that new strategy and once satisfied with its success returned to continuous reading using the new strategy as a new automatic strategy.

Placing the implementation of a new strategy or adoption of new goals within regulatory reading behaviour is more appropriate as this is conscious behaviour rather than the automatic behaviour that typifies continuous development of reading comprehension. The three phases of reading (preparation for reading, continuous reading, and regulatory reading behaviour) that are contained within the discontinuous model of reading comprehension are now more distinct from each other, both in terms of when each occurs but also in the nature of the behaviours included within each.

6.5.1 Preparation for Reading

The behaviours included in this section are by definition all those behaviours that occur prior to reading beginning. The three aspects of this are closely linked to each other and also have the potential to impact upon each other. Text selection and goal setting directly impact on each other in a number of ways. One may even largely determine the other. In cases where a reader has a particular goal in mind such as a desire to find a particular piece of information, this goal will determine the text selected as the reader chooses a text that will enable them to achieve their particular goal. In another scenario the reader selects the text they are to read first and then develops a goal that is related to the selected text. This process of selecting a text and goal setting is closely linked to the development of a plan of attack for reading the text (Winne, 2001).

Where a reader is sufficiently familiar with the type of text chosen and the goal set is also of a familiar kind then developing a plan is a very straightforward process. As discussed in earlier chapters and also in relation to the specific questions earlier in this chapter, in this situation a reader will have a prototypic definition of the task that is activated because the text and goal are what the reader considers typical (Winne, 2001). The plan of attack will include a default strategy that is associated with the prototypic definition (McKoon & Ratcliff, 1992) that the reader does not need to decide to use. Once this prototypic definition and default plan is in
use then the reader will simply do what they always do in this situation, and there will be little or no active consideration of how to approach the text.

In the situation where the task is familiar enough that the reader is sufficiently expert at the type of reading required the process of preparing for reading is essentially automatic. Where the reader is less familiar with the text type or where they have an unusual goal to achieve then this process will be more conscious and require more direct control from the reader. In the current study this happened largely when the participants were asked to select and read a non-fiction text. All the participants involved in the non-fiction phase of the data collection stated that they would not normally read a non-fiction text unless someone (a teacher) asked them to or if they had something in particular they wanted to find out about. Data collected from these participants showed some contrasts between the fiction and non-fiction texts. When reading the fiction texts there was little explicit reporting of activity during preparation for reading. Much of the behaviour reported or observed was fleeting and was not able to be coded using the concurrent verbal protocols but needed the retrospective report information from the participants’ review of the videos in order to be coded. With the less familiar non-fiction texts the preparation for reading behaviour was often able to be coded from the concurrent verbal protocols as it was a conscious process and therefore available to the participants for reporting. Participants appeared to be more active when reading the less familiar text but this reflected the more conscious nature of the activity rather than a greater level of activity.

While there is variation in how automatic the behaviour involved in preparing for reading is, the behaviour involved in preparing for successful reading is similar across different text types and in different situations. In those cases where participants in the good readers group set what has been described earlier in this thesis as an anti-goal that resulted in limited comprehension related activity, the participant still set a goal, selected a text, and had a plan for reading [even if this was an automatically retrieved plan associate with the default or prototypic task definition (Winne, 2001)]. The variation related to how much effort they were prepared to invest in the reading, and this had both an impact on the form their goals and the plan took, and was itself influenced by the goals set for reading. There was no need to alter this aspect of the model.
6.5.2 Continuous Development of Reading Comprehension

This part of the model was changed. Once the reader is ready for reading they begin to put their plan into action. The process of doing so was much simpler than suggested in the earlier iteration of the model. Even in cases where the development of a plan of attack was conscious as the reader did not have a prototypic definition that carried with it a default strategy, their subsequent reading and strategy use was automatic. The participants in the good readers group began reading and applied their strategy without further conscious decision making, this was coded as automatic strategy use. The use of an automatic strategy was not something that occurred where the reader encountered a problem (as represented in the original model) but proved to be an essential activity of reading. In Chapter Two the relationship between monitoring and cognitive strategy use was considered. What is apparent from the current study is that during successful reading the traditional model of monitoring affecting control (Koriat et al., 2013) is consistent with the behaviour that occurs here. The reader is constantly using their automatic strategy to develop their understanding of the text. Where this strategy use is successful and the reader is developing a positive feeling of understanding (FoU) this is a signal to the reader to continue as they are. In some cases the reader was barely aware of using the strategy, and was more aware of their FoU. In the model proposed in Chapter Three this was represented as “reading and monitoring”, but in the version proposed in this chapter this is represented as “continuous reading”. This change has been made as participants did not report reading and monitoring. Their reports indicated that reading is the use of an automatic strategy and that to the extent that monitoring exists as a separate concept it is feedback in the form of a FoU from the application of that automatic strategy. There is not a separate behaviour that performs the monitoring task. In the currently proposed version of the model successful reading is represented by a single circle. Where the automatic strategy failed, resulting in a negative FoU, then the reader ceased reading as the failure of the strategy signalled the need to do something different.

6.5.3 Regulatory Reading Behaviour

The cessation of reading leads to the third group of behaviours contained in the proposed model, regulatory reading behaviour. Reading may stop for one of two reasons, either the reader reaches the end of the text, or the reader experiences a negative FoU that means he or she feels the need to pause in their reading and take some form of action to remedy their negative feeling.
In the first case where the reader has finished the text, they begin the process of disengaging from the text. This usually involved a revision of their reading and understanding relating to the goal(s) held for their reading and whether the text was enjoyed or not. As with the planning stage and during continuous reading the amount of effort put into this disengagement process depends greatly on the goals set. In the current study this varied from several minutes of consideration to a statement of “Done!” at the end of case L discussed earlier. Where a reader engages in regulatory reading behaviour following a negative FoU however, more behaviour relating to the executive function is seen.

Once a reader has experienced a negative FoU, reading ceases and there is a process of re-evaluation that takes place. In contrast to continuous development of reading comprehension this process is conscious and considered. The reader first identifies the problem (e.g., “I thought I could picture it but I couldn’t.” or “I’m not finding anything that’s helping me answer my question.”) and then decides what to do about it. This may result in a change of strategy if the reader feels that their automatic strategy is not able to resolve the difficulty or it may not result in a change of strategy. Where the automatic strategy continues to be used, it is still a conscious decision to do that and there is a focusing of attention to resolve a particular difficulty. Once the strategy (either new or the original automatic) strategy has been used, the reader makes a judgement as to whether that has been successful or not. This judgement is monitoring that has been called evaluative monitoring earlier in this chapter, the reader evaluates the success of their chosen strategy.

Where the evaluative monitoring indicates the strategy has been successful and the difficulty is resolved, the reader returns to continuous development of reading comprehension. This return may or may not involve returning to the original automatic strategy. In some cases in the current study, readers returned to their original strategy and in other cases they moved into continuous reading and used the new strategy as their automatic strategy. The specific style of reading (introduced and summarised in Chapter Five) seemed to have an influence here. Some styles are more closely tied to a particular strategy than others. The “movie-maker” for example is closely tied to the use of a visualisation strategy. The “movie watcher” on the other hand is less closely tied to a particular strategy. In both styles the reader uses the construction of a movie as their automatic strategy. The difference is in the intent and the commitment to the movie, the movie maker sets out to make a movie of the story (analogous
to a movie producer) while the movie watcher simply wonders what is going to happen and watches (like someone who goes to see a movie). This means that when faced with a difficulty a movie maker aims to resolve that difficulty in order to resume making their movie. A movie watcher on the other hand may decide that retaining the new strategy gives them a better chance of finding out what is going to happen than their previous strategy and make that their new automatic strategy. This is what happened in case G.

Decisions relating to strategy use are one aspect of regulatory reading behaviour. The other is consideration that may be given to the reader’s goal(s). Where a reader ceases reading as a result of a negative FoU they may decide to resolve that difficulty through strategy use as discussed already, or they may resolve the discrepancy between their goals and the progress towards them by altering the goals. A change in goals could take a number of different forms. Firstly, the goal may be lowered to make it more easily achievable or to the point where the new goal has already been achieved. This was seen in case L where the reader paused at one point and later indicated she would normally have stopped reading at that point, having decided that she had found out all she wanted to from the text and was no longer interested in reading the remainder of the text. In this situation the reader’s re-evaluation of their goals would result in disengagement from the text. Secondly, the goal may be lowered to a lesser degree; to the point where the discrepancy has been reduced to a level that reader feels is acceptable then the reader may begin continuous reading again without making a change to their use of strategies. Thirdly, the reader may set himself or herself a higher or additional goal. An example of this was case D where the participant paused reading following a negative FoU, realised she was now more interested in the text than she was initially and therefore set a higher level goal than previously and also set a new idea goal before returning to reading. In this case there was no change in the strategy used but a difference in the goal for the reading resulted in the strategy being used more frequently.

The last possibility is that there may be a change of both strategy and goal(s). This eventuality was not observed during the current study but it is possible to envisage a scenario where this might happen. A change in the goal for reading effectively redefines the task and as such requires a strategy that the reader feels is suitable for that goal and task. Depending on the form the goal change takes it may necessitate a change in strategy in order to enable the achievement of the new goal.
6.5.4 Summary of revision of the discontinuous model of self-regulated reading comprehension

The regulatory reading behaviour and the preparation for reading aspects of the amended model perform a similar function in that their purpose is to enable the continuous development of reading comprehension. Where a text is not excessively difficult and a reader is sufficiently expert in reading a particular text type and in achieving the type of goals set, then relatively little time will be spent in either preparation for reading or regulatory reading behaviour and the process of reading will be largely automatic. Assuming the conditions here are met, once a text has been selected reading will be largely automatic, with varying amounts of conscious and deliberate behaviour. How much conscious behaviour is involved in the reading of a text will depend on the relative difficulty of the task as defined by the reader. There could be as little as no conscious executive function if a text or task is easily achievable, or there could be large amounts if the reader is finding the task difficult.

The amount of continuous reading and regulatory reading behaviour occurring throughout the reading may also vary as the relative difficulty of the task is ultimately under the control of the reader through their application of regulatory reading behaviour. By altering their definition of the task through changes to goals readers can make the task simpler or more challenging for his or herself and subsequently affect the amount of regulatory reading behaviour required.

The model provides a representation of the way in which good readers control not only their strategy use during reading but also the way they are able to control the task itself.

6.6 Conclusions Relating to the Validity of the Model

The model proposed here is intended to represent good reading that results in good comprehension of text. As such it does not represent poor reading or the behaviour of poor readers, although some aspects of the model were displayed in the behaviour of the poor readers in the current study. The process represented in the Discontinuous Model of Self-Regulated Reading Comprehension represents the behaviour exhibited by good young readers as they read texts successfully. As such it represents the behaviour of readers that are, or are becoming, expert. Where a good young reader is faced with a text that is overly difficult or is
insufficiently familiar to them this model may not apply. The model represents the type of reading that is the educational goal for all readers.

The model initially proposed in Chapter Three was based on a combination of research into self-regulated learning and reading comprehension. The primary aim of the current study was to see if the observed behaviour of good readers supports the model and the research questions and methodological design reflected this aim. Following the analysis of the concurrent verbal protocols and retrospective reports generated in the current study a number of changes have been made, resulting in the model that is now being presented. The changes do not affect the model’s consistency with previous research, and because its current form is grounded in the observed behaviour of good readers the model can be accepted in its current form. It now provides a basis for further research and considering educational programmes and the individualistic nature of reading itself. The next chapter will consider the implications of this model and other findings of the current study for our understanding and the teaching of reading.
CHAPTER SEVEN

The Individualistic Nature of Reading and its Implications for Education

7.1 Introductory Comments

In Chapter One the background that led to this research was presented. Data from the PISA and PIRLS studies (Caygill & Chamberlain, 2005; Sturrock & May, 2002) indicated that there was a large gap in reading achievement between most New Zealand students and a group of students that were failing to achieve as well as their peers. Later studies (Alton-Lee, 2003; Lai et al., 2003; May et al., 2013; McNaughton, 2007), including PISA and PIRLS, showed that not only was this issue a persistent one, but also that it was an issue of reading comprehension. More specifically, it was the metacognitive control of reading strategies rather than simply a lack of knowledge that was at the core of the problem.

The primary purpose of this chapter is to relate the modified Discontinuous Model of Self-Regulated Reading Comprehension discussed in the preceding chapter to the teaching and learning of reading comprehension. Chapter Two discussed a number of pedagogical approaches to teaching reading comprehension and strategy instruction that have shown benefits for reading comprehension. However, these approaches address specific aspects of reading comprehension but do not address the entire reading process (Massey, 2009).

The intention of the current research was to provide a framework for understanding the overall reading process, and doing so would inform teachers’ and schools’ decision-making processes when they are developing their reading programmes. Knowing how different aspects of reading relate to each other and interact to produce proficient reading enables the careful selection of complementary approaches and also the ability to teach them in such a way that developing readers understand the reading process and the place of each skill or ability within that process. This chapter sets out the implications for current pedagogy and what we as educators may need to do differently will be considered. It uses the Discontinuous model of Self-Regulated Reading Comprehension to set out the aspects of reading we need to teach, and how those aspects relate to each other within the overall process of reading, and then relates those aspects to some popular existing programmes. Following this discussion,
the final section of this chapter will consider the limitations of the current study and pose some questions for further research.

