LANGUAGE MINORITY STUDENTS WITH POOR AND GOOD READING COMPREHENSION SKILLS: READING-RELATED PROCESSES AND USE OF READING STRATEGIES

by

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B.A., Universidad de los Andes, 2000

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

The Faculty of Graduate Studies

(Special Education)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

June, 2012

Abstract

Few studies have focused on the comprehension performance of language minority (LM) students and their findings are mixed. Some studies show that reading comprehension is an area of weakness and academic difficulty for LM students whereas others show the language status does not make a difference in reading comprehension performance. Various sources of difficulty LM students experience in reading comprehension have been described. The primary purpose of this study was to examine the similarities and differences between LM good and poor reading comprehenders in terms of their reading-related linguistic and cognitive skills, and their use of reading strategies. A descriptive multiple-case study comparing three poor reading comprehenders to six good reading comprehenders attending grade 6 and matched by gender, age, school, years of schooling in English, and years living in Canada was conducted. Comparisons were made in relation to their language proficiency, word-level reading skills, verbal working memory, and their use of reading strategies. The results indicated that the LM poor reading comprehenders obtained lower scores in measures of morphological awareness skills, word reading accuracy and efficiency, and vocabulary when compared to the good comprehenders. No differing patterns were found for non-word reading skills, syntactic awareness and working memory. As for the use of reading strategies, the poor and good comprehenders used reading strategies before, during and after a reading activity. The good reading comprehenders tended to use global reading strategies more frequently whereas the poor reading comprehenders tended to use support reading strategies more often. No difference was found between the poor and good comprehenders in the use of

problem solving reading strategies. Having an explicit goal to perform after reading did not help the overall reading comprehension performance of participants but it promoted their use of reading strategies. Weaknesses in reading basic skills and higher-order skills seem to be sources of difficulty related to the reading comprehension failures of LM struggling comprehenders in this study. Future research should examine whether and how the direct teaching of morphological skills and strategic reading could help the reading comprehension performance of LM students.

Preface

This study was conducted solely by the graduate student, under the advisement of her research co-supervisors. The graduate student conducted most data collection and was responsible for recruitment, analysis, and writing. This thesis is therefore representative of her work as the primary researcher and lead author. The UBC Behavioural Research Ethics Board found this study to be acceptable on ethical grounds for research involving human subjects. The Ethics Certificate Number was H09-01499.

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Acknowledgements

I would like to thank my research co-supervisors, Drs. Linda Siegel and Nancy Perry, for their encouragement and support throughout my Master's program, as well as for their time, insightful feedback, and guidance in my development as a researcher and in the process of completing this study. It has been a pleasure working and learning with both of you. I would also like to thank the external examiner, Dr. Lee Gunderson, for sharing with me his vast knowledge about language minority students.

I wish to express my deepest gratitude to the participating children for their precious collaboration, time and commitment. I would also like to acknowledge the teachers and administrators from the schools who took part in this study for supporting my project. Thank you to Kathryn Thompson who helped me with data collection. I would like to thank to the Faculty of Education Graduate Student Research Grant for funding this study.

Special thanks to my family and friends whose support was priceless. Last, but by no means least, I want to thank Oliver for his love, patience, and determined support of me, as well as for all the care-giving hours he devoted to Simón while I was completing my program and research.

To Oli, Simón and Tomás

Chapter 1: Statement of the Problem

The literacy performance of the growing language minority (LM) population in Canada, and specifically in British Columbia, supports the need for studies that provide evidence to understand the characteristics of the word and text level reading skills of this population. Language minority students come from homes in which the main language is different than the societal language (in this case, English) and who have attained some level of proficiency in that first language. They might be bilingual (proficient both in the societal language and in their first language), or have limited proficiency in the second language, or only be proficient in the second language. Regardless of their proficiency level, language minority students might also be called English language learners (ELL) or English as second language (ESL) students if they are learning English. These descriptors have also been used to refer to students whose second language proficiency is not enough to benefit from instruction in that language (August & Shanahan, 2006). This is the case within the school system in British Columbia where students with a home language other than English are designated as ESL when their oral English proficiency is low. Based on their progress and English proficiency, they receive additional services to benefit from mainstream instruction up to five years (British Columbia Ministry of Education, 2009). In the context of the present study, and to avoid confusions, the term language minority was used to describe students whose English proficiency varied but were no longer designated as ESL within the school system.

Language minority students often enter school with low proficiency in English, thereby, needing to learn the oral language, develop literacy skills, and incorporate content simultaneously (Lesaux & Geva, 2006). When LM learners are not sufficiently efficient to

catch up with their native English speaking peers on these processes, they are at risk of academic failure and of being referred for special education services. This reinforces the need for research that informs the accurate identification and assessment of struggling LM readers, as well as the design of specific instructional practices to meet their particular needs. In a knowledge-based society, having poor reading comprehension abilities beyond the primary grades can have unfavorable consequences on school achievement, access to societal resources, and occupational success. Students in upper elementary grades require the ability to analyze and comprehend complex texts to attain academic success and benefit from instruction (Lesaux & Kieffer, 2010). In fact, failure to attain at the same level of language proficiency as native speakers in literacy has been related to high rates of school drop-out, reduced job expectations and poverty among LM students (August & Shanahan, 2006; Gunderson, 2006; 2008).

Studying reading comprehension performance is a complex endeavor due to its multidimensional nature, but it is particularly intricate doing so in language minority students. This population is heterogeneous and dynamic thus controlling for all possible influencing factors is complicated, and accurate assessment practices for linguistically and culturally diverse populations are not yet well developed (Francis, 2011; Samson & Lesaux, 2009).

Reading comprehension performance, both in native and LM students, is influenced by individual factors (e.g., word-level reading skills, vocabulary knowledge, motivation, working memory, use of reading strategies, metacognition, cognitive ability) and contextual factors (e.g., demographic characteristics, instructional experience, text attributes, home literacy practices) (Geva, Gottardo, Farnia, Byrd Clark, 2009; Lesaux & Kieffer, 2010). In

the monolingual literature, two profiles of reading comprehension difficulty have been described. One in which errors in word-level reading skills (e.g., word recognition), phonological processing and language skills impede learners' ability to gain meaning from texts, and one in which specific comprehension deficits exist but word level reading skills are operational. The latter is related to higher order processes involved in comprehension, such as working memory, the use of metacognitive strategies, the capacity to analyze, integrate and synthesize information in text, and the capacity to plan and organize reading activities (Cain & Oakhill, 1999; Cutting, Materek, Cole, Levine, & Mahone, 2009; Oakhill & Yuill, 1996; Swanson & Siegel, 2001; Torgesen, 2000).

Despite its clear importance in multilingual societies like Canada, the study of reading skills in upper elementary LM students has not been extensive and little is known about the nature of reading comprehension performance or about the profile of characteristics of LM students who have comprehension difficulties (Geva et al., 2009; Lesaux & Geva, 2006; Lesaux & Kieffer, 2010; Lesaux, Lipka & Siegel, 2006; Low & Siegel, 2005; Siegel, 2008).

The findings from research focused on comprehension skills of LM students are mixed. Some studies show that reading comprehension is an area of weakness and an area of academic difficulty for this population as early as second grade through high school (García, 1991; Geva et al., 2009; Lesaux & Geva, 2006; Lesaux & Kieffer, 2010; Lesaux, Koda, Siegel & Shanahan, 2006; Verhoeven, 1990, 2000). This has been related to both the multidimensional nature of reading comprehension as well as to specific characteristics of LM students, such as their limited oral proficiency in the second language. In fact, a recent study that explores the reading comprehension difficulties among early adolescent LM

students and their English-native speaking classmates concludes that multiple sources of difficulty characterize the performance of struggling readers (Lesaux & Kieffer, 2010). However, other studies show that, as a group, LM students perform similar to their classmates who are native English speakers (oral proficiency scores in the average range although slightly lower) and conclude that language status does not make a difference in reading comprehension performance (Siegel, 2006; Low & Siegel, 2005).

Most studies examining the specific difficulties LM students face in reading comprehension focus on the role of variables such as word-level reading skills, phonological awareness, oral proficiency (i.e., vocabulary, syntactic awareness) and the influence of first language on the second language (See August & Shanahan, 2006; Geva et al., 2009 for a review). Overall, the findings of these studies are consistent and indicate that LM students and English-native speakers have similar phonological processing and word-level reading skills (accuracy), but the lack of prior knowledge and English language proficiency (i.e., vocabulary knowledge, listening comprehension, syntactic processing and morphological skills) greatly contribute to the overall difficulties LM students have with reading comprehension. Moreover, the reading ability LM students have in their home language is also related to their reading comprehension in a second language (Chiappe & Siegel, 2006; Geva & Wang, 2001; Gottardo, Yan, Siegel, & Wade-Woolley, 2001; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006; Low & Siegel, 2005; Siegel, 2008).

Few studies have examined how higher order processes involved in comprehension might contribute to a reading comprehension deficit (the second profile described in monolingual students) in language minority students. Of these, some have addressed the role of metacognition, strategic reading, and self-monitoring in the reading comprehension

performance in LM students (e.g., Anderson, 2003; Jiménez, García, & Pearson, 1995, 1996; Mokhtari & Sheorey, 2002; Sheorey & Mokhtari, 2001) and the majority of studies focusing on LM reading comprehension performance have included the contribution of working memory (See August & Shanahan, 2006; Geva et al, 2009 for a review). Overall, studies examining metacognitive awareness and the use of reading strategies indicate that both LM and English-native readers use reading strategies related to planning and monitoring their own reading comprehension but they do so differently (Padrón, Knight & Waxman, 1986; Padrón & Waxman, 1988; Sheorey & Mokhtari, 2001). Similarly, research has shown that LM successful and struggling readers use different strategies (qualitatively and quantitatively) when approaching a text (Block, 1986, Hosenfeld, 1977; Padrón & Waxman, 1988). For example, skilled readers integrate the information in the text, are more aware of the text structure, focus on the message, and activate prior knowledge more frequently than using a glossary (Block, 1986; Hosenfeld, 1977). Conversely, struggling readers use less effective strategies (e.g., looking at the glossary or copying the story) more frequently than global strategies (e.g., skimming through the text) as they lose the meaning of sentences while decoding, and reading word by word (e.g., translating) and in short sentences (Mokhtari & Sheorey, 2001; 2002). Both, LM successful and struggling readers might check the glossary to find the meaning of a word they do not know, but the skilled reader would do it once other more effective strategies have failed, whereas checking the glossary would be the first choice for a non-skilled reader (Hosenfeld, 1977).

Even though research has shown that the high quality reading instruction in Canada (specially the early systematic literacy instruction in British Columbia) has benefited language minority elementary students (D'Angiulli, Siegel & Maggi, 2004; Lesaux, Lipka &

Siegel, 2006; Low & Siegel, 2005), a study of the similarities and differences between language minority (LM) students who are either good or poor reading comprehenders at their reading-related linguistic and cognitive skills, and their use of reading strategies is relevant. It can contribute to the design of more comprehensive educational strategies to address the academic challenges these students continue facing as learners, as well as to a better understanding of the reading comprehension performance and underlying deficits in LM students. This is the purpose of my study.

1.1 Context

Canada has a high number of immigrants. In fact, Citizenship and Immigration Canada (2010a) admitted 280,681 permanent residents in 2010 of which 87.2% have a mother tongue other than English or French. The most frequent mother tongues for admitted permanent residents in that same year were Tagalog, Arabic, Mandarin, Punjabi, and Spanish (Citizenship and Immigration Canada, 2010b). As for temporary residents, Citizenship and Immigration Canada (2010c) reported 250.406 residents are still present in Canada and many of these individuals speak a language other than English or French at home.

British Columbia has the third highest level of immigration in the country, and according to the 2006 census of population, about 17.5% of residents in the province either speak a non-official language or a combination of an official language (English or French) and a non-official language (Citizenship and Immigration Canada, 2010a; Statistics Canada, 2009). According to the same census, about 41.9% of the population in Vancouver speaks a non-official language or a combination of an official and a non-official language (Statistics Canada, 2007). Thereby the amount of language minority students is high. For instance, in

the Vancouver School District, 25% of students in K-12 are ESL designated (absent or very low English proficiency) and 60% speak a language other than English at home (Vancouver School Board, 2012). Therefore, as Geva and colleagues (2009) suggested, it is of great importance to different stakeholders to understand the challenges these students may face within the educational system to inform instructional practices.

As it was outlined above, reading comprehension is a developmental process and as such, different expectations according to age/grade level must guide the understanding of the process. In general, students from late elementary on are asked to think critically about the texts they read, to form concepts from their readings, to apply their new knowledge to other contexts, and to integrate information across texts (Morsy et al., 2010). Upper elementary students are generally required to take a problem solving approach (active, effortful) when reading in order to understand texts (Gaskins et al., 2007).

Specifically, according to the current reading learning outcomes prescribed for grade 6 in British Columbia it is expected that by the end of the school year students: (a) read fluently and show comprehension and interpretation (e.g., make predictions, paraphrase main ideas, connect texts, integrate old and new information) of grade-appropriate texts, (b) understand how text structure and features help to develop meaning, and (c) use various strategies before, during and after reading to build and monitor their understanding of texts. The strategies include: setting a purpose, making connections with prior knowledge, making predictions, self-generating questions, previewing texts, visualizing, using text features, reading selectively, figuring out unknown words, prioritizing ideas, self-monitoring and self-correcting, and summarizing and synthesizing (British Columbia Ministry of Education, 2011b).

National and provincial assessments of student learning contribute to understanding the context in which the study of skills, such as reading comprehension, is going to take place. In Canada, the Pan-Canadian Assessment Program, a national assessment measuring the knowledge and skills of 13 year-old students in reading comprehension, mathematics, and science, reported that 12% of all students across Canada enrolled in English schools performed at level 1 (not meeting expectations) whereas 88% performed at level 2 (acceptable level for age group) or level 3 (higher than expected) in reading comprehension. Similarly, in British Columbia, 13% of all students perform at level 1 and 87% perform at level 2 or above (Council of Ministers of Education, Canada, 2009).

The British Columbia Ministry of Education (2011a) reported that in the provincial exams administered to seventh graders (Foundation Skills Assessment - FSA), 18% of all students assessed in the province are not yet meeting the expectations for reading comprehension and 56% of students met the expectations (minimal level). When considering the ESL status, the percentage of students not meeting expectations is higher —26% of them are not yet meeting the expectations. The same report for the Vancouver school district notes that 11% of all assessed students and 16% of ESL students are not yet meeting the expectations whereas only 53% of all assessed students in the district and 31% of ESL students are meeting or exceeding the expectations. It is important to note that the FSA performance level of 36% of all students assessed and of 54% of ESL students assessed is unknown (British Columbia Ministry of Education, 2011a). However, not all language minority students are ESL (as defined by the BC Ministry of Education) which implies that many LM students are included in the overall percentage of students not meeting the reading expectations or meeting the expectations at the minimal level.

Given that reading comprehension skills are fundamental to acquire, organize, and interpret information in and out of the school setting and to attain success in leisure activities, it would be a contribution to policy makers, educators, researchers, and families to understand the potential sources of weakness that may explain the performance on reading comprehension of language minority sixth graders in the Vancouver School district.

1.2 Overview of the study

The main purpose of this descriptive multiple-case study was examining the similarities and differences between language minority (LM) students who were either good or poor reading comprehenders.

Three principal questions guided this study:

1. How do LM students with good reading comprehension differ from LM students with poor reading comprehension in terms of their word-level reading skills, English language proficiency, and working memory?
2. How do LM good and poor reading comprehenders differ in their use of reading comprehension strategies?
3. How does having an explicit goal help the reading comprehension performance and promote the use of reading strategies in LM poor and good reading comprehenders?

Chapter 2: Literature Review

In this chapter, an in-depth review of the literature about the constructs under investigation is presented. The chapter is organized around the research questions that guided the present study. For each section, main concepts are defined and are followed by research findings in LM students.

2.1 Reading-related linguistic and cognitive skills

Reading is a multidimensional and interactive process that involves several linguistic and cognitive skills, and has as its ultimate goal the construction of meaning. Oral language proficiency plays a major role in the development and performance of the two dimensions of reading: word-level skills (i.e., word reading accuracy and efficiency, decoding) and text-level skills (i.e., reading comprehension, fluency) (August & Shanahan, 2006; Lesaux & Geva, 2006). Generally researchers agree that in alphabetic languages, such as English, the cognitive processes that are involved in reading development are phonological processing, syntactic awareness, working memory, morphological awareness, semantic processing, and orthographic awareness (Bialystok, 2007; Roman, Kirby, Parrila, Wade-Woolley & Deacon, 2009; Siegel, 2003; Shu & Anderson, 1999). Siegel claims struggling readers have severe difficulties with phonological processing, working memory, syntactic and morphological awareness, but their semantic and orthographic processing abilities are not very different from skilled readers (2003; Siegel & Mazabel, in press).

In this section reading-related linguistic and cognitive skills relevant in the context of the present study are defined (e.g., phonological processing, syntactic and morphological

awareness, vocabulary and working memory), along with their relationship to word reading in LM students.

2.1.1 Language proficiency

Oral language proficiency refers to receptive and expressive skills, along with knowledge and use of some aspects of oral language (i.e., phonology, vocabulary, morphology, grammar, discourse, and pragmatics). Research shows it plays an important role in the reading achievement and reading comprehension of LM students (August & Shanahan, 2006; Lesaux, Lipka et al., 2006; Lesaux, Koda et al., 2006).

Cummins (1979, 1981) proposed two types of language proficiency: basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). BICS refers to the language used in face-to face social and informal contexts, or in other words, to conversational fluency in English. Cummins suggests that it takes an English-language learner about 2 or 3 years to acquire BICS. Research comparing LM students and native English speakers support this and even conclude that provided good instruction this period of time can be even shorter (Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006). However, as Gunderson (2006) points out, having adequate BICS is not enough to progress at school, which requires learning content material, and comprehending texts. Instead, CALP, a more complex set of oral and written language skills used in the classrooms and texts, is necessary to learn successfully at school.

Native speakers begin their schooling with excellent BICS and continue to develop their CALP whereas LM students must acquire BICS and academic English simultaneously while learning at school, thus making it hard for them to keep up with their peers' pace. In LM students, the intensity and length of exposure to the second language will determine the

acquisition of word and text reading skills (Lesaux, Koda et al., 2006). Poor cognitive academic language proficiency is highly related to school failure and the high rates of drop-outs among immigrant students (Gunderson, 2006, 2008).

According to Cummins (2008, 2009) a second language learner will take on average a period of 5 to 7 years of exposure to English to reach grade norms in academic language proficiency (e.g., vocabulary knowledge). Even though some studies support this statement (Hakuta, Butler, & Witt, 2002; Klesmer, 1994; Thomas & Collier, 2002) the evidence is scarce since these studies differed on methodological characteristics (e.g., longitudinal vs. cross-sectional and measures used) and on the variables that were considered (e.g., socio-economic status, age of arrival, formal instruction in first language) (August & Shanahan, 2006; Lesaux, Koda et al., 2006). Regardless of how long it takes LM students to catch up with peers on their academic language, while LM students are mastering CALP they may lag behind their peers in learning grade level concepts and content. However, good instruction can help LM students to catch up with their native English speaking peers (Lesaux, Lipka et al., 2006).

2.1.1.1 Phonological processing

Phonological processing skills make use of the sound structure of language and involve two skills relevant in reading acquisition: a) the ability to associate sounds with letters or understanding grapheme-phoneme conversion rules, often known as phonics; and b) the ability to manipulate sounds in speech (phonological awareness, PA) (Siegel, 2003). Phonemic awareness is included within PA and refers to the “ability to notice, think about, and work with the individual sounds in spoken words” (Lerner & Kline, 2006, p. 377). Both PA and phonics are the basis of word recognition as children learn to decode printed

language and translate it into sounds (Lesaux & Geva, 2006). Moreover, research shows these are the most significant cognitive processes in the development of reading in English both in monolingual and language minority students (Geva & Wang, 2001; Ho & Bryant, 1997; Huang & Hanley, 1994; Lesaux, Koda, et al., 2006; So & Siegel, 1997). However, English is an inconsistent language in terms of the phoneme-grapheme relationship so words that are not predictable must be learned as sight-words (i.e., words recognized instantly and without analysis) and, as reading becomes automatic, words no longer need to be decoded but instead they develop into sight words (Lerner & Kline, 2006).

There is a positive correlation between decoding and comprehension, as skilled decoders tend to be skilled comprehenders (Gough, Hoover & Petersen, 1996). Phonological processing skills are relevant in reading comprehension given their relationship with speed of word reading. Fluency refers to the ability to read connected text fast, smoothly, automatically and with good intonation, and it draws on automaticity, which is the ability to identify single words rapidly, accurately and effortlessly (Lerner & Kline, 2006; Shaywitz, 2005). Research has consistently shown that speed and accuracy of single word reading are key predictors of reading comprehension in LM and monolingual students (Lesaux, Koda et al., 2006). In fact, Perfetti (1985) concluded that the efficiency of word reading accounted for a significant amount of variance in monolinguals' reading comprehension performance. When students are unable to read words fluently, their working memory capacity becomes overloaded trying to decode words and few attentional resources are left for reading comprehension (Woolley, 2008).

Even though there is evidence that, after receiving English reading instruction only for one or two years, LM students and native speakers have similar phonological processing and word

reading accuracy skills, it is relevant to assess word and non-word reading accuracy and efficiency in a group of LM students with good and poor reading comprehension (Lesaux & Geva, 2006). Failures in word-level reading skills could explain reading comprehension difficulties in the poor reading comprehenders.

2.1.1.2 Syntactic awareness

Syntactic awareness refers to the ability to understand the grammatical structure of the language within sentences. This is crucial for reading fluency because it helps predict the words that will come next in the sequence (Siegel, 2003). Research has shown that children with reading disabilities have poor syntactic awareness when compared to age-matched typical readers (Siegel & Ryan, 1988). Tunmer and Hoover (1992) indicated that besides aiding text reading fluency, well-developed syntactic skills allow readers to monitor their reading comprehension performance.

Given the relationship between syntactic awareness and language proficiency, it is expected that LM students with weak language proficiency will show weaknesses on this cognitive skill. For example, Da Fontoura and Siegel (1995) found that Portuguese- Canadian bilingual children (9-12 years old) whose word reading and working memory skills were similar to their native English language peers obtained significantly lower scores than the native speakers on a measure of syntactic awareness. These authors found syntactic awareness was the cognitive skill that distinguished LM and monolingual students (they also assessed working memory and word and pseudo-word reading). Measuring syntactic awareness remains crucial as it will help determine whether this factor is important in the reading comprehension performance of LM learners.

2.1.1.3 Morphological awareness

Morphological awareness refers to sensitivity to morphemes in words or, as Carlisle (1995) defined it, the "conscious awareness of the morphemic structure of words and their ability to reflect on and manipulate that structure" (p. 194). Different studies have found that morphological awareness aids word reading, spelling and reading comprehension by making word pronunciation predictable, providing consistency of characteristics of spelling, helping preserve the semantic relationships between words, easing the load on working memory, and offering a meaning-related strategy to understand texts (Chomsky & Halle, 1968; Deacon, Wade-Woolley & Kirby, 2007; Kemp, 2006; Shaywitz, 2005, Siegel, 2008). Therefore, when individuals are aware of the morphemes (roots of words and affixes) they are likely to have better decoding skills, vocabulary and reading comprehension (Kieffer & Lesaux, 2008; Shaywitz, 2005, Siegel, 2008). Arnbak and Elbro (2000) reported that children in upper elementary grades with reading disabilities improved their spelling and reading comprehension skills after receiving instruction on how to use morphology and this is supported by further research (Bowers et al., 2010; Siegel, 2008). It appears morphological awareness contributes to reading at the word and text levels over and above other reading-related variables (e.g., vocabulary, short-term memory, reading ability, verbal and non-verbal intelligence, phonological awareness and orthographic knowledge) (Deacon, 2011; Deacon & Kirby, 2004; Deacon et al., 2007; Siegel, 2008).

In one study, Siegel (2008) found no differences between ESL and English monolinguals on a measure of morphological awareness. She interpreted this null finding might be due to the high-quality reading instruction these students received. However, struggling readers in this study obtained lower scores on measures of morphological

awareness and all participants had more difficulty recognizing suffixes in pseudo-words than in real words because analyzing pseudo-words require higher levels of morphological awareness. Additionally, it was reported that the correlations between a morphological awareness task and word reading and reading comprehension measures were statistically significant. Such correlations were greater than the association between phonological and syntactic awareness tasks and word reading and reading comprehension tasks (although these were statistically significant as well). Including measures of morphological awareness in a study of language minority students seems appropriate.

2.1.1.4 Vocabulary

Vocabulary is one of the main components of oral language proficiency and it has a great influence on English reading achievement and reading comprehension (National Reading Panel, 2000). Oral vocabulary knowledge implies knowing and having access to a wide array of words and their meanings but also applying them in context (Lerner & Kline, 2006). Oral language proficiency is often assessed through measures of expressive and/or receptive vocabulary. Geva (2006) reviewed studies examining the contribution of English oral proficiency (measured with vocabulary knowledge or grammatical sensitivity tasks) to LM students' word-level reading skills and suggested that, overall, oral proficiency tasks do not predict as well as phonological processing or working memory the word-level reading skills in English. The author notes that this conclusion is more appropriate for younger than older LM students.

Research shows LM students in elementary and middle school often have limited vocabulary knowledge and it is assumed that this could put them at disadvantage, when compared to native English speakers, in reading comprehension performance (August &

Shanahan, 2006; Lesaux, Koda et al., 2006). Additionally, it has been shown that vocabulary knowledge significantly contributes to reading comprehension in English (Geva, 2006). Including a measure of expressive vocabulary knowledge in a study focusing on reading comprehension is imperative.

2.1.2 Working memory

Working memory (WM) is the ability to retain information for a short period of time while simultaneously processing incoming information and retrieving information from long-term memory. This cognitive skill is necessary for word decoding and recognition and more importantly, for reading comprehension (Siegel, 2003; Cain, Oakhill & Bryant, 2004). Readers identify words that they must remember while simultaneously retrieving information related to those words (e.g., semantic, phonological) and establishing relationships between words (e.g., inferences) in order to gain meaning from texts (Gholamain & Geva, 1999; Siegel & Ryan, 1988). In a longitudinal study with children aged 8-11 years old, Cain and colleagues (2004) found that working memory predicts reading comprehension even after controlling for word reading ability, vocabulary and verbal ability.

Some studies with LM students indicate that working memory contributes to word-identification and decoding in English (da Fontoura & Siegel, 1995; Gholamain & Geva, 1999), as well as to reading comprehension performance (Lesaux, Lipka et al., 2006; Low & Siegel, 2005). Da Fontoura and Siegel (1995) found that LM and English-native speakers with reading disabilities had similar deficits in verbal working memory performance. Thus, including a measure of working memory in a study of reading comprehension in LM students is necessary.

The reading-related linguistic and cognitive skills outlined above serve as a basis for

reading acquisition and comprehension in English but also improve with reading practice (Lesaux & Geva, 2006). Several studies focusing on the reading acquisition and performance of language minority students have used these cognitive skills as framework for understanding their literacy attainment (August & Shanahan, 2006; Lesaux, Koda et al., 2006). The profiles of language minority and native speakers who struggle at word-level reading indicate that underlying deficits and not the language status are important in word-level reading disabilities (Lesaux & Geva, 2006). Other factors such as metacognition, strategic reading and self-regulation also influence reading comprehension performance (Cain & Oakhill, 1999; Cutting, 2009; Geva et al., 2009; Swanson & Siegel, 2001).

2.2 Reading comprehension and strategic reading

It is well established that the purpose of reading is gathering meaning from the text and that reading comprehension has important implications during childhood and adolescence for effective school learning, and in adulthood for educational and occupational attainment (Locascio, Mahone, Eason & Cutting, 2010). In fact, reading comprehension is the most often assessed ability in schools around the world and the most important ability for school learning (Cornoldi & Oakhill, 1996). In this section, the concept of reading comprehension and issues related with its assessment are presented. Then, an in-depth examination of strategic and purposeful reading is provided along with a general description of how skilled reading comprehenders and struggling reading comprehenders approach texts.

2.2.1 Reading comprehension

Until recently, it was thought that the ability to decode words accurately on a page would result in reading comprehension, but it has been shown that reading with the purpose

of understanding or gaining information goes beyond decoding single words. Instead, comprehending a text requires binding the recognized words with the reader's prior knowledge of the world to construct a mental representation of the information represented by those words (Cain & Oakhill, 2006; Cutting et al., 2009; Duke, Pressley & Hilden, 2004; Lerner & Kline, 2006).

> Decoding and comprehension, then, are the two halves of reading. But the two halves are not added together. Reading does not equal the sum of decoding and comprehension, for neither decoding in the absence of comprehension, nor comprehension in the absence of decoding, leads to any amount of reading. A child who cannot decode cannot read; a child who cannot comprehend cannot read either. Literacy – reading ability- can be found only in the presence of both decoding and comprehension. Both skills are necessary; neither is sufficient (Gough et al., p. 3).

Reading comprehension is a multi-dimensional, developmental, and active process that entails various skills and depends on the interaction between the reader (e.g., reading accuracy and speed, vocabulary, background knowledge, working memory, metacognition, use of reading strategies, general cognitive skills), the text (e.g., discourse structure, content, clarity, vocabulary, organization, and syntactic complexity), and factors related to the activity of reading (e.g., motivation and instruction) (Kintsch & Kintsch, 2005; Lerner & Kline, 2006; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006; Morsy, Kieffer, & Snow, 2010). Moreover, reading comprehension should be understood within a socio-cultural context (Lesaux & Geva, 2006; Morsy et al., 2010). For instance, Sweet and Snow (2003, p. 1) define reading comprehension as "the process of simultaneously extracting and constructing meaning" By extracting, the authors mean that print represents words that should be

accurately and efficiently decoded to access their meaning; by constructing, the authors mean that when isolated words' representations are put together, the reader builds new meanings by integrating new with old information. Thus, comprehending individual words does not by itself guarantee the understanding of a sentence or a paragraph. Comprehension requires readers have oral language skills and activate and use background knowledge (Kintsch & Kintsch, 2005; Lesaux, Lipka et al., 2006). However, prior knowledge activation and use is insufficient for a reader to be able to comprehend from a text. Readers must be strategic and use metacognition as well as be motivated in order to be successful comprehenders (Pressley, 2002). Consequently, reading comprehension involves interaction and engagement between the text and the reader (RAND Reading Study Group, 2002).

Reading comprehension involves different language skills related to reading at the word, sentence and text level. Accuracy, fluency, morphological awareness and vocabulary knowledge are necessary skills at the word level whereas syntactic awareness is more relevant at the sentence level. All of these linguistic skills have been widely studied across the life span both in correlational and longitudinal studies with native English speakers and have been shown to be central to successful reading comprehension (Cain & Oakhill, 2006; Cutting et al., 2009; Torgesen, 2000). Efficiency in these skills leaves spare resources for higher-level processes such as working memory, the capacity to generate inferences, integrate information, and monitoring of comprehension required at the text level (Cain & Oakhill, 2006; Pressley, 2002). Therefore, for reading comprehension to occur, initiative, planning, and strategic organization enable the reader to monitor and take control of gathering meaning from the text (Gaskins, Satlow & Pressley, 2007).

2.2.2 Assessment of reading comprehension

Reading comprehension is a complex process, so its measurement is not a simple task that can be accomplished through the use of a single test. The assessment of reading comprehension should be multifaceted. A variety of developmentally appropriate tools should be used to measure skills that influence reading comprehension (e.g., word-level reading and language processing) (Morsy et al., 2010; Woolley, 2008).

There are several commercial reading comprehension measures with different characteristics to serve diverse purposes depending on the components of reading comprehension an examiner wants to target (e.g., a cloze test taps more on decoding than a multiple choice one) (Cutting & Scarbourough, 2006; Francis, Fletcher, Catts, & Tomblin, 2005). Woolley (2008) notes that awareness of the strengths and limitations of the instruments is needed in order to select appropriate assessment tools and interpret their scores. For instance, reading comprehension measures vary in the number and range of assessed skills (e.g. vocabulary, strategies), the activity through which examinees show their comprehension of a given text, and the theoretical constructs underlying them (Cutting & Scarborough, 2006; Morsy et al., 2010). Tests may involve oral or silent reading of short or long passages, answering open-ended or multiple choice questions about passages in written or oral format (seeing the text or not), selecting a picture according to a text, or completing sentences in cloze-type tasks. Besides these, a measure may be time constrained or not, and ask for literal, inferential or critical answers from students to demonstrate their comprehension of a given selection (Keenan, Betjemann & Olson, 2008).

Comparative studies of the most popular (in research and clinical practice) reading comprehension measures examined whether these instruments were assessing the same

components of reading comprehension at different ages (Cutting & Scarbourough, 2006; Keenan et al., 2008). The authors noted that given the multi-dimensional nature of reading comprehension, the instruments they reviewed made different demands on the assessed component skills of reading comprehension (e.g., decoding, listening comprehension, oral language proficiency) and even some measures assessed different skills according to the age and reading ability, so they should not be used interchangeably. Additionally, Cutting and Scarborough (2006) concluded that cognitive factors, such as intelligence and verbal memory, did not predict comprehension scores for the reading comprehension measures they reviewed.

Some reading comprehension measures are better for screening or diagnosing than others, while a few measures are considered hybrid because a wide range of skills and specific levels of comprehension are assessed (e.g., Stanford Diagnostic Reading Test) (Morsy et al., 2010). The suitability of a selected measure would vary according to the context in which it is used.

With the idea that reading comprehension is a developmental process, tests will have different characteristics (e.g., text complexity and specialization) and will require different skills from the examinee. For example, a valid (ecologically speaking) and useful (instructionally wise) reading comprehension for sixth graders in British Columbia should include a range of selections, such as informational and narrative texts, promotional texts, newspaper articles, written instructions for simple procedures, as these are the types of materials these students encounter regularly (British Columbia Ministry of Education, 2010b). Accordingly, these students are frequently asked to perform a variety of tasks while they read (e.g., interpret and analyze information, make notes, create visual representations,

participate in discussions, write reports, summarize and paraphrase, respond to written or oral questions) (British Columbia Ministry of Education, 2010b). Therefore, an appropriate reading comprehension measure would reflect these requirements.

Often, standardized reading comprehension tests provide one score to be interpreted as the performance level of a given student which is not very informative for instruction. Conversely, informal measures, such as reading inventories, tracing methods or talk-aloud protocols are the most informative for teachers, as they provide an insight on the reading comprehension process in context (Snow, 2003). Perry and Winne (2006; Perry, Thauberger & Hutchinson, 2010) describe tracing as a methodology for gathering data about complex cognitive operations that occur when learners interact with content. For example, a student who highlights headings and main ideas in a text has left a trace to indicate s/he perceives those features of text are important. Using a reflective metacognitive survey focusing on the students' awareness of their reading comprehension process is one way to understand in context how a given student approaches a reading comprehension task. However, informal measures tend to have low reliability across testing sessions and examiners. Woolley (2008) suggests that combining various formal and contextualized instruments at different stages with a clear purpose would address the aforementioned limitations.

2.2.3 Strategic reading

As it was outlined above, research on monolingual students suggests that reading comprehension difficulties can arise for distinct reasons, which include, but are not limited to, word-level reading skills and oral proficiency. Gaskins and colleagues (2007) suggest that planning, directing, selecting and coordinating the processes needed to accomplish the comprehension purposes, including the use of reading strategies, are relevant skills related to

reading comprehension performance.

The literature says that good reading comprehenders have adequate goal setting skills, they make a plan for action before reading a text and make use of strategies before, during and after reading, to attain the goal of gaining meaning from the reading material. Planning refers to the identification and organization of the steps and elements needed to achieve a goal. It involves decision making and the development of strategies (Dawson & Guare, 2004; Lezak, Howieson & Loring, 2004). To be able to plan, a person must look ahead (conceptualize changes from existing conditions), consider alternatives, weigh and make choices, think about the sequence and hierarchy of steps needed to give direction to the plan itself, carry out the plan, and self-monitor the outcomes' effectiveness (perceive mistakes, self-correct them and regulate behaviours). Additionally, a good planner requires impulse control, self-regulation, good working memory and sustained attention (Lezak et al., 2004; Unterrainer & Owen, 2006).

Goal setting is an important aspect of taking a strategic approach to learning (Schunk, 2003). Academic activities are often related to a performance goal (e.g., answer text questions) and strategic students set personal goals (e.g., learning a skill, gaining knowledge, getting the work done, obtaining good grades) at the outset of the task to keep them motivated to work (Dweck & Legget, 1988). As the activity progresses, students monitor their performance and make use of strategies to help them reach their goal. Locke and Lathan (1990) suggest that goals (internally or externally set) must have certain characteristics to enhance learning and motivation. Specific goals with clear performance standards facilitate self-monitoring, are engaging and promote achievement. Short-term (proximal) goals are achieved quickly and, therefore, students engage and put extra-effort to accomplish them.

Challenging but attainable goals increase motivation and students put more effort into reaching them. In certain academic tasks providing goal progress feedback is useful to promote self-monitoring and achievement (Schunk, 2003). For example, in a reading comprehension task it is difficult for students to assess whether their understanding is as expected or not, thus when the teacher provides progress feedback, students may decide to continue using or modifying the selected strategies to comprehend the text.

Self-monitoring is an important component of planning, Dawson and Guare (2004) define it as part of the metacognitive skills: 'the ability to stand back and take a bird's-eye view of oneself in a situation. It is an ability to observe how you problem solve" (p.1). Pressley and Ghatala (1990) define monitoring as "activating and deactivating other processes, as a function of on-line evaluation of thought processes and products as they occur" (p 19).

Metacognition is understood as the awareness of one's own thinking processes occurring in the moment ("I am struggling to understand this text, I won't remember what it says") and in the long term ("I know good strategies to help me understand what I read") (Pressley, 2002). Perry and Winne (2006; Perry et al., 2010; Winne & Perry, 2000) define metacognition as the learners' awareness of their strengths and limitations in relation to the demands of a task, and their ability to formulate and apply strategies to optimize learning in a given situation. These authors suggest that self-regulated learners tend to report high self-efficacy or at least accurate efficacy for performing tasks and define self-efficacy as a judgment made in advance of action about the likelihood of being successful in a particular situation.

Therefore, metacognition and self-efficacy are crucial to success on academic tasks and to maintain motivation to learn. The skill set and knowledge the individual has about the academic task, the value assigned to that activity and the task characteristics (e.g., outcome expectations, feedback) influence how efficacious a person feels about that task. Flavell (1978) described two dimensions of metacognition, one related to the reader's knowledge regarding his/her own cognitive skills and limitations and how these match with the reading situation (How am I doing?), and another one related to the regulation of cognition. So, if a reader knows what is needed to perform, it is likely that s/he will take a strategic approach to effectively cope with the reading situation.

Perry, Nordby and VandeKamp (2003) suggest that self-regulated, metacognitive and strategic learners have high efficacy for learning and attribute outcomes to factors they can control (e.g., effort and effective use of strategies) allowing them to be successful both in and beyond school. Research shows (Perry, VandeKamp, Mercer & Nordby, 2002; Valentin, 2005) that learning improves when metacognitive skills are included in classroom instruction. Reading comprehension and memory of the text is more successful when children are explicitly taught to take a strategic approach to reading, that is, taught to plan, prioritize, organize, self-check, and self-assess (Duke et al., 2004; Gaskins et al., 2007; Pressley, 2002).

Intervention research during the 1980's demonstrated the importance of reading strategies for improving reading comprehension performance (Brown, 1981; Palinscar & Brown, 1985). Successful and unsuccessful readers may use strategies while completing reading tasks, but they might do so differently (Duke et al., 2004). For example, both types of readers might check the glossary to find the meaning of a word they do not understand in a

text; however, skilled readers are likely to do this once other more effective strategies have failed (e.g., using the passage's context), whereas the glossary would be the first choice for a non-skilled reader (Hosenfeld, 1977).

Sheorey and Reichard (2002) defined three types of reading strategies: global, problem solving and support reading strategies. Each of these strategies interacts with the others. Global reading strategies refer to "generalized, intentional reading strategies aimed at setting the stage for the reading act and helping students find meaning in the text(e.g., setting a purpose, making predictions)" (p. 252). Problem solving strategies refer to repair or localized strategies that are implemented when the text becomes difficult to understand (e.g., re-reading, changing the reading speed) thus "allowing them [readers] to navigate through text skillfully" (p.252). For example, problem solving strategies will help the reader to decode difficult words or sentences. Finally, support strategies refer to functional strategies readers use while reading to support comprehension (e.g., making notes, underlining, using the dictionary). The use of these strategies depends on the student's age, instruction, reading ability, text difficulty and type of material they are reading.

Metacognitive awareness in reading comprehension has been shown to differentiate between good and unsuccessful readers. Paris and Jacobs (1984) describe such differences:

> Skilled readers often engage in deliberate activities that require planful thinking, flexible strategies, and periodic self-monitoring. They think about the topic, look forward and backward in the passage, and check their own understanding as they read. Beginning readers or poor readers do not recruit and use these skills. Indeed, novice readers often seem oblivious to these strategies and the need to use them (p. 2083).

2.2.4 Skilled reading comprehenders

According to Gaskins and colleagues (2007), the capacity to develop and use word reading skills, comprehension strategies and self-monitor progress with flexibility characterizes good comprehenders. Reading comprehension entails a problem solving process (Lerner & Kline, 2006). In order to be successful comprehenders, students must be motivated, set a reading purpose, use concepts, develop and use reading strategies, test hypotheses, self-monitor their outcomes and modify reading strategies to achieve their reading goal. Thus successful readers are active participants in the reading process, interacting with the text, from beginning to end, to gain meaning from it. Successful readers know what and why they are reading and how to solve potential problems and monitor their understanding. According to the National Reading Panel (2000), good comprehenders tend to be more engaged in reading and read more than poor comprehenders, so good comprehenders are motivated to gain information from texts.

One characteristic of skilled readers is that reading of words requires little effort so resources remain available to gain meaning from text (Pressley, 2002). Beyond having the necessary basic reading skills intact, skilled reading comprehenders usually have a rich vocabulary and background knowledge. The effect of prior knowledge on reading comprehension is enormous (Duke et al., 2004). For example, by reading the heading of a text and activating their prior knowledge, readers develop expectations about the content and make predictions about it, which are then confirmed or updated as reading goes along. As a result, skilled reading comprehenders ask themselves questions, make representations of the ideas expressed in the text, make inferences and associations (e.g., causal relations, states of mind) related to the text, and synthesize what they have read to aid their understanding and

update their knowledge base. Duke and colleagues (2004) note that skilled comprehenders also recognize different text structures (e.g., informational, expository), which allows them to form expectations from each type of text. This enhances their understanding and memory about information in the texts.

However, activating and updating background knowledge are not the only processes skilled reading comprehenders use to aid their understanding of texts. Above all, they take a strategic approach to reading engaging in several processes before, during and after reading that enhance their reading comprehension (Dermitzaki, Andreou, & Paraskeva, 2008; Jacobs & Paris, 1987; Pressley, 2002). According to these authors, skilled reading comprehenders are active information processors who use strategies efficiently and flexibly to understand text. They actively pursue meaning, are thoughtful and reflective, preview passages, formulate their own pre-reading questions, make comments in the margins, underline and highlight text, review what they have read, summarize, monitor, and may seek clarification if passages seem to not make sense. Sheorey & Reichard (2002) found that skilled comprehenders used global and problem solving reading strategies more often than struggling comprehenders but no differences were found in the use of support reading strategies. The use of global and problem solving reading strategies varied in relation to how proficient readers thought they were: the better they were the more they used them.

2.2.5 Struggling reading comprehenders

Readers who have difficulty with basic reading processes, such as word identification, decoding, and fluency or who have insufficient background knowledge and vocabulary, who have difficulty making semantic or grammatical connections, and who fail to read strategically and monitor comprehension may struggle to gain meaning from text

(Lesaux, Lipka et al., 2006). Research consistently indicates that specific reading comprehension difficulties (S-RCD) are present in approximately 3% of the school-aged children or in 10-25% of poor readers (Cornoldi & Oakhill, 1996; Cutting & Scarborough, 2006; Locascio et al., 2010). It has been shown that many children in late elementary grades have inadequate reading comprehension abilities (British Columbia Ministry of Education, 2011a; Cutting & Scarborough, 2006; National Center for Education Statistics (NCES), 2009).

In early elementary grades, difficulties in reading comprehension are mostly related to failures at the word-reading level (i.e., decoding and sight-word reading accuracy and efficiency), but in the later years, learners who do not have a word reading disorder might show reading comprehension difficulties due to different causes.

Two types of reading comprehension profiles have been described in the literature for English speakers (Lesaux, Lipka et al., 2006; Lesaux & Kieffer, 2010). The first one describes students who have poor comprehension as a result of word reading difficulties rooted in phonological processing deficits, whereas the second type is related to students with a specific comprehension problem with difficulties at the text level. The latter group of students has average word-level reading skills (accuracy, speed, and automaticity), but they have difficulty with higher-level processing (e.g., inference making, working memory, text structure knowledge, planning, using reading strategies, vocabulary, oral language, and the capacity to analyze, integrate and synthesize information in text) and as a result have poor reading comprehension (Cain & Oakhill, 1999; Cain, Oakhill & Bryant, 2000; Cutting et al., 2009; Cutting & Scarborough, 2006; Lesaux, Lipka et al., 2006; Oakhill & Yuill, 1996; Swanson & Siegel, 2001; Torgesen, 2000; Yuill & Oakhill, 1991).

Research shows that given the multifaceted nature of reading comprehension, classifying students according to their reading comprehension performance (good or poor) regardless of the profiles described above, would help to confirm the myriad of possible sources of difficulty related to reading comprehension. This practice would inform research suggesting that poor readers may have a combination of difficulties at the word-reading level as well as in higher order skills (Lesaux & Kieffer, 2010). For example, a student with word-reading difficulties will be less likely to take a strategic approach to reading, might have poor vocabulary and general knowledge and these will impact his reading comprehension.

Overall, struggling comprehenders do not plan ahead their reading activity, use ineffective strategies while reading, do not self-monitor and self-regulate the reading process, and do not reflect on their own learning; hence, the pre-reading, during-reading, and after-reading stages are affected and poor reading comprehension results (Butler, 2002; Sheorey & Reichard, 2002; Zimmermann, 2002). Moreover, unskilled readers often concentrate on reading as a word identification process rather than as a meaning-gaining process (Baker & Brown, 1984). Whether their difficulty self-monitoring or self-regulating the reading process is the result of limited knowledge about what strategies to use, how to apply the right strategies, or in recognizing that something needs to be done is under debate (Woolley, 2008).

2.3 Reading comprehension in language minority students

Despite its clear importance in multilingual societies like Canada, the study of reading skills in upper elementary LM students has not been extensive and little is known about the reading comprehension performance and the nature of reading comprehension difficulties in

this population (Geva et al., 2009; Lesaux & Geva, 2006; Lesaux & Kieffer, 2010; Lesaux, Lipka & Siegel, 2006; Low & Siegel, 2005; Siegel, 2008). Therefore, the main purpose of this study was examining the similarities and differences between language minority (LM) students who were either skilled or struggling reading comprehenders. In this section, what is known about the reading comprehension performance of LM students is described. First, findings from studies examining reading comprehension and its related cognitive skills are presented. Then, evidence from studies focused on reading comprehension and strategic reading are described.

2.3.1 Reading comprehension and related linguistic and cognitive skills

Most studies that examine the specific difficulties LM students encounter with reading comprehension (August & Shanahan, 2006; Geva et al., 2009) have focused on the role of variables such as oral proficiency (e.g., vocabulary, syntactic and phonological awareness), word-level reading skills, verbal working memory, and the influence of first language on the second language. It has been shown that LM students tend to obtain average scores on word reading measures in English (Lesaux & Kieffer, 2010). Moreover, the reading ability LM students have in their home language is also related to their reading comprehension (Chiappe & Siegel, 2006; da Fontoura & Siegel, 1995; Geva & Wang, 2001; Gottardo, Yan, Siegel, & Wade-Woolley, 2001; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006; Low & Siegel, 2005; Siegel, 2008). According to Droop and Verhoeven (1998) the linguistic complexity of texts (i.e., length of syllables, words, sentences, and verbal groups) also influences reading comprehension in LM students.

Lesaux, Lipka and colleagues (2006) and Lesaux, Koda and colleagues (2006) reviewed research regarding the specific difficulties contributing to language minority weak

reading comprehension performance. They point out that some studies have identified the lack of linguistic background in ESL students as one specific difficulty (i.e., vocabulary knowledge, listening comprehension, and morphological skills), and that results are mixed, according to the age group, regarding the influencing role of phonological processing and syntactic awareness in the reading comprehension performance of LM students.

2.3.1.1 Language proficiency

Regarding the oral proficiency in English, the National Literacy Panel (NLP) report on language-minority children and youth, indicates well developed oral language proficiency is related to good reading comprehension skills. Those aspects of oral language proficiency more related to adequate reading comprehension performance in elementary and middle school LM students were vocabulary, listening comprehension, syntactic and metalinguistic skills (Lesaux and Geva, 2006).

2.3.1.1.1 Phonological processing

Lesaux, Lipka and colleagues (2006) did not find differences in measures of reading and phonological processing between LM students and native speakers who were either good or poor reading comprehenders. This is consistent with the findings from other studies (see Lesaux, Koda et al., 2006 for a review). Lesaux, Lipka and colleagues (2006) interpreted the reading comprehension failures in the group of poor comprehenders were directly associated with the act of reading comprehension (specific reading comprehension difficulty).

One other consistent finding across studies is that middle-school ESL students often have better scores on phonological measures than native-speakers (see Lesaux & Geva, 2006 and Lesaux, Koda et al., 2006 for a review). Verhoeven (1990) found that word reading efficiency predicted reading comprehension up to second grade but after that point

vocabulary and syntactic knowledge play major roles (Dutch was the second language).

2.3.1.1.2 Syntactic awareness

Research suggests that LM students and struggling readers (including English monolinguals) tend to have lower syntactic ability which might account for their difficulties in reading comprehension (e.g., Lesaux & Kieffer, 2010). Verhoeven (1990) found that syntactic awareness failures accounted for significantly lower performance in reading comprehension in Turkish speakers learning Dutch in comparison to Dutch native first and second graders. In their study, Lesaux, Lipka and colleagues (2006) found that both good and poor reading comprehenders in the LM group received significantly lower scores on tasks involving syntactic awareness than native speakers despite having received mainstream English instruction for 5 years. Moreover, these authors found that LM good comprehenders also obtained lower scores in such tasks than native speakers with poor comprehension skills. However, the authors suggested that despite LM obtaining lower scores in syntactic awareness, the reading comprehension performance for the majority of the group seemed unaffected (only 17% of the ESL participants were classified as poor comprehenders). Siegel (2008) reported a high correlation between syntactic awareness and reading comprehension performance in ESL students. It seems more research is needed to understand exactly how syntactic awareness is implicated in the reading comprehension performance of LM students.

2.3.1.1.3 Morphological awareness

Even though Siegel (2008) did not find differences between ESL and English-native speakers on a measure of derivational morphology, which may have been related to the high-quality reading instruction these students received, she reported that the correlations between a morphological awareness task and reading comprehension measures were statistically

significant. In fact, such correlations were greater than the association between phonological and syntactic awareness tasks and reading comprehension tasks (although these were statistically significant as well). Other studies support the significant contribution of morphological awareness to reading comprehension in bilingual and second language learners who are in intermediate grades (Ku & Anderson, 2003; Kieffer & Lesaux, 2008). Therefore, measures of morphological awareness should be included in comprehensive assessments of LM students' reading comprehension and factors associated with it.

2.3.1.1.4 Vocabulary

Lesaux and Geva (2006) note LM students in elementary and middle school often have limited vocabulary knowledge and this could explain their low levels of reading comprehension performance. However, these authors acknowledge that other factors, such as cognitive ability, memory, and contextual factors (i.e., SES, instruction, reading practice, home language) might also influence reading comprehension performance in LM.

Lesaux & Kieffer (2010) identified three skill profiles among poor reading comprehenders (both for LM and English-native speakers) according to their performance on measures of non-word reading accuracy, working memory, vocabulary and reading fluency (word and text levels). All three profiles presented with low scores in working memory, low general vocabulary and low-average scores in academic vocabulary, which is consistent with findings of poor oral proficiency skills among LM students. The authors found that LM and native speakers were equally distributed in each of the skills profiles and no evidence of differences between their performances on the measures used was found (except on general vocabulary in which native speakers obtained slightly higher scores). Finally, Lesaux and Kieffer found that the prevalence of LM students in the poor reading comprehension group

was higher than that of the native speakers.