7.2 Implications for Current Pedagogy

Given repeated studies that show little or no explicit teaching of comprehension in many classrooms (e.g. Durkin, 1993; B. Taylor & Pearson, 2002), and subsequent studies that indicate that even where explicit teaching of comprehension strategies (either single or multiple strategy instruction) is happening, the achievement gap remains (McNaughton, 2007). Many of those who develop into proficient readers have presumably done so on their own. If we are to overcome the achievement gap highlighted at the beginning of this thesis then we cannot leave the development of strategies and their control to the students themselves. The implications for current pedagogy arising from the current study are not simply related to the content of reading instruction programmes, but to the context in which that content is delivered.

The terms skill and strategy have often been used as being equivalent in both research and instructional programmes (Afflerbach et al., 2008). Apart from the confusion this may have caused, differentiating between the two may provide us with a useful distinction. Afflerbach et al. (2008) differentiated between the two terms on the basis of expertness and automaticity. A strategy is something that requires cognitive effort whereas a skill is an automatic and relatively seamless behaviour. In the context of the present study, this differentiation goes some way to clarifying the difference between good and poor readers and also relates to the main thrust of the pedagogical implications of the current study. Throughout the process of data collection and analysis, watching not only the actual reading process but also the video recordings a number of times, the researcher was struck by the automaticity and apparent ease of effective reading. The narratives of individual reading styles presented in Chapter Five are an attempt to capture the nature of this reading as well as to demonstrate the process utilised and the behaviours engaged in by the readers in the current study. The challenge for teaching is to develop a context that not only provides readers with the conditional knowledge of strategy they require but also develops their ability to use them to the point where they become skills rather than strategies (Afflerbach et al., 2008) and provides them with the metacognitive knowledge and abilities required to use those strategies effectively.
In order to ensure that students do not develop into ‘extreme decoders’ (e.g., case O), ‘fluent decoders’ (e.g., case S), or ‘passive readers’ (e.g., case W) where the readers’ focus is either too much or exclusively on the decoding of words, then instruction in comprehension strategies should begin alongside instruction in word level skills (Kennedy, 2014). Instruction in comprehension strategies alone will not be sufficient however, as indicated by studies that show strategy instruction does not necessarily result in effective readers, particularly for struggling readers (Atkins, 2013). Results from this research and the current study suggest that the use of a routine or programme for instruction in strategy development is not sufficient. Instruction in the development of the metacognitive knowledge required to engage in the reading process observed being used by good readers in the current study is needed.

Studies into the effective teaching of literacy have emphasised the explicit nature of metacognitive modelling (Louden et al., 2005) and the use of a coaching style of teaching. Overt and explicit modelling of strategies has been a feature of classroom research and recommendations for practice for some time (Duke & Pearson, 2002; International Reading Association, 2010; Pressley et al., 1992). Unfortunately such modelling is often not evident, not made explicit, not made purposeful for students (Louden et al., 2005), and has also proven difficult to develop in teachers (Kennedy, 2014). The Discontinuous Model of Reading Comprehension and the narrative exemplars provide teachers with a framework for the modelling of good reading to students.

Starting with the Discontinuous model and accompanying exemplars would provide teachers themselves with an overall picture of what reading looks like for good readers and what is going on in their heads. It seems likely that one of the reasons for the lack of and difficulty in developing good modelling is that teachers themselves are not clear on the processes involved and how they relate to one another or to the multitude of possible strategies and what the purpose of each aspect is. Teachers may also only model their own reading style, being unaware that there are other possible styles that may be equally effective and better suited for the individuals they are teaching. Combining the use of the model with familiarity with the individual reading styles outlined here would give teachers a greater understanding of the metacognition of good reading and what it is they need to show their students how to do. Numerous authors have identified that a gradual release of responsibility model is best used in the development of reading comprehension (e.g. Duke & Pearson, 2002; Kennedy, 2014).
Programmes developed using the Discontinuous Model would not be a replacement for, or an addition to, existing teaching but rather would provide the means for teachers to link the instruction they give relating to areas such as phonics, morphology, comprehension strategies, and self-assessment to each other. Understanding the place of their learning in the overall process of reading would make each aspect more meaningful and enable the gradual release of responsibility for developing meaning to the students as they master each individual aspect of reading.

The Discontinuous Model can be used as a basis for the development of a classroom programme that is carefully designed to promote self-regulation. Complementary programmes that have been shown by research to be effective at teaching the individual aspects of reading such as strategy use can then be selected. Rather than being seen as promoting self-regulation themselves (Massey, 2009), these programmes can be identified as serving a particular purpose in developing students’ ability to carry out the individual behaviours that are required to develop meaning from text. The narratives of individual reading styles indicated the need for comprehension strategies and other behaviours (e.g., word recognition) to be learned to the point of becoming skills (Afflerbach et al., 2008) that can be used automatically. As the instruction of comprehension and self-regulation can not wait until other aspects of reading have been developed (Kennedy, 2014), while the individual aspects of reading are being developed to the point of being skills, the teacher must take on the responsibility for the regulation of reading and modelling this to students (Duke & Pearson, 2002; International Reading Association, 2010; Kennedy, 2014). Kennedy (2014) also raised the issue that developing good explicit modelling techniques in teaching is not easy.

Duke, Pearson, Strachan, and Billman (2011) have reiterated that students need to learn how to select appropriate strategies themselves, and that teachers need to avoid using an approach to the teaching of strategies that becomes artificial or regimented. The individual reading styles presented earlier in this thesis provide the opportunity to model reading comprehension to students in ways that are naturalistic and truly reflective of good reading. As mentioned in Chapter Two, earlier research into the use of reading comprehensions strategies (e.g., L. M. Phillips, 1988; Pressley & Afflerbach, 1995) has identified the fact that good readers make use of a range of strategies but without making it clear whether individual readers use a single
strategy, or a small or larger number of strategies when reading a text. Results from the current study would suggest that while an individual reader may have a range of strategies at his or her disposal, they use only a single or very limited number of strategies in the course of an individual text. Strategy use is determined by the purpose for reading and accompanying goals. In the current study, no case involved the use of more than two different strategies.

The Discontinuous Model of Self-Regulated Reading Comprehension and the narratives of individual reading styles provide a basis for teachers to conduct this modelling knowing that what they are demonstrating to their students is what good readers do when reading texts of a particular type. Using the model and the narratives as a basis for modelling may result in teachers becoming more aware of their own reading processes (as occurred for the researcher during the current study), and this can only be beneficial for their teaching practice and for their own reading ability.

7.3 The Relationship of Discontinuous Model of Self-Regulated Reading Comprehension to Current Knowledge

Massey (2009) indicated that there is insufficient research that directly investigates the self-regulation of reading comprehension. She outlined a number of problems that relate to using self-regulation research from other areas as the basis for attempting to understand self-regulation as it relates to reading comprehension. Massey (2009) discussed self-regulated learning (SRL) as it relates to reading comprehension, and indicated that there is limited direct support currently for SRL as supporting comprehension. She says, “there are no SRL studies that present direct evidence that SRL (not metacognition or the subprocesses of SRL) influences reading comprehension.” (Massey, 2009, p. 393). As Massey points out, the history of research into reading comprehension and self-regulation is one of investigation into single or isolated aspects of regulation and whether instruction in individual aspects of SRL results in improved student achievement in reading. The current study does not attempt to resolve this difficulty by relating SRL to reading comprehension or investigating the effectiveness of SRL on developing reading comprehension. The current study and the Discontinuous Model of Self-Regulated Reading Comprehension are intended to describe the process involved in the self-regulated action (Kaplan, 2008) of reading comprehension.
As a description of process, the model does not describe the specific behaviours involved in the development of reading comprehension. There is no need to do so as there is a long history of research into the individual aspects of reading comprehension and the strategies and behaviours involved have been identified and described elsewhere (see Chapter Two). There is also a significant body of research into ways of teaching students how to use comprehension strategies, and some of these studies and the educational programmes to stem from them include explicit modelling of strategy use and teaching of when to use them. Zimmerman (2001) referred to self-regulation as an individual’s ability to instigate their own thoughts, feelings and actions that are “planned and cyclically adapted to the attainment of personal goals” (p. 14) and yet much of the research in this area has not been able to draw conclusions as to what this process looks like in the context of reading comprehension. Paris and Paris (2001) stated that our knowledge of SRL as it relates to reading is more a collection of individual topics such as strategy use, self-efficacy, and monitoring. This issue is referred to again by Massey (2009) who stated that while much is known about the individual components, little is known about the self-regulated action of reading comprehension as a whole.

The next section uses the Discontinuous Model of Self-Regulated Reading Comprehension to outline the process as a whole and identify the conditional and procedural knowledge that has been identified as playing a role in the development of reading comprehension by successful young readers.

7.4 Implications of the Current Study and Discontinuous Model of Self-Regulated Reading Comprehension for the teaching of reading comprehension

The results of the current study and the Discontinuous Model of Reading Comprehension as set out in Chapter Six of this thesis carry some indications for teaching. When placed alongside previous research they assist in the identification of some important dispositions and skills that good readers display. The first part of this section relates to the dispositions that emerging readers need to develop, and the second to the skills that need to be taught if they are to become effective readers.

7.4.1 Required Dispositions

The process employed by good readers appears to hinge on some particular dispositions that, when in place, result in the kinds of decision-making and active engagement with text that are
necessary for good reading to occur. The individual reading styles in Chapter Eight help to
demonstrate these.

The first is a predisposition to being interested. The successful reading observed in the current
study was preceded by participants expecting to find something of interest to them. Secondly,
successful readers were motivated by meaning and approached a text with this in mind.
Subsequent behaviour was linked to these dispositions being present and when they were
absent, successful reading did not occur. Successful readers also knew that they would have
to be active in order to develop their understanding; they were predisposed towards working
out meaning for themselves. There were examples in the current study where good readers
who had previously displayed these dispositions on other texts during the experiment, or who
indicated that they normally did, failed to bring those to a particular text and subsequently
displayed poor reading (e.g., case L). Where good reading was demonstrated, the participants
demonstrated this set of dispositions that promoted active engagement.

Before they even saw the options they had to choose from for reading, the good readers
approached the task with the view that it should be interesting and they looked for ways to
make it interesting. As a result, text selections for the good readers were based almost
exclusively on the level of interest a particular text held for the participants. The level of
interest that a text held for the reader determined not only the text that was selected for
reading but also had a significant impact on subsequent behaviour. Guthrie and Wigfield
(2000) say that “Motivation is what activates behaviour” (p. 406) and without a predisposition
to be interested in what is being read and a belief that meaning is what matters then a reader
will not be motivated to expend energy on developing understanding. The group of good
readers in the current study approached the task with an expectation that they would find
something interesting and that they would be able to gather some meaning from what they
read. Where they were unable to find something interesting (e.g., case L) the good readers
became motivated not by understanding, but by the desire to get the text read quickly and
accurately. The poor readers came to the task with a predisposition that reading well meant
reading accurately (i.e., getting the words right) and consequently that is what they expended
their effort on. In the examples where good readers were unmotivated through a lack of
interest they effectively read like poor readers. Consistent with earlier research (Wharton-
McDonald & Swiger, 2009), all the strategies and skills they had at their disposal went unutilised unless the reader was motivated to use them.

As well as the examples of poor reading by good readers, there were also examples of effective strategy use by the poor readers. However, these examples were too isolated in the reading of a text to produce meaningful understanding of the text as a whole. They may have resulted in understanding of a particular piece of the text (e.g., a sentence) but not of the text in its entirety. During the review of the videos there were also occasions when the poor readers appeared able to make use of comprehension strategies when prompted (e.g., case S) but had not done so during their independent reading of the text.

These examples demonstrate that the poor readers have at least some ability to develop reading comprehension. They showed some ability to use comprehension strategies even if they did not develop full understanding of a text. The disposition that they bring to a text means however that they do not use that ability. In an educational setting that would suggest that for learning to take place, the teacher must first engage the learner meaningfully in the task. Failure to do so will not result in the reader being motivated to make use of and develop their existing skills, and nor will they be motivated (or even understand why they should) learn new strategies. Further, if emerging readers are to develop into effective independent readers then engaging them in the reading they do with the teacher is not sufficient. Care must be taken to ensure that the engagement that is developed during instruction becomes extended beyond that context. Students must come to see meaning (not accuracy) as paramount, expect to be interested and to be ready to use the strategies they have at their disposal to develop meaning. If this set of dispositions is not developed then any reading comprehension strategies that are taught, no matter how effectively, will not be used. This is related to the issue introduced in Chapter One, whereby many lower achieving students were receiving instruction in how to use comprehension strategies but did not actively control their own use of those strategies.

If those students received effective instruction in strategy use, but the wider context of their reading instruction and the rest of their lives still encouraged them to value accuracy and speed of reading then they are unlikely to develop the required dispositions towards reading. Without those dispositions being active, the current study shows readers do not set
comprehension-related goals, do not define the task in terms of meaning, and consequently do not seek to develop meaning as they read. Wharton-McDonald and Swiger (2009) stated that “Strategies and knowledge are critical, but if the reader chooses not to use them, they are of little use” (p. 516). This is true, but the current study suggests that it may not be a matter of choosing not to use strategies, but rather that without the required dispositions there is no reason to use them. Individuals do not regularly choose to deliberately ignore what they know to be useful strategies for achieving their goals. It is the goals that determine the approach to any given task, unless a reader is disposed towards setting comprehension related goals (rather than accuracy or avoidance) it is unlikely they will choose comprehension related strategies. They will instead actively choose strategies that help them either to read accurately (decoding), to avoid having to take part in a task they are not inclined towards, or to finish as quickly as possible.