2.3.1.2 Working memory

Lesaux, Lipka and colleagues (2006) concluded that LM students who were poor and good reading comprehenders, performed significantly lower than native speakers on measures of verbal working memory. However, the authors concluded that this lower performance does not seem to affect the reading comprehension performance of the majority of the sample (only 17% of LM students were classified as poor comprehenders). Other studies have concluded that working memory contributes to reading comprehension both in monolinguals and LM students (Cain et al., 2004; Cain & Oakhill, 2000; Lesaux & Kieffer, 2010).

In summary, unskilled LM readers display a similar profile to unskilled monolingual readers in terms of their reading-related basic cognitive processes, and word and text reading skills (August & Shanahan, 2006; Lesaux & Kieffer, 2010; Lesaux, Lipka & Siegel, 2006; Low & Siegel, 2005). Research has shown that English reading comprehension difficulties in LM students stem from limited English language proficiency (e.g., vocabulary knowledge, listening comprehension, and morphological skills) (August & Shanahan, 2006; Lesaux, Lipka et al., 2006; Lesaux, Koda et al., 2006).

The findings from Lesaux and Kieffer are consistent with other group of studies, that have examined reading comprehension performance from the perspective that weaknesses in reading comprehension might be caused by failure in higher order processes, such as using reading strategies, vocabulary, self-monitoring, planning and working memory, and not by word-level reading skills deficits (Buly & Valencia, 2002; Cain & Oakhill, 1999; Cutting et al., 2009; Oakhill & Yuill, 1996). Although most studies examining reading comprehension

in LM students included the role of working memory and vocabulary (August & Shanahan, 2006; Geva et al., 2009), few of them examined the other variables aforementioned (e.g., Anderson, 2003; Jiménez et al., 1996; Mokhtari & Sheorey, 2002; Padrón et al., 1986; Sheorey & Mokhtari, 2001). Additionally, only a small number of studies have been conducted with upper elementary students.

2.3.2 Reading comprehension: Strategic and purposeful reading

Despite recommendations to include strategic reading in the reading instruction of second language learners since the 1970s, few studies have examined how successful and unsuccessful LM students use reading strategies (Carrell, 1989). Overall, studies examining metacognitive awareness and the use of reading strategies indicate that effective strategies related to planning and monitoring reading comprehension (i.e., having a goal in mind, making predictions, summarizing, questioning, using text features) are used by both LM and English-native readers, but in a different fashion (Sheorey & Mokhtari, 2001).

In 1977, Hosenfeld conducted an exploratory case-study comparing successful and unsuccessful second language comprehenders' use of strategies. The findings from this study indicated good comprehenders tended to use global strategies, such as activating prior knowledge to keep the meaning of the text in their minds during reading and skimming through the text, more frequently than support strategies like using a glossary. Conversely, poor comprehenders in this study tended to use support and problem solving strategies more frequently than global strategies, as they lost the meaning of sentences while decoding, read word by word (e.g., translating), and in short sentences. In a different case-study, Block (1986) used a think-aloud methodology to study LM college students who were unsuccessful readers. The author identified four characteristics that differentiated more and less proficient

readers within this group: integrating information, using the text structure, using background knowledge, and responding in a reflexive (i.e., relate personally to the text) versus an extensive (i.e., focus on the message) form. Students who integrated the information, were aware of the text structure, responded in an extensive way, and used their background knowledge progressed more than those who had the opposite characteristics as readers.

Padrón and colleagues (1986; Knight, Padrón & Waxman, 1985) investigated the differences in the reported use of reading strategies of LM (Hispanic) and English-monolingual elementary students (third and fifth grade). Their findings indicated LM students use fewer and qualitatively different strategies than those used by native-speakers. For example, monolingual students reported using concentrating (e.g., thinking about the story) most often and reading to answer questions that the teacher might ask least often. Conversely, LM students reported using this latter strategy most often. There were three specific strategies that were reported significantly more often by monolinguals than by LM students (i.e., concentrating, noting/searching for salient details, and self-generated questions). The authors suggest that the differences in the reported use of reading strategies might be related to the lower achievement of LM students in reading comprehension measures. These authors raise the issue of having LM students develop oral proficiency and decoding simultaneously, which may not leave spare resources for learning cognitive strategies to comprehend.

In a different study, Padrón and Waxman (1988) examined the reported use of cognitive reading strategies and reading comprehension performance in a sample of Hispanic ESL elementary students. They found an association between the awareness of reported reading strategies and reading comprehension performance in the sample. Poor reading

comprehenders tended to use less effective reading strategies than good reading comprehenders. These authors suggest that the use of what they called negative strategies (i.e., skipping parts that are not understood, copying the story, looking for words in the dictionary) might interfere with the reading comprehension performance of ESL students regardless of their English proficiency. On the other hand, the use of positive strategies (i.e., summarizing, underlining, self-generated questions, monitoring understanding while reading, taking notes, and picturing the story in the mind) had a positive relationship with reading comprehension performance.

Jiménez and colleagues (1995) conducted a case-study on eight bilingual Hispanic sixth and seventh graders in the US to understand their use of reading strategies while reading, and compared it to that of three successful English-native readers and three bilingual unsuccessful readers. In the context of the present study, the findings related to unsuccessful bilingual readers are relevant. These students were often unaware of their reading strategies and considered the two languages as unconnected and thus did not transfer reading strategies from one language to the other while reading. This and other studies with LM students who are bilingual and biliterate (e.g., Spanish-English) show that they use unique and effective reading strategies (e.g., transfer of information across languages, translation, accessing cognate vocabulary) to comprehend text and overcome the lack of background knowledge (Jiménez et al., 1996). Nevertheless these conclusions might not be well suited for LM students who do not have well developed literacy skills in their first language and whose first language is not alphabetic.

Mokhtari and Sheorey (2002) found ESL students who lack oral proficiency skills in their second language tend to rely on ineffective strategies to comprehend texts, such as

word-by word or sentence-by-sentence understanding (e.g. literal translation, use of dictionary), thus comprehension is not attained. These authors compared ESL college students and English-native speakers in their metacognitive awareness and perceived use of reading strategies when reading school materials (Mokhtari & Sheorey, 2001; 2002). They found that both groups of students were aware of different reading strategies and that there was a positive correlation between the level of reading ability and use of reading strategies. The findings from one of these studies (2001) indicated that both native and ESL students, regardless of their reading ability, reported using problem solving reading strategies more often than global reading strategies and both of these strategy types more frequently than support strategies. When the reading level proficiency was considered, the authors found that skilled readers reported a higher use of global and problem solving strategies than unskilled readers. As for support strategies, ESL students, regardless of reading level, reported using them significantly more frequently than native speakers.

Even though research has shown that the high quality reading instruction in Canada (specially the early systematic literacy instruction in British Columbia) has benefited LM elementary students (D'Angiulli et al., 2004; Lesaux, Lipka et al., 2006; Low & Siegel, 2005), understanding the roles reading comprehension-related cognitive skills and use of reading strategies play in the reading comprehension performance of LM students is relevant. It may contribute in the design of more comprehensive educational strategies to address the academic challenges these students continue facing as learners.

Chapter 3: Methods

This descriptive multiple-case-study had the primary purpose of examining similarities and differences in reading behaviours between language minority (LM) students who were either good or poor reading comprehenders.

Three principal questions guided this study:

1. How do LM students with good reading comprehension differ from LM students with poor reading comprehension in terms of their word-level reading skills, English language proficiency, and working memory?
2. How do LM good and poor reading comprehenders differ in their use of reading comprehension strategies?
3. How does having an explicit goal help the reading comprehension performance and promote the use of reading strategies in LM poor and good reading comprehenders?

This research was designed as a descriptive multiple-case study because it aimed at providing a comprehensive picture and better understanding of a contemporary phenomenon that has not been studied extensively, a main characteristic of case studies according to Butler (2011). Additionally, the research questions and objectives proposed met the conditions Yin suggested (2003) for case-study as a research strategy. The type of research questions ("how") that guided the study required in-depth data gathering and analysis to adequately describe and understand the phenomenon being studied. Therefore the study used multiple sources of quantitative and qualitative evidence (i.e., standardized assessments, clinical interviews, observations, trace activity) to assess LM students' reading-related linguistic and cognitive skills, and the use of reading strategies. To be able to examine the

similarities and differences between LM students who were either good or poor reading comprehenders, the researcher attempted to cover as many relevant variables as possible, to guide data collection and analysis.

Following Stake (2006), analysis of multiple cases was chosen as the research strategy to address the questions that guided this study, because it allowed examining the uniqueness of each case as well as shared patterns across cases. Additionally, multiple case studies are less vulnerable and more powerful (in terms of validity) than single case studies (Yin, 2003). As suggested by Yin, a replication logic was used hence the analysis was based on considering each case as an independent study to then searching for patterns across cases.

3.1 Participants

3.1.1 Screening phase

Twenty-four LM students in grade 6 participated in the screening phase. LM students were defined as those who (a) came from homes in which the main language was different than the societal (in this case, English), (b) who had attained some level of proficiency in that first language, and (c) spoke a language other than English before entering school.

Language minority students can be distinguished according to their oral proficiency in the second language: (a) they might be bilingual (proficient both in the societal language and in their first language); (b) they might have limited proficiency in the second language; (c) they might have reached a level of proficiency in the second language but continue learning English and are actively using their first language; or (d) they might be only proficient in the second language. Regardless of their proficiency level, language minority students might also be called English language learners (ELL) or English as second language

(ESL) learners if they are still learning English. The BC Ministry of Education (2009) refers to ESL students as learners whose second language proficiency limits their ability to benefit from instruction in that language. These learners "require additional services in order to develop their individual potential within British Columbia's school system" (p. 4).

In the context of the present study, the term language minority was used, as the LM students that formed the sample were LM students with a level of proficiency in English that allowed them to benefit from mainstream instruction without requiring additional services. Some of them were bilingual and a couple of them self-identified as English monolinguals. The LM students in this sample did not include students the school district designated as requiring support for learning English outside the classroom (English as second language-ESL). At the time of the study, all participants were receiving all instruction in the general education classroom. LM students included in the sample had at least three years of formal schooling in English in Canada. This helped to ensure they had developed adequate basic interpersonal communication skills and, to some extent, CALP. It also helped ensure they had similar performance as native speakers in word-level reading skills and had received a minimum of good quality English instruction (Gunderson, 2006; Lesaux & Geva, 2006). None of the participants had a learning disability designation or other neurological disorder (e.g. traumatic brain injury, tumour, autism spectrum disorders, and epilepsy).

Students in grade 6 were selected as the study group because they have been exposed to reading comprehension tests in their school environment, and because they are expected to have automatic-efficient word and text reading skills, and well-developed reading comprehension skills to access the curriculum. Moreover, they have been taught reading strategies at school and they are expected to use them.

The majority of participants were either born in Canada (n=7) or moved to Canada before 5 years of age (n =10). Seven participants had immigrated to Canada at or after 6 years of age. Most participants reported reading and/or writing in their first language (n=14), five said they had some reading or writing skills in their first language, and five reported not being able to read or write in their home language. Teachers reported all 24 LM participating students were orally proficient in English and could follow testing instructions.

The average age of participants in the study was 11 years and 8 months and the average years of English schooling (in Canada) was 5.25 years. Participants came from a variety of linguistic backgrounds, including Chinese (Mandarin, 6; Cantonese, 3; unspecified, 5), Spanish (1), Uzbek (1), Tagalog (1), Korean (2), Japanese (1), Hindi (1), Serbian (1), Hebrew (1) and Malay (1).

A measure of reading comprehension (Stanford Diagnostic Reading Test 4, SDRT 4) was administered to select the students of interest for the multiple-case study. Measures of reading related linguistic and cognitive skills, a researcher designed reading comprehension activity, and a survey about the use of reading strategies were also administered to the sample (N=24) to obtain a performance parameter for this group of students.

Performance on the SDRT 4 served to select the students of interest for the multiple-case study. According to their performance on this measure, students were classified either as poor or good reading comprehenders. The poor reading comprehenders (PC) obtained a score at or below the 25th percentile whereas good reading comprehenders (GC) obtained a score above the 35th percentile. The 25th percentile cut-off was chosen to include in the subsample of struggling comprehenders those with severe difficulties, or who would be generally not be meeting expectations in reading comprehension for their grade. This group of students would

be the one in need of support to access the curriculum. The good comprehenders selected for the case-studies obtained a score were well above the 35th percentile (>60th percentile) to make sure the comparison was done between students with severe reading comprehension difficulties and students whose reading comprehension was excellent.

3.1.2 Multiple-case study phase

From the initial group of 24 LM participants, three were classified as poor reading comprehenders. Each PC was matched to two LM good reading comprehenders (SDRT 4 score above 60th percentile) to form three independent case studies. The students were matched by gender, age, years of schooling in English, years living in Canada, and school attended. It was not possible to match the poor and good reading comprehenders by language. Having or not having an explicit goal in the research activity was also considered in matching the case studies. Each PC (all of them had an explicit goal) was matched to a GC with an explicit goal and to a GC without an explicit goal. Table 3.1 summarizes the demographic characteristics and scores obtained in the SDRT- 4 for the case studies and their matches (pseudonyms are used).

3.1.2.1 Case-study 1

TS is a girl who was 11 years and 7 months at the time of the study. She was born in Canada and has been attending school A and learning in English since Grade 1. She attended the ESL program at the school for three years. TS lives with her parents and her home language is Tagalog; however, she said that sometimes she speaks English at home with her parents: “My mom speaks to me in Tagalog and I sometimes answer in English.” She reported that Tagalog was the only language she spoke before starting school. TS is able to read and write in Tagalog. TS’s performance on the SDRT 4 was below the average range

Table 3.1 Multiple-case study demographics and SDRT 4 percentile scores

	Case-study 1			Case-study 2			Case-study 3		
	TS	RN Match (G)	VM Match (NG)	HD	PR Match (G)	ED Match (NG)	ML	OC Match (G)	JA Match (NG)
Gender	F	F	F	M	M	M	M	M	M
Age (yrs., mo)	11.7	11.6	11.8	12	11.7	12.1	11.7	11.4	12.1
School	A	A	A	B	B	B	A	A	A
Yrs. School	6	5.5	6	6	6	6	5	4	5
Yrs. in Canada	Born	Born	11	Born	Born	10	5	4	5
Language	Tagalog	Chinese	Cantonese	Japanese	Mandarin	Korean	Uzbek	Chinese	Chinese
SDRT 4 P	18	85	63	9	89	85	15	81	70

P: Percentile, G: Goal, NG: No goal

(18th percentile), thus she was classified as a poor reading comprehender.

TS' goal match. RN is a girl who was 11 years and 6 months old at the time of testing. She was born in Canada and has been attending the same school as TS since Grade 1, but she went back to China for a period of 6 months at the age of 6 years. RN's home language is Chinese and she reported that this was the only language she spoke before starting school. She lives with her parents and speaks Chinese with them but RN said: "I speak English with my sister". RN is able to read but not to write in her home language. RN's performance on the SDRT 4 was above the average range (85th percentile), thus she was classified as a good reading comprehender.

TS' no goal match. VM is a girl who was 11 years and 8 months at the time of the study. She lives with her mother and sister and has lived in Canada for 11 years. VM has been attending the same school as TS since Grade 1. VM's home language is Cantonese and she reported that she started speaking English in kindergarten. "At home, I speak Cantonese with my mom but English with my sister". VM attended heritage language classes for 4 years and reports having basic reading and writing skills in her home language. VM's performance on the SDRT 4 was on the high end of the average range (63rd percentile), thus she was classified as a good reading comprehender.

3.1.2.2 Case-study 2

HD is a boy who was 12 years old at the time of the study. He was born in Canada and has been attending school B and learning in English since Grade 1. HD lives with his parents and brother and his home language is Japanese; however, he said "we speak English with my brother". He reported that Japanese was the only language he spoke before starting school. HD does not know how to read or write in his home language. His performance on

the SDRT 4 was below the average range (9th percentile), thus he was classified as a poor reading comprehender.

HD's goal match. PR is boy who was 11 years and 7 months at the time of testing. He was born in Canada and has been attending the same school as HD since Grade 1. PR's home language is Mandarin and he reported that this language was the only one he spoke before starting school. PR reported: "At home, I speak a mix of Mandarin and English" as he speaks mainly Mandarin with his mother and extended family but he sometimes speaks English as well. PR does not know how to read or write in his home language. His performance on the SDRT 4 was above the average range (89th percentile), thus he was classified as a good reading comprehender.

HD's *no goal match.* ED is boy who was 12 years and 1 month at the time of testing. Born in Korea, he came to Canada at the age of 4 after living for two years in the United States. He entered the same school as HD in Grade 1. ED lives with his parents and siblings and his home language is Korean. He speaks this language to all his family members and other Korean speakers. ED reported that he started speaking English in kindergarten. He is able to read in his home language as his parents taught him but he says: "I'm a little better at reading in English." ED's performance on the SDRT 4 was above the average range (85th percentile), thus he was classified as a good reading comprehender.

3.1.2.3 Case-study 3

ML is a boy who was 11 years and 7 months old at the time of the study. He has lived in Canada for five years and has been attending school A, in English, since the second half of Grade 1. ML lives with his mother and said: "I speak Uzbek with my mom all the time". He reported that Uzbek was the only language he spoke until he arrived in Canada. ML is able to

read and write in his home language. His performance on the SDRT 4 was below the average range (15th percentile), thus he was classified as a poor reading comprehender.

ML's goal match. OC is a boy who was 11 years and 4 months at the time of testing. He has lived in Canada for four years and has been attending the same school as ML since Grade 2. OC's home language is Chinese and he reported that this language was the only one he used before coming to Canada. He lives with his parents with whom he speaks Chinese. OC said: "I don't know how to read or write in Chinese". His performance on the SDRT 4 was above the average range (81st percentile), thus he was classified as a good reading comprehender.

ML's *no goal match*. JA is boy who was 11 years and 4 months at the time of testing. He arrived in Canada at the age of 6 and has been attending the same school as ML since the second half of Grade 1. JA lives with his parents and his home language is Mandarin. He speaks this language to all his family members. JA reported: "I learned English when I started school here in Canada". He attended heritage language classes for four years and is able to read and write in his home language. JA's performance on the SDRT 4 was on the high end of the average range (70th percentile), thus he was classified as a good reading comprehender.

3.2 Procedure

The UBC Behavioural Research Ethics Board approved the research protocol.

3.2.1 Recruitment

Participants were recruited from two schools (A and B) in one school district in British Columbia. These schools were located in different neighbourhoods and their student

bodies reflected a wide range of socio-economic status and cultural backgrounds. In this school district, both native and non-native English speakers participating in the study received instruction in English in general education classrooms.

School A was located in a working class multicultural neighborhood and according to the 2006 census of the population the language most commonly spoken in the neighborhood was Chinese (City of Vancouver, 2011). In the school, during the 2010/2011 academic year, Mandarin was the most common language spoken at home (32.3%), followed by English (25%) and Cantonese (13%) (British Columbia Ministry of Education, 2011c). School B was also located in a multicultural neighborhood inhabited by high-income professionals and university students, staff, and employees. In this school, during the 2010/2011 academic year, the most common languages spoken at home were English (29.8%), followed by Mandarin (25.5%) and Korean (11.2%) (British Columbia Ministry of Education, 2011c).

Once school authorities (i.e. the school principal and grade 6 teachers) agreed to participate in the study, a parental consent form (see Appendix A) written in English was distributed to families of grade 6 students whose English proficiency, as specified by the teacher, was sufficient to give informed consent. The parental consent form described: (a) what was required as participants in the study, (b) any potential benefits or concerns, (c) voluntary participation, and (d) confidentiality. A demographic questionnaire was attached to the consent form for parents to complete (see Appendix B). Grade 6 students in participating classrooms who returned a signed parental consent form and who met the inclusion criteria participated in the study.

3.2.2 Setting and data collection

In the winter/spring of 2011, the author and a trained graduate student collected the data. The data collection occurred in the school setting during regular school hours. Table 3.2 presents a summary of the sessions, measured skills and assessment tools used in the study.

Table 3.2 Summary of sessions, measured skills and assessment tools

Session	Skills	Assessment tools
Screening Phase	Reading comprehension	SDRT 4, Brown Level Form J
	Morphological awareness	Derivational Suffix Task Prefix and Suffix Task
Multiple-case study Phase Individual Session	Word-level reading skills	WJ III- Ach Form B: Word Identification, Word Attack TOWRE Form A Sight Word Efficiency, Phonemic Decoding Efficiency
	Oral language proficiency	Oral Cloze Task, WJ III- Ach Form B Picture Vocabulary
	Verbal working memory	Working Memory for Sentences
Small group Session	Use of Reading strategies	Researcher designed reading comprehension activity Grade 6 SORS

SDRT 4 (Stanford Diagnostic Reading Test 4), WJ III – Ach (Woodcock Johnson III Tests of Achievement, TOWRE (Test of Word Reading Efficiency), SORS (Survey of Reading Strategies)

Participants were assessed in two phases. An initial screening phase (N=24), that occurred in the classroom as a whole-class session, with the purpose of assessing reading comprehension performance and selecting the cases of interest for the study phase.

Measures of morphological awareness were also administered in the group session. A second phase, case-study phase, occurred in a quiet room outside the classroom, with the purpose of administering measures to address the research questions. This study phase consisted of two independent sessions. In the first session, participants selected as cases completed tasks associated with word-level reading skills, verbal working memory and oral language proficiency. In the second session of the study phase, participants completed a researcher designed activity that involved the use of reading strategies in the context of a reading comprehension task. This task was administered to small groups of cases (minimum 3 and maximum 5 students). All measures were administered in English. All participants in the sample were assessed with the aforementioned measures with the purpose of obtaining performance parameters for this group of students. Participants read and signed an assent form prior to their participation in the study (See Appendix C).

3.2.3 Measures

3.2.3.1 Whole-class session

3.2.3.1.1 Reading comprehension

To assess reading comprehension performance, the comprehension section of the Brown Level of the Stanford Diagnostic Reading Test Fourth Edition (SDRT 4) was administered (Karlsen & Gardner, 1996b). On this multiple choice reading comprehension test participants read short-to- medium length texts and then answered a series of questions about them within a time limit of 50 minutes (See Table 3.3 for the types of text and modes of comprehension assessed).

According to the authors, the SDRT 4 measures functional reading comprehension as used in daily life. The SDRT 4 has two forms (J and K) and is grade-leveled. Form J of the

Brown Level was used. The test's standardization was based on the 1990 US Census and the

Table 3.3 Types of text and modes of comprehension assessed in the SDRT 4

		Definition	Questions	Number of items
Types of Text	Recreational Reading	Build meaning from material read for enjoyment (e.g. narrative text)	13-17, 31-37, 49-54	18
	Textual Reading	Build meaning from grade-appropriate texts (e.g., informational or expository text)	7-12, 18-24, 38-42	18
	Functional Reading	Build meaning from texts met in everyday life situations (e.g., recipes, posters)	1-6, 25-30, 43-48	18
Mode of Comprehension	Initial Understanding	Comprehend explicit information	1,2,6,13,17,20,22,23,25-27,29,30,37,42,44,47,48	18
	Interpretation	Interpretation based on explicit and implicit information	3,4,7-9,11,14-16,19,21,28,31,33-36-,38,40,41,49-53	25
	Critical Analysis	Synthesize and assess explicit and implicit information	5,10,39,43,45,46	6
	Process Strategies	Define and use text factors and reader strategies	12,18,24,32,54	5

Adapted from Karlsen & Gardner (1996b), pp. 11, 52-53.

spring norms were done with about 20 thousand students representing the school population at the time. The spring norms were used to obtain scaled scores and percentiles. The SDRT 4

has excellent reliability: The comprehension component of Form J for grade 6 has a reliability coefficient of .93 and the comprehension component of the Brown level has an alternate –forms reliability of .80. Evidence of validity is provided in the manual (Karlsen & Gardner, 1996a; Swerdlik & Bucy, 1998). In a review of the measure, Morsy and colleagues (2010) indicate some strengths of the SDRT 4 are that it provides accurate information about comprehension skills in low achieving students while making relatively low demand on vocabulary and background knowledge. This makes it a useful tool for language minority students. This measure was used to select the students of interest for the multiple-case studies.

3.2.3.1.2 Morphological awareness

Measures of morphological awareness also were administered in this session because the tasks could be administered to groups. However, students' performance on these measures became part of the case-study analyses.

First, to assess sensitivity to the morphemes in words, the Derivational Suffix Task was administered (Singson, Mahony & Mann, 2000). This paper and pencil task consists of two parts, one with words and another one with non-words. Participants were required to read a sentence with a missing word and select which one of four alternatives was the correct word or non-word to complete the sentence. Each task consisted of 10 sentences and a practice item. One point was given for each correct answer.

Second, to assess vocabulary and morphological awareness, the Prefix and Suffix Task was used (Siegel, nd). This is an experimental task in which participants were exposed to a list of parts of words (prefixes and suffixes) and were required to guess the meaning of those parts and think of a word that had that part in it. A total of 17 word parts form the list

and two scores result from this measure: a) the correct use of prefixes and suffixes to form a word, and b) the correct meaning interpretation of prefixes and suffixes. One point was given for each correct answer (See Appendix D).

3.2.3.2 Individual session

Word-level reading skills, oral language proficiency and verbal working memory were assessed. The standardization procedures or the task characteristics of these measures required them to be administered individually.

3.2.3.2.1 Word-level reading skills

Accuracy in word recognition and decoding skills were assessed with the Woodcock Johnson III Tests of Achievement Form B Letter-Word Identification and Word Attack (Woodcock, McGrew & Mather, 2001). Both tasks were administered based on grade-based start points and participants were administered items following established basal and ceiling rules. Although test accommodations for English language learners are provided in the Examiner's Manual (Mather & Woodcock, 2001), these were not used as all students were orally proficient in English according to their teacher.

The Letter Word Identification subtest required the participant to identify and pronounce isolated letters and words of increasing complexity. According to the technical manual, this test has excellent internal consistency and test-retest reliability (McGrew, Shrank & Woodcock, 2007). The median reliability coefficient across ages for Letter Word Identification is .94 and for ages 11 and 12 is .90. The test-retest (one year interval) reliability coefficient for all reported ages is .95, and for ages 11 to 13 is .84. Evidence of solid validity is provided in the technical manual as well.

The Word Attack subtest required the participant to pronounce or decode non-words

of increasing complexity that conform to English letter sound pronunciation rules (phonetically consistent). The examiner's manual states, "This test assesses the skill in applying phonic and structural analysis to the pronunciation of unfamiliar printed words" (Mather & Woodcock, 2001, p. 14). According to the technical manual (McGrew et al., 2007), this test has strong internal consistency and test-retest reliability. The median reliability coefficient across ages for Word Attack is .87, for age 11 it is .86 and for age 12 it is .85. The test-retest (one year interval) reliability coefficient for all reported ages is .83 and for ages 11 to 13 is .73. Evidence of solid validity is provided in the technical manual as well.

For both tests, 1 point was credited for each item pronounced accurately and fluently. Incorrect responses received a score of 0. Items that were not read fluently were scored as incorrect. Participants were not penalized for any mispronunciations resulting from articulation errors, dialect variations, or regional speech patterns. The number of items answered correctly was recorded as the raw score.

The Sight Word Efficiency Form A and Phonemic Decoding Efficiency Form A from the Test of Word Reading Efficiency (TOWRE) (Torgesen, Wagner & Rashotte, 1999) were used to assess participant's fluency in word recognition and decoding.

The Sight Word Efficiency subtest is a timed test (45 seconds) that required participants to accurately identify as many words as possible from a list of 104 words. Across ages, this subtest has high internal consistency (r =.93) and test-retest reliability (r = .91) (Flanagan, Ortiz, Alfonso & Mascolo, 2006). The subtest has high internal consistency for students aged 11 and 12 years-old (r= .91 and .95 respectively) and medium test-retest reliability (2 weeks interval, for ages 10-18 years old, r = .84).

The Phonemic Decoding Efficiency subtest is a timed test (45 seconds) that required participants to accurately decode as many pronounceable printed non-words as possible from a list of 63 non-words. Across ages, this subtest has excellent internal consistency (r = .94) and test-retest reliability (r = .91) (Flanagan et al., 2006). For students aged 11 and 12 years-old the subtest has high internal consistency (r =.91 and .94 respectively) and medium test-retest reliability (2 weeks interval, for ages 10-18 years old, r = .89).

Both subtests have a practice list and testing is discontinued (no score is recorded) if the participant cannot respond correctly to at least one practice item. Feedback was given during the practice and the examinee was prompted if hesitation for more than three seconds was observed. One point was assigned for each test item accurately read within the time limit; the total number of words/non-words read was the raw score. If the participant finished reading or decoding all the items in the lists before the time limit, the time required to read was noted. Skipped items were counted as incorrect. According to the examiner's manual, the TOWRE is a valid measure of word reading efficiency.

3.2.3.2.2 Oral language proficiency

To measure syntactic awareness, the Oral Cloze Task (Siegel & Ryan, 1988) was administered (See Appendix E). A set of 20 incomplete sentences, each with one word missing, was read aloud to the participant. The type of missing words varied from nouns, verbs, prepositions, adjectives, adverbs, auxiliary verbs, and conjunctions. The researcher read each sentence and said 'beep' when a word was missing. Participants had to supply the missing word to complete the sentence with a word that was both syntactically and semantically correct. The sentence was repeated several times if the child wished. One point was credited for each correct answer and the total was the raw score. Different studies have

reported a high reliability for this task (r > .84) (O'Shanahan, Siegel, Jiménez & Mazabel, 2010; Siegel, 2008).

Expressive language skills and vocabulary knowledge in English were assessed using the Woodcock Johnson III Tests of Achievement Form B Picture Vocabulary Test (Mather & Woodcock, 2001). Participants were asked to name familiar to less familiar objects in pictures. Start points for the Picture Vocabulary subtest were grade-based and established basal and ceiling rules were followed. Teachers reported all language minority students were orally proficient in English, so test accommodations for English language learners, which were provided in the examiner's manual, were not used. According to the technical manual (McGrew et al., 2007), this test has strong internal consistency and test-retest reliability. The median reliability coefficient across ages for Picture Vocabulary is .81, for age 11 it is .79 and for age 12 it is .77. Evidence of solid validity is provided in the technical manual. One point was credited for each item accurately named and incorrect responses received a score of 0. The number of items answered correctly was recorded as the raw score.

3.2.3.2.3 Working memory

The test Working Memory for Sentences (Siegel & Ryan, 1989) was used to assess verbal working memory (See Appendix F). On this test, participants were presented aurally with sets of 2, 3, 4 or 5 sentences (different levels) that were missing the final word. Participants were required to supply a word to complete each sentence and then repeat all the missing words from the set in the right order. To obtain the raw score, one point was credited for the set of correctly recalled words for each level of sentences (maximum of 5) and a total of three trials for each level of sentences were possible. For example, "An elephant is big, a mouse is…," "At the library people read…," "An apple is red, a banana is…" The test was

discontinued when the participant failed all the items at one level. “In order to minimize word-finding difficulties, sentences were chosen so that the missing word is virtually predetermined” (Siegel & Ryan, 1989, p. 975).

3.2.3.3 Small group session

In this session, participants completed a reading comprehension activity designed by the researcher. The researcher observed students as they worked on this task and then interviewed them to learn about their use of reading strategies while reading this text and generally.

A narrative text adapted from a current grade 6 social studies textbook (Sterling & Powrie, 2001) was given to participants (See Appendix G). Frequency of new vocabulary, passage length, and topic were considered when selecting an appropriate text that was readable for students at an independent level yet complex enough to elicit the use of reading strategies. Elementary students’ approach to school-reading material is typically guided by a specific request from their teacher. Therefore, the investigator randomly instructed half the participants to adopt an explicit reading purpose while reading the text: “You are reading this text to write a summary afterwards, that is your goal.” The other half of the participants received the following instruction: “You will read this text.” The selected reading purpose—to write a summary—was taken from the BC Reading Performance Standards for grade 6 (British Columbia Ministry of Education, 2011b). Students were assigned to the goal/no goal conditions during the screening phase of the study, prior to selecting the students of interest for the multiple-case study.

The researcher administered this task to small groups of 3 to 5 participants, but asked students to work independently. There was no time limit. The conditions for this task

reflected a typical classroom reading activity to encourage students to engage in usual and meaningful reading practices. Participants were offered regular school materials (i.e., pen, pencil, eraser, highlighter, blank paper, a dictionary and a glossary) so they could leave a trace of their reading activities, and the examiner said: “If you want, you can use these tools to meet your goal” (to students with an explicit goal) or “If you want, you can use these tools” (to students without an explicit goal). Perry and Winne (2006; Perry et al., 2010) describe tracing as a methodology for gathering data about complex cognitive operations that occur when learners interact with content. For example, a student who highlights headings and main ideas in a text has left a trace indicating that those sentences were perceived as relevant. The tracing methodology is useful to address the limitations of self-reported measures, including problems with the accuracy of learner’s perceptions and recollections of what they do during reading (Perry & Winne, 2006; Perry, Thauberger, & Hutchinson, 2010).

Once students finished reading the social studies text, those with an explicit goal wrote their summary. This was useful to see if they met their goal as well as to link their use of strategies to their actual performance. Both groups answered four reading comprehension questions about the text. This task provided a common measure of reading comprehension for both groups (i.e. explicit goal versus no goal). Participants were allowed to re-read the text if they needed while answering the questions. A rubric to evaluate students’ comprehension of the text was developed (See appendix G). Question 1 required an understanding of the main idea of the text and was assigned a score of two. This score was arbitrarily selected to emphasize the importance of understanding the main idea when comprehending a text. Questions 2 and 3 addressed secondary ideas, and question 4 required the interpretation of explicit and implicit information in the text. If correct, these questions

were assigned a score of 1. Each question had a set of possible correct answers. The researcher interpreted a total score of 4 or 5 as indicative of good comprehension of the text, whereas a score equal to or below 3 indicated the student had poor comprehension of the text.

Non-verbal behaviours, or traces (e.g., highlighting, making notes, using a dictionary or a glossary, etc.), were recorded in written format while students read the text, wrote the summary, and answered the reading comprehension questions. This data was coded following Mokhtari and Sheorey's (2002) types of reading strategies (see below for a detailed description).

Student-generated strategies were assessed through individual retrospective interviews following the small group work. Participants with an explicit goal were asked: "Did you do anything special to help you while reading to meet your goal?" Students without an explicit goal were asked: "Did you do anything special to help you while reading?" If a student was not able to answer this question, s/he was prompted using his/her own recorded non-verbal behaviours. For example, for a student who highlighted a section of the text, the prompt, "How did highlighting help you while reading?" was used. All responses were recorded verbatim and were coded using Mokhtari and Sheorey's (2002) types of reading strategies.

Finally, the researcher individually administered an adapted version of the Survey of Reading Strategies (SORS; Mokhtari & Sheorey, 2002, See Appendix H). This questionnaire asked participants about their awareness of the reading strategies they used while reading school-related materials and the social studies text. The SORS was originally designed to

measure ESL adolescent and adults' awareness of the reading strategies used when engaged with academic materials.

The grade 6 SORS consists of 25 items that were adapted from the original version to suit language minority sixth graders. Language was simplified (e.g., use of terms common to grade 6 students) and some items were excluded. It was piloted with three LM attending grade 6 and no changes were needed. The items are subdivided into three categories: global reading strategies (GRs, 9 items), problem solving strategies (PSRs, 7 items), and support strategies (SRs, 9 items). The definition of each category is the same as in the original SORS (Mokhtari & Sheorey, 2002). Global reading strategies include "intentional, carefully planned techniques by which learners monitor or manage their reading" (p. 4). Examples are: setting a purpose, previewing the text, using pictures or graphics. Problem reading strategies refer to the specific techniques readers use while working on the text to address difficulties (e.g., adjusting reading speed, re-reading, and guessing the meaning of unknown words). Support strategies refer to mechanisms used to aid the comprehension of the text (e.g., using the dictionary, translating, taking notes, underlining, highlighting). Participants responded to a 5-point Likert scale ranging from 1 (never or almost never) to 5 (always or almost always) to indicate the frequency with which they use the reading strategy implied in the statement. Responses were recorded, summed and divided by 25 to obtain students' overall average score for items on the instrument. This score indicates how frequently participants believe they use the reading strategies presented when reading for school. To calculate the average frequency of use of each type of reading strategy, responses to items within each category were added and averaged.

Mokhtari and Sheorey (2002) describe three levels of frequency of reading strategy use: a) high (mean > 3.5), b) moderate (mean > 2.5 < 3.4) or c) low (mean < 2.4). These levels were used to interpret the scores participants obtained from the SORS in this study. This applies both for the total and the subscale (types of strategies) scores. Therefore, if a student obtains a low score on any of the subscales, it indicates some instruction should be provided regarding those strategies.

Additionally, participants were asked to respond "Yes" or "No" to indicate whether they used the strategies while reading the social studies text. This data was coded by type of reading strategy according to Mokhtari and Sheorey (2002) (i.e., global, problem solving and support). This data was used in conjunction with the information gathered in the retrospective interview as both measures provided information about students' perceived general and context specific strategy use.

3.2.3.4 Scoring

For measures with published norms, the percentile score obtained was calculated and the individual performance was qualified according to the following: below average ($\leq 25^{th}$ percentile), average (26th -75th percentile), and above average ($\geq 76^{th}$ percentile). For experimental measures, the performance of the case-study participants was compared to the whole group (N=24) mean and standard deviation for each measure. Scores plus or minus 1 SD from the group mean were used to define students' performance as being above and below average. See Appendix I for descriptive statistics for the sample in all the measures.

Chapter 4: Results

This chapter is organized in two sections. In the first section, the results from the screening phase are presented. The screening phase results include an item analysis for the SDRT-4 and a description of the reading comprehension performance for each case-study. In the second section, the results from the multiple-case study phase are presented. The second section is organized according to the three research questions that guided this study. For each of question, the individual case studies are presented first and are followed by a cross-case analysis.

4.1 Screening phase

The reading comprehension performance of 24 language minority sixth graders was assessed with the Brown level of the Stanford Diagnostic Reading Test 4 (SDRT 4). The results obtained on this measure were used to select the students of interest for the multiple-case study. Table 4.1 presents the descriptive statistics obtained by the sample in the SDRT 4.

Table 4.1 Descriptive statistics SDRT 4 (N=24)

Statistic	Value
Mean	44.25
SD	8.78
Median	47
Min	20
Max	53

The majority of participants (87.5%) performed in the average or above average range (i.e., >35th percentile) when compared to the test norms (grade-based). This indicates that most of the participants in this study are meeting expectations for students in grade 6 to gain meaning and make inferences from texts—they were good reading comprehenders (GC). However, three participants (12.5%) performed below the cut off ($\leq$ 25th percentile) on this measure indicating a difficulty in understanding the texts. These students were classified as poor reading comprehenders (PC) and selected as case studies to understand how their reading-related linguistic and cognitive skills and their use of reading strategies differed from those of the good reading comprehenders (matches).

4.1.1 SDRT 4 item analysis

Given that the SDRT 4 was not standardized with language minority students, an item analysis of the SDRT 4 for the sample (N = 24) was conducted to better understand the reading comprehension performance of the students in the case studies. It was found that in eight of the 54 reading comprehension questions the percentage of participants that answered them incorrectly was within the range of 33.3% to 65.2% (see Table 4.2) These results are relevant for the interpretation of the reading comprehension performance in the SDRT 4 of participants in the case studies

As it can be seen in Table 4.2, both the poor and good reading comprehenders in the multiple-case study had difficulty answering these questions. It is important to note that during the testing session some participants asked the researcher about the meaning of words included in certain questions (i.e., 10, 34, and 51). For example, question 10 asked “Which is an *opinion* in the article?” and students did not know the meaning of *opinion.* Or in question 34, the answer choices included words these students did not understand and were not presented in the text (i.e., conceited, informal). The researcher did not provide any answers to these questions.

Table 4.2 Incorrect responses in the SDRT 4 for the sample and multiple-case study participants

Question	Type of Text	Mode of Comprehension	Incorrect Responses		
				Multiple-case study	
			% of the sample (N=24)	Poor comprehenders (n=3)	Good Comprehenders (n=6)
5	Functional Reading	Critical Analysis	37.50	3	0
10	Textual Reading	Critical Analysis	33.3	3	2
19	Textual Reading	Interpretation	41.7	3	2
32*	Recreational Reading	Process Strategies	65.22	2	5
34*	Recreational Reading	Interpretation	47.83	1	3
39**	Textual Reading	Critical Analysis	63.64	1	3
41**	Textual Reading	Interpretation	45.45	1	2
51**	Recreational Reading	Interpretation	36.36	0	1

*1 poor comprehender did not attempt the question (n= 23); ** 2 poor comprehenders did not attempt the question (n=22)

An error in answering these flagged questions could be related to: a) individual issues related to those questions (e.g., limited vocabulary, lack of understanding), b) specific patterns of reading comprehension difficulties characteristic of many language minority readers in grade 6, or c) lack of sensitivity of those questions to assess reading comprehension in grade 6 language minority students.

Since there appeared to be differential item functioning in the SDRT 4, caution should be

exercised in interpreting failure to respond correctly to those items as it may not be a reflection of poor reading comprehension ability.

4.1.2 Case-studies: Reading comprehension performance

4.1.2.1 Case-study 1

In the SDRT 4, TS performed in the below average range as her score was in the 18th percentile. She completed the test within the time limit and gave the wrong answer to 28 questions in the text including 7 of the flagged questions with which many participants had difficulty. An error analysis showed that TS had more difficulty building meaning from grade-level informational texts (SDRT 4 textual reading) than from narrative materials read for enjoyment (SDRT 4 recreational reading) or from texts met in everyday life situations (e.g., posters, SDRT 4 functional reading). Across the test, most of her errors were caused by failure to interpret explicit and implicit information presented in the texts correctly. However, she also had difficulty synthesizing and assessing information (critical analysis), defining and using text characteristics and reader strategies (process strategies), and in some instances comprehending explicit information in the text (initial understanding). In questions 5, 10, 34, and 41 her errors could be related to lack of vocabulary understanding (e.g., did not know the meaning of *opinion, conceited*), or to a difficulty using text cues to grasp the meaning of unknown words (e.g., *framework*). In question 19, her error was related to poor understanding of the text.

TS' goal match: RN's performance in the SDRT 4 was in the above average range. Her score was in the 85th percentile and she completed the test within the time limit. She answered 49 of the 54 items correctly and three of her errors were made on flagged questions with which many participants had difficulty. RN had no difficulty building meaning from the different types of text presented, interpreting, synthesizing and assessing the information in the texts or using process strategies.

TS' no goal match: VM's performance in the SDRT 4 was in the average range. Her score was in the 63rd percentile and she completed the test within the time limit. She answered 43 of the 54 items correctly and two of her errors were made on flagged questions with which many participants had difficulty. RN answered five questions related to informational texts (SDRT 4 textual reading) incorrectly. Out of her total number of errors, six were caused by failure to interpret explicit and implicit information presented in the texts correctly. She had no difficulty building meaning from the different types of text presented, synthesizing and assessing the information in the texts or using process strategies.

4.1.2.2 Case-study 2

HD obtained a percentile score (9th) below the average range in the SDRT 4. Within the test's time limit, he attempted 37 questions leaving blank the17 questions for the last three texts in the test. Throughout the test he had a total of 17 errors including four of the flagged questions with which many participants had more difficulty. An error analysis showed that HD had more difficulty building meaning from recreational/narrative texts (materials read for enjoyment) than from grade-level informational texts (SDRT 4 textual reading) or from texts met in everyday life situations (SDRT 4 functional reading). Across the test, most of his errors were caused by failure to interpret explicit and implicit information presented in the texts correctly. However, he also had some difficulty defining and using text characteristics and reader strategies (process strategies), and in some instances comprehending explicit information in the text (initial understanding). In questions 5 and 10 his errors could be related to limited vocabulary as he did not know the meaning of the word *opinion*. In question 19, his error was related to poor understanding of the text.

HD's goal match: In the SDRT 4, PR's performance was in the above average range. He scored in the 89th percentile and completed the test within the time limit. He answered 50 of the 54 items

correctly and one of his errors was made on a flagged question. PR had no difficulty building meaning from the different types of text presented, interpreting, synthesizing and assessing the information in the texts or using process strategies.

HD's no goal match: In the SDRT 4, ED's performance was in the above average range. He scored in the 85th percentile and completed the test within the time limit. He answered 49 of the 54 items correctly and four of his errors were made on flagged questions. ED had no difficulty building meaning from the different types of text presented, interpreting, synthesizing and assessing the information in the texts or using process strategies.

4.1.2.3 Case-study 3

ML obtained a percentile score (15th) below the average range in the SDRT 4. Within the test's time limit, he attempted 30 questions leaving blank 24 questions for the last four texts in the test. Text reading speed was a primary problem for him. ML had 6 errors throughout the test including 3 of the flagged questions with which many participants had difficulty. An error analysis shows that ML had more difficulty building meaning from grade-level informational texts (SDRT 4 textual reading) than from texts met in everyday life situations (SDRT 4 functional reading). He did not show any difficulty with the recreational/narrative texts he read. Most of his errors were caused by failure to interpret explicit and implicit information presented in the texts correctly. ML underlined words he did not know (e.g., opinion) and made notes on the text and answer sheets. Errors in questions 5 and 10 might be related to limited vocabulary as he did not know the meaning of the word *opinion* whereas his error in question 19 was related to lack of understanding.

ML's goal match: In the SDRT 4, OC's performance was in the above average range. He scored in the 81st percentile and completed the test within the time limit. He answered 48 of the 54 items correctly and four of his errors were made on flagged questions. OC had no difficulty building

meaning from the different types of text presented nor did he have difficulty interpreting, synthesizing and assessing the information in the texts or using process strategies.

ML's no goal match: In the SDRT 4, JA's performance was in the average range. He scored in the 70th percentile and completed the test within the time limit. He answered 45 of the 54 items correctly and five of his errors were made on flagged questions. JA answered seven questions related to informational texts (SDRT 4 textual reading) incorrectly. Out of his total number of errors, five were caused by failure to interpret explicit and implicit information presented in the texts correctly. He had no difficulty building meaning from recreational/narrative or functional texts nor did he have difficulty synthesizing and assessing the information in the texts or using process strategies.

4.2 Multiple-case study phase

To address each research question, the individual case studies are presented first and are followed by a cross-case analysis. Cases are described in relation to tables of norms (percentile) for measures that had them available and to the sample's mean for unpublished measures (see Appendix I).

4.2.1 Reading-related linguistic and cognitive skills

The first research question asked, "How do LM students with good reading comprehension differ from LM students with poor reading comprehension in terms of their word-level reading skills, English language proficiency, and working memory?"

4.2.1.1 Case-study 1

Table 4.3 presents the results obtained on all measures of cognitive skills related to reading comprehension for case-study 1.

4.2.1.1.1 Word-level reading skills

TS' word-level accuracy and efficiency skills were within the average range whereas her

Table 4.3 Case-study 1: Results obtained in reading-related skills

	Skill	Measure	TS		RN (Match G)		VM (Match NG)	
			Raw	%ile	Raw	%ile	Raw	%ile
Word-level reading	Words	Accuracy (WI)	55	42	62	75	60	64
		Efficiency (TOWRE SW)	70	39	82	82	97	98
	Non-words	Accuracy (WA)	25	49	27	63	30	86
		Efficiency (TOWRE PD)	42	64	49	82	58	99
Language Proficiency	Morphological awareness	DST Words	7*		10		10	
		DST non-words	4*		9		8	
		PST meaning	1*		6		8	
		PST word	2*		11		14	
	Expressive Vocabulary	Picture Vocabulary	25	37	25	38	29	69
	Syntactic Awareness	Oral cloze	10*		17		14	
Working Memory		WM for Sentences	2*		4		4	

G: Goal, NG: No goal. WI (Word identification WJ III), WA (Word attack WJ III), TOWRE SW (Sight word), TOWRE PD (Phonemic decoding). DST (Derivational Suffix Task), PST (Prefix and Suffix Task), WM (Working Memory); *Below the average range.

matches obtained scores in the high end of the average range or above the average range for word reading accuracy, and above the average range in measures of word-level reading efficiency. In a measure of word reading accuracy (WJ III Word Identification), it was found that TS had more difficulty than her matches identifying and pronouncing words of increasing complexity. An error analysis showed that she had more difficulty reading less frequent and irregular words correctly. When compared to her matches, TS made more errors in longer words, omitted some sounds and did not use the common English pronunciation for some graphemes in a measure of non-word reading accuracy (WJ III Word attack) . As for the reading efficiency performance for words and non-words, it was found that TS was able to read in the alloted time less words and non-words than her matches.

In spite of having obtained a score in the high end of the average range in a measure of non-word reading efficiency (TOWRE PD), her matches performed in the above average range. This indicates TS' reading fluency at the word-level is less developed than her matches' who were good reading comprehenders.

4.2.1.1.2 Language proficiency

Morphological awareness: TS's performance on measures of morphological awareness was in the below average range whereas RN and VM obtained scores within the average range. This indicates that TS' sensitivity to the morphemes in words and non-words is not well established in comparison to her matches who were good reading comprehenders. An error analysis of the Derivational Suffix Task (Singson et al., 2000) showed TS had more difficulty with the non-words task than with the words task. In general her errors were related to suffixes forming adjectives from nouns (i.e., al, ous) and with suffixes forming nouns denoting a person's affiliation (i.e., ist) or meaning 'the action or result of" (i.e., tion). In the Prefix and Suffix Task (Siegel, nd), she also had difficulty defining prefixes and

suffixes, and providing words using them. When using prefixes to form a word, TS provided a word that had those letters or sounds (i.e., prefix re, word read; prefix anti, word aunti). She was able to use two suffixes correctly (i.e., ism and ful).

Expressive vocabulary: It was found that TS , RN and VM obtained scores within the average range in the WJ Picture Vocabulary test. This indicates that their expressive vocabulary and vocabulary knowledge in English is the expected for their age.

Syntactic awareness: TS' performance on the Oral Cloze task (Siegel & Ryan, 1988) was below the average range whereas RN and VM had an average performance. An error analysis showed TS tended to complete the sentence with a word already included in the sentence which could be related to working memory issues. She showed difficulty on sentences missing verbs, prepositions and adverbs.

4.2.1.1.3 Working memory

TS obtained a score below the average range in a measure of verbal working memory whereas both matches performed within the average range. It was found that TS was able to hold and manipulate fewer units of information than her matches who were good reading comprehenders.

Figure 4.1 summarizes the results for students in case-study 1 on measures of reading-related cognitive skills for this case-study.

In general, it was found that TS' performance on measures of word-level reading skills, English language proficiency (morphological and syntactic awareness), and working memory was different to that of the good reading comprehenders in this case-study. When compared to her matches, TS obtained lower scores in all measures taken but the largest differences were observed in morphological, syntactic awareness and working memory, in which she scored below the average range. Even though

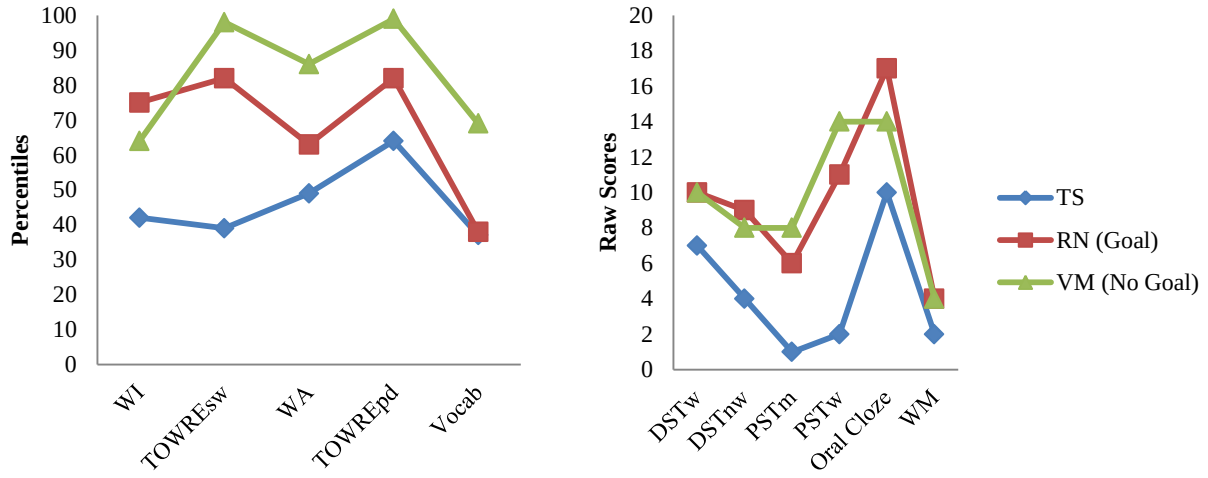

Figure 4.1 Reading-related cognitive skills in case-study1

Note: WI (Word identification), WA (Word attack), TOWREsw (Sight word), TOWREpd (Phonemic decoding), DSTw/nw (Derivational Suffix Task Word/Non word), PSTm/w (Prefix and Suffix Task meaning/word), WM (Working memory)

TS' performance on measures of word and non-word reading accuracy and efficiency were in the average range, RN and VM performed in the high end of the average range or above the average range. As for the expressive vocabulary skills, TS and RN had a similar performance whereas VM scored in the high end of the average range.