The dispositions discussed here set the conditions under which the following reading behaviour occurs. In an educational setting a teacher may deliberately manipulate these conditions to promote reading comprehension, but unless a reader is able to regulate their own conditions they will not become independent good readers. They will be self-regulating, but they will not be regulating for the development of comprehension. An individual may have the conditional knowledge that allows them to use reading comprehension strategies appropriately, but if the conditions under which they are reading (whether externally or internally set) are not promoting comprehension they will not use those strategies. Once a reader is inclined towards comprehension of a text, there remain some things they need to know how to do.

7.4.2 Required Skills and Knowledge:
Once a reader approaches a text in the right frame of mind and is disposed to look for meaning, then the scene is set for the development of comprehension. Without the background of appropriate dispositions, even a good reader will be inclined to read poorly (e.g., case L). With the appropriate dispositions, for a reader to read well there are still some things that need to be learned. Six out of the 13 cases (N, Q, S, T, X, and Z) from poor readers in the current study demonstrated at least some of the required dispositions, in that they selected their texts based on interest, but still read poorly. As discussed in Chapter Two, there
is also research (McNaughton, 2007) that shows that individuals may be able to make use of appropriate comprehension strategies but are still not able to read as good readers do.

In this section the Discontinuous Model is used as a guide for setting out the required skills and knowledge in the order in which they would be used in the course of effective reading. In the initial stages (Preparation for Reading) these are not necessarily sequential as each can impact on the others, and because the initial conditions that resulted in the task impact on which is encountered first.

Readers must be able to set goals relating to understanding, and therefore students must be taught how to set functional goals. These goals can take two forms, being either related to a desired level of understanding, or to a particular idea that the reader wants to better understand in some way. The key aspect of these goal forms derives from the dispositions discussed earlier. To promote the development of comprehension, the goals set by readers must be related to the development of understanding. In cases where the group of good readers read well, they set goals that took one of the two forms, and sometimes both. Where the good readers read poorly they either did not set comprehension related goals, or they set anti-goals. Having set the appropriate conditions, in order to be able to begin reading with a goal that is likely to promote understanding, an individual must have the procedural knowledge required to be able to develop comprehension-related goals. They need to know how to take their interest in or requirements from a text and turn that into a workable and achievable goal, before selecting an appropriate strategy for achieving that goal.

For readers to be able to select an appropriate strategy they need to have the conditional knowledge that signals which strategy is appropriate under what conditions (as distinct from knowing that they need to use a strategy). Goal setting and text selection can be viewed as setting the conditions for the reading to follow. How they are interpreted as a task definition is a key factor in determining the strategies that will be used later (McKoon & Ratcliff, 1992).

Which strategy is appropriate in any context is conditional on the task at hand, and the current study shows that good readers know [either through conscious consideration or by default (McKoon & Ratcliff, 1992)] which strategy they will use prior to beginning reading.

Before they start to read a good reader knows what they are reading, why they reading it, and how they plan to make sense of what they are reading. Individuals must have the ability to
coordinate all the aspects of Preparation for Reading to produce the necessary conditions for successful reading. The executive function controls the application of an individual’s knowledge so that these conditions are met. Executive function is needed in this situation because the circumstances that lead up to the reading of a text differ, meaning that the Preparation for Reading aspects of reading are not always encountered in the same sequence and nor are they always required to achieve the same purpose. Sometimes the goal is set first (e.g., To answer my question I need to find out…) which leads to the selection of a text to achieve that goal. In other cases a text is selected first because it appears interesting in some way to the reader and a goal that is appropriate for that text is subsequently set for the reading. In still other cases the task may be at least in part defined first (e.g., “This is a test”). It is possible that one or more of the three aspects may be beyond the control of the reader altogether such as in an instructional setting where the text may be selected by a teacher. The reader needs to understand the purpose of each aspect and coordinate and control the use of each to result in the best possible conditions for reading. This is the role of executive function in the Preparation for Reading phase and may require an understanding of the whole process of reading to be able to be carried out effectively, although this is something that requires further investigation.

During the development of their reading ability, the individual participants learned how to carry out all the behaviours described earlier, and after sufficient practice and success they have become automatic. In the descriptive narratives of reading styles in Chapter Five not all of these actions were conscious for the participants. In many cases there were default strategies and goals that were automatically retrieved as being suitable for the task at hand. This is a sign of expertise (McKoon & Ratcliff, 1992) but does not mean that it was always so for those readers. If young readers are to develop into the relative experts that made up the group of good comprehenders then they must first be taught how to carry out the behaviours involved, and then supported to practice them often and long enough for them to become automatic behaviours. Given the length of time it takes to become expert in any domain, the teaching of these skills must begin as early as possible.

Whatever the strategy being used, the reader requires the procedural knowledge to implement that particular strategy. They also need to know how well their chosen strategy is working. For the Continuous Development of Reading Comprehension phase to be carried out well,
there are two things that the good reader must be taught how to do and control. The first is the use of their automatic strategy determined during the Preparation for Reading phase. What the implementation of the strategy looks like is largely determined by the strategy that is being used. In the case of visualisation strategies for example, the participants in the current study reported being aware only of their picture or movie and essentially unaware of the actual words they were reading. Where a questioning strategy was being utilised, participants asked themselves a question and subsequently looked closely at the text for key words relating to their question.

Effective monitoring is important for continuous reading. In Chapter Two a number of alternative monitoring forms were discussed (Koriat et al., 2013). Essentially monitoring can either inform control mechanisms or provide feedback on the strategies used following the application of executive control. Where a proficient individual reader’s reading is proceeding well, then monitoring and strategy use often appear to be indistinguishable. Although the differing reading styles displayed by readers in the current study all had this feature (monitoring being inseparable from strategy use) in common there remained differences in the exact nature of the monitoring. For Movie makers and those taking a Movie watcher approach their monitoring took two forms, either it was a confirmation that reading was progressing well or it was an alert that their automatic strategy was not serving them well enough. In the first form this was most often observed as brief comments, face-pulling, or in some cases a question for which an answer was not sought. These behaviours were reflective of a positive FoU. Participants viewed these behaviours as confirmation or a check that they understood what they were reading. They were not consciously a part of their reading activity, rather they appeared to be reflections on something they were experiencing first hand in the same way these behaviours might occur during real life experiences. Where these readers’ automatic strategy failed, their monitoring provided an alert that work was needed. Similarly to successful reading, participants were not aware of monitoring their reading as such but rather they experienced a negative FoU and became aware that they could no longer see their movie, or that they had encountered a piece of information that they were unable to assimilate into their movie.

For those using a Hunter-seeker strategy, both strategy use and monitoring are much more conscious. These participants asked a question of the text and proceeded to seek out the
answer. For these readers the seeking of relevant information was the major aspect of their strategy use and they were monitoring their success in finding that information. They were asking themselves questions relating both to their goal and to the part of the text currently being read. These questions could be summarised as “Do I need to attend to that?”. For most of the text the reading of these participants was not focused on the outcomes of strategy use (in contrast to the Movie makers, Movie watchers, and Wonderers) but rather on whether or not they had found what they were looking for.

When something (e.g., a key word) indicates they have found relevant information then their automatic questioning strategy is used to find or work towards an answer for their goal question. The outcome of this effort is monitored to determine whether further information is needed or whether their goal has been achieved. For these readers, the monitoring as alert function occurs before strategy use (not after as for Movie makers, Movie watchers, and Wonderers) and initiates rather than stops strategy use, and the monitoring of success or progress occurs after strategy use.

Despite these differences, in all cases where the participants were displaying reading behaviours characteristic of good reading then the strategy being used also provided the monitoring mechanism as long as the reader felt they were making progress as expected. For this mechanism to work the reader needs to have an expectation that understanding will develop over time (see the discussion on required dispositions earlier in this chapter) and they need to have a goal or goals to which they can compare their current position. Monitoring will only be effective if the reader has expectations that are or are not being met. Where the disposition or goal required is absent (e.g., case I, J, L) then even good readers will read poorly and even if they are using an automatic strategy, they will not be reading and monitoring in such a way that the need to change their behaviour will become apparent. This resulted in much lower levels of comprehension-related reading activity in the three cases mentioned here when compared to other cases from good readers. Cases I and J were examples of non-fiction reading from a single participant who indicated that she did not enjoy non-fiction reading. In these cases the number of non-reading behaviours were four and five respectively, while the same participant displayed 39 and 67 examples of non-reading comprehension-related behaviours when reading fiction texts.
A different set of behaviours become apparent once a good reader experiences a negative FoU and becomes aware (e.g., “I wasn’t sure anymore”) that they are not progressing toward achieving their goal(s) as they expected or hoped. It was at this point that the development of reading comprehension ceased to be automatic and conscious control processes became apparent for the good readers reading as good readers (therefore not cases I, J, L). For a good reader to take conscious control over the development of their reading comprehension they need to have the conditional knowledge that indicates that it is time to do so, and also the procedural knowledge relating the process that needs to be followed.

The conditional knowledge relates to those aspects discussed already and primarily to the experience of a negative FoU. As mentioned in Chapter Six, the negative Feelings of Understanding were much more specific than the positive ones. It is suspected here that it is the specific nature of negative FoU that makes them conscious to the reader and therefore interrupts automatic processing of the text. The procedural knowledge required following a specific FoU would relate to the identification of the issue, and appropriate ways to resolve that issue. There appear to be two ways of resolving the issue, either a reader changes their plan of attack by altering their chosen strategy, or they change the goals they have set thereby changing the need for strategy use.

Good readers need the capability to use more than one effective strategy if they are to manage a range of scenarios. In Chapter Six it was identified that the outcome of this process of deciding what to do was not always the same, in some cases the participant did not alter the strategy being used but rather modified it (e.g., asked a more specific question) while in others they utilised an entirely different strategy (e.g., when visualisation failed, asking a question). In those cases where a new strategy is used then the reader must also have the conditional and procedural knowledge to be able identify the correct replacement strategy and carry out its use. In some cases the participants in the current study indicated that they effectively had a second strategy that they always fall back on if they experience difficulty with their automatic strategy, while others indicated that they decided what to do on each such occasion. In either situation, once the modified plan of attack has been implemented, the reader needs to be able to evaluate its success and decide whether to continue with the new plan (strategy) or to revert to their original automatic strategy. Both approaches were observed in the current study.
A third approach that was also observed was to alter the goals that the reader has set. Two versions of this approach were seen also. The first was to change the goal in order to make it more easily achieved, thus removing the difficulty. The second was seen in cases where the participant initially set a low or anti-goal, but subsequently became more interested in the text. The participant realised that because of the nature of their goal they had not been actively working towards understanding the text and therefore did not understand it as well as they now wished. This resulted in a process similar to that seen at the preparation for reading phase, leading to first a change of goal (to one that required more of the reader) and subsequently the adoption of a strategy to suit. Once the participant returned to reading they displayed behaviour more reflective of good reading, in some cases the first apparent use of a comprehension strategy only occurred after this change had taken place.

One participant that provided a number of cases (cases A, B, C, D) not only used the same strategy (questioning) for both their automatic strategy and their secondary strategy, but also used this strategy when reading both fiction and non-fiction. In this fashion a reader may need to be proficient in the use of only one strategy to read successfully. In an example of the importance of conditional knowledge, other participants that read both fiction and non-fiction used different strategies for the different text types. Those that used a visualisation strategy as their automatic strategy for reading fiction texts did not do so for non-fiction texts, indicating an awareness that the conditions present in the task of reading non-fiction would make a visualisation strategy unsuitable.

Another possible method for dealing with difficulty understanding a text is to abandon the task altogether. This option was not observed in the current study, although in case L the participant indicated in the review that there was a point during her reading of that text that under normal (non-experimental) circumstances she would have stopped reading part way through the text. The decision to abandon a text can be viewed as a strategy for solving an issue with reading comprehension. It too requires conditional knowledge as the reader would need to be aware of whether that was an appropriate response to the difficulty under the circumstances. A different decision may be made in the context of an exam than in a more relaxed environment.
7.4.3 Summary comments:
The preceding pages have outlined the dispositions and skills needed for successful reading. Without those dispositions and skills the kind of reading described in the Discontinuous model of Reading Comprehension and depicted in the narratives describing successful reading would not be possible. The focus of the Discontinuous Model of Self-Regulated Reading Comprehension is on the process of developing reading comprehension and how a reader comes to use particular strategies rather than on the specific strategies that a reader may use to assist in the development of reading comprehension. This is because to develop a model that explicitly laid out the range of different strategies available to readers and attempted to include the different ways in they might be used would quickly become cumbersome and complicated. Rather, the model outlines the way in which a good reader makes use of whatever strategies they have at their disposal. As was discussed in Chapter Two, studies have shown that there is a body of relatively low performing students that have some of the knowledge required to be good readers, in that they have received instruction in the use of reading comprehension strategies and have demonstrated an ability to carry out those strategies, but who lack the ability to use those strategies independently (McNaughton, 2007). The dispositions, skills, and knowledge outlined above are what enable a reader to make effective use of the strategies they have developed.

7.5 Limitations and Questions for Further Research
As they stand, the Discontinuous Model of Self-Regulated Reading Comprehension and the accompanying individual reading styles provide some additional clarity to our understanding of the regulation of reading comprehension. They have the potential to improve our understanding of how good young readers go about the development of reading comprehension, and subsequently to improve our ability to educate other students in such a way as to facilitate the development of reading in a similar fashion. While the results presented here provide this insight and allow us to consider its implications for our knowledge and teaching currently, because of the nature of the current study there are also a number of further questions and implications raised from this research. The exploratory nature of the current study and the novel method used to gather data meant that there was some uncertainty about the data that would be gathered. However, the data gathered yielded results that are indicative of a wider picture and provide some support for the Discontinuous
Model of Self-Regulated Reading Comprehension, while still carrying some limitations. The value of the data gathered using the method developed for the current study also suggests research using this method may provide further insights into the cognition and metacognition related to self-regulated reading comprehension. It is also accepted that there are some limitations to the methodology used in the current study. The intention of the current study was to investigate reading that was as naturalistic as possible, and influenced as little as possible by the experimental condition itself. It was mentioned in the procedure section that it is accepted that no currently available method can be considered completely naturalistic. The act of reading aloud and reporting thinking are themselves unnatural and not a normal part of reading. However, attempts were made to limit the influence of external factors, including the instructions given to participants and the researcher’s efforts to have as little input as possible during reading. Participants reported that they felt their reading in the current study was representative of their normal reading. There were a number of instances where participants reported doing what they “always do”.

The primary limitations of the current study and the generalisability of the results gained stem from the small size of the sample and the fact that the participants involved primarily represent a minority group. The ability to carry out quantitative analysis of any sort was severely limited both by the size of the sample and also by the fact that some participants provided more cases than others. Having some participants provide more than one case had some benefits for the qualitative analysis in that it enabled the consideration of how an individual responded to different text types or levels of interest, and also provided some insight into the consistency of an individual’s approach to text. It did not allow for the analysis of quantitative differences between the good and poor readers, between different reading styles, or on other factors such as familiarity with text type or the level of interest a reader had for a particular text. The differing numbers of cases provided by different participants meant that statistical methods were unable to be used to compare the results of good and poor readers. In the current study any attempt to use statistical methods, such as a t-test or similar, would have meant that individual participants results would have had differing impacts on the outcomes of the tests. Those participants that provided more cases would have had a greater influence on the results. This issue remains even with the qualitative analysis undertaken, in that some participants are responsible for more of the narratives than others. As mentioned above, the advantage of having some participants provide more cases is that
they provided insight into the reading of an individual under different circumstances. Whilst it would have been preferable for more participants to have provided the greater number of cases and thus enabling more analysis, ethical constraints meant that participants were able to withdraw from the study at any time and a number chose to do so. Studies with larger samples would be able to overcome these difficulties and be able to consider whether there are quantitative differences in ways such as those mentioned here.

The small sample not only limited the forms of analysis available, but also carried another limitation. As a result of the low response rate from both schools and potential participants, the sample was self-selected in that all those who responded positively were included in the study. This resulted in a sample that was not representative of the wider population, the sample involved was predominately of Pacific Island heritage, meaning that another limitation is placed on the generalisability of the findings. The positive aspect of this is that the findings in the current study are representative of good reading by students of a background that is representative of those students currently underperforming in the New Zealand school system. Consequently, the results of this study may be useful for working with that population. The possibility remains that good reading may look different in different populations. As with the earlier limitations, these could be overcome in a study with a larger sample size, and the opportunity to select a sample that is more reflective of the wider population.

The narratives of individual reading styles presented in Chapter Five give a rich description of the reading styles encountered in the current study. The current study is limited by the use of a relatively small sample however, meaning that the ability to generalise from these results may be limited. The possibility that a small sample of this kind is not representative of the reading of other good readers of a similar age is therefore an important one. The reading that was observed by these readers may have been influenced by a number of factors, including the possibility that the reading observed in the current study was not reflective of good readers generally but rather of those readers from that particular school setting.

One question that follows from this is whether or not the styles observed during this study are representative of all readers of this age or whether there are there more styles that were not observed here. This question is important not only for our knowledge of reading, in that it
would be of interest to see how other readers develop comprehension, but also in relation to the implications for the teaching of reading discussed earlier in this chapter. As was discussed, the narratives could provide a useful tool for assisting teachers to model the process of good reading to their students. If they are to be used in this fashion then it is important to know whether there are other styles of reading that should also be modelled to students. Future studies using the method developed in the current study and with a larger sample size would be able to shed further light on this question. Given the individualistic nature of reading comprehension that has been highlighted in the current study, it is important that a better understanding is developed as to how individualistic this is. Is the number of reading styles limited only by the number of readers, or is there a finite number of styles that readers settle upon individually?

Another issue that relates in part to the small sample size, and in part to the nature of the focus and analysis used in the current study stems from the fact that there were only a small number of strategies observed used by the participants. Although they were used in differing ways, the participants in the current study relied exclusively on two main strategic approaches. Either they asked questions, or they visualised the information from the text. Previous studies have identified a larger range of strategies than this (e.g. Duke et al., 2011) although some of those were used in the current study as monitoring or supporting tools rather than as a primary strategy for the development of comprehension. This raises a few questions that require further investigation. Do all young readers use these strategies in this way (i.e., relying on these two strategies) or was this only observed in the current study by chance or at least partially due to the small sample size? If a similar pattern is observed in future studies then this would have an impact on the teaching of reading comprehension. Research that identified the relative use (both frequency and type) of particular strategies would be of benefit to determining how and when those strategies should be taught. If there are some strategies that are more widely used and useful, then it would make sense to begin instruction in those strategies earlier and then to teach strategies that are used to support or monitor the success of those primary strategies in that fashion. If relating to prior knowledge is in fact a form of monitoring (as was observed in the current study) then it should be taught as such. The current study did not investigate the type or frequency of strategy use directly as it was focused primarily on the process involved.
The narratives of individual reading styles are helpful for understanding the process that was utilised by the participants involved in those cases. The suggestion is made that these narratives or similar accounts could be useful for teachers attempting to model these processes for their students. As well as identifying whether there are other reading styles that have not been identified in the current study, it would be beneficial to inquire into whether having these rich descriptions of good reading would help overcome the difficulty of developing effective modelling in teachers that has been previously identified (Kennedy, 2014).

Massey (2009) identified the issue that much of our knowledge associated with self-regulation and reading comprehension can be seen as conclusions drawn from research into isolated aspects of reading or from other contexts that have been conflated into a potentially misleading understanding of how self-regulated learning relates to reading comprehension. If the Discontinuous Model of Self-Regulated Reading Comprehension is accepted as a basis for our understanding of self-regulated reading comprehension this allows for a different approach to understanding reading comprehension. The study of separate aspects of reading comprehension could be carried out in a fashion that means they are related to an overall understanding rather than being artificially related to each other later. While it would be preferable if future research continued the attempt made here to consider the process as a whole, answers to questions such as those raised in this chapter would strengthen our understanding of the model considerably. Using the Discontinuous model as a basis for future research would provide a coherent whole into which specific knowledge can be integrated, potentially avoiding the pitfalls associated with the collection of research in this area currently (Massey, 2009).
CHAPTER EIGHT

Conclusions and Recommendations

8.1 Introductory comments
There are three main aspects of the current study that both add to our current knowledge and suggest directions for future research. The first of these is the data collection method used in the current study and the richness of the data gathered through its use, the second is the identification of individual reading styles and the use of narrative descriptions to illustrate the processes involved in those, and finally the ability of the Discontinuous Model of Self-Regulated Reading Comprehension itself to explain and clarify the underlying patterns of behaviour that are consistent across able young readers.

8.2 Methodology
Particular features of the cued retrospective reporting methodology used here provided a high degree of richness in the data collected and a number of other benefits, not all of them expected or considered prior to the current study being undertaken. As discussed in Chapter Two the purpose of using cues was to enable the gathering of richer data than can be gathered using concurrent verbal protocols alone, whilst avoiding the tendency for participants to report what they think they were thinking rather than what they were thinking by providing a cue. The particular approach to cued retrospective reporting used here, which was immediate and video-cued, had five particular benefits to the current study.

The first was that the method allowed immediate retrospective reporting. This meant that the participants involved were not attempting to remember thought processes that they had been using some time in the past, but on their most recent significant mental task. This immediacy is important in reducing the tendency for participants to report either a generalised view of what they think they do when reading, or to attempt to construct or embellish a version that they think is appropriate or what the researcher is wanting to hear (K. L. Taylor & Dionne, 2000). Related to the benefits of immediacy, was the fact that the use of video recordings as a cue meant that the participants were able to both see and hear themselves reading aloud and also to hear their own concurrent verbal protocols. This meant that not only was the participant reporting on a recent event, they could also hear some of what they had been
thinking at the time, and see other cues such as eye movements that would not have been available to them using audio recordings. The full nature of the cue means that the retrospective reports provided by the participants should be more valid and reliable (van Gog et al., 2005). The third and fourth benefits of the immediate video-cued retrospective reporting used here are again believed connected to the fullness of the cue.

Both the third and fourth benefits are related to the ability of the researcher to remain relatively removed from the reporting process. The third benefit of the method was that participants in the current study provided large amounts of additional reporting without the need for the researcher to prompt the reader at all. As the participants watched their video, they were moved to comment on the behaviours and concurrent verbal reports they could see and hear. The benefit that this gives to the data collection process is the inherent reduction in the risk of observer bias being introduced through prompts that may guide the participant to provide a particular response. The fourth benefit was similar, in that where probes were required in order for a participant to report on their thinking the fullness of the cue made it easier for the researcher to use neutral probes. There was no need to remind the participant of the context in which the observed behaviour or reported thinking took place as it was visible and audible to both participant and researcher. This meant that the researcher was able to use “what” questions such as “What happened there?” or “What were you thinking there?” as is recommended practice (K. L. Taylor & Dionne, 2000). Both the reduced need for probes and the increased ability to use neutral probes increase the validity and reliability of the data gathered. The fourth benefit just discussed here was foreseen, in that having a participant’s own behaviour as a cue means that the researcher is able to draw attention to that rather than give more direction to the participant, but the degree to which the video cue would prompt participants to provide additional data was not anticipated. The fifth and final benefit to the researcher was also unanticipated and resulted from the interaction between the video and the audio recordings collected during the video-cued retrospective reporting phase of data collection.

Prior to the beginning of data coding, the first set of audio recordings were transcribed so these could be used to support the coding developed directly from the video recordings. The difficulty with this was that the timings recorded on the transcripts related to the length of the audio recording and not to the reading itself. This difficulty meant that before the information
on the transcripts could be used in conjunction with the video information the timings needed to be related to the video so the researcher could be sure that the concurrent reporting on the video and the retrospective reporting on the transcript were referring to the same behaviour. In order to do this the researcher began by using the video recording initially to identify the timings of the behaviours and think-alouds that were observed throughout the reading process, and then listened to the audio recordings while comparing the transcripts and the timings identified from the video. It quickly became apparent that as an accidental result of the research process used, the concurrent video recording could be heard in the background of the retrospective audio recording. This meant that the audio recordings already contained the information needed to relate them to the video. As a result the data analysis was greatly facilitated, and the triangulation of the two forms of data was simplified. Future research using immediate video-cued retrospective reporting could be designed to make deliberate use of the possibilities opened up by this feature. Software packages designed for the analysis of qualitative data are available and may be able to make use of the secondary recordings (video heard on the audio) to assist with the timing of the behaviours being coded. This is an aspect of the methods used in the current study that needs further consideration in order to maximise the potential benefits available.

The method used in the current study provided a great deal of richness in the data collected, both intentionally and through some unexpected benefits.

8.3 Individual Reading Styles

The richness of the data collected using this method was what suggested the use of the exemplar narratives to the researcher. Hearing the participants describe and discuss their reading process as they reviewed the just completed video of themselves was of great benefit to understanding what they had been thinking at the time. This understanding was not something that could be replicated by the discussion of frequency data or the strategies used by each reader. There was an imperative to capture the ‘feel’ of the reading and the fluid and automatic nature of the good reading that was observed in the current study. As discussed in the literature review in Chapter Two, previous studies that have considered strategy use in the development of reading comprehension have focussed on which strategies have been used and on the identification of related behaviours. These studies have greatly increased our understanding of good readers but they may have led to a perception that the use of these
strategies was somewhat separated from the reading itself and that readers are selecting from a range of strategies at the point of strategy use while reading.

The narratives displaying good reading and the comments of some of the participants discussed earlier make it clear that for good readers, strategy use is not something that good readers do to help them with their reading, it is their reading. Some participants, particularly those making use of visualisation strategies, reported not even really being aware of reading. The experience for these readers was one of seeing and hearing the text rather than of reading words and constructing meaning. In addition to this different view of strategy use, it is clear that good readers do not generally select from a range of strategies as needed. The strategy they are using has been predetermined before they begin reading, and the selection process itself may not have been conscious. Only in a few cases where there was a reading difficulty to be overcome did strategy selection become conscious during reading itself. During the reading of a text, only a small number of strategies appropriate to the text and reader’s goals are used.

The development of the narratives of individual reading styles provide a useful tool for understanding the experience of readers with different styles as well as the process they use for developing their understanding and the way they control the skills and strategies at their disposal. The real benefit of the narratives as a tool may be connected to teaching and learning. There are two major issues that have been discussed earlier relating to the effective teaching and learning of reading comprehension. We know that although many students receive tuition in the use of reading comprehension strategies many do not develop the ability to use them independently (McNaughton, 2007). We also know that good modelling by teachers is one of the most effective ways to develop metacognition in students (Louden et al., 2005) and that effective monitoring is difficult to develop in teachers (Kennedy, 2014). The major potential impact of the development of the narratives of individual reading styles in the current study and any new styles coming out of future research is in the ability for them to be used practically as a tool to assist students to understand the reading process, and for teachers to be able to both understand the process and also develop their ability to model it for students.
It is unlikely that students will receive good modelling from their teachers if those teachers are either not used to thinking about the underlying processes involved in controlling the development of reading comprehension, or are unfamiliar with the processes used by good readers in a range of different styles of effective reading. The identification of the individual reading styles in the current study and their illustrations using the narratives provide an opportunity to show teachers how good young readers read, and to encourage them to practise reading in a variety of different styles themselves in order that they can then model those styles to their students. It has been noted earlier in this thesis that we have known a lot about what good readers do for some time, and yet this has not been transferred into the classroom in a meaningful way. The routines for teaching reading comprehension discussed earlier have their place as methods for teaching students how to use a variety of strategies, but the critical issue has been shown to be the teaching of self-regulation of those strategies. Professional development for teachers that enables them to effectively model different reading styles to students (using examples such as the narratives in the current study) may be the key to maximising the benefits from existing methods of instruction and to developing truly self-regulating readers.