4.2.1.2 Case-study 2

Table 4.4 presents the results obtained on all measures of cognitive skills related to reading comprehension for case-study 2.

4.2.1.2.1 Word-level reading skills

It was found that HD's ability to identify and pronounce words of increasing complexity, to decode non-words, and his word-level reading fluency is well established for his age. He obtained an average score on a measure of word reading accuracy and a score in the high end of the average range on a measure of word reading efficiency, but his matches obtained scores well above the average range

Table 4.4 Case-study 2: Results obtained in reading-related skills

	Skill	Measure	HD		PR (Match G)		ED (Match NG)	
			Raw	%ile	Raw	%ile	Raw	%ile
Word-level reading	Words	Accuracy (WI)	59	53	67	92	65	82
		Efficiency (TOWRE SW)	81	67	91	94	94	93
	Non-words	Accuracy (WA)	30	84	27	62	28	66
		Efficiency (TOWRE PD)	52	84	56	97	52	84
Language Proficiency	Morphological awareness	DST Words	10		10		10	
		DST Non-words	6*		10		9	
		PST meaning	3*		7		8	
		PST word	13		16**		13	
	Expressive Vocabulary	Picture Vocabulary	26	42	34	94	35	94
	Syntactic Awareness	Oral cloze	13		14		13	
Working Memory		WM for Sentences	4		3		3	

G: Goal, NG: No goal. WI (Word identification WJ III), WA (Word attack WJ III), TOWRE SW (Sight word), TOWRE PD (Phonemic decoding), DST (Derivational Suffix Task), PST (Prefix and Suffix Task), WM (Working memory); * Below the average range; ** Above the average range

on the same measures. HD's performance on measures of non-word reading accuracy and efficiency was above the average range whereas PR and ED performed in the average in a measure of non-word reading accuracy and in the above average range in a measure of non-word reading efficiency.

4.2.1.2.2 Language proficiency

Morphological awareness: HD's performance on two measures of morphological awareness (Derivational Suffix Task for non-words and Prefix and Suffix Task meaning) was in the below average range. This indicates that his sensitivity to the morphemes (suffixes) in non-words and his ability to define prefixes is not well established. Conversely, PR and ED's performance on these measures was in the average range. An error analysis of the Derivational Suffix Task (Singson et al., 2000) showed HD's errors were related to sensitivity to suffixes forming adjectives from nouns (i.e., al, ous) and to suffixes forming nouns from adjectives (i.e., ity). HD was better at defining prefixes than suffixes but was able to provide correct words using both of them. The performance of HD and his matches on a measure of morphological awareness with words, and on a task requiring them to generate words using suffixes and prefixes was in the average range. PR's ability to generate words using prefixes and suffixes was excellent.

Expressive vocabulary: HD obtained a score within the average range in the WJ Picture Vocabulary Test, whereas PR and ED performace was in the above average range. Altough HD performs similarly to peers his age, his expressive vocabulary knowledge score in English was lower to that of his good reading comprehension matches.

Syntactic awareness: HD, PR and ED's performance in the Oral Cloze task (Siegel & Ryan, 1988) was in the average range.

4.2.1.2.3 Working memory

HD and his matches obtained a score in the average range on a measure of verbal working

memory. HD was able to hold and manipulate four units of information whereas PR and ED held and manipulated three units of information.

Figure 4.2 summarizes the results for students in case-study 2 on measures of reading-related cognitive skills for this case-study.

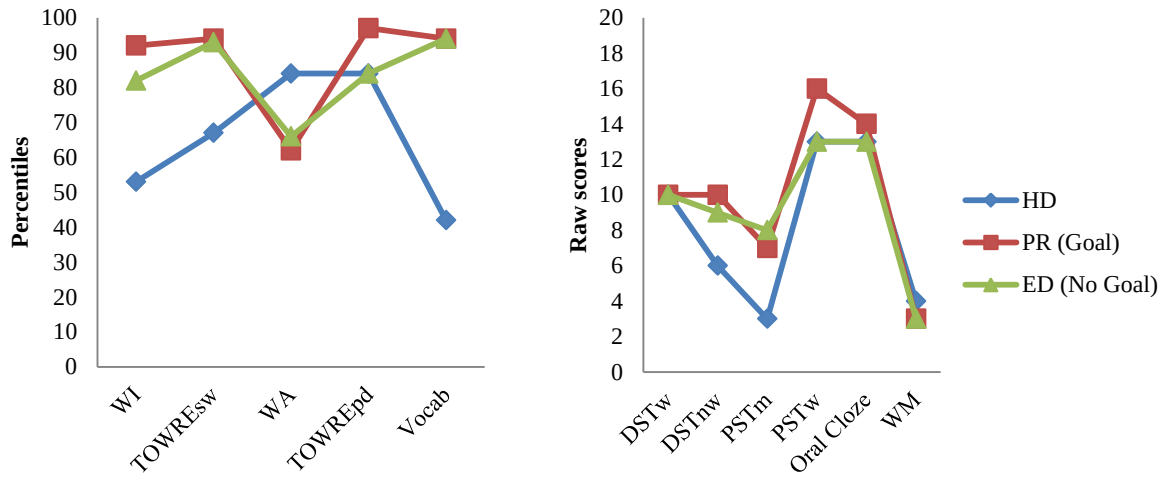

Figure 4.2 Reading-related cognitive skills in case-study 2

Note: WI (Word identification), WA (Word attack), TOWREsw (Sight word), TOWREpd (Phonemic decoding), DSTw/nw (Derivational Suffix Task Word/Non word), PSTm/w (Prefix and Suffix Task meaning/word), WM (Working memory)

To summarize, it was found that HD's performance on measures of English language proficiency and word-level reading skills was different from that of the good reading comprehenders. When compared to his matches, HD obtained lower scores on measures of morphological awareness and in spite of having performed in the average range on the rest of the measures, he obtained lower results on measures of word reading accuracy and efficiency and vocabulary knowledge. However, HD obtained better scores than his matches on working memory and non-word reading measures. No differences were observed in syntactic awareness.

4.2.1.3 Case-study 3

Table 4.5 presents the results obtained on all measures of cognitive skills related to reading comprehension for case-study 3.

4.2.1.3.1 Word-level reading skills

ML's performance on measures of word reading accuracy and efficiency was in the low end of the average range but his performance on measures of non-word decoding and efficiency was in the average range. He had a difficulty reading less frequent and irregular words. OC obtained scores in the high end of the average range on the measure of word reading accuracy and in the above average range in a measure of word reading efficiency. His performance in a measure of non-word reading accuracy was in the low end of the average range but the score he obtained in a measure of non-word reading efficiency was in the high end of the average range

JA performed in the low end of the average range on measures of reading accuracy and efficiency both for words and non-words. Therefore, in comparison to peers his age, ML's ability to identify and pronounce words of increasing complexity, to decode non-words, and his word-level reading fluency is adequate, but he seems to make more word reading identification errors and to read at a slower rate when compared to OC. This may be the reason why he was not able to finish the reading comprehension test within the time limit. JA and ML obtained a very similar performance in the word-level reading skills.

4.2.1.3.2 Language proficiency

Morphological awareness: ML's performance on measures of morphological awareness was in the below average range whereas his matches performed either in the average or above the average range. An error analysis of the Derivational Suffix Task (Singson et al., 2000) showed ML

Table 4.5 Case-study 3: Results obtained in reading-related skills

Skill		Measure	ML		OC (Match G)		JA (Match NG)	
			Raw	%ile	Raw	%ile	Raw	%ile
Word-level reading	Words	Accuracy (WI)	54	39	59	64	54	34
		Efficiency (TOWRE SW)	69	39	84	85	74	39
	Non-words	Accuracy (WA)	25	49	21	36	21	32
		Efficiency (TOWRE PD)	38	48	46	74	32	27
Language Proficiency	Morphological awareness	DST Words	9*		10		10	
		DST Non-words	7*		8		10	
		PST meaning	0*		9		11	
		PST word	7*		16**		13	
	Expressive Vocabulary	Picture Vocabulary	27	54	29	72	20	8
	Syntactic Awareness	Oral cloze	13		12*		18**	
Working Memory		WM for Sentences	3		4		4	

G: Goal, NG: No goal. WI (Word identification WJ III), WA (Word attack WJ III), TOWRE SW (Sight word), TOWRE PD (Phonemic decoding), DST (Derivational Suffix Task), PST (Prefix and Suffix Task), WM (Working Memory); * Below the average range; ** Above the average range

had more difficulty with the non-words task than with the words task. In general his errors were related to suffixes forming adjectives from nouns (i.e., ous), suffixes forming nouns from adjectives (i.e., ive) and suffixes related to verbs (i.e., ate). ML had difficulty defining prefixes and suffixes, but he was better at providing words using them. When using prefixes and suffixes to form a word, ML provided a word that had those letters or sounds in it (e.g., prefix un, word under; prefix dis, word disk; suffix ful, word full). He was able to use five prefixes (i.e., anti, phil, geo, pre, tele) and two suffixes correctly (i.e., ism and ology). ML asked the researcher whether he could form the words in his first language (Uzbek).

Expressive vocabulary: ML and OC obtained a score within the average range whereas JA performed below the average range in the WJ Picture Vocabulary Test.

Syntactic awareness: Performance on the Oral Cloze task (Siegel & Ryan, 1988) was different for each participant: ML performed in the average range, OC in the below average range and JA in the above average range.

4.2.1.3.3 Working Memory

All three participants obtained a score in the average range in a measure of verbal working memory. ML was able to hold and manipulate fewer units of information than his matches.

Figure 4.3 summarizes the results for students in case-study 3 on measures of reading-related cognitive skills for this case-study.

To summarize, it was found that ML's performance on measures of English language proficiency (morphological awareness) and word-level reading skills was different to that of the good reading comprehenders. When compared to his matches, HD

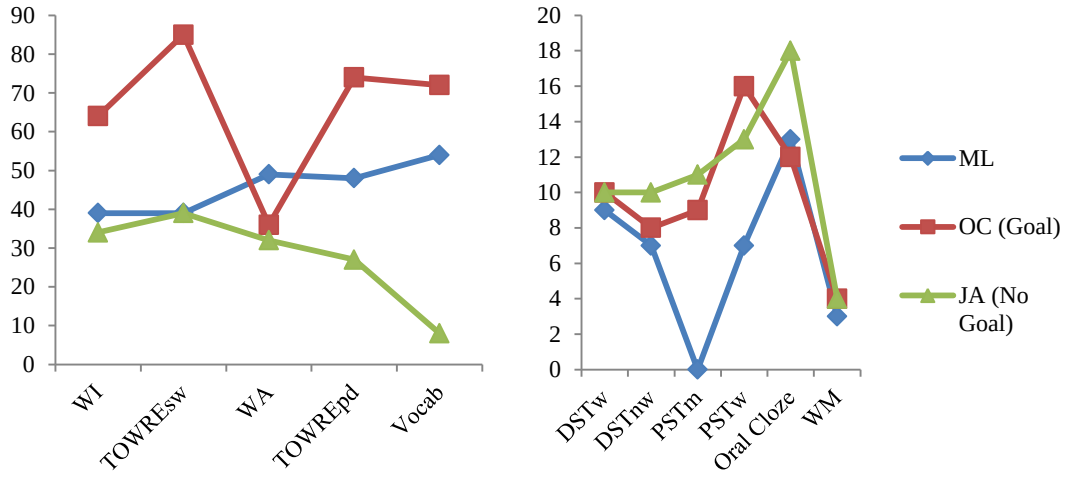

Figure 4.3 Reading-related cognitive skills in case-study 3

Note: WI (Word identification), WA (Word attack), TOWREsw (Sight word), TOWREpd (Phonemic decoding), DSTw/nw (Derivational Suffix Task Word/Non word), PSTm/w (Prefix and Suffix Task meaning/word), WM (Working memory)

obtained lower scores in measures of morphological awareness. In comparison to OC, ML performed lower on measures of word reading accuracy and efficiency, vocabulary and working memory; their performance was similar on a measure of syntactic awareness. ML and JA's profiles were similar at the word-level reading skills but JA's vocabulary knowledge was also below the average range. It seems that JA compensates for his vocabulary issues with good morphological and syntactic awareness as well as working memory skills. When compared to his matches, ML's non-word decoding skills were better.

4.2.1.4 Cross-case analysis

How did language minority students with good reading comprehension differ from language minority students with poor reading comprehension in terms of their word-level reading skills, English language proficiency, and working memory?

A cross-case analysis indicated that the poor reading comprehenders differed from the good reading comprehenders in their morphological awareness skills. Sensitivity to suffixes and knowing the meaning of prefixes and suffixes were the skills that the good comprehenders had and the poor comprehenders lacked. Additionally, the poor reading comprehenders obtained lower scores, but within the average range, in measures of word reading accuracy and efficiency. The poor reading comprehenders tended to have more errors on less frequent and irregular words, and to read words at a slower rate than the good reading comprehenders. However this might be related to low vocabulary skills. In fact, in one of the presented cases, despite the average performance of the poor comprehender (HD) in expressive vocabulary and vocabulary knowledge, there is a noticeable difference on this aspect with his matches who were good comprehenders. The latter obtained scores either in the higher end of the average range or in the above average range, whereas the former's score was in the lower end of the average range. Based on the studied cases, non-word reading accuracy and efficiency skills, working memory performance and syntactic awareness did not contribute to the reading comprehension performance of the poor comprehenders as they tended to obtain either similar or higher scores to the good comprehenders on these measures.

4.2.2 Reading comprehension and use of reading strategies

The second research question asked, "How do LM good and poor reading comprehenders differ in their use of reading comprehension strategies?"

To address this question, data from various sources was used: a) observations made by the researcher while students completed a researcher designed reading comprehension activity, b) information obtained during individual retrospective

interviews that assessed student-generated reading strategies, and c) the results from the Survey of Reading Strategies (SORS). The SORS asked participants about their awareness of the reading strategies they used while reading school-related materials and the social studies text.

4.2.2.1 Case-study 1

Table 4.6 presents observed strategies during the research activity, and the results obtained in the retrospective interview and from the SORS.

Table 4.6 Case-study 1: Use of reading strategies

Measure		TS	RN (Match G)	VM (Match NG)
Observed strategies*	Before reading	Inquiry	Inquiry	None
	While reading	PS/SRs	G/SRs	G/PSRs
	After reading	PSRs	PS/SRs	None
Self-generated strategies	Interview*	N/A	Yes	Yes
	Type of Rs		PS/SRs	PSRs
SORS	Total Score	2.76	3.64	3.12
Rs for school materials	GRs	2.77	4.11	3
	PSRs	3.57	4.14	3.71
	SRs	2.11	2.77	2.77
Rs for Social Studies text **	GRs	3	6	6
	PSRs	5	6	6
	SRs	2	4	3

G (goal), NG (no goal), Rs (Reading strategies), G (Global), PS (Problem solving), S (Support), N/A (None reported) * Refer to Appendix J; ** Number of reported Rs

4.2.2.1.1 Reading comprehension activity

Behavioural observations

Participants approached the reading comprehension activity using different strategies. Before reading, TS and RN requested more information about the activity (TS: "What is a summary?" RN: "Do we use the highlighter to highlight important words?"). While reading the social studies text, TS used problem solving and support reading strategies (e.g., she read slowly using her finger to keep track of her reading, and used the glossary once without leaving a trace on the text). The good reading comprehenders used global reading strategies (e.g., skimmed through). RN also used a support reading strategy as she highlighted relevant words and sentences leaving a trace on the text, and VM used a problem solving reading strategy (i.e., re- reading). After reading, the two participants with a goal used problem solving and support reading strategies.

Individual retrospective interviews

In a retrospective interview about the strategies participants used while reading the social studies text, TS was not able to generate any strategies whereas both her matches self-generated the strategies they used. RN said "I highlighted the important parts, not the details, just the main ideas (Support reading strategies -SRs) and read it more than once (Problem solving reading strategies -PSRs). During my writing, I read the paragraphs with words I highlighted." She reported using the problem solving reading strategy more frequently than the support reading strategy. VM said, "I visualized the village" and reported she usually uses this problem solving strategy. In response to the researcher prompts during the retrospective interview, TS replied, "It – the glossary- helped me to understand the meaning of words." She referred to using this type of

support reading strategy often ("I usually ask people this and don't look in glossaries or the dictionary"). As RN did not mention the use of the glossary, the researcher prompted her and asked how using it had helped her, to whom she replied: "To find out what a word meant." She referred to using this type of support reading strategy often. VM did not mention having read more than once, so the researcher prompted her and asked how doing it had helped her, to whom she replied, "I read more than once and I know what is happening." She reported using this type of problem solving reading strategy often.Consistency was found between the recorded observations and the results in the retrospective interview (See Appendix J).

4.2.2.1.2 Survey of Reading Strategies (SORS)

In the SORS, all participants in the case-study obtained total scores within the average range. TS and VM obtained a score that indicates a moderate use of reading strategies when reading school materials (TS's total score 2.76; VM's total score 3.12), whereas RN's score indicates a high frequency of using reading strategies (total score 3.64). Of the 25 reading strategies that were presented to them, TS reported using 19 strategies whereas RN and VM reported using 23 of them when reading for school. Their report of the strategies used to approach the social studies text also indicated that TS used fewer strategies (10) than her matches (RN: 16 and VM: 15).

As for the type of reading strategies, all participants in the case-study reported using problem solving reading strategies more often than the other type of strategies. In fact, when reading school materials, the three of them reported using each of the problem solving strategies presented (7) frequently, and the scores they obtained on this sub-scale were in the average range. There is a slight difference in the amount of problem solving

reading strategies that TS used when approaching the social studies text(5) when compared to the good reading comprehenders (6). The problem solving reading strategies these participants reported using was consistent with the researcher's observations while they were reading the text, as well as with their self-report in the retrospective interview. Common problem solving reading strategies they reported using were: "I read slowly and carefully to make sure I understand" and "I re-read when the text is difficult or when I lose concentration." Refer to Appendix K for more examples of reading strategies used and the frequency these participants reported using them when reading for school.

In second place of frequency of use, participants in this case-study reported global reading strategies. In this case, RN reported a high frequency of use whereas TS and VM reported a moderate frequency of use. Similarly, RN's result was above the average range whereas TS' and VM's results were in the average range. It was found that TS reported using less global reading strategies than the good reading comprehenders both when reading for school (7 items vs. 9 –RN- and 8-VM), and when approaching the social studies text (3 items vs. 6 items–RN and VM). Even though TS had an explicit goal to perform after reading the social studies text, she replied "No" to the statement: "I have a goal in mind when I read", whereas RN reported having had a goal in mind when reading the text. Examples of common global reading strategies these three students reported using when approaching a reading task include using the title to guess what the text was about and connecting information in the text with their knowledge to aid understanding of the text (refer to Appendix K for more examples).

The least frequently used type of reading strategies were support reading strategies. Although participants in this case-study obtained scores in the average range,

TS reported a low frequency of use of support reading strategies whereas the good reading comprehenders reported a moderate frequency of use of these strategies. This result is consistent with the amount of support reading strategies TS reported using when reading school materials and when approaching the social studies text (5 and 2 of 9 items presented), and the amount of strategies the good reading comprehenders reported using with the same purposes (school materials: RN=7, VM=8; text: RN=4, VM=3). The support reading strategies participants reported using while reading the social studies text were consistent with the researcher's observations and the self-generated strategies in the retrospective interview. It was found that good reading comprehenders used different support reading strategies than TS. For example, TS reported never underlining information but sometimes reading aloud to help her understand, whereas both RN and VM reported the opposite (refer to Appendix K for more examples).

To summarize, participants in this case-study demonstrated the use of reading strategies before, during and after reading the social studies text. The good reading comprehenders used a combination of global reading strategies and the other types of strategies whereas TS approached the research activity with problem solving and support strategies. The retrospective interview results suggest that, in this case-study, the good reading comprehenders were more aware of the reading strategies than TS.

The results from the SORS showed that TS reported using fewer reading strategies when reading school materials than her matches, thus in this case-study good reading comprehenders reported being more strategic than TS. In spite of having been assigned an explicit goal to perform after reading, TS reported not having it in mind whereas RN did. Participants in this case-study reported using problem solving strategies

more frequently than global or support strategies, and more global than support reading strategies. In this case-study, the use of problem solving reading strategies when reading school materials did not differentiate between the good and poor reading comprehenders. However, when reading for school, the use of global and support reading strategies was different between them. The good comprehenders reported using more global reading strategies and different support reading strategies than TS (e.g., TS reported she occasionally read aloud to aid her understanding whereas both RN and VM said the never did so). A different pattern was observed in the type of strategies they reported using while reading the social studies text. The good reading comprehenders reported using the same amount of global and problem solving reading strategies, and they used these more than support reading strategies. Conversely, TS reported a more frequent use of problem solving than global and support reading strategies.

4.2.2.2 Case-study 2

Table 4.7 presents observed strategies during the research activity, and the results obtained in the retrospective interview and from the SORS.

4.2.2.2.1 Reading comprehension activity

Behavioural observations

Participants approached the reading comprehension activity using different strategies. Before reading, HD requested more information about the activity (i.e., “What is a summary?”). While reading, HD used support and problem solving reading strategies (i.e., he read slowly and used the glossary once) whereas good reading comprehenders used global and problem solving reading strategies (i.e., skimmed through first and then read slowly and carefully). After reading, participants with a goal kept using problem

solving and support reading strategies.

Table 4.7 Case-study 2: Use of reading strategies

Measure		HD	PR (Match G)	ED (Match NG)
Observed strategies*	Before reading	Inquiry	None	None
	While reading	PS/SRs	GRs	G/PSRs
	After reading	PS/SRs	PSRs	None
Self-generated strategies	Interview*	N/A	Yes	Yes
	Type of Rs		G/PSRs	G/PSRs
SORS	Total Score	3.16	2.72	2.4
Rs for School materials	GRs	3.22	3.44	2.44
	PSRs	3.71	3	3.42
	SRs	2.66	1.77	1.55
Rs for Social Studies text**	GRs	2	6	3
	PSRs	5	1	4
	SRs	1	1	1

G (goal), NG (no goal), Rs (Reading strategies), G (Global), PS (Problem solving), S (Support), N/A (None reported) * Refer to Appendix J; **Number of reported Rs

Individual retrospective interviews

In a retrospective interview about the strategies participants used while reading the social studies text, HD was not able to generate any strategies whereas good reading comprehenders in this case-study did. PR said: “I didn’t do much. I read through looking at the facts and simplified (when writing the summary) some of it.”

HD was aware of having used a global reading strategy to approach the text and said he often did. On the other hand, ED said: “Not really. I read it over again, checked if

there was more text (at the back) and I knew what the words meant so I didn't use the glossary." He was aware and reported having used a problem solving reading strategy to approach the text. In response to the researcher prompt, HD said that using the glossary and re-reading (SRs) had helped him: "It made it easier. If I didn't read again, I wouldn't know much of it. It helps to understand." As PR did not mention having read the text more than once (PSRs), the researcher prompted him and asked how it had helped him, to whom he replied: "Sometimes I wouldn't remember so I go back. It helps to understand." When the researcher prompted ED, asking how re-reading had helped him (PSRs), he replied: "I get something I miss, I read more carefully. First, I read really fast but I miss words or sentences, so then I read more carefully and it helps me understand." He referred to using these global and problem solving reading strategies often when reading for school. Consistency was found between the recorded behaviours and self-generated strategies in the interview (See Appendix J).

4.2.2.2.2 Survey of Reading Strategies (SORS)

In the SORS, HD and PR obtained total scores within the average range whereas ED's score was in the below average range. This same pattern was observed in relation to the total frequency of use of reading strategies reported by participants. HD and PR's scores indicate a moderate use of reading strategies when reading school materials (HD total score 3.16; PR total score 2.72) whereas ED's score indicates a low frequency use of reading strategies (total score 2.4) when reading for school. Of the 25 reading strategies that were presented to them, HD reported using all, PR reported using 21 and ED reported using 15 when reading for school. It was found that the three participants in this case-study reported having used a total of 8 strategies when approaching the social

studies text.

As for the type of reading strategies, results vary for the frequency of use between these participants. HD and ED reported using problem solving reading strategies more frequently than global reading strategies whereas PR reported the opposite. All participants in this case-study reported using less support reading strategies than other types of reading strategies when reading materials for school. Furthermore, HD's SORS subscale scores were in the average range whereas PR and ED obtained scores below the average range in some of them (PR: support and problem solving reading strategies; ED: global and support reading strategies).

It was found that, when reading school materials, HD used problem solving reading strategies more frequently than the good reading comprehenders. His score fell in the high frequency use range whereas PR and ED's fell in the moderate frequency use range. However, the three of them reported using all, or the majority, of the problem solving reading strategies presented to them. As for the amount of problem solving reading strategies they reported using to approach the social studies text, HD reported a higher number than good reading comprehenders. The reported use of these strategies to approach the social studies text was consistent with the behaviours the researcher recorded as well as with the results obtained in the retrospective interview. One problem solving reading strategy all three participants used frequently was: "I re-read when the text is difficult or when I lose concentration" (refer to Appendix K for more examples).

As for the reported use of global reading strategies, HD and PR said that when reading for school they used all the items (9) presented to them with moderate frequency whereas ED said he used 6 of these strategies with low frequency. Differences were noted

as well in the reported amount of global strategies used by these participants to approach the social studies text with PR reporting a higher number than HD and ED. All three participants reported using the title to guess what the text was about and connecting the information in the text with their knowledge to aid understanding of the text. Even though HD had an explicit goal to perform after reading the social studies text, he replied "No" to the statement: "I have a goal in mind when I read" whereas PR reported having had a goal in mind when reading the text. The reported use of global reading strategies was consistent with the observations the researcher recorded as well as with the results obtained in the retrospective interview with one exception: ED did not report using skimming during the SORS, although he mentioned it in the retrospective interview (see Appendix J).

All the participants reported using support reading strategies least frequently when reading school materials and approaching the social studies text. HD reported using all the items presented (9) whereas the good reading comprehenders reported using half or less than that. As for the reported frequency of use, it was found that HD reported using support reading strategies with moderate frequency whereas the good reading comprehenders reported using them with low frequency. The three participants reported using only one (and the same) support reading strategy when they read the social studies text: "I usually think the ideas in my own words to better understand what I read." HD did not report having used the glossary when reading the social studies text despite doing it, but the reported use of support reading strategies for the other participants were consistent with the retrospective interview (see Appendix J). Three strategies the good reading comprehenders reported never using were translating into their first language,

thinking about the information in both English and their first language, or reading aloud to help him understand. Conversely, HD reported he would use these strategies occasionally.