8.4 The Discontinuous Model of Self-Regulated Reading Comprehension

The individual reading styles identified in the current study are all noticeably different from each other. Along with the narrative exemplars they illustrate the individual nature of good reading and emphasise the fact that there is no single ‘right’ way to read well. However, previous research into the self-regulation of reading comprehension (e.g. Pressley & Afflerbach, 1995) has shown us that there are some consistent behaviours across readers. The Discontinuous Model of Self-Regulated Reading Comprehension is designed to show the underlying processes involved in self-regulated reading comprehension without being tied to specific behaviours or strategies or to a specific style of reading and therefore highlight the consistencies.

The current study has provided support for the revised model presented in Chapter Six. The model provides a framework for better understanding of the cognitive and metacognitive processes involved in good reading. Earlier in this chapter the point was made that teaching students to be meta-cognitively self-regulating is best achieved through modelling (Louden et al., 2005), and the difficulty that exists with providing effective metacognitive models for
readers was discussed (Kennedy, 2014). The representative narratives were presented as a means of providing guidance for teachers attempting to model self-regulated reading. While the narratives are useful in terms of giving clear examples of actual reading as demonstrated by good young readers, they are limited in their usefulness for this very reason. They are examples of specific styles of reading and are tied to the readers and the texts involved. The narratives provide an insight into the feel of good reading and assist with understanding how the model relates to actual reading, but they do not in themselves illustrate the relationships between the different aspects of reading and nor do they provide a theoretical basis for the teaching of reading. The model provides us with a framework with which to understand good reading rather than simply to see what it looks like. Once understood, the process of reading is more likely to be able to be modelled effectively.

The Discontinuous Model of Self-Regulated Reading Comprehension draws on previous research and the good reading observed in the current study to identify both the aspects of reading that need to be in place and also how they relate to each other. The model presented in this thesis provides a clearer outline of the self-regulated action (Kaplan, 2008) of reading comprehension than has been available previously. It is the model that provides the ability to understand the individual reading styles and to identify the aspects of those styles that makes them effective or not. The narratives are able to be mapped on to the model, and the process of doing this provides them with their real power in terms of using them to model the process of reading for developing readers. Understanding the model and its information processing underpinnings will enable individual teachers and students to better understand the behaviours evidenced in the narratives.

Chapter Six set out the individual aspects of the three phases within the model and the interactions between them. These aspects all need to be taught explicitly, including the ability to use a range of different strategies and to practise them until they become skills (Afflerbach et al., 2008). In Chapter Two, research that indicates the teaching of these aspects have all been shown to have benefits for reading comprehension was presented, but the issue was also raised that teaching these aspects themselves does not produce self-regulated readers and should not be expected to (Massey, 2009). The process of self-regulation must be taught alongside the teaching of these individual aspects.
The real power and usefulness of the Discontinuous Model of Self-Regulated Reading Comprehension lies in its ability to inform both aspects of teaching. The model not only informs what needs to be taught for teachers and students, but most importantly it also provides the process that has previously been missing from much reading instruction. It provides teachers with the tools to effectively teach the self-regulated action of reading comprehension.
Appendix A: Documents for Participating School

1. Principal Information Sheet
2. Principal Consent Form
Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

To: Principal

My name is John Milne and I am conducting research as part of a Doctor of Education degree in the Faculty of Education at the University of Auckland. My supervisors are Dr Libby Limbrick and Dr Richard Hamilton of the Faculty of Education.

The aim of this project is to shed some more light on the regulatory process used to determine comprehension strategy use in reading. The underlying reason for this is that research has shown that if we are to close the large gaps that exist between the highest and lowest achievers in reading in New Zealand then addressing the issue of strategy control is crucial. This project aims to give a greater understanding of the process used by good readers, and how this differs from poor readers’ approach to the use of reading comprehension strategies in order that this may inform teaching practice directly aimed at closing this gap in achievement.

Assistance required from the school:
Consent to take part will be gained from participants and their parents or guardians, and this will include consent for me to receive information from the school. However, in order to be able to complete this research I will also need assistance from the school in a number of ways.

In the first instance this will be with the identification of potential candidates. Because this research is looking at the reading behaviour of both able and poor readers, I will need you to advise me of the number of students you have that meet the following criteria:
Aged 11 or 12 at the beginning of the year
And who are:
Either:
Stanine 7 or above on either PAT Reading Comprehension or an asTTle Reading test. This equates to an asTTle reading score (aRs) of 575 or higher.
Or:
Stanine 3 or below on either PAT Reading Comprehension or an asTTle Reading test. This equates to an asTTle reading score (aRs) of 450 or lower.
As I am looking for at least 20 participants in each group, I would be aiming to have at least 30 students who meet these criteria before proceeding further. This allows for a number of students to refuse to take part. I do not need to know an individual student’s score, only which group they belong to.

If there are sufficient potential participants at your school then I will ask you to arrange for information sheets and parental consent forms to be provided to the parents of those students, and for the students to receive their information sheets and assent forms. This will mean that the students may have questions for you about the research. These should initially be answered with reference to the information sheets and referred to parents/guardians and their information sheet, and secondly to myself. My contact details are on the information sheets. If parents or students wish to meet me at school then that can be arranged.

**Research process:**

Once consent has been given a meeting with groups of 4-5 participants and the researcher will be held to:

- Explain the process in more detail.
- Introduce and familiarise participants with the equipment involved (e.g., video camera) and how it works.
- Demonstrate to participants and give them training in the activities involved in the study to make sure they understand them.
- Answer any more questions they may have.

This meeting is expected to take between ½ to 1 hour.

The final part of the research will involve individual participants and the researcher. In this part I will ask each student to read two pieces of writing that will require them to think carefully in order to understand it. While participants are reading they will be asked to ‘think aloud’ while developing their understanding. This is expected to take no more than 1½ hours. This part of the research will be videotaped, and I may also make some notes as well.

The estimated time is 1 ½ to 2 hours total. This research will require those students taking part to leave their usual classroom for this time.

Students may choose to withdraw from the research at any point without giving a reason, including after the video session has started. Data provided by participants can be withdrawn up to 2 weeks after the date of the video being made and will be destroyed at this point. You are asked to ensure that students who do not agree to take part or who later withdraw are not penalised in any way.

Your school’s participation in this research is completely voluntary and you may decide at anytime to rescind your approval for students from your school to participate. The information given by students in this research will be reported in a way that does not identify them or your school, and individual data will not be given to you, your school or teachers. A summary report will be made available to you if you wish. This summary will also be available to participants and they will also be able to receive their individual data (video tapes and notes) if they wish.

Video recordings will be transcribed by a third party who will be bound by a confidentiality agreement.
Because of the small number of people involved in this study it is possible that you or someone who knows the participants well may be able to identify their information. However, no names will be used anywhere in the report or summary.

**Storage of data:**
All data including video recordings will be stored in a secure place and viewed by myself and my supervisors only (other than for transcription and reliability testing purposes). Data will be kept for six years in order to produce peer reviewed publications, develop further research, and write the thesis for the Doctor of Education degree. Signed consent and assent forms will also be kept for six years, in a secure place but separate from the data. After six years, the video recordings data, and signed consent and assent forms will be destroyed.

If you agree to this research occurring within your school and to provide the assistance required then please fill in and return the consent form in the stamped addressed envelope provided.

Thank you very much for your time. If you have any more questions or wish to know more please call me or email me at the address below.

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APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 15 October 2008 for 3 years from 15/10/08 to 15/10/2011
Reference Number 2008/365
PRINCIPAL/BOARD OF TRUSTEES CONSENT FORM

THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

Researcher: John Milne; candidate for Doctor of Education, Faculty of Education
Supervisors: Dr Libby Limbrick and Dr Richard Hamilton, Faculty of Education

I, (Principal’s name) , principal of (Name of school) school agree to this research taking place within this school.

I have read and understood the information sheet provided to me and that provided to participants.

I agree to provide the assistance detailed in the information sheet, namely:
To identify potential participants according to the criteria supplied,
To provide information sheets and consent forms to parents of those students identified,
To make appropriate space and time available within the school.

I understand that students taking part in this research will be required to be out of their class for up to 2 hours in total.

I understand that participants will be videotaped during their involvement in this study.

I understand that participants may decline their consent or withdraw their participation at any time, including after the video has started, and give an assurance that there will be no negative consequences if this is the case.

I understand that both participants and their parents or guardians will be required to agree to students taking part in this study.
I have had an opportunity to ask questions and have had all my questions answered.

I understand that I will have the option to receive a summary of results from this study and that this summary will be available to participants if they wish.

I understand that no individual student will be named in this summary, but that they, or someone who knows them well, may be able to identify some of their information.

I give my assurance that no student will be disadvantaged in any way if they or their caregivers do not wish them to participate.

Signed:

Name:
(Please print clearly)

Date:

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Reference Number 2008/365
Appendix B: Documents for Participants

1. Participant Information Sheet
2. Participant Assent Form
STUDENT PARTICIPANT INFORMATION SHEET

Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

To: Participant

My name is John Milne and I am conducting research as part of a Doctor of Education degree in the Faculty of Education at the University of Auckland. In this research I want to find out how and what children think while reading. We know that children are taught a lot of ways to help them understand what they are reading, but that many don’t use them unless their teacher asks them to.

I want to learn about how those children that do use these strategies by themselves think. In other words, how do good readers make sense of what they are reading? The idea is that if we can find out what good readers do, we will be able to teach this to everybody.

What will happen?
Once I know who has agreed to take part in the study we will have two meetings, both of these will be in class time but in another room. The first will be between you, me, and a few other students. This will be so I can show you what will happen and you can have a practice. You will also get to see the video recorder and laptop that I will use and be able to have a go with these.

The second meeting will be just between you and me. This will be when the real study happens. You will be asked to read two short pieces of writing and to say out loud what you are thinking. These will be hard enough that you will have to think about what you are doing, but not so hard you can’t read them well. You will be recorded while you do this and we will check the video after you have finished reading.

You can pull out of these meetings at any time.

After the meetings:
One or two other people may see the videos, this is so they can type what you have said so that I can use the information better, and possibly to check that they agree with what I thought you were doing. Nobody who sees the videos is allowed to talk about them with anybody.
I will use the information to produce one or more reports on what I have found. Your name will not be used.

A short summary of the results will be provided to your school so that are able to see what has been learned as a result of the study. You will not be named in this report. You are also able to get a report if you wish so that you can see what your information was used for. You can also get a copy of your video if you want. If you want either of these then please show this on the assent form. This is up to you, if your parents or caregivers would like either of these then they need to talk to you and you need to agree.

The information I collect will kept in a safe place at the university for six years. This is so that I am able to use it for the reports, but it can not be seen by someone who is not supposed to do so. After six years all videos and written material will be destroyed.

Thank you very much for your time. If you have any more questions or wish to know more please talk to your parent or guardian first as they have been given information about the study as well, and I can be contacted at the phone numbers or email address below if needed.

John Milne  
Phone: (09) 6344548, (021) 1137728  
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APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 15 October 2008 for 3 years from 15/10/08 to 15/10/2011
Reference Number 2008/365
STUDENT PARTICIPANT ASSENT FORM

THIS ASSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

Researcher: John Milne; candidate for Doctor of Education, Faculty of Education
Supervisors: Dr Libby Limbrick and Dr Richard Hamilton, Faculty of Education

I, (Participant’s name) , agree to take part in this research.

• I have read the information sheet and it has been explained to me so that I understand it. I have been able to ask questions and all my questions have been answered.

• I understand why I have been chosen to take part in this study.

• I understand that the first meeting will be with a group of others taking part to talk about what will happen, to get used to thinking aloud while working on something, and to answer any more questions I may have. This is expected to take between ½ to 1 hour.

• I understand that in the second meeting I will be asked to read two short pieces of writing and to think-aloud while I am reading, and that this will be with just myself and the researcher present. This will take about 1 hour and be videoed.

• I understand that the study will take place during normal class time, but in a separate room.

• I understand that if any of the results are published, this will be done in a way that does not directly identify me.

• I understand that I can stop taking part at any time without giving a reason.
• I understand that up to two weeks after the video was taken any data provided by me can be withdrawn if I wish without giving a reason.

• I understand that any information collected for this research will not be given to my school or teachers, but that a summary of results will be given to the school, and that every effort will be made not to identify me in this summary.

• I understand that the information collected for this study will be kept safe at the university for six years and then destroyed.

• I understand that I can receive a summary of the results if I wish, and that this will be sent to the school to be given to me.

• I DO / DO NOT wish to be given a summary of results.
  (circle one)

• I understand that I can receive a copy of my video if I wish, and that this will be sent to the school to be given to me.

• I DO / DO NOT wish to be given a copy of my video.
  (circle one)

Signed:
(participant)

Name:
(Please print clearly)

Date:

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 15 October 2008 for 3 years from 15/10/08 to 15/10/2011
Reference Number 2008/365
Appendix C: Documents for Parents/Guardians

1. Parent/Guardian Information Sheet
2. Parent/Guardian Consent Form
Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

To: Parent or Guardian

My name is John Milne and I am conducting research as part of a Doctor of Education degree in the Faculty of Education at the University of Auckland. My supervisors are Dr Libby Limbrick and Dr Richard Hamilton of the Faculty of Education.