In conclusion, participants in this case-study demonstrated the use of reading strategies before, during and after reading. The good reading comprehenders used mostly global and problem solving reading strategies whereas HD approached the social studies text with problem solving and support reading strategies. The retrospective interview results indicate that, in this case-study, the good reading comprehenders were more aware of the reading strategies they used than HD. However, when HD was prompted, he recognized having used reading strategies.

The results from the SORS showed that HD and PR reported using reading strategies when reading school materials with similar and more frequency than ED. Both HD and PR reported being more strategic than ED did, and in fact, HD reported using reading strategies more frequently than both the good reading comprehenders. In spite of having been assigned an explicit goal to perform after reading, HD reported not having it in mind whereas PR did recall the goal. Nevertheless, differences in the type of reading strategies used were found between the good reading comprehenders and HD. HD reported using more problem solving and support reading strategies and with more frequency than the good reading comprehenders. Furthermore, there was a difference in the type of support reading strategies the good reading comprehenders and HD reported using (e.g., HD reported translating into his first language or reading aloud to aid his understanding. The good comprehenders reported never using those strategies but instead they reported thinking the ideas in their own words).

When approaching the social studies text, all participants in the case-study reported using support reading strategies least frequently. HD reported using a higher number of problem solving reading strategies than the good reading comprehenders whereas PR reported using a higher number of global strategies than HD and ED.

4.2.2.3 Case-study 3

Table 4.8 presents observed strategies during the research activity, the results obtained in the retrospective interview and from the SORS.

Table 4.8 Case-study 3: Use of reading strategies

Measure		ML	OC (Match G)	JA (Match NG)
Observed strategies*	Before reading	Inquiry	None	None
	While reading	PS/SRs	SRs	GRs
	After reading	PS/SRs	PS/SRs	None
Self-generated strategies	Interview*	Yes	N/A	N/A
	Type of Rs	S/PSRs		
SORS	Total Score	3.68	3.44	2.92
RS for School materials	GRs	3.77	3	3
	PSRs	4.14	4.42	4.28
	SRs	3.22	3.11	1.77
RS for Social Studies text**	GRs	5	3	5
	PSRs	4	5	4
	SRs	5	2	0

G (goal), NG (no goal), Rs (Reading strategies), G (Global), PS (Problem solving), S (Support), N/A (None reported) * Refer to Appendix J; ** Number of reported Rs

4.2.2.3.1 Reading comprehension activity

Behavioural observations

Participants approached the research activity with strategic behaviors. Before reading, ML and JA requested more information about the activity (see Appendix J for details). While reading, ML used support and problem solving reading strategies (i.e., he read slowly, used the glossary once and highlighted) whereas the good reading comprehenders used global and problem solving reading strategies (i.e., skimmed through, highlighted). After reading, ML and OC also used problem solving and support reading strategies.

Individual retrospective interviews

In the retrospective interview about the strategies they used while reading the social studies text, ML said, "I highlighted it which helped me to remember the important parts. I also visualized it in my mind as if I was there." ML was aware of having used support and problem solving strategies to approach the text. He said he made notes and used visualization strategies often when reading for school. Conversely, the good reading comprehenders in this case-study were not able to self-generate the reading strategies they used when approaching the social studies text.

Nevertheless, in response to the researcher's prompt, both good reading comprehenders reported their strategies. OC said: "I highlighted what I wanted to write about. That way I knew where I was at and I wouldn't lose my place." He mentioned he used this support reading strategy often. JA said that knowing whether he had to remember the text or making notes helped him: "I want to see if I can get anything from it, what I need it for." He referred to using this global reading strategy often when reading

for school. Since ML did not mention using the glossary or re-reading, the researcher prompted him and asked how using these had helped him. To which he replied: “To check the meaning of words (glossary) and to get it back into my brain (re-reading).” It confirmed the observations recorded in Appendix J.

4.2.2.3.2 Survey of Reading Strategies (SORS)

In the SORS, all participants obtained total and sub-scale scores within the average range, except JA who scored below the average range in the reported frequency of use of support reading strategies. A difference between ML and the good reading comprehenders was found in terms of the reported amount and frequency of use of reading strategies when reading school materials. ML reported using 23 reading strategies, OC said he used 21 and JA reported using 17 of them. As for the frequency of use, ML obtained a total score that fell in the high frequency use (3.44) whereas the good reading comprehenders’ total scores fell in the moderate frequency use (OC= 3.44; JA= 2.92). The same pattern was observed in the reported amount of reading strategies used when reading the social studies text with ML reporting a higher number than good reading comprehenders in this case-study.

All participants in this case-study reported using problem solving reading strategies most frequently. In fact the three of them reported using problem solving reading strategies with high frequency. When reading for school, ML and OC said they used each of the problem solving reading strategies presented (7) and JA reported using 6 of them. They also reported having used a similar amount of this type of strategies when reading the social studies text. Examples of problem solving reading strategies the three participants in this case-study reported using (always/usually) are: “I read slowly and

carefully to make sure I understand," and "I re-read when the text is difficult or when I lose concentration" (refer to Appendix K for more examples). Consistency was found between the reported use of problem solving reading strategies in the social studies text, the retrospective interview and the behaviours recorded by the researcher (See Appendix J).

The second most frequently used reading strategies for this group of participants varied on a case-by-case basis. ML and JA reported using global reading strategies more frequently than support reading strategies whereas OC reported a more frequent use of support reading strategies than global reading strategies.

As for the reported amount of global reading strategies used when reading school materials, all participants in the case-study reported a similar number (8 for ML and JA; 7 for OC). However, ML reported using them with high frequency whereas the two good reading comprehenders reported a moderate frequency of use. A comparable report was obtained when the amount of global reading strategies used for reading the social studies text was calculated (5 for ML and JA; 3 for OC). Even though ML had an explicit goal to perform after reading the social studies text, he replied "No" to the statement: "I have a goal in mind when I read," whereas OC reported having had a goal in mind when reading the text. One common strategy all of them used when approaching the text was connecting information in the text with their knowledge. When reading materials for school, the three of them said: "I use titles and headings to find important information" (refer to Appendix K for more examples). The results were consistent among measures (i.e., retrospective interview, observations recorded by the researcher and reported use of global reading strategies in the social studies text) (see Appendix J).

As for the use of support reading strategies, ML and OC reported a similar amount of strategies used when reading school materials (8 and 7, respectively) and a similar frequency of use (moderate). Conversely, JA reported using 3 of the 9 items presented with low frequency when reading school materials. A difference in the amount of support reading strategies used to approach the social studies text was found between ML and good reading comprehenders, with the former reporting 5 strategies and the latter 2 (OC) and none (JA). Examples of support reading strategies the three of them reported using with similar frequency when reading for school are "I use a dictionary/ glossary to help me understand what I read" and "I answer the unit questions at the end of the book chapter and then check if I was right or wrong". It was found that when reading for school none of them translated into their home language. However, ML reported he thinks about the information in both English and his home language whereas good reading comprehenders reported never using this strategy (refer to Appendix K for more examples). The support reading strategies reported were consistent with observations recorded by the researcher and results of the retrospective interview (see Appendix J).

In conclusion, participants in this case-study demonstrated the use of reading strategies before, during and after reading. The good reading comprehenders used mostly global and support reading strategies whereas ML approached the reading comprehension activity with problem-solving and support reading strategies. In spite of having been assigned an explicit goal to perform after reading, ML reported not having it in mind whereas OC did. The retrospective interview results indicate that, in this case-study, good reading comprehenders were not aware of the reading strategies they used, but when prompted they recognized having used global and support reading strategies. Conversely,

ML was aware of some of the strategies he used.

The results from the SORS showed that ML reported using reading strategies when reading school materials more frequently than good reading comprehenders in the case-study. Both ML and OC reported being more strategic than JA. All individuals in this case-study reported using more, and on a high frequency basis, problem solving than global or support reading strategies, and more global than support reading strategies. There were no differences between the good reading comprehenders and ML in the use of problem solving reading strategies. However, it was found that the type of support reading strategies the good reading comprehenders and ML reported using was different. When approaching the social studies text, the good reading comprehenders tended to report having used more global (e.g., skimming through, setting a goal) and problem solving (e.g., re-reading) reading strategies than support reading strategies whereas ML reported using about the same amount of the three types of strategies. Still ML reported having used only problem solving and support strategies in the retrospective interview.

4.2.2.4 Cross-case analysis

How did language minority good and poor reading comprehenders differ in their use of reading comprehension strategies? Table 4.9 summarizes the results.

The researcher observed that all participants in these case-studies used strategies before, during and after reading the social studies text. The good reading comprehenders used mostly global reading strategies (combined with the other types) whereas the poor reading comprehenders used problem solving and support reading strategies. In a retrospective interview with the purpose of having participants self-generate the strategies they used to approach the social studies text, the good reading comprehenders tended to

Table 4.9 Cross-case analysis summary: Reading comprehension and use of reading strategies

	Similarities between PC and GC	Differences	
		PC	**GC**
Researcher Observations	Strategic behaviors before, during, after reading	-PSRs and SRs	-Mostly GRs and PSRs/SRs
Individual Retrospective Interviews	N/A	- Less self-aware of used Rs - Reported PSRs/ SRs	- More self-aware of used Rs - Reported GRs /PSRs
SORS (School materials)	-Average scores (Except ED, below average) -Similar number of Rs reported -PSRs most used	- Higher frequency of use of Rs than GC (HD and ML) - SRs used more than GRs - All rely on their first language to understand texts	- Lower frequency of use of Rs than PC (Case-studies 2/3) - GRs used more than SRs - Case-study 1 rely on their first language to understand texts
SORS (Social studies text)	Similar number of Rs reported	- PSRs most used - Similar use of GRs and SRs	- Same use of PSRs and GRs - SRs least used

PC (Poor comprehender), GC (Good comprehender), SORS (Survey of Reading Strategies), PS (Problem solving), S (Support), G (Global), Rs (Reading strategies)

be more aware of the strategies they used than the poor comprehenders. The good comprehenders reported having used global and problem solving reading strategies whereas the poor reading comprehenders reported having used support and problem solving strategies. The results from this interview were consistent with the researcher's

observations.

In the SORS, all but one participant in the case-studies (ED) obtained a total score (perceived frequency of use of reading strategies) that was within the average range when reading school materials. On average, both the good and poor reading comprehenders in the sample reported using about the same amount of reading strategies when reading school materials (21.3 vs. 22.3, respectively) and the social studies text (12.1 vs. 10.6 respectively).

Regarding the frequency with which they used the strategies, in two case-studies it was found that the poor reading comprehenders (HD and ML) reported a more frequent use of strategies than their matches who were good reading comprehenders, whereas in the other case (TS) the opposite pattern was found.

Both the good and poor comprehenders reported using problem solving reading strategies most frequently, so the use of problem solving reading strategies did not differentiate between the good and poor reading comprehenders. Regardless of their reading comprehension performance, the majority of participants would adjust their reading speed when necessary and would pay more attention or re-read when the text was difficult or they lost concentration.

Conversely, it was the frequency of use of global and support reading strategies what established a difference between the poor and good comprehenders. The latter group tended to report more frequent use of global reading strategies such as having a goal in mind, using titles and headings to find important information, or skimming through the text before reading to see what it was about, than the former group. In fact, the three good comprehenders who were assigned an explicit goal to perform after reading the text

reported having had it in mind while reading whereas the three poor comprehenders who had been assigned the same goal did not. On the other hand, the poor reading comprehenders tended to report more frequent use of support reading strategies than the good reading comprehenders. For example, the poor comprehenders reported reading aloud to aid understanding of difficult texts and translating to their first language or thinking the information in both English and their first language when reading, but the good reading comprehenders never reported using these strategies. Regardless of their reading comprehension performance, participants in the case-studies reported using global strategies like (e.g., connecting their knowledge with the information provided in the text) and support strategies like (e.g., using a dictionary and thinking the ideas in their own words) with about the same frequency.

As for specific items within the SORS, the most frequent reading strategies (Rs) reported by participants in the case-studies were: a) I re-read when the text is difficult or when I lose concentration (problem solving reading strategy - PSRs), b) When the text becomes difficult I pay more attention (PSRs), and c) I think about what I know to help me understand what I read (global reading strategy - GRs). The least frequent reading strategies reported by participants in the case-studies were the following support reading strategies (SRs): a) When I read, I translate into my first language, b) When I read I think about the information in both English and my first language, and c) If a text is difficult, I read aloud to help me understand. However, the three poor reading comprehenders and two good comprehenders (RN and VM) reported relying on their first language to understand school reading materials.

When approaching the social studies text, all participants in the study reporting

using support strategies the least frequently. A difference between the good and poor reading comprehenders was that the former tended to report a more frequent use of global and problem solving strategies whereas the latter a more frequent use of problem solving than global reading strategies.

The observations recorded by the researcher and the results obtained from the self-report in the retrospective interview and the SORS were consistent across cases.

4.2.3 Purposeful reading, reading comprehension and the use of reading strategies

The third question guiding this study asked, "How does having an explicit goal promote the use of reading strategies and help the reading comprehension performance of the language minority poor and good reading comprehenders?"

In the researcher designed reading comprehension activity, half of the sample was asked to write a summary (explicit goal) and half of the sample was required to read the social studies text without an explicit goal. Then, participants were presented with four reading comprehension questions to answer in written form but were not told about them in advance. The text questions were scored by two independent raters who reached almost perfect agreement (κ =.944) as 96.8% of the scores assigned to responses given by participants were equally scored by both of them (see Appendix F for scoring criteria).

4.2.3.1 Case-study 1

4.2.3.1.1 Behavioural observations

In the reading comprehension activity, TS worked in a group of 3 students and her matches worked in groups of 4 students. Regarding the use of reading strategies, participants with a goal demonstrated strategic behaviour before reading (TS asked, "What is a summary?" and RN asked, "Do we use the highlighter to highlight important

words?”) and after reading the social studies text (e.g., referring to the text when answering the questions or highlighting) whereas VM, who did not have a goal, did not. The three of them used reading strategies while reading (e.g., reading slowly or skimming through the text).

4.2.3.1.2 Explicit goal and text questions

The quality of TS’ summary indicates that she comprehended the main idea of the text but that she had some difficulty understanding the secondary ideas in it. When writing about these, she copied verbatim from the text. This is consistent with her performance in the reading comprehension questions of the text (see Table 4.10), in which she obtained a score of 3 (poor comprehension) as she answered a question correctly regarding the main idea and accurately interpreted information from the text. However, she was not able to answer the questions about the secondary ideas correctly. TS referred to the text while answering the questions.

Table 4.10 Case-study 1: Text questions results

Measure		TS	RN (Match G)	VM (Match NG)
Text Questions	Total score (Max 5)	3	3	3
	Main idea (2)	2	2	0
	Secondary ideas (2)	0	1	2
	Interpretation (1)	1	0	1

G (goal), NG (no goal)

Besides referring to the text while writing the summary, RN highlighted it again and used the glossary once. The quality of her summary indicates RN comprehended the main idea and some secondary ideas in it. Also, the summary was brief and she used her own words. Although RN referred to the text while answering the text questions, she obtained a score of 3, which indicates she had some difficulty comprehending it (see Table 4.10). She answered a question correctly regarding the main idea and provided an accurate answer about a secondary idea but was not able to interpret the information from the text accurately. Although VM referred to the text while answering the text questions, she obtained a score of 3, which indicates she also had some difficulty comprehending it (see Table 4.10). She answered a question regarding the main idea incorrectly, but provided correct answers for questions about secondary ideas, and interpreted the information from the text accurately. Overall, the three participants in this case study showed poor comprehension in the researcher designed activity.

When taking into consideration the subgrouping by goal and no goal in this case-study, it was found that only participants with a goal were successful at grasping the main idea of the text as it was expressed both in their summaries and in their answers to the text questions. However, it was found that having a goal did not help the overall reading comprehension performance of participants in this case-study.

4.2.3.1.3 Survey of Reading Strategies (SORS)

In the SORS, it was found that RN (good comprehender with a goal) was the participant in this case-study who reported using reading strategies most frequently (high) when reading for school and the most strategies when approaching the researcher designed task. Furthermore, she reported using global reading strategies (high) more

frequently than VM and TS who used this type of strategy on a moderate basis. Even though TS was assigned a goal, her reported use of reading strategies, when reading for school and approaching the social studies text, was lower than that of VM (no goal). In spite of having been assigned an explicit goal to perform after reading, TS reported not having it in mind while reading the social studies text whereas RN did. Having a goal promoted the use and the reported use of reading strategies in a good reading comprehender but not in a poor reading comprehender.

4.2.3.2 Case-study 2

4.2.3.2.1 Behavioural observations

In the researcher designed activity, all participants in this case-study worked in small groups of 4 students. Only HD, the poor comprehender, demonstrated strategic behaviour before reading. He requested more information about the activity by asking, "What is a summary?" All participants used reading strategies during (e.g., reading slowly, highlighting or skimming through the text) and after reading (e.g., referring to the text while answering the questions).

4.2.3.2.2 Explicit goal and text questions

The quality of HD's summary indicates he had some difficulty comprehending the text, it was disorganized and even though he paraphrased the original text, the summary was confusing. This is consistent with his performance in the reading comprehension questions of the text (see Table 4.11), in which he obtained a score of 1 (poor comprehension) as he only answered one question that required him to interpret information from the text correctly. However, he was not able to answer the questions about the main and secondary ideas correctly. HD answered the questions from memory.

Table 4.11 Case-study 2: Text questions results

Measure		HD	PR (Match G)	ED (Match NG)
Text Questions	Total score (Max 5)	1	5	5
	Main idea (2)	0	2	2
	Secondary ideas (2)	0	2	2
	Interpretation (1)	1	1	1

G (goal), NG (no goal)

The quality of PR's summary indicates he had good comprehension of the text as he accurately expressed the main and secondary ideas. He obtained the maximum score (5) in the text questions and answered them from memory. ED referred to the text while answering the text questions, and he obtained the maximum score (5), which indicates he comprehended the text (see Table 4.11).

When taking into consideration the subgrouping by goal and no goal in this case-study, it did not make a difference in terms of the overall reading comprehension performance. It was found that having a goal did not help the reading comprehension performance of HD whereas both good reading comprehenders (regardless of having an explicit goal or not) were successful in the text questions. It was observed that participants with a goal answered the questions from memory whereas ED, who did not have a goal, referred back to the text.

4.2.3.2.3 Survey of Reading Strategies (SORS)

In the SORS, participants with a goal reported using more reading strategies and

with more frequency than ED, who did not have a goal, when reading for school. As for the types of reading strategies, the reported use of global reading strategies was different between participants with an explicit goal and ED. PR and HD reported using global reading strategies more frequently than ED when reading for school. Hence, having a goal promoted their use and reporting of reading strategies. Furthermore, it was found that the good comprehender, PR, who was assigned a goal, reported using more global reading strategies to approach the text than the good comprehender, ED, without a goal, who reported using a similar amount of global and problem solving reading strategies. HD, in spite of having been assigned an explicit goal to perform after reading, reported not having it in mind while reading the social studies text whereas PR did.

4.2.3.3 Case-study 3

4.2.3.3.1 Behavioural observations

In the researcher designed activity, ML worked in a group of 4 students, OC worked with 2 more students and JA with 4 more students. It was observed that before reading, ML and JA requested more information about the activity. For example, ML asked, “Do we have a time limit? Do we read it out-loud?” and JA asked, “Do we have to remember this and make notes?” During and after reading all participants used reading strategies (e.g., reading carefully, skimming through, asking how to approach the reading comprehension questions, and referring to the text while answering them).

4.2.3.3.2 Explicit goal and text questions

The quality of ML’s summary indicates he had some difficulty comprehending the text as he included all secondary ideas but did not develop the main idea. This is consistent with his performance in the reading comprehension questions of the text (see

Table 4.12), in which he obtained a score of 2 (poor comprehension) as he answered correctly one of two questions regarding secondary ideas and one that required him to interpret information from the text. He was not able to answer correctly a question about the main idea. ML answered the questions from memory and self-talked while doing it. The quality of OC's summary indicates he achieved a good understanding of the text as he accurately expressed the main and secondary ideas. This was consistent with the score he obtained in the text questions (4), which he answered from memory. When given the text questions, JA asked, "Can we read again?" and he consulted the text. He obtained a score of 4, which indicates he comprehended the text (see Table 4.12).

Table 4.12 Case-study 3: Text questions results

Measure		ML	OC (Match G)	JA (Match NG)
Text Questions	Total score (Max 5)	2	4	4
	Main idea (2)	0	2	2
	Secondary ideas (2)	1	1	1
	Interpretation (1)	1	1	1

G (goal), NG (no goal)

When taking into consideration the subgrouping by goal and no goal in this case-study, it was found that only participants with a goal left a trace on the text and answered the text questions from memory. However, in this case-study, having a goal did not help the overall reading comprehension performance of a poor reading comprehender.

4.2.3.3.3 Survey of Reading Strategies (SORS)

In the SORS, it was found that participants with a goal reported using more reading strategies and with more frequency than JA when reading for school and when approaching the social studies text. As for the types of reading strategies, the reported use of support reading strategies was different between participants with an explicit goal and the participant without a goal. OC and ML reported using support reading strategies more frequently than JA when reading for school and approaching the social studies text. Hence, having a goal promoted the use and reported used of reading strategies. However, in spite of having been assigned an explicit goal to perform after reading, ML reported not having it in mind while reading the social studies text whereas OC did.

4.2.3.4 Cross-case analysis

How did having an explicit goal help the reading comprehension performance and promote the use of reading strategies in poor and good reading comprehenders? Table 4.13 summarizes the results.

The data indicated that having an explicit goal did not help the overall reading comprehension performance of the poor or good reading comprehenders as assessed by the text questions. In the case of the poor comprehenders, they did not understand what to do (e.g., how to summarize) to meet the goal or were concerned with the characteristics of the task (e.g., time limit). As for the good comprehenders, no difference was found in their success at answering the text questions when the subgrouping by goal and no goal was taken into consideration. However, it was found that four out of six participants with a goal (Case-studies 2 and 3) answered the text questions from memory; hence having a goal may have helped them to rehearse the information. Still this was not related to good

understanding of the text, especially for the poor reading comprehenders.

Table 4.13 Cross-case analysis summary: Purposeful reading, reading comprehension and the use of reading strategies

	Goal		No goal
	PC	**GC**	
Behavioural Observations	More strategic		Less strategic
Summary	Difficulty expressing main or secondary ideas. Disorganized.	Expressed main/secondary ideas	
Text Questions	- Obtained a score ≤ 3= poor RC - Answered from memory*	- Good RC in cases 2 and 3, Poor RC in Case 1 - Answered from memory*	- Good RC in cases 2 and 3, poor RC in case 1 - Referred to text
SORS	- The reported use of Rs was similar to GC in Case-studies 2 and 3 but having a goal did not promote Rs use in TS - Did not report having a goal in mind when reading the social sciences text	- Reported using more strategies and with more frequency than GC without a goal - Reported having a goal in mind when reading the social sciences text	- Reported using less strategies and with less frequency than GC with a goal

PC: Poor Comprehenders, GC: Good comprehenders, SORS: Survey of Reading Strategies, RC: Reading comprehension. *Except Case-study 1.

On the other hand, having a goal promoted the use of reading strategies in the poor and good reading comprehenders. Five out of six participants in the case studies

who had an explicit goal (TS was the exception) in the research activity reported using more reading strategies and with more frequency when reading for school and when approaching the social studies text than participants without a goal. Similarly, the researcher observed that all participants with a goal approached the social studies text, before during and after reading, more strategically than participants without a goal. For example, they focused on relevant information for meeting the goal (identifying the main idea which is key for summarizing). However, a difference between the good and poor comprehenders, is that the poor comprehenders did not appear to use the goal to process the social sciences text whereas the good comprehenders did (the poor comprehenders did not report having the assigned goal in mind while reading).

When comparing the good reading comprehenders with and without a goal, it was found that those with a goal tended to use more reading strategies and reported using them with more frequency than those without a goal, both when reading school materials and when approaching the social sciences text. As for the type of reading strategies, the use and reported use of global and support reading strategies made a difference between good reading comprehenders with an explicit goal and good comprehenders without a goal. In two cases, good reading comprehenders with a goal (RN and PR) reported a more frequent use of global strategies when compared to those without a goal (VM and ED), and in one case support reading strategies where reported as used more frequently by the good comprehender with a goal (OC) than by the good comprehender without a goal (JA).

Chapter 5: Discussion

Language minority students in upper-elementary grades might have weaknesses in reading comprehension which puts them at risk for academic failure, school drop-outs, and for being over represented in special education services (Gunderson, 2006; 2008). However, the specific underlying causes of their comprehension difficulties have largely gone unstudied (Lesaux & Geva, 2006; Lesaux & Kieffer, 2010; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006; Low & Siegel, 2005; Siegel, 2008). Most studies in the field have focused on the word-level reading performance of LM learners and compared their performance with that of monolingual, typically English, students. These studies have greatly contributed to understanding that the language status is not sufficient for explaining the reading comprehension problems LM students experience, as these students often perform at the same level as monolinguals on some reading-related cognitive processes (e.g., word reading accuracy, phonological processing). Likewise, unskilled LM readers display a similar profile to unskilled monolingual readers in terms of their reading-related basic cognitive processes, and word and text reading skills (Lesaux & Kieffer, 2010; Lesaux, Lipka & Siegel, 2006; Low & Siegel, 2005). Few studies have focused on the contribution of reading-related cognitive skills and higher-order processes that are involved in reading comprehension in LM students and even fewer studies have compared the reading comprehension profiles of struggling and skilled LM readers (Block, 1986; Hosenfeld, 1977; Jiménez, García, & Pearson, 1995, 1996; Mokhtari & Sheorey, 2002; Padrón & Waxman, 1988).

The primary purpose of this study was to examine similarities and differences

between LM who were either good or poor reading comprehenders with the objective of increasing understandings of how these students differed in their word-level reading skills, English language proficiency, working memory, and use of reading comprehension strategies. In addition, whether and how having an explicit goal while reading a text helped their reading comprehension performance and use of reading strategies was examined.

The findings from this descriptive multiple-case study provide a comprehensive picture of the differences between three LM struggling and six LM skilled reading comprehenders who were in grade 6. Skilled comprehenders were matched with struggling comprehenders on the basis of gender, age, years of schooling in English, years living in Canada, school attended, and having or not an explicit goal in the researcher designed activity. It was not possible to match the poor and good reading comprehenders by language.

This chapter is organized following the research questions the study intended to answer.