This research is aimed at finding out about how and what students think while reading. We know that the students are taught a lot of strategies to help them make sense of what they are reading, but that a lot of students do not always follow these unless asked to by their teacher. This study focuses on the decision making process used by those students that do use these strategies by themselves. In other words, how do good readers make sense of what they are reading? The idea is that if we can find out what good readers do and how they are different from poor readers, we will be able to teach this to everybody.

Why has your child been chosen?

I have invited your child to take part in this research because they are either a very good or a poor reader, and because they were 11 or 12 years old at the start of the year. The school’s principal has provided me with the names of those students who meet these criteria. Those students who are in the group of very good readers have scored in the top 23% nationally in either the asTTle or PAT reading tests. Those in the group of poor readers have scored in the bottom 23% of the same tests. The principal will provide me with names for each group only. I do not know your child’s actual score.

The research process:

Your child’s participation in this research would involve two separate sessions. In the first, students who have agreed to participate and whose parents have consented will be invited to a meeting with myself and three or four other students who have agreed to participate. At this meeting, I will explain the study and what they will be asked to do in more detail. They will also be shown the equipment that will be used (a video camera), how it works, and given a chance to try it out. I will
also demonstrate what they will be asked to do in the second session and they will be able to
practise this. This meeting will also be an opportunity to ask any more questions and to make sure
all participants understand what the study is about and their part in it.

This meeting is expected to take between ½ and 1 hour, and will be during class time in a room
away from your child’s class.

The second meeting will be just between your child and me. This session is expected to take about
an hour, and will again take place during class time but in a separate room. In this session I will
ask them to read two short pieces of writing. This text will be fairly difficult, but not too hard for
your child to read. It is made quite hard so that participants will need to think carefully about it
while they are reading. While reading they will be asked to stop when they have a problem and to
think aloud while they work out what the writing means. This is so that I can find out how people
who are reading go about solving problems while they are reading.

The passages used will be of relatively short length and relatively challenging (but not so hard as to
make understanding of the texts impossible). The texts will be on a topic that is at least somewhat
familiar to the participants, as this provides opportunities for the use of the widest possible range of
comprehension strategies.

This part of the research will be videotaped, and I may also make some notes as well. Video
recordings will be transcribed by someone else and this person will be bound by a confidentiality
agreement not to discuss the recordings with anyone.

Learning to reflect on your own thinking is a useful skill for students to develop as it can
potentially lead your child to being a more effective learner within the classroom.

Your child’s participation in the study is completely voluntary and participants may choose to
withdraw from the research at any point without giving a reason, including any time after the video
has started. You may also withdraw your consent at any time, and this would mean that your child
would not continue in the study.

If you do not agree to your child taking part in this study or you withdraw your child after giving
consent they will not be penalised in any way. Your child’s principal has agreed to make sure of
this. Your child’s information can be withdrawn up to 2 weeks after the date of the video being
made.

The information your child shares in this research will be reported in a way that does not identify
them, and their information will not be given to the school or teachers. A summary report that does
not identify any individuals will be given to the school.

This summary report will be made available to your child if they wish, and they will also be able to
get a copy of their video and any other information. They will be given the opportunity to signal
this on their assent form. If you wish to see either of these then you need to discuss this with your
child. As it is their information, it is their decision as to whether they receive this and pass it on.

Because of the small number of people involved in this study it is possible that you or someone
who knows your child well may be able to identify their information. However, their name will not
be used anywhere in the report or summary.
Storage of data:
All data including video recordings will be stored in a secure place and viewed by myself and my supervisors only (other than for transcription purposes). Data will be kept for six years in order to produce peer reviewed publications, develop further research, and write the thesis for the Doctor of Education degree. Signed consent and assent forms will also be kept for six years, in a secure place but separate from the data. After six years, the video recordings data, and signed consent and assent forms will be destroyed.

If you consent to your child taking part please fill in and return the consent form in the stamped addressed envelope provided. Your child must sign an assent from as well and this should be returned in the same envelope.

Thank you very much for your time. If you have any more questions or wish to know more please call me or email me at the address below.

John Milne  
Phone: (09) 6344548, (021) 1137728  
Email: jcmilne@ihug.co.nz

Dr Libby Limbrick  
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APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 15 October 2008 for 3 years from 15/10/08 to 15/10/2011
Reference Number 2008/365
PARENT/GUARDIAN CONSENT FORM

THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

Title: Self-regulated Reading Comprehension: How do readers exercise control over cognitive strategies?

Researcher: John Milne; candidate for Doctor of Education, Faculty of Education
Supervisors: Dr Libby Limbrick and Dr Richard Hamilton, Faculty of Education

I, (Parent/guardian’s name) ________________________________________________, consent to my child taking part in this research.

- I have read and understood the information sheet I have been given. I have had the opportunity to ask questions and all my questions have been answered.

- I understand why my child has been chosen to take part in this study.

- I understand that the first session will be to introduce the research process, to become familiar with using a think aloud strategy, and to answer any more questions my child may have. This is expected to take between ½ to 1 hour.

- I understand that in the second session my child will be asked to read two short pieces of writing and to think-aloud while they are reading, and that this will be with just them and the researcher present. This will take approximately 1 hour.

- I understand that the study will take place during normal class time, but in a separate room, and that this means that my child will miss some class time.

- I understand that my child will be videotaped while taking part in the third part of the study.

- I understand that if any of the information provided is published, this will be done in a way that does not identify my child as its source.
• I understand that my child can withdraw from the research at any time without giving a reason.

• I understand that any data provided by my child can be withdrawn at their request, and without giving a reason, up to two weeks after the video was taken.

• I understand that any information collected for this research will not be given to my child’s school or teachers, but that a summary of results will be given to the school, and that every effort will be made to protect my child’s identity in this summary.

• I understand that the data collected for this study will be held in a secure place (separate from the consent forms) at the university for up to six years, after which time video recordings will be erased and other data forms will be destroyed.

• I understand that my child can receive a summary of the results and/or a copy of their video if they wish, and that this will be sent to the school to be given to them if they request this.

Signed:
(Parent/Guardian)

Name:
(Please print clearly)

Date:

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 15 October 2008 for 3 years from 15/10/08 to 15/10/2011
Reference Number 2008/365
Appendix D: Participant Instructions

I am interested in learning about how good readers work out how to understand what they read. I want to know how you decide what to do while you are reading. You will be given a passage from a School Journal. I would like you to read this passage as if you are reading it for yourself, but for me to get to know how you make sense of what you are reading, I need you to think out loud while you are doing this. The red dots at the end of each sentence are there to help you remember to do this, but you should think out loud throughout your reading.

Please say out loud everything you are thinking and doing as soon as I give you the story. I would like to know what you are thinking and doing from the moment I give you the paper, even before you know what the title is, until you have completely finished with your reading. After you have read the story I will ask you to give me a very brief summary and what you think may happen next.

I’ll be here in case anything goes wrong with the camera, but I can’t answer any questions about the reading or help you with it.

After you have finished reading we will go over the recording and you will have the chance to tell me anything else you may have forgotten to say out loud.

Please remember that it is very important to say everything you are thinking while you are reading this text, no matter how unimportant you may think it is.
Appendix E: Text Selection Sheets and Participant Texts (Good Comprehenders)
TE MANU TARATAHI
Can a kite save a life?

THE SNAKE PIT
Locked in the loo… in Australia!

POP AND PIE
That hōhā magpie – it’s always up to no good!
Can a kite save a life?

Long ago, there was a papa kāinga caught between the blue of the ocean and the green mountains that rose behind. The people in this village knew they lived in a place of plenty. Rain fell on the hills and fed the crops, the waka often returned with bulging nets, and no shadows loomed on the horizon.

The rangatira of this village had a daughter who was both intelligent and beautiful. Her hair was shiny, her forehead high, and her brown eyes flickered like tuna in the creeks. She worked hard, and her weaving equalled that of the kuia, who took great joy in teaching her everything they knew.

Hine was eventually married, but her husband, Rewi, had no warmth. And having such a beautiful wahine by his side did not please him – it made him jealous. Over time, this envy grew into a monster, feeding on what little goodness he had.

One day, as the pink fingers of dawn reached across the papa kāinga, Rewi prodded Hine as she lay sleeping. “E oho, lazy dog! The sea is calm. It’s a good day for fishing.”

Hine rose and got dressed, her fingers brushing the smooth pounamu of her tipuna that hung around her neck. Her husband’s voice troubled her. “I shall get us something to eat,” she said “It will be a long day.”

“Kia tere!” He growled. “We’re leaving soon.”

The small waka dipped up and down in the waves as Rewi paddled determinedly out to sea. His strong strokes took them towards the small island that lay just within the limits of the horizon. Hine turned back to the shore, waving goodbye to the children playing on the beach. She watched the light playing on the water and didn’t notice that they had gone by the usual fishing ground. Finally, she asked, “Have we passed the tauranga ika? We are very near that rocky island.”
Anger crossed Rewi’s face. “Don’t question me. Many kūkutai cling to those rocks.” He bared his teeth in a smile. “Take this bag and gather some.” Hine nodded, even though she sensed her husband was deceiving her.

She was clinging to the dark rocks that cut her hands, plucking mussels to put in her bag, when she heard the cold slap of the paddle. Hine watched in terror as the waka disappeared over the waves. “Aieee!” she shouted. “Why are you leaving?”

That night, the villagers mourned their tragedy. The wharenui was filled with wailing as the people sat around the cloak of the daughter they had lost. The rangatira sat with his eyes closed, haunted with thinking of his tamāhine’s face as she was swept overboard by the monster wave. They had dragged Rewi up onto the beach that afternoon, weak from his struggle. Gasping for breath, he told of how the unforgiving sea had dragged his wife down.

Far away, alone with the howling wind, the rangatira’s daughter shivered with cold. With an aching heart, she waited for the dawn.

At first light, Hine was woken by a seagull’s screech. She watched as it floated calmly on the breeze, barely moving it’s wings. The bird reminded her of something she had done as a child, of playing with the wind. It gave her an idea. She would leave this island. She wouldn’t die here alone.

Stretching her stiff legs, Hine set about searching for the things she needed. She scrambled to the top of the small cliff that rose on this side of the island, and there, in a small hollow, she saw the plants. Clumps of green ribbons rustled in the wind, and nearby was the cutty grass, with its feathered stalks. Hine hurried back to the beach, giving silent thanks to the gods. Using the sharp edge of a mussel shell, she quickly got to work, grateful she’d watched so carefully when the kuia had taught her how to build a kite.

With nimble fingers, Hine made a frame in the shape of a spearhead, the feathers of the stalks pointing outwards from the corners. She made thread by splitting the green leaves with her thumbnails, binding some dried strands across the stalks, and lacing a handful at a time until
she’d covered the whole frame. · Now Hine turned her attention to weaving a long length of rope. · She joined the rope to the centre of the kite and took off the pounamu that hung from her neck. Brushing the warm stone against her lips, she tied the gift of her ancestors to the frame and climbed to the top of the hill. · The sun had only just reached the highest point in its path.

Back at the papa kāinga, the children sat on the beach throwing pebbles into the sea. · They were too sad for games. · One boy sat apart from the others. · For some time, he had been watching a speck hovering above the island. · There was something strange about its shape. · Now it seemed to be getting closer, borne by the wind that blew onshore. · “What kind of bird is that?” he called.

The other children stopped throwing their stones and started to watch. · The shape got closer and closer. · “That isn’t a bird,” one of them cried. · “Look it has a rope. · That’s a manu taratahi.”

The kite flew overhead, past the children and the sand dunes, and floated above the village. · Suddenly the wind dropped, and the kite drifted gently to the ground in front of the rangatira’s whare. · The children chased after it, their voices raised.

In his whare, the rangatira slowly lifted himself from the mat. · “Who makes such a noise at a time like this?” he bellowed. · He came to the doorway and saw the kite, which lay at his feet, surrounded by the excited children. · One of them spoke.

“This came from the island. I saw it.”

The rangatira bent down to take a closer look. · There, tied to the frame, was something he recognised. · It was the taonga of his forebears. · The polished pounamu he had given his daughter on her wedding day. · He loosened the stone, and with a voice like thunder, called for his warriors.
Alice huddles on the seat, her eyes firmly fixed on the dark corner. Something’s just moved there. She’s sure of it. Something big and black and hairy. She edges to the right. That gives her about 2 centimetres before her shoulder buts against the rough wall. Her hand lands on something soft, and she snatches it away. The toilet paper thuds to the floor.

“Why can’t they have an inside toilet like normal people?” she mutters as she stretches her hand towards the paper. But it’s too hard to reach. She inches forward, keeping one eye on the dark shape, and finally touches her fingers to the roll.

There’s a scuttling noise and a monstrous shiny cockroach darts across the floor. Alice lets out a yelp. The cockroach runs blindly into a waiting web, and the spider hurries in for the kill.

Alice grabs the toilet paper. She’s done in record time, and her hand is on the latch before the paper even hits the bottom of the pit. And that’s where her hand stays. She jiggles the latch, then pushes on the door but it’s firmly locked.

Outside, there’s a giggle.

Alice’s heart sinks. She should have known. She’d seen her cousins hanging around but was too rushed to worry about it.

Her eyes dart back to the spider. It’s bigger than Alice first thought, intent on its prey like a busy chef.

“Open the door!” she shouts.

“What’s wrong Alice?” comes Michael’s voice. “Having a bit of trouble?” “Ha, ha, “ says Alice. “You got me – now open the door!”
The spider finishes wrapping its dinner and moves to the top of the web. Is it eyeing Alice for next?

“We haven’t done anything to the door,” insists Michael. “You have to use the screwdriver.”

“The screwdriver?”

The spider twitches. A trail of ants crawls through a crack in the wall. Why does Australia have so many creepy-crawlies?

“Yeah, the screwdriver,” says Michael, hardly able to contain his laughter. “The latch broke. You have to jimmy it with the screwdriver.”

“Where is it?” Alice bangs her hand on the door. Her skin is crawling. The smell from the hole is sinking through to her bones. The ants find a wet patch on the floor and swarm over it like bees on honey.

“Didn’t you take it with you?” asks Michael.

“No,” says Alice. “No one said anything about a screwdriver.” There’s a scurrying noise behind her, and she looks nervously over her shoulder. Mice?

“Here it is, still hanging on the hook.” Jo’s voice, oozing innocence. “Shall I pass it in?”

“Yes please.” Alice is starting to sweat. The spider’s moved to the bottom of the web and is busy weaving a gate across the crack in the door. “Now if you don’t mind,” she adds.

“Heads up,” says Jo. “Or should that be bottoms up?”
Alice sees the end of the screwdriver poking through the gap at the top of the dunny door. She reaches up, but next thing she knows, the screwdriver’s flying towards her head. She ducks.

The screwdriver lands with a thud. Alice watches as it rolls over the edge and lands with a splash at the bottom of the pit. “It’s gone down the hole!” She yells, stamping her foot in frustration. Gales of laughter pound through the walls. Her cousins are wetting themselves.

Then she hears another sound that sends a chill straight to her heart. A strident hiss that can only mean one thing.


Alice stands very still. The noise is coming from the pit. Can snakes swim? Can they climb? She squeezes closer to the door. Her leg touches the sticky strands of the spider’s web, but she doesn’t care. She sees something move behind the seat.

Alice feels like she’s swallowed an elephant, but something registers in her mind. She grabs the pen from her pocket and jams it in the door latch. Her breath is loud in her ears. She glances back at the hole. Is something moving?

She wriggles the pen and gives the door a shove, and the latch gives way. Alice scrambles away from the dunny and turns to face Aunt Maya. “It’s in there… behind the…” She stops, seeing the grins on her cousins faces.

“What are you talking about?” asks Maya.

“The snake, I saw it…”
“Oh you poor thing” says Aunt Maya, hiding a smile. · “Didn’t Michael tell you?” · She frowns at him. · “It’s Bluey, our blue-tongued lizard. · She sometimes goes in there to look for insects.” ·

Alice doesn’t say anything. · Her mind has jumped ahead to the next school holidays, when it’s her cousins’ turn to come and stay in New Zealand. · Already, she has the perfect plan. ·
That hōhā magpie – it’s always up to no good!

Our grandpop grows gigantic vegetables. Sometimes he even wins prizes for them in the show. Pop feeds his vegies a really stinky brew of animal manure and possum carcasses. He mixes everything up with water in an old washing machine bowl that he scavenged from the tip.

Pop doesn’t grow lawns and flowers. “You can’t eat those,” he says, sitting under the totara tree. “I’m not wasting my good stink-tank on grass!” He wipes the sweat off his face with an old hanky. “That’s a good day’s work there,” he tells us, looking at his garden. Then he reaches up, pulls on a string that’s dangling into the water tank, and acts surprised when he finds a bottle of beer tied on to the other end.

“Well I’ll be! Waipiro! Someone’s stocked up my fridge,” he laughs.

This summer, Pop’s garden was going well – at least it was at the start. Then his friend the vet gave him a magpie and everything changed.

“Ka pai!” Pop said at first. “I’ll call her Pie, and she can help me in the garden. She can clean up those hōhā woodlice and looper caterpillars and thrips and mealy bugs.”

We thought pop would get a cage for Pie but he said, “No way! I’ll just clip the feathers on one of her wings, and she can have the run of the whole garden. Big birds aren’t born to be caged, not even imports from Australia.”

But Pop was just asking for trouble.

“That Pie!” he complained one day. “I planted two dozen cabbage seedlings and I turn around, and she’s pulled them all out!”

“Maybe you should build her a cage, Pop we said.”
“Nope,” he said. “That wouldn’t be fair.”

Then Pie undid the knot of the string attached to the bottle in the “fridge”. Pop had to strip down to his huge, white underpants and jump right into the tank full of cold rainwater to get his bottle of beer.

“So, what about that cage?” We suggested again, but he still wouldn’t lock Pie up.

Then she scattered his pipe tobacco amongst the silverbeet. She tossed his matches into the beans and pulled the stuffing out of the old armchair. She plucked the hairs from Pop’s beard and chest when he nodded off in the afternoon sun, and she undid the binder twine that held his pants up. And then she picked holes in the enormous pumpkin that we reckoned would have won first prize at the show.

But Pop still wouldn’t get a cage.

Then, one day, Pie sat on top of the stereo that Pop was restoring and pooped right down into its works. Pop was so mad. He took everything apart so he could clean out the mess and, as soon as his back was turned, Pie pinched bits of the machine and dropped them into the stink-tank.

“That blankety-blank Pie is nothing but a vandal!” he roared. He jumped into his car. “I’m taking myself off for some peace and quiet.”

That’s when Pop found that the car keys were missing. We reckoned Pie had dropped them into the stink-tank, too!

Pop stomped off to catch a bus to town. We weren’t surprised when he arrived back an hour or two later, sitting up front with the driver of a flat-bed truck loaded with timber and wire netting.

That night, we heard Pop hammering and sawing till Mum told him to get off to bed because he was keeping the whole neighbourhood awake.
Next morning, still in our pyjamas, we raced outside. We couldn’t believe our eyes! There was this high wire-netting fence that stretched right around the garden, with a dog-leg to include the tank stand and the old leather chair under the totara tree. Inside the cage, Pop leaned on his rake, pipe between his teeth, smiling at a new straight line of lettuce plants. He looked pretty pleased with himself.

“\n
“I built myself a cage,” he told us, “and I’m not sharing it with that hōhā magpie!”
Hobnail
Scary bedtime story about a mother and daughter's night-time journey home.

The Cricket War
A family start a war with nature when they move to the country.
Hobnail

Scary bedtime story about a mother and daughter's night-time journey home.

Sandra Poteet sat cross-legged on her Uncle John's front porch; her favourite rag doll clutched under one arm. The late afternoon sun shone through the leaves of the giant oak tree, casting its flickering light on the cabin. This golden motion of light entranced the child and she sat with her face turned upward, as if hypnotised. The steady hum of conversation flowed from inside of the cabin.

"Ellen, I'm sure happy that you came to church with us today. Why don't you spend the night? It's getting awfully late and it will be dark before you make it home."

"I'll be fine Sally," replied Sandra's mother. "Anyhow, you know how Nigel is about his supper. I left plenty for him and the boys on the back of the stove, but he'll want Sandra and me home. Besides, he'll want to hear if Sam Bosworth's wife managed to drag him into church."

The laughter that followed her mother's statement broke the child's musings and she stood up, pulled her dress over the protruding petticoat, and stepped inside.

"Get your shawl Sandra. When the sun goes down, it'll get chilly."

As the little girl went to the chair by the fireplace to retrieve her wrap, her uncle came in from the back with a lantern.

"You'll need this Ellen. The wick is new and I've filled it up for you."

"I appreciate it Johnny," Ellen said. "I'll have Nigel bring it back when he goes to town next week."

Ellen kissed her younger brother good-bye and hugged Sally gently. Patting her sister-in-law on her swollen belly, she said, "I'll be back at the end of the month. Don't be lifting anything heavy. If that queasy feeling keeps bothering you, brew some of that mint tea I left in the kitchen. Lord knows I've never seen a baby keep its mammy so sick as much as this one has. It's a boy for sure."

Upon hearing this, Sandra frowned. She was the youngest in her family, and the only girl. After living with four brothers, she had prayed fervently to God every night for Him to let her aunt have a girl. The only other comfort she had was the pretty rag doll that her mother had made for her. Tucking the doll under her left arm and gathering the shawl with the same hand, she stood waiting patiently. Aunt Sally kissed her lightly on the cheek and squeezed Sandra gently. "If I have a girl, I hope that she will be as sweet as you," her aunt
Uncle John patted her on the head and said, "Bye Punkin. When that old momma cat has her kittens, I'll give you the pick of the litter."

This brought a smile to Sandra's face and swept away the darkening thoughts of boys.

Ellen secured her own shawl about her shoulders and tossing one side around and over again, picked up the lantern, which had already been lit. Taking Sandra's right hand, the pair proceeded on the three-mile trek back home.

Heavy rains during the last week had left the dirt road virtually impassable for anyone on foot. Ellen and her daughter would return home the way they had come, by following the railroad track.

The track was about one half mile above the road. It wound and wound around the mountains and through the valleys carrying the coal and lumber, which had been harvested from the land. Once on the track, they proceeded in the direction of their own home.

Ellen began to tell Sandra about the trains and all of the distant places they went to. The little girl loved hearing her mother's stories of all the big cities far away.

She had been to town only a few times and had never travelled outside of Wise County. Sandra remembered her papa talking about his brother Jack.

Uncle Jack had left the county, as well as the state of Virginia. He was in a faraway place called Cuba, fighting for a man called Roosevelt.

She wondered what kind of place Cuba was, and if it was anything like home.

The sun's last rays were sinking behind the tree-studded mountains. Shadows rose ominously from the dense woods on both sides of the track. Rustling sounds from the brush caused Sandra to jump, but her mother's soothing voice calmed her fears.

"It's all right Child; just foxes and possums."

A hoot owl's mournful cry floated out of the encroaching darkness and Sandra tightened her grip on her mother's hand.

Finally, night enveloped the landscape, and all that could be seen was the warm glow of the lantern and the shadow of the figures behind it. It was a moonless night, and the faint glow of a few stars faded in between the moving clouds. Sandra tripped over the chunks of gravel scattered between the ties and Ellen realized that her daughter was tired.

"We'll rest awhile child. My guess is that we have less than a mile to go."

Ellen set the lantern down and the weary travellers attempted to get comfortable sitting on the rail.

"Mammy, it's so scary in the dark. Will God watch over us and protect us?"
"Yes, Sandra. Remember what that new young preacher said in church today. The Good Lord is always with you, and when you need His strength, call out His name. Better still, do what I do."

"What's that mammy?"

"Well," Ellen said, stroking her daughter's hair," I sing one of my favourite hymns."

While contemplating her mother's advice, Sandra was distracted by a sound. The sound came from the direction they had travelled from, and the girl's eyes peered into the ink like darkness. It was very faint, but unlike the other noises she had grown used to along the way. The slow methodical sound was someone walking, and coming in their direction.

"Mammy, do you hear that?"

"Hear what child?"

Sandra moved closer to her mother and said, "It's somebody else coming!"

Ellen gave her daughter a comforting hug and replied," You're just imagining things Sandra. We've rested enough. Let's get on home. Your papa will be worried."

Ellen picked up the lantern, took Sandra's hand, and the two resumed their journey. After a while, the sound that had unnerved the little girl began again. This time the steps were more distinct, and definitely closer. The distant ringing of heavy boots echoed in the dark.

"Mammy, I hear it again!"

"Hush child."

Ellen swung the lantern around.

"See, there's nothing there."

Sandra secured the grip on her mother's hand and clutched her rag doll tightly. The hoot owl continued its call in the distance, and the night breeze rustled the leaves in the trees.

"The air sure smells like rain," said Ellen. "The wind is picking up a mite too. We'll be home soon, little girl. Yonder is the last bend."

Sandra found comfort in her mother's voice, but in the darkness behind them, the steps rang louder. It was the sound of boots, heavy hobnail boots.

"Mammy, it's getting closer!"

Ellen swung the lantern around again and said, "Child, there's nothing out there. Tell you what; let's sing "Precious Lord".
Sandra joined in with her mother, but her voice quivered with fear as the heavy steps came closer and closer. She couldn't understand why her mother seemed oblivious to the sound.

Ellen's singing grew louder, and up ahead the warm glow of light from their own home glimmered down the side and through the trees. A dog barking in the distance brought the singing to an abrupt end.

"See child, we're almost home. Tinker will be running up to meet us. Big old Tinker. He's chased mountain lions before. He'll see us safely home."

"Let's hurry then Mammy. Can't you hear? It's closer and I'm scared. Let's run!"

"All right child, but see, I'm telling you there's nothing there."

Ellen made another sweep around with the lantern and as they proceeded she cried out, "Here Tinker! Come on boy!"

The dog raced up the path leading to the track and the two nearly collided with him as they stepped down on the familiar trail to home.

"Ellen, is that you?"

Sandra's heart filled with joy as her father's voice rang out of the darkness.

"Yes Nigel. I'm sorry we're so late. I'm afraid I walked a bit fast for this child. She's worn out."

Elijah picked up his daughter and carried her the rest of the way home. Once inside of the cabin, Ellen helped Sandra undress and gently tucked her in bed.

The comforting sounds of her parents' voices drifted from the kitchen. Even the snores of her brothers in the back made her smile and be thankful that she and her mother were safe and sound. Before closing her eyes, her mother's voice rang in her ears.