5.1 Reading-related linguistic and cognitive skills

The first research question that guided this study asked how LM students with good reading comprehension differed from LM students with poor reading comprehension in terms of their word-level reading skills, English language proficiency, and working memory.

The findings from this study are consistent with previous research examining struggling and skilled readers from different linguistic backgrounds regarding the

characteristics of word-level reading skills and oral proficiency (i.e., morphological awareness and vocabulary knowledge). Research has shown that English reading comprehension difficulties in LM students stem from limited English language proficiency (e.g., vocabulary knowledge, listening comprehension, and morphological skills) (August & Shanahan, 2006; Lesaux, Lipka et al., 2006; Lesaux, Koda et al., 2006).

The most consistent difference between the good and poor reading comprehenders in the present study was morphological awareness. Sensitivity to suffixes and knowing the meaning of prefixes and suffixes were the skills that the good comprehenders had and the poor comprehenders lacked. Consistent with Siegel (2008), poor reading comprehenders had more difficulty recognizing adequate suffixes to pseudo-words than to real words. The fact that morphological awareness uniquely contributes to word reading and reading comprehension by making word pronunciation predictable, providing consistency of characteristics of spelling, helping preserve the semantic relationships between words, easing the load on working memory, and offering a meaning-related strategy to understand texts, could explain why these poor comprehenders struggled at gaining meaning from texts (Chomsky & Halle, 1968; Deacon, 2011; Deacon & Kirby, 2004; Deacon et al., 2007; Kemp, 2006; Shaywitz, 2005, Siegel, 2008). When individuals are aware of the morphemes (roots of words and affixes) they will likely have better decoding skills, vocabulary and reading comprehension (Kieffer & Lesaux, 2008; Shaywitz, 2005; Siegel, 2008). Hence weaknesses in morphological awareness among the poor comprehenders in the study could also be related to the scores these students obtained in measures of vocabulary and word-reading accuracy and fluency (low end of average range).

Performance in word reading accuracy and efficiency was also different between the good and poor reading comprehenders in the present study. Consistent with previous research (Lesaux & Geva 2006; Lesaux & Kieffer, 2010; Lesaux, Lipka et al., 2006), the poor comprehenders obtained age-appropriate scores on these measures, which is consistent with the idea that LM students perform at the same level as native speakers at word reading (Lesaux & Geva, 2006). However, their scores were lower than those obtained by the good comprehenders. Whether this difference was great enough to affect reading comprehension performance is unknown and beyond the scope of the present study, but it merits further investigation. Moreover, this result indicates reading comprehension failures in the LM poor comprehenders may be related to higher order processes (e.g., inference making, text structure knowledge, vocabulary, critical analysis, and use of reading strategies) and not with foundational reading skills (Cain & Oakhill, 1999; Cutting et al., 2009; Cutting & Scarborough, 2006; Lesaux, Lipka et al., 2006; Oakhill & Yuill, 1996; Yuill & Oakhill, 1991).

The fact that the poor comprehenders tended to have more errors on less frequent and irregular words, and to read at a slower rate than the good reading comprehenders, and that in some cases non-word reading accuracy and efficiency skills were better than word recognition, are indicative of a vocabulary problem (Shaywitz, 2005). Actually, in this study the poor comprehenders tended to obtain lower scores (within the average range) than the good comprehenders on a measure of vocabulary knowledge, which is consistent with findings from some studies (e.g., Lesaux, Lipka et al., 2006), but inconsistent with others (Lesaux & Kiefer, 2010). Despite having received 5 years of English instruction, the poor comprehenders in this study continued to lag behind their

LM peers who are good comprehenders on measures of reading comprehension. It is possible that their limited vocabulary, especially their academic vocabulary, is constraining their reading comprehension, as well as their poor reading comprehension impacting their academic vocabulary development.

The literature indicates that vocabulary is often an area in which LM students in middle school show weaknesses when compared to English- native speakers (Lesaux & Geva, 2006; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006; Lesaux & Kieffer, 2010), but LM students in this study obtained age-appropriate results. One possible interpretation for this difference between studies is that the measure used in the present study assessed expressive vocabulary and general/basic knowledge whereas in other studies measures of academic and receptive vocabulary were used. Another interpretation is related to differences in reading instruction between participants across studies. It would have been interesting examining the performance of the poor comprehenders on measures of academic and receptive vocabulary as well as its relationship to their reading comprehension performance.

The findings from this study also support evidence regarding the word-level reading skills of good comprehenders (Duke et al., 2004; Pressley, 2002). It seems that as is the case for successful English monolinguals, the LM good comprehenders read words effortlessly (accurately and efficiently), had good oral proficiency (vocabulary knowledge, syntactic and morphological awareness) and adequate working memory.

On the other hand, results from this study were inconclusive regarding the role syntactic awareness and working memory played in the reading comprehension performance of the poor comprehenders. Two of the three cases of interest (HD and ML)

obtained similar scores (on the average range) to their matches who were good comprehenders on measures of working memory and syntactic awareness whereas the third student (TS) obtained scores below the average range when compared to her matches who were good comprehenders.

Despite the fact that previous research suggests that LM students and struggling readers (including English monolinguals) tend to have lower syntactic ability and working memory skills (e.g., Da Fontoura & Siegel, 1995; Lesaux & Kieffer, 2010; Lesaux, Lipka et al., 2006; Verhoeven, 1990), the present study does not entirely support this conclusion. Research shows that despite having received mainstream English instruction during 5 years, LM students perform poorly in syntactic awareness (Lesaux, Lipka et al., (2006); Limbos & Geva; 2001). Differences between the present study and others in the literature might be related with the nature of the syntactic awareness measures. As Lesaux, Lipka and colleagues (2006) suggest, including both receptive and expressive measures of syntactic awareness could inform this more accurately.

Even though various studies have concluded that working memory contributes to reading comprehension both in monolinguals and LM students (Cain et al., 2004; Cain & Oakhill, 2000; Lesaux & Kieffer, 2010; Lesaux, Lipka et al., 2006), the present study does not completely support this conclusion. The student (TS) that showed poor working memory functioning also had oral language proficiency weaknesses. Having used a measure of working memory that did not load so heavily on language proficiency would have probably shown different outcomes in this case.

5.2 Reading comprehension and use of reading strategies

The second research question that guided this study asked how the LM good and poor reading comprehenders differed in their use of reading comprehension strategies.

Both the good and poor comprehenders in the present study took a strategic approach to reading the researcher designed activity text—they used strategies before, during and after reading. In fact, participants in this study reported using about the same amount of reading strategies when reading for school and when reading the research text, regardless of their reading comprehension performance. Consistent with Gaskins and colleagues (2007) these strategies included planning, directing, selecting and coordinating the processes needed to understand the text. However, consistent with previous research, a main finding from this study was that the type of strategies the good comprehenders used and reported using more often was different from the strategies the poor comprehenders used and reported using. The good comprehenders used global strategies more frequently than other type of strategies, whereas the poor comprehenders used support strategies more frequently than other type of strategies (Duke et al., 2004; Hosenfeld, 1977; Sheorey & Reichard, 2002). It is relevant to note that regardless of their reading comprehension performance all participants reported using to some extent the three types of reading strategies when reading materials for school. For example connecting their knowledge with the information provided in the text was a common global strategy frequently reported as used by all participants, and using the dictionary or thinking the ideas in their own words was a common support strategy reported as used by most participants in this study.

As Sheorey and Reichard (2002) suggest, the use of more sophisticated strategies (i.e., global) is related with how proficient readers think they are. Poor reading comprehenders might be aware of their difficulties and thus use support strategies mainly. Nevertheless, the findings from the present study are consistent with previous research because it has been shown that ESL students who lack oral proficiency skills in the second language (e.g., poor vocabulary, morphological awareness) tend to rely on ineffective strategies to comprehend texts, such as word-by word or sentence-by-sentence understanding (e.g. literal translation, use of dictionary) hindering their comprehension of texts (Mokhtari & Sheorey, 2002).

Contrary to Sheorey and Reichard (2002), who found no difference in the use of support strategies between good and poor comprehenders, in the present study that difference was present and instead no difference was found in the use of problem solving strategies between the poor and good comprehenders. It is probable that the LM students in this study reported using problem solving strategies regardless of their comprehension performance because they have been instructed on when and how to implement these strategies when the text becomes difficult to understand (e.g., re-reading, changing the reading speed) so they can navigate through the text. This is hard to determine because no information about reading strategies instruction was gathered.

Regarding the frequency with which participants reported using reading strategies when reading for school, the findings from the present study were mixed. The literature suggests that good comprehenders tend to be more strategic than poor comprehenders (Dermitzaki et al., 2008; Jacobs & Paris, 1987; Pressley, 2002). Nonetheless this is related more with the type of strategies, the timing for using them, and the effectiveness

and flexibility they use them with, rather than with the frequency good readers use the strategies. Therefore it would be expected to find that poor comprehenders use strategies more frequently than good comprehenders because they need strategies more frequently and/or because they are not using them effectively and flexibly. However this issue requires further study.

In two case-studies it was found that two poor reading comprehenders (HD and ML) reported using strategies more frequently than their matching good reading comprehenders, whereas the opposite pattern was found for the third case-study (TS). TS' case seems to be fundamentally different to HD and ML's cases as she also showed working memory and vocabulary proficiency weaknesses. It might be the case that HD and ML's performance profile across measures indicates the typical differences between poor and good LM reading comprehenders and that TS' performance profile is indicative of a typical LM poor comprehender who has a disability. However, further assessment and research is needed to test this hypothesis.

Consistent with the literature, the researcher observed that the good reading comprehenders were active and interacted with the text, they knew what and why they were reading, and how to solve the problems that presented to them while monitoring their understanding. Both from the researcher observations and students' reports, it can be concluded that the good comprehenders were purposeful, previewed passages, engaged in self-questioning, represented the information in the text, made inferences and associations, synthesized the ideas to aid their understanding, and used external mechanisms to support their understanding. When the good comprehenders used reading

strategies, they did so efficiently and flexibly (Dermitzaki et al., 2008; Duke et al., 2004; Jacobs & Paris, 1987; Lerner & Kline, 2006; Pressley, 2002).

The findings related with the use and reported use of strategies by the poor comprehenders was also consistent with the literature (Butler, 2002, Sheorey & Reichard, 2002; Zimmermann, 2002). Even though they seemed to know different reading strategies they were not purposeful readers and focused on using external supports in order to comprehend (e.g., making notes, underlining, using the dictionary). Moreover, the LM poor comprehenders often used strategies the good comprehenders would never use (e.g., translating into their first language, thinking both in their first language and English, and reading out-loud) which was also found in Hosenfeld (1977). Nevertheless, the literature on bilingual and biliterate LM students has shown that translating, accessing cognate vocabulary or transferring information across languages, are unique and effective reading strategies to comprehend text and compensate for lack of background knowledge (Jiménez et al., 1996).

Regarding the awareness of use of reading strategies when reading for school, the findings from this study indicate that the good reading comprehenders tended to be more aware of the strategies they used than the poor comprehenders. This seems to be consistent with the literature as good comprehenders have shown to continuously self-evaluate and monitor their understanding, and being aware of their own thinking processes and their strengths and limitations regarding the demands of a task (e.g., “I am struggling to understand this text, I won’t remember what it says”, “I know good strategies to help me understand what I read”). Good comprehenders know how to apply strategies to optimize learning in a given situation (Paris & Jacobs, 1984; Perry & Winne,

2006; Pressley & Ghatala, 1990), whereas poor comprehenders do not have this knowledge (Baker & Brown, 1984).

5.3 Purposeful reading, reading comprehension and use of reading strategies

The third question guiding this study inquired how having an explicit goal helped the reading comprehension performance and promoted the use of reading strategies in language minority poor and good reading comprehenders.

The findings from the present study indicate that having an explicit goal set externally did not help the reading comprehension performance of the poor or good reading comprehenders. In the case of the poor comprehenders, even though a goal to perform after reading had been set externally they did not have it in mind when reading and they were in fact concerned with the characteristics of the tasks of reading and writing a summary (e.g., time limit, what did writing a summary mean). As a result, their reading comprehension performance was not improved. This outcome might be related with lack of self-efficacy in relation to the specific tasks of reading that text and writing a summary. The literature says that the personal beliefs about the strengths and limitations to perform a certain task are relevant to learning and achieving (Schunk, 2003). The fact that the poor comprehenders did not have the requisite skills (poor reading comprehension) or knowledge about the activity (what is a summary?), were given a general instruction (read this text to write a summary) without specific outcome expectations and feedback on their performance, might have impacted their self-efficacy to perform the tasks and hindered the opportunity of benefiting from a goal to improve their achievement. Consistent with the literature on the effects of low self-efficacy and

learning, the poor comprehenders were not able to allocate cognitive resources to gain meaning from text as they did not know how accomplish the task they were given. Identifying effective strategies is possible when learners have some task knowledge (Flavell, 1978; Schunk, 2003).

The good comprehenders with and without a goal did not show differences in their success at answering the text questions. This might be related with them being self-regulated learners, good comprehenders and the text and text questions being easy for them to cope with (Butler, 2002; Schunk, 2003; Zimmerman, 2002). However, in one case-study both good comprehenders (with and without a goal, RN and VM respectively) obtained low scores in the text questions, which was surprising. This might be related with the fact that they did not know they were going to be asked questions about the text and did not recruit all the resources and strategies they usually would use to gain specific information from the text (Dweck & Leggett, 1988).

The majority of students with a goal answered the text questions from memory, which is consistent with the literature. Different authors have concluded that memory of the text is more successful when a strategic approach is taken before and during the reading process (Duke et al., 2004; Gaskins et al., 2007; Pressley, 2002). It might be that providing students with a goal to perform after reading may have helped them to focus on and rehearse relevant information and use appropriate reading strategies more effectively.

The use and reported use of reading strategies was indeed higher among students who were assigned to the goal condition than students who did not have an explicit goal to perform after reading. This was evident in both the poor and good comprehenders. Locke and Latham (1990) suggested that goals often help learners to put an effort on the

task they are pursuing by focusing on the task itself and recruiting strategies that will help them attain their goal. The present study supports this idea because the good comprehenders with a goal tended to use more reading strategies and reported using them with more frequency than the good comprehenders without a goal. Moreover, the type of strategies the good comprehenders with a goal reported using were global reading strategies, which are thought to be the more effective in terms of aiding comprehension.

In conclusion, in the present study the LM poor comprehenders showed weaknesses in basic processes, such as morphological awareness, along with good working memory and syntactic awareness when compared to the LM good comprehenders. Despite the poor comprehenders having obtained age-appropriate word-level reading accuracy and speed, and vocabulary knowledge scores, these scores were lower than those obtained by the good comprehenders. Moreover, the struggling reading comprehenders differed from the good comprehenders in the type of reading strategies they used to aid understanding of texts as well as in the frequency with which they used them. Therefore, as Lesaux and Kieffer (2010) suggest, various sources of difficulty can be related with reading comprehension failures in LM struggling comprehenders as weaknesses at basic processes and higher order skills were evident in this study.

5.4 Strengths of the present study

Literature is consistent about the complexity of studying reading comprehension performance and especially in language minority students. The multidimensionality of reading comprehension as well as the heterogeneity of language minority students makes it difficult to investigate this issue. This study had some strengths and limitations that

must be acknowledged.

In terms of strengths, the present study examined in detail, and simultaneously, variables that have often been studied separately (i.e., reading-related cognitive skills and reading strategies). This allowed for the development of a more complete picture of the reading comprehension profiles of the participants. One goal of the present study was to characterize the reading skills profiles of LM struggling and skilled readers while holding the instructional context constant and finding out whether these profiles resembled those descriptions in the literature. Even though it would have been ideal to assess other higher order processes (e.g., analysis and synthesis skills) and use more than one measure to assess some basic reading-related skills, the study advanced the understanding of how LM poor comprehenders differ from good comprehenders.

One other strength is that in the assessment of awareness of reading strategies, various measures were used in order to reduce the limitations each measure had on its own (e.g., observations, retrospective interview, SORS), and the researcher designed activity allowed the researcher to tell whether students actually used in the strategies they reported using. More importantly, the results obtained through these measures seem valid as they were consistent across measures. It would have been good though to calculate correlations between these measures, but the sample size was not large enough to provide valid results.

An advantage of the present study is that it looked at those LM students who, despite receiving English instruction during 5 years and despite having good word-level reading skills, still struggled to gain meaning from texts. Therefore, this study suggests a need to attend to other variables (i.e., morphological awareness, higher order processes)

when designing instruction for LM students and identifying struggling readers in upper elementary grades.

5.5 Limitations of the present study

As is true of all case-studies, the findings from this study cannot be generalized to the LM learner population. However, the results reflect theory and findings from previous research and generate questions/hypothesis. Therefore, this study can inform future research and instruction design.

One important limitation of the study was not having a comparison group of native English speakers for LM students. This has several implications. Not being able to determine whether the observed characteristics of the poor and good comprehenders are specific to their language status or not is the most important. Secondly, having used norms for standardized measures that have not been validated with LM learners is also a limitation, although in a way it was relevant finding out that the LM students in this study performed at the average or above average range on all of these measures.

Regarding the assessment measures used, there were some limitations for some of them. Even though the comprehension section of the Stanford Diagnostic Reading Test 4 (Karlsen & Gardner, 1996b) has been used in different studies of LM students, the findings from this study indicated that this measure could have put the LM students in the sample at a disadvantage, whether or not they were good or poor reading comprehenders, because of differential item functioning. Therefore, it remains unknown whether the LM group assessed in the present study indeed lags behind their peers on reading comprehension. However, when analyzing the proportion of students identified as good

(87.5%) and poor comprehenders (12.5%), it was found that the prevalence of both groups is similar to that reported in national and provincial assessments and other studies (British Columbia Ministry of Education, 2011a; Council of Ministers of Education, Canada, 2009; Lesaux, Koda et al., 2006; Lesaux, Lipka et al., 2006).

By using the SDRT 4 in a sample of LM sixth graders who had received adequate English instruction for more than 5 years, only those LM students with severe difficulties were identified as poor reading comprehenders (the three of them performed below the 25th percentile on this measure). This measure was not appropriate to identify students with moderate or mild difficulties who would also greatly benefit from instruction and who still lag behind their monolingual peers at school and later on in occupational attainment. This might be related with a ceiling effect given that it was originally designed for low achievers (Karlsen & Gardner, 1996b). Including other measures of reading comprehension (e.g., cloze test) to complement the ones used would have allowed categorizing participants as good or poor comprehenders with more precision.

The self-report measure in this study was subject to the limitations of self-report measures generally, so these results need to be interpreted cautiously (Perry & Winne, 2006; Winne & Perry, 2000). And, although effort was made to study what strategies students actually used (not just those they reported using) through the researcher designed reading activity, the researcher's coding of strategies may have been influenced by the pre-determined list. Regarding the measures selected to assess the reading-related linguistic and cognitive skills, it would have been better to have included other measures (e.g., listening comprehension, receptive vocabulary, academic vocabulary, receptive syntactic awareness) to better describe the strengths and weaknesses related to the

reading comprehension performance of participants in this study. Additionally it would have allowed comparing results obtained in this sample with profiles of struggling readers already described in the literature (e.g., Catts, Hogan & Fey, 2003; Lesaux, Lipka et al., 2006; Lesaux & Kieffer, 2010).

5.6 Implications

As it has been pointed out in previous research, all the weaknesses possibly related to reading comprehension failures in LM students (i.e., limited oral language proficiency, lower results in word-reading accuracy and efficiency, inability to use reading strategies effectively and to use prior knowledge to gain meaning from texts) can be addressed through instruction (Padrón et al., 1995, 1996). Hence, the present study highlights the need for re-thinking reading instruction for upper elementary LM students. As it was shown in this study, the LM poor comprehenders displayed weaknesses on both basic and higher-order skills related to reading comprehension. Therefore, this study supports the need to explicitly instruct LM students on these aspects of reading (Arnbak & Elbro, 2000; Bowers et al., 2010; Perry, VandeKamp, Mercer, & Nordby, 2002; Siegel, 2008). Including overt instruction related to oral proficiency skills and strategic reading would greatly influence the reading comprehension performance of LM students even when they have been exposed to good quality reading instruction over 5 years. For example explicitly teaching academic vocabulary and word definitions, increasing general vocabulary, teaching the morphemic and grammatical structure of English language, and how and when to use different reading strategies would aid LM learners understanding of texts and promote self-regulated learning.

The literature suggests that reading-related basic skills and higher-order processes are acquired independently and simultaneously and the development of one may promote the progress of the other (Rapp, Broek, McMaster, Kendeou, & Espin, 2007). Upper elementary LM students are simultaneously strengthening their literacy skills and oral proficiency so they are at greater risk of academic failure. Having word-level reading skills intact is not enough for LM students to successfully access the curriculum and become good comprehenders; they need to develop all the other reading-related processes.

The present study also serves to stress the importance of implementing careful and comprehensive assessment practices to accurately understand the needs of LM students in upper elementary. Ultimately, effective instructional designs are based on evaluation of students needs so if there is awareness of the various factors that are implicated in the reading comprehension performance of LM students, effective instruction and intervention techniques can be developed.

Finally, this study contributes to the understanding of the multifaceted reading comprehension skills of upper elementary LM students who struggle and are skilled at reading comprehension. Even though conclusions from this study are not generalizable to the population, its findings reinforce the need for research in the area and as a result contribute to the development of theories of second-language reading comprehension.

5.7 Future research

An unbiased understanding of the reading comprehension performance of language minority students in upper elementary requires the development of adequate

models of reading comprehension, the identification of strengths and weaknesses for struggling and skilled readers, the development of adequate intervention and instruction programs, and the assessment of the different factors related with reading comprehension in this population. Moving to experimental designs with robust sample sizes and various comparison groups could be a goal for future research.

This study suggests specific areas in which research is still needed. Especially in the Canadian context, the rapid growth of language minority students highlights the need for studies that provide evidence to understand the characteristics of their literacy performance.

In relation to the reading-related cognitive processes, comparing the performance of LM and native English speakers on morphological awareness measures would inform whether or not morphological awareness weaknesses of LM students with reading comprehension failures are a unique characteristic of their reading comprehension difficulties profile. As for the influence vocabulary, working memory, and syntactic awareness might have on the reading comprehension performance of struggling LM students, future studies should include more appropriate measures for this population. For example, both expressive and receptive measures of vocabulary and syntactic awareness, as well as tasks evaluating academic language should be considered. Additionally, considering working memory tasks with a reduced load on language proficiency seems relevant. Finally, given that all three poor comprehenders in this study showed difficulties making inferences in the reading comprehension measure, it would be interesting examining the role of working memory when having to retrieve, maintain, and manipulate information in texts as Trabasso and Magliano suggest (1996).

In relation to understanding the underlying reasons for the use of different types of reading strategies and with different frequency in LM good and poor reading comprehenders, further study is required. Future studies focusing on this issue should consider the inclusion of native English speakers matched by age to LM students, as it remains unknown whether such differences between LM good and poor comprehenders are related to their language status or to other factors (e.g., age).

Research in the aforementioned areas is needed if policy makers and educators want to close the gap between LM struggling and skilled readers in order to prevent academic failure, school drop-outs, reduced job expectations, and over representation of language minority students in special education programs.

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Appendices

Appendix A **Informed Consent Form – Parents / Guardians**

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Educational and Counselling Psychology, and Special Education
The University of British Columbia
Faculty of Education
2125 Main Mall
Vancouver BC Canada V6T 1Z4
Tel 604-822-8229 Fax 604-822-3302
www.ecps.educ.ubc.ca

Principal Investigators: Dr. Linda Siegel (604-822-0052), Dr. Nancy Perry (604-822 6410)
Co-investigator: Silvia Mazabel Ortega (Special Education Masters student)

Dear Parents,

We are conducting a research study titled "Planning and Reading Comprehension Skills" in your child's classroom. This study is the thesis for the completion of the Master's degree of Silvia Mazabel Ortega.

The purpose of this letter is to provide you with some information about this study, and to ask your permission to involve your child in it. After reading this information, please discuss the project with your child and complete the attached consent form indicating that you DO or DO NOT give permission for your child to participate in this study. A copy of the consent form is included for your own records.

We are interested in understanding how children learn to read in English. We would like to understand the relationship between their ability to plan and their reading comprehension skills. We will include in our study children who have English as a second language (ESL) with at least 4 years of instruction in English. We will also include children who are English-native speakers and children with learning disabilities.

A total time of 1.5 hours is involved in participating in this study for ESL students. These hours will be divided in two sessions lasting 30-45 minutes (one group and one individual session). English-native speakers will participate only in the group session (30-45 minutes). The sessions will happen during class time and your child's teacher will inform us about the best time for your child to participate in the study. We will give your child various activities (e.g. reading comprehension, word reading, picture naming, and word games). In some activities your child will be asked to give an answer orally and in other activities, your child will select the answer from different choices.

You and your child have the right to withdraw from the study at any time and testing will stop without negative consequences. If your child does not take part in the study, s/he will just continue to take part in the regular classroom activities. We are not aware of any risks if your child takes part in our study. Our experience in the past is that most students enjoy the activities.

The information you give us is confidential. We will not report or share information about your child's individual performance and no parent or child will be identified by name in any reports about the study. The information collected from you and your child will be stored in a locked filing cabinet and will be viewed only by the researchers. If you would like to learn about the results of our investigation, provide your regular or e-mail address in the attached consent form.

If at any time you have any concerns about your child's treatment or rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at the University of British Columbia at (604) 822-8598. If you have any questions or concerns regarding the project you may contact Silvia Mazabel Ortega.

We would be delighted if you would allow your child to participate. You may do so by completing the consent form and questionnaire attached to this letter.

Sincerely,

Dr. Linda Siegel	Dr. Nancy Perry	Silvia Mazabel
Professor	Associate Professor	MA Student

CONSENT FORM

Please return this copy to your child's teacher

I have read the letter describing Silvia Mazabel's research for her Master's thesis titled "Planning and Reading Comprehension Skills". I understand what my child will have to do by participating in it. I have discussed the study with my child and we understand that my child's participation is voluntary and confidential, and that s/he may withdraw from the project at any time without negative consequences.

My signature indicates my desire for _____ to participate in the study.

Signature: _____

Date: _____

I do not wish for _____ to participate in this study.

Signature: _____

Date: _____

I would like to receive a summary of the results of Silvia Mazabel's study once it is completed.

Name: _____

Address: _____

_____

Version 4, January 2011
3 of 4

CONSENT FORM

Please keep this copy for your own records

I have read the letter describing Silvia Mazabel's research for her Master's thesis titled "Planning and Reading Comprehension Skills". I understand what my child will have to do by participating in it. I have discussed the study with my child and we understand that my child's participation is voluntary and confidential, and that s/he may withdraw from the project at any time without negative consequences.