"Nigel, I heard the steps. I didn't want to frighten the child. I kept singing and swinging the lantern around and telling her there was nothing to be afraid of. But Nigel, just before we got off the tracks, I turned the lantern around one last time. That's when I saw what was following us. I saw the figure of a man. A man without a head!"
A family starts a war with nature when they move to the country. They picked a fight the minute they invaded our cellar. Dad didn't care for bugs much more than Mamma, but he could tolerate a few spiders and assorted creepy crawlers living in the basement. Every farm house had them. A part of rustic living, and something you needed to put up with if you wanted the simple life.

He told Mamma: Now that we're living out here, you can't be jerking your head and swallowing your gum over what's plain natural, Ellen. But she was a city girl through and through and had no ears when it came to defending vermin. She said a cricket was just a noisy cockroach, just a dumb horny bug that wouldn't shut up. She said in the city there were blocks of buildings overrun with cockroaches with no way for people to get rid of them.

No sir, no way could she sleep with all that chirping going on; then to prove her point she wouldn't go to bed. She drank coffee and smoked my father's cigarettes and she paced between the couch and the TV. Next morning she threatened to pack up and leave, so Dad drove to the hardware store and hurried back. He squirted poison from a jug with a spray nozzle. He sprayed the basement and all around the foundation of the house. When he was finished he told us that was the end of it.

But what he should have said was: This is the beginning, The beginning of our war, the beginning of our destruction. I often think back to that summer and try to imagine him delivering a speech with words like that, because for the next fourteen days mamma kept finding dead crickets in the clean laundry. Shed shake out a towel or a sheet and a dead black cricket would roll across the linoleum. Sometimes the cat would corner one, and swat it around like he was playing hockey, then carry it away in his mouth. Dad said swallowing a few dead crickets wouldn't hurt as long as the cat didn't eat too many. Each time Mamma complained he told her it was only natural that we'd be finding a couple of dead ones for a while.

Soon live crickets started showing up in the kitchen and bathroom. Mamma freaked because she thought they were the dead crickets come back to haunt, but Dad said these was definitely a new batch, probably coming up on the pipes. He fetched his jug of poison and sprayed beneath the sink and behind the toilet and all along the baseboard until the whole house smelled of poison, and then he sprayed the cellar again, and then he went outside and
sprayed all around the foundation leaving a foot-wide moat of poison. · Stop them son of a bitches right in their tracks, he told us.

For a couple of weeks we went back to finding dead crickets in the laundry. · Dad told us to keep a sharp look out. · He suggested that we'd all be better off to hide as many as we could from mamma. · I fed a few dozen to the cat who I didn't like because he scratched and bit for no reason. · I hoped the poison might kill him so we could get a puppy. · Once in a while we found a dead cricket in the bathroom or beneath the kitchen sink. · We didn't know if these were fresh dead or old dead the cat had played with and then abandoned. · Dad cracked a few in half to show us that they were fresh. · Then he used the rest of the poison to give the house another dose. · A couple of weeks later, when both live and dead crickets kept turning up, he emptied the cellar of junk. · He borrowed Uncle Burt's pickup and hauled a load to the dump. · Then he burned a lot of bundled newspapers and magazines which he said the crickets had turned into nests.

He stood over that fire with a rake in one hand and a garden hose in the other. · He wouldn't leave it even when Mamma sent me out to fetch him for supper. · He wouldn't leave the fire, and she wouldn't put supper on the table. · Both my brothers were crying. · Finally she went out and got him herself. · And while we ate, the wind lifted some embers onto the wood pile. · The only gasoline was in the lawn mowers fuel tank but that was enough to create an explosion big enough to reach the house. · Once the roof caught, there wasn't much anyone could do.

After the fire trucks left I made the mistake of volunteering to stay behind while Mamma took the others to Aunt Gail's. · I helped Dad and Uncle Burt and two men I'd never seen before carry things out of the house and stack them by the road. · In the morning we'd come back in Burt's truck and haul everything away. · We worked into the night and we didn't talk much, hardly a word about anything that mattered, and Dad didn't offer any plan that he might have for us now. · Uncle Burt passed a bottle around, but I shook my head when it came to me. · I kicked and picked through the mess, dumb struck at how little there was to salvage, while all around the roar of crickets magnified our silence.
Appendix F: Text Selection Sheets and Participant Texts (Poor Comprehenders)
Bits in a jar
I didn’t know tonsils could be so big, until I saw mine in the jar!

Sports Day
It’s sports day, and Hine doesn’t know what to say to her mum.

Drawing Horses
Draw an outline – and let reality fill in the rest.
Bits in a jar

I didn’t know tonsils could be so big, until I saw mine in the jar!

Last year I had to get my tonsils out. Every now and then, the inside of my throat would get sore and swell up. The doctor said they would to be taken out. Mum booked me in for the operation, and months later a letter arrived in a brown envelope.

It was to tell us that the next week I had to go into hospital. Mum and Dad kept telling me not to worry, but really, I was quite looking forward to it.

The day after the letter arrived, I told my teacher, Mrs Thompson. She told me not to worry, and to ask the doctor to put my tonsils in a jar for the science corner. Of course I said I would.

The weekend just flashed by, and before I knew it I was in the car, on my way to hospital.

“How do you feel?” asked mum.

“OK,” I said. “Mrs Thompson wants my tonsils for the science corner.”

“Oh yuck!” said Mum. “What does she want them for?”

“They’re educational,” said Dad. “Let all the kids see what they look like!”

Mum still didn’t look too sure. “I suppose so.”

I was in hospital for two days. I can’t remember much about what happened in there. I was pretty sore after the operation, but I do remember lots of ice cream.

Dad came to pick me up in the car. “Well, how are you feeling? Will you be fit for school next week?”

“School! OH NO!” I said. “I forgot to get my tonsils for Mrs Thompson!”
Dad smiled.  “Don’t worry, I’ll nip back later and get a couple of spare ones from the hospital.”

When I got home, Mum made a bit of a fuss of me.  It was great!

On the morning when I started school again, Dad gave me a piece of card and a felt pen and told me to write a notice for the tonsil jar.  I remembered about the tonsils then, and asked if I could have a look at them.  He told me that they were in the boot and that I’d have to be patient.

When Dad dropped me off at school, he carried the tonsil jar into the classroom for me.  No one else was there, and Dad seemed to be in a hurry, so we placed the jar in the science corner and I put my notice beside it.  Dad said goodbye and rushed off.

It was then that I had a good look at the tonsils.  They were pink and grey and red and I couldn’t believe that things like that were cut out of me!  I heard the bell go, and in next to no time all the kids in the class were crowded around, looking at the tonsils.  Everyone wanted to see them but nobody liked the look of them!

“How was it in hospital?” asked Mrs Thompson, over the noise.

The class went quiet.

“Good thanks, Mrs Thompson,” I replied.  “I’ve got some tonsils here.”

“Well, bring them over here and we’ll take a look at them,” and she sat on her desk.

“The jar’s a bit heavy,” I said, frightened I’d drop it.

“Heavy?” said Mrs Thompson.
She stood up and came over to the science corner. She bent closer to look at the jar. “Who gave you these?” She asked.

I told her that Dad got them for me.

She held up the eight-litre pickle jar, smiled and said, “I think someone’s been playing a joke. Tonsils are tiny things. What you’ve got here are two ox hearts. Someone’s been to the butcher, not the hospital!”

Everybody started to laugh. I could feel my face burn with shame.

“Just wait till I get home,” I thought. “I know someone who’s going to get it!”
“Good … afternoon … Mr … Foster.” · Hine pulled her bag over her shoulders and dashed from the classroom.

“Wait for me Hine!” Bernadette shouted. · “Is your mum coming to school tomorrow?” · Hine shrugged her shoulders and screwed her nose up. · “I don’t know. · She might be too busy. · I don’t care whether she does or not.” ·

“OK, see you. · There’s our car.” · Bernadette ran across to where a woman was holding the car door open for her.

Oh wow, Hine sighed. · So that’s her mother. · Oh, I wish there wasn’t any sports day tomorrow.

At home, during dinner and clearing up afterwards, Hine watched her mother everywhere she went. · “What’s the matter Hine?” Mrs Ropata asked. · “Something bothering you at school?” ·

Hine sighed again. · “No, it’s nothing mum.” ·

“Oh, I know what it is. · You think I’ve forgotten about your sports day tomorrow, don’t you? · Well, I haven’t, and I promise this time I’ll be there for sure. · I’d have come last time if Baby hadn’t been sick.” ·

“You don’t have to come if you’re too busy Mum. I … I’ll understand.” ·

“No, I said I’d be there, and that’s a promise. · Now go and have your bath.” ·

Hine’s mother kissed her quickly on the forehead, then took the ironing basket through in front of the TV. · Hine had a long bath and went to her bedroom. She lay down to think.

Suddenly she woke. · She had slept through to morning. · “Oh no!” she yelled. · “It’s tomorrow … I mean today! · Today is the sports day.” ·

“That’s right,” called Mrs Ropata. · “So you’d better hurry and get dressed, or you’ll be late. · I’m really looking forward to watching you race today.” ·
Hine dragged herself through to the bathroom. “The kids at school are going to laugh at me for sure,” she muttered, pulling a face at herself in the mirror.

“Hurry up then,” Mrs Ropata smiled. “I’ll see you at school later on.”

“You really don’t have to, Mum.”

“That’s OK love, I wouldn’t miss it for anything. Quickly now with your breakfast.”

At school, the teachers hurried the children into their teams. Then, slowly, the field filled with parents of all shapes and sizes. Hine scanned the faces to see if her mother had arrived.

“Is your mum here yet?” Bernadette nudged. Hine kept looking. “No, not yet. Well, I can’t see her anywhere, so she can’t be.”

Then, pow, as bright as day, there she was. The fattest lady in the front row. Hine ducked her head so that she couldn’t be seen.

“Eight year old girls, one hundred metre race. Line up please,” called a teacher.

Hine glanced across. Her mother was waving and calling out to her.

“Hey Hine,” Bernadette yelled from her place in the line. “That lady over there is calling to you.”

Hine turned red.

“Is that your mother?” Bernadette asked.

“Yes!” shouted Hine. “And if you say anything…”

“I wouldn’t do that. You’re my best friend, remember, and anyway, my mother’s just as fat as yours.”

Hine looked at her. “Don’t lie. I saw your mother pick you up from school yesterday.”

Bernadette screwed up her nose and giggled. “That was my aunty, not my mother. There’s my mother over there.”
Hine gasped in disbelief. “Really Bernadette? No lies?”

“Really. You watch.” Bernadette raised her hand and shouted across to a fat woman standing at the front of the parents’ area.

Drawing Horses. ·

Draw an outline – and let reality fill in the rest. ·

Horses are wonderful. · They’re so beautiful. · But I don’t have one, even though I really, really want one. · I don’t even ask. · It costs a lot of money to buy a horse and then more to feed it and pay to use a paddock. · We don’t have that kind of money. ·

What I do instead is: I draw horses. · I love to draw them. · I have a special artist’s block with stiff, thick, white paper in it. · My mum gave it to me for my birthday. · I draw my best pictures in there. · I take a lot of time and use only pencil, and I rub out really carefully so I don’t make a mess. ·

Palominos are my favourite horses. · I love their pale, caramel brown bodies and their big, dark eyes that always look just a little bit sad. · But in my drawings, I never colour in my horses. · They’re always just outlines. ·

I like to read stories about people who own horses, too. · In those stories, the girl always has a pony of her own, and all her friends have one. · It’s a different world where they live. · But I live in this world, and I’ve never even been on a horse, and I know we could never afford to buy one. ·

Then one day, my big sister asks, “Do you want to come to my friend’s place out west next weekend? · She’s got a horse.” ·

Sometimes she does things like that, my sister. · She takes me out on our own, and we do something special. ·

That week, I lie in bed every night dreaming about riding. · In my dreams, I’ve grown up and the horse loves me and when I ride it, I feel like I’m flying. ·

Then it’s Saturday and we’re heading out west on the motorway in my sister’s old bomb of a car. · I think to myself that “out west” is the perfect place for a horse to be. ·
It’s a long trip and when we get there, my sister’s friend Dianne is waiting for us. · Her old clothes are dusty with horse feed, and she smells like the outdoors: sweet like grass and manure. · Dianne’s friendly, but she and my sister are both a lot older than me, and I don’t say much.

We go out to the field, and there’s Dianne’s horse, Bounce, chomping on tufts of green grass. · Dianne doesn’t call to him or anything, like they do in the books. · She has to run around the field and play cat-and-mouse games until she catches him. · Then she walks him over and asks if I’d like a ride.

This horse doesn’t look sad or friendly – or like it wants to be my friend. · He has a mean look in his eye. · And he’s huge. Well, I guess not huge, but I’m short for my age, and looking at a picture of a horse in a book is a lot different from looking up at one standing next to you.

My sister and Dianne help me up onto Bounce’s back, and the ground is a long, long way down. · Dianne leads Bounce around, and I sit, stiff and nervous. · His back wobbles horribly when he walks, and even though I’m holding the reins, he doesn’t care about me. · He just wants to do his own thing.

When we’ve done one round of the paddock, I’m happy to get off. · In my relief, I hold a carrot out to Bounce. · He grabs it with his lips curled back, and I see his enormous teeth. · I’m surprised to see that my fingers are still on the end of my hand after the carrot’s been snatched away.

I say thank you to Dianne but “No, I won’t have another go.” ·

I say thanks to my sister, too, when we’ve driven all the way home. · I can see now that what I like about horses is just an outline, like my pictures.

One of my brother’s best friends comes over that evening, and I draw a picture of him in my special drawing book.
### Appendix G: Initial Coding Scheme

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<td>Disagreement from text</td>
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Appendix H: Final Coding Scheme

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