My signature indicates my desire for _____ to participate in the study.

Signature: _____

Date: _____

I do not wish for _____ to participate in this study.

Signature: _____

Date: _____

I would like to receive a summary of the results of Silvia Mazabel's study once it is completed.

Name: _____

Address: _____

_____

Version 4, January 2011
4 of 4

Appendix B **Background Information Questionnaire**

1. What language/s does your child speak at home?

2. Who does he/she speak that language with? (e.g., siblings, parents, extended family)

3. For how many years has your child been speaking English?

4. For how many years has your child received formal education in English?

5. Does your child know how to read in the language he/she speaks at home?

6. Does or did your child attend heritage language classes and for how long?

7. Did he/she learn to read the home language at school or at home?

8. Is your child currently receiving medication? Please specify.

Appendix C **Assent Form**

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Educational and Counselling Psychology, and Special Education
The University of British Columbia
Faculty of Education
2125 Main Mall
Vancouver BC Canada V6T 1Z4
Tel 604-822-8229 Fax 604-822-3302
www.ecps.educ.ubc.ca

(The child will read)

We are interested in how children learn to read in English.

We will ask you to read some texts and words and answer questions about them.

Some of these questions will be easy and others will be hard. Please try your best. This is not a test and your teacher will not see the results.

You can stop doing the activities whenever you want and nothing will happen.

Do you have any questions?

Signature _____

Date:

Appendix D **Prefix and Suffix Task**

(Siegel, nd)

You will see a list of parts of words. Try to guess what they mean. Think of a word that has that part in it and write it on the line. Some of them are at the beginning of words and some are at the end. Some of these are hard but try your best. This is not a test. Your teacher will not see your answers.

Example:

	Meaning		Word
Tri	three		triangle

un _____

re _____

anti _____

phil _____

geo _____

dis _____

ism _____

pre _____

ful _____

psych _____

centric _____

ology _____

penta _____

tele _____

socio _____

bi _____

quadr _____

Appendix E **Oral Cloze Task**

(Siegel & Ryan, 1988)

Instruction: I will read something to you and there will be one word missing. Where the word is missing, I will say “beep.” I want you to think of a word that would sound right in the “beep.” For example, I might say, “The moon shines bright in the “beep” (pause and repeat) and I want you to say “sky”, etc. Let’s try another one. I’ll say, “The children “beep” with the toys” (pause and repeat). What is the missing word? If the child fails to respond, say, “How about play?” Then it would be “The children play with the toys.” Let’s try another one. “The puppy wags its “beep” (pause and repeat). Good! Let’s try some more.

Discontinue: if the child fails the practice items and the first three task items
The moon shines bright in the _____.
The children _____ with the toys.
The little puppy wags its _____.

1. The _____ little pigs ate corn.
2. Fred put the big turkey _____the oven.
3. The _____put his dairy cows in the barn.
4. Jane _____ her sister ran up the hill.
5. It was a sunny day with a pretty_____ sky.
6. Betty_____ a hole with her shovel.
7. Jim set the lamp on the desk so he could_____
8. With a piece_____ chalk, he sketched her face.
9. The girl___ ___ is tall plays basketball well.
10. The boy had big brown eyes and a pleasant___ _____.
11. Because of the rain yesterday, the children _____inside the house.
12. Nancy knocked _____before entering the house.
13. The children put on their boots_____
it snows.
14. I want to play with a toy_____ is fun.
15. _____is Susan going to the doctor today?
16. Jeffrey wanted to go_____ the roller coaster.
17. When we go _____the building, we must be quiet.
18. Dad _____Bobby a letter several weeks ago.
19. After her broken leg had healed, Laura found it hard to walk_____.
20. Paul's mother picked up the toys _____books.

ORAL CLOZE TASK

Acceptable Answers

1. Three, dirty, pink, etc.. (anything that makes sense)
2. In, inside
3. Farmer, boy, man, woman, etc
4. And, said
5. Blue, bright, colorful
6. Dug, made
7. Read, see, write
8. Of
9. Who, that
10. Smile, face, etc
11. Played, worked, ran, stayed (any past tense verb that makes sense)
12. Once, twice, loudly, softly, again, etc
13. When, because (not acceptable: before)
14. That (not acceptable: because, it)
15. When, where, why (not acceptable: dad, mom, any person's name)
16. To, on (not acceptable: ride)
17. To, through, in, inside, around
18. Wrote, sent, e-mailed, gave, bought (anything that is past tense and makes sense)
19. Again, around, outside, fast, quickly, slowly, properly, steadily, far, etc
20. and

Appendix F **Working Memory for Sentences**

(Siegel & Ryan, 1989)

Instructions:

I'm going to say some sentences and the last word in each sentence will be missing. I want you to tell me what you think the last word should be. Let's try one. *"For breakfast the little girl had orange _____".* Now, I'm going to read to sentences. After each sentence, I want you to tell me the word that should go at the end of the sentence. When I finish the two sentences, I want you to tell me the two words that you said for the end of each sentence. Please tell me the words in the order that you said them. Let's try it. *"When we go swimming, we wear a bathing _____". "Cars have to stop at a red _____".*
Discontinue: When the child has failed an entire level (i.e., all three items A, B, C of a particular number)
Note: Announce each level. Record the words in the order the child has said them. Once the child answers correctly one item (per level) proceed to the next level. The score will be the reached level (0, 2, 3, 4, and 5).

2A 1) In a baseball game, the pitcher throws the _____
2) On my two hands, I have ten _____
Child's responses: _____ (ball, fingers)

2B 1) In the fall we need to rake _____
2) When we are sick, we often go to the _____
Child's responses: _____ (leaves, doctor)

2C 1) An elephant is big, a mouse is _____
2) A saw is used to cut _____
Child's responses: _____ (small, wood)

3A 1) Running is fast, walking is _____
2) At the library people read _____
3) An apple is red, a banana is _____
Child's responses: _____ (slow, books, yellow)

3B 1) The sun shines during the day, the moon at _____
2) In the spring, the farmer plows the _____
3) The young child had black hair and brown _____
Child's responses: _____ (night, field, eyes)

3C 1) In the summer it is very _____
2) People go to see monkeys in a _____
3) With dinner, we sometimes drink _____
Child's responses: _____ (hot, zoo, milk)

4A 1) Please pass the salt and _____
2) When our hands are cold we wear _____
3) One the way to school I mailed a _____
4) After swimming I was soaking _____
Child's responses: _____(pepper, gloves, letter, wet)

4B 1) Snow is white, grass is _____
2) After school, the children walked _____
3) A bird flies, a fish _____ _____
4) In the barn, the farmer milked the _____
Child's responses: _____ (green, home, swims, cow)

4C 1) In the autumn, the leaves fall of the _____
2) We eat soup with a _____
3) I go to the pool to _____
4) We brush and comb our _____
Child's responses: _____(trees, spoon, swim, hair)

5A 1) For the party, the girl wore a pretty pink_____
2) Cotton is soft, and rocks are _____
3) Once a week we wash the _____
4) In the spring it is very _____
5) I throw the ball up and then it comes _____
Child's responses: _____(dress, hard, car, rainy, down)

5B 1) The snail is slow, the rabbit is _____
2) At a birthday party, we usually eat ice cream and _____
3) Sandpaper id rough but glass is _____
4) In a garden, we pick _____
5) Over the field, the girl rode the galloping _____
Child's responses: _____(fast, cake, smooth, flower, horse)

5C 1) To cut meat we use a sharp _____
2) In the daytime it is light, and at night it is _____
3) Dogs have four _____
4) At the grocery store, we buy _____
5) A man is big, a baby is _____
Child's responses: _____(knife, dark, legs, food, small)

TOTAL _____

Clean Water for the Village

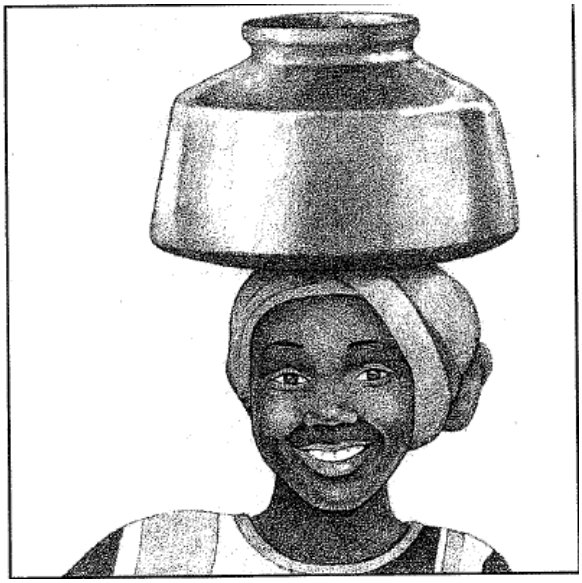
Kids in Action!

In the village of Bbira in Uganda, the main source of drinking water is a well fed by rainwater. After the rains, water runs off the nearby hillsides and **accumulates** in a well. Each day, people from the village bring containers to this well to get water for cooking, drinking, and washing. Until recently, animals such as cattle and chickens would also come and stand in and drink this water. But the children of the village decided to do something about this water management problem.

In their school, they learned about health issues like nutrition, road safety, community **hygiene**, and the use of traditional medicine. With their teachers, they thought that clean and safe water was important for their village so they made a plan of action.

First, they met with the community leader and talked about the risk of illnesses that can result from drinking **contaminated** water. The leader organized a village meeting. At this meeting, the children made presentations (poems and dramas) with messages about the importance of clean water:

Little creatures and plants, hunting for hours and hours-
Water, where are you?
Water, water, water,
When clouds and moisture dance with gusts in the air:
Water, water, water!



The whole community talked about what the children's presentations meant for them and adults and children worked together on cleaning the well. Then, they built a fence to keep out animals. When the project was finished, everyone celebrated with music and songs.

The children didn't stop there, though. They are still working to make sure everyone understands how to use the well to keep the water clean. The children have helped their community by understanding what is important for the community's health and doing something about it.

Adapted from Sterling & Powrie (2001)

Glossary

Accumulates: To gather or pile up especially little by little

Hygiene: Conditions or practices (as of cleanliness) conducive to health

Contaminated: To contaminate is to make (something) impure by exposure to or addition of a poisonous or polluting substance.

Questions:

1. What type of water problems did the village have?
2. What did the children do to solve the problem?
3. What was the result of their work?
4. Why do you think they talked to the community leader first?

Answers

1. a. Water is contaminated [because animals are drinking from the well where people gets water for daily use]
b. Water management problems

2. a. Children designed a plan of action to have clean and safe water
b. Met with the community leader and talked to him about the contaminated water and the risks of illnesses related to drinking it
c. A village meeting was organized and children made presentations with messages about clean water to raise awareness about the importance of clean water.

3. a. The whole community worked together to clean the well
b. They built a fence to keep the animals off the well
c. The community has clean water and will have less health issues
d. The community is aware of the importance of clean water and knows how to keep the well clean.
e. Children are still working to raise awareness

4. a. The leader has power
b. He can call for a village meeting
c. Villagers would likely listen more to the leader than to children
d. He would approve the project

Scoring

Question	**Focus**	**Score**
1	Main idea	2 or 0
2	Secondary idea	1 or 0
3	Secondary idea	1 or 0
4	Interpretation	1 or 0

The maximum score is 5. A total score equal or above 4 means the student comprehended the text, a score $\leq$ 3 means the student did not comprehend the text.

Appendix H **Grade 6 Survey of Reading Strategies (SORS)**

Administration

1) The examiner will give the survey to the student and say: **"I am interested in knowing what you do when you read for school. I will say a sentence and you will answer YES or NO if you did it when reading the Text. Then, you will say how often you do it when you read for school**"
2) The examiner will point to the range of possible answers and say:
   "1 means that 'I never or almost never do this'
   2 means that 'I do this only occasionally'
   3 means that 'I sometimes do this' (half of the times)
   4 means that 'I usually do this'
   5 means that 'I always or almost always do this'
   There is no right **or wrong response** to any of the sentences."
3) The examiner will read aloud the sentence, wait for the student to respond, and then circle the answer according to the student's response.

Statement	**SS text**		**Frequency of use with school-related texts**				
	Y	**N**	**Never**	**Ocass.**	**Sometimes**	**Usually**	**Always**
1. I have a goal in mind when I read(G)			1	2	3	4	5
2. I make notes to help me understand or remember what I read (S)			1	2	3	4	5
3. I think about what I know to help me understand what I read (G)			1	2	3	4	5
4. Before reading, I skim through the text to see what it is about (G)			1	2	3	4	5
5. If a text is difficult, I read aloud to help me understand (S)			1	2	3	4	5
6. I read slowly and carefully to make sure I understand (P)			1	2	3	4	5
7. Before reading, I check how long the text is and how it is organized (pictures, tables) (G)			1	2	3	4	5

Statement	SS text		Frequency of use with school-related texts				
	Y	N	Never	Ocass.	Sometimes	Usually	Always
8. I try to connect the information in the text with what I know (G)			1	2	3	4	5
9. I underline or circle information in the text to help me remember it (S)			1	2	3	4	5
10. I change my reading speed according to what I am reading (P)			1	2	3	4	5
11. I use a dictionary or glossary to help me understand what I read (S)			1	2	3	4	5
12. When the text becomes difficult I pay more attention (P)			1	2	3	4	5
13. I use pictures and figures in the text to help me understand (G)			1	2	3	4	5
14. I stop from time to time to think about what I am reading (P)			1	2	3	4	5
15. I try to picture the information to help me remember what I read (P)			1	2	3	4	5
16. I use titles and headings to find important information (G)			1	2	3	4	5
17. I think about the information that was not given in the text and I want to know (G)			1	2	3	4	5
18. I try to guess what the text is about when I read the title (G)			1	2	3	4	5
19. I re-read when the text is difficult or when I lose concentration (P)			1	2	3	4	5
20. I ask myself questions I would like to have answered in the text (S)			1	2	3	4	5
21. I answer the unit questions at the end of the chapter and then check if I was right or wrong (S)			1	2	3	4	5

Statement	SS text		Frequency of use with school-related texts				
	Y	N	Never	Ocass.	Sometimes	Usually	Always
22. When I read, I guess the meaning of words or phrases I don't know (P)			1	2	3	4	5
23. When I read, I translate into my first language (S)			1	2	3	4	5
24. When I read, I think about the information in both English and my first language (S)			1	2	3	4	5
25. I think the ideas in my own words to better understand what I read (S)			1	2	3	4	5

G = Global, P = Problem Solving, S = Support

Appendix I **Descriptive Statistics of the Sample**

Reading comprehension-related cognitive skills (N=24)

Skill	Measure	Mean	SD	Median	Mode	Min	Max
Morphological Awareness	DST Words	9.83	0.64	10	10	7	10
	DST Non-words	8.67	1.46	9	10	4	10
	PST meaning	7.04	3.14	7.5	8	0	13
	PST Word	11.58	3.80	13	13	2	16
Reading accuracy	WJ WI	60.17	3.88	59.5	59	54	67
	WJ WA	27.42	2.65	28	29	21	30
Reading efficiency	TOWRE W	85.17	8.76	87.5	84*	69	98
	TOWRE NW	51.42	7.41	52.5	58	32	62
Oral proficiency	WJ Picture Voc.	27.33	3.53	27.5	29	20	35
	Oral Cloze	14.71	2.37	14.5	13*	10	18
	Working Memory	3.87	0.95	4	4	2	5

DST (Derivational Suffix Task), PST (Prefix and Suffix Task), WJ (Woodcock Johnson III Tests of Achievement) WI (Word Identification), WA (Word Attack), TOWRE (Test of Word Reading Efficiency), W (Sight word), NW (Phonemic decoding), Picture Voc (Picture Vocabulary); * multiple modes, the smallest value is reported.

Survey of Reading Strategies (SORS) Results (N=24)

	Reading Strategies	Mean	SD	Median	Mode	Min	Max
SORS Total		3.21	0.59	3.14	2.92	2.16	4.24
	Global	3.33	0.62	3.22	3.22	2.44	4.44
	Problem Solving	3.86	0.69	3.71	3.71	2	4.85
	Support	2.57	0.67	2.55	2.33	1.44	3.77

SORS by Goal and No goal (N=24)

Scale/Subscale	Statistic	Goal (n=12)	No Goal (n=12)
SORS Total Score	Mean	3.36	3.05
	SD	0.52	0.63
Global Rs	Mean	3.44	3.22
	SD	0.61	0.63
Problem Solving Rs	Mean	4.04	3.69
	SD	0.53	0.79
Support Rs	Mean	2.75	2.38
	SD	0.60	0.71

Rs = reading strategies

Appendix J **Field Notes from Goal-Setting Skills Activity**

Behavioural Observations (before, during and after reading) and Reading Strategies Codes7

Case-study 1.

	TS	RN	VM
Before	"What is a summary?"	"Do we use the highlighter to highlight important words?"	None
During	Read slowly and carefully. Used finger to keep track and used the glossary (PSRs/ SRs) No trace on text	Skimmed through, highlighted relevant words/sentences (GRs/PSRs)	Skimmed through, read once more (GRs/PSRs) No trace on text
After	Referred to the text when writing and answering questions. Wrote the summary and re-read it before handing it (PSRs)	Referred to text when writing and answering questions, used glossary, read it when done and highlighted the text again (PSRs/SRs)	None

Case-study 2.

	HD	PR	ED
Before	"What is a summary?"	None	None
During	Read slowly used the glossary (PSRs/SRs) No trace on text	Skimmed through (GRs) No trace eon text	Skimmed through, then read carefully (GRs/PSRs) No trace on text
After	Referred to the text when writing. Used the glossary. Answered questions from memory (PSRs/SRs)	Referred to text when writing and answered questions from memory (PSRs)	Referred to text when answering questions (PSRs)

Case-study 3.

	ML	OC	JA
Before	Do we have a time limit? Do we read out-loud?	None	"Do we have to remember this and make notes?"
During	Read slowly and very carefully, used the glossary and highlighted (PSRs/SRs)	Highlighted	Skimmed through (GRs). Moved lips. No trace on text
After	Referred to text while writing, highlighted, read the summary and made changes (PSRs/SRs) Answered questions from memory, self-talked.	Highlighted other sentences, read it when done (PSRs/SRs) Answered questions from memory	When answering questions asked: "Can we read again?" and referred to text. (PSRs)

GRs (Global), PSRs (Problem Solving), SRs (Support)

Retrospective Interview

All participants with a goal responded to the following question: Did you do anything special to help you while reading to meet your goal? Participants without a goal were asked: Did you do anything special to help you while reading?

Case-study 1.

TS: "No"

Researcher (R): How did checking the glossary help you to meet your goal?

TS: "It helped me to understand the meaning of words"

R: Do you usually do it?

TS: "I usually ask people this and don't look in glossaries or the dictionary" (support reading strategy)

RN (Match Goal): "I highlighted the important parts, not the details, just the main ideas and read it more than once. During my writing I read the paragraphs with words I highlighted" (support reading strategy)

R: Do you usually highlight or read more than once?

RN: "I don't highlight but I do read more than once" (problem solving reading strategy)

R: How did using the glossary help you?

RN: "To find out what a word meant" (support reading strategy)

R: Do you usually do this?

RN: "Yes"

VM (Match no goal): "I visualized the village" (problem solving reading strategy)

R: Do you usually do it?

VM: "Yes, I do"

R: How did re-reading help you?

VM: "I read more than once and I know what is happening" (problem solving reading strategy)

Case-study 2.

HD: (Didn't know how to answer)

R Prompt: How did re-reading or using the glossary helped you to meet your goal?"

HD: "It made it easier. If I didn't read it again I wouldn't know much of it. It helps to understand" (problem solving and support reading strategies)

PR (Match Goal): "I didn't do much. I read through looking at the facts and simplified (when writing the summary) some of it" (global reading strategy)

R Prompt: How did re-reading helped you to meet your goal?

PR: "Sometimes I wouldn't remember so I go back. It helps to understand."

R: Do you usually do it?

PR: "I usually read/skim through" (global/problem solving reading strategies)

ED (Match no goal): "Not really. I read it over again. Checked if there was more text (at the back) and I knew what the words meant so I didn't use the glossary" (problem solving reading strategies)

R Prompt: How does reading again help you?

ED: "I get something I miss, read more carefully. First I read really fast but I miss words or sentences, so then I read more carefully and it helps me understand" (Global/problem solving reading strategies)

R: Do you usually do it?

ED: "Yes I do"

Case-study 3.

ML: “I highlighted it which helped me to remember the important parts. I also visualized it in my mind as if I was there” (support/problem solving reading strategies)

R Prompt: Do you usually highlight and visualize?

ML: “I don’t highlight but make notes and I always visualize” (support/problem solving reading strategies)

R: How did using the glossary helped?

ML: “To check the meaning of words” (support reading strategy)

R: How did re-reading help you?

ML: “To get it back into my brain” (problem solving reading strategy)

OC (Match Goal): “No, I didn’t”

R Prompt: I noticed you highlighted, how did that help?

OC: “I highlighted what I wanted to write about. That way I knew where I was at and I wouldn’t lose my place” (support reading strategy)

R: Do you usually do it?

OC: “Yes”

JA (Match no goal): “No, I didn’t”

R Prompt: You asked if had to remember the text, how did that help?

JA: “I want to see if I can get anything from it, what I need it for.” (global reading strategy)

R: Do you do this often?

JA: “Yes”

R: I observed you moved your lips while reading, how did it help?

JA: “It is just a habit, I don’t even notice it.”

Appendix K **Examples of Reported Reading Strategies and Reported Frequency of Use**

Participant	Reading strategy	Frequency of use with school-related texts				
		Never	**Occasionally**	**Sometimes**	**Usually**	**Always**
TS	Global	I use titles and heading to find important information	I have a goal in mind when I read	I try to guess what the text is about when I read the title.	I think about what I know to help me understand what I read. Before reading I skim through the text to see what it is about	I use picture and figures in the text to help me understand
	Problem Solving		When I read, I guess the meaning of words or phrases I don't know	I stop from time to time to think about what I'm reading	When the text becomes difficult I pay more attention. I re-read when the text is difficult or when I lose concentration	I read slowly and carefully to make sure I understand. I change my reading speed according to what I'm reading
	Support	When I read I think about the information in both English and my first language	I use a dictionary or glossary to help me understand what I read. If a text is difficult I read aloud to help me understand	When I read I translate into my first language		I think the ideas in my own words to better understand what I read
RN	Global			I think about the information that was not given in the text and I want to know	I use pictures and figures in the text to help me understand. I try to guess what the text is about when I read the title	I have a goal in mind when I read. Before reading I skim through the text to see what it is about
	Problem Solving		I change my reading speed according to what I'm reading	When I read I guess the meaning of words or phrases I don't know	I stop from time to time to think what I'm reading	I read slowly and carefully to make sure I understand. When the text becomes difficult I pay more attention. I re-read when the text is difficult or when I lose concentration.
	Support	If a text is difficult, I read aloud to help me understand. When I read, I translate into my first language		When I read I think about the information in both English and my first language	I think the ideas in my own words to better understand what I read	I underline or circle information in the text to help me remember it

Participant	Reading strategy	Frequency of use with school-related texts				
		Never	**Occasionally**	**Sometimes**	**Usually**	**Always**
VM	Global	Before reading, I check how long the text is and how it is organized	I use titles and headings to find important information. I have a goal in mind when I read		I use pictures and figures in the text to help me understand	I think about what I know to help me understand what I read
	Problem Solving			I change my reading speed according to what I'm reading	I re-read when the text is difficult or when I lose concentration	I try to picture the information to help me remember what I read
	Support	If a text is difficult, I read aloud to help me understand.	I use a dictionary or glossary to help me understand what I read. I translate into my first language		I usually think the ideas in my own words to better understand what I read. I think the information in both English and my first language	
HD	Global			I have a goal in mind when I read	I think about what I know to help me understand what I read	
	Problem Solving			When I read I guess the meaning of words or phrases I don't know	I read slowly and carefully to make sure I understand. I re-read when the text is difficult or when I lose concentration	
	Support		I make notes to help me understand what I read. When I read I translate into my first language. If a text is difficult I read aloud to help me understand	I use a dictionary or glossary to help me understand what I read	I underline or circle information in the text to help me remember it	

Participant	Reading strategy	Frequency of use with school-related texts				
		Never	**Occasionally**	**Sometimes**	**Usually**	**Always**
PR	Global			I use pictures and figures in the text to help me understand	I have a goal in mind when I read. Before reading, I skim through the text to see what it is about.	
	Problem Solving		I stop from time to time to think about what I'm reading	I read slowly and carefully to make sure I understand	I re-read when the text is difficult or when I lose concentration	
	Support	If a text is difficult I read aloud to help me understand. I use a dictionary or glossary to help me understand what I read. I translate into my first language		I underline or circle information in the text to help me remember it. I think the ideas in my own words to better understand what I read		
ED	Global	Before reading I check how long the text is and how it is organized. I have a goal in mind		I try to connect the information in the text with what I know	I think about what I know to help me understand what I read.	
	Problem Solving	I read slowly and carefully to make sure I understand	I change my reading speed according to what I'm reading	When I read I guess the meaning of words or phrases I don't know	I stop from time to time to think about what I'm reading	I try to picture the information to help me remember what I read. I re-read when the text is difficult or when I lose concentration
	Support	I translate into my first language. I think about the information in both English and my first language. If a text is difficult I read aloud	I make notes to help me understand or remember what I read		I think the ideas in my own words to better understand what I read	

Participant	Reading strategy	Frequency of use with school-related texts				
		Never	**Occasionally**	**Sometimes**	**Usually**	**Always**
ML	Global	Before reading, I skim through to the text to see what it is about		I have a goal in mind when I read	I think about the information that was not given in the text and I want to know	I try to connect the information in the text with what I know. I use titles and headings to find important information
	Problem Solving				I try to picture the information to help me remember what I read	I read slowly and carefully to make sure I understand. I re-read when the text is difficult or when I lose concentration
	Support	When I read I translate into my first language	If a text is difficult I read aloud to help me understand	When I read I think about the information in both English and my first language	I ask myself questions I would like to have answered in the text	I answer the unit questions at the end of the chapter and then check if I was right or wrong
OC	Global	Before reading, I skim through to the text to see what it is about	I try to guess what the text is about when I read the title	I have a goal in mind when I read		I think about what I know to help me understand what I read
	Problem Solving				I read slowly and carefully to make sure I understand. I re-read when a text is difficult or when I lose concentration	I change my reading speed according to what I'm reading
	Support	I translate into my first language. I think about the information in both English and my first language		If a text is difficult I read aloud to help me understand	I think the ideas in my own words to better understand what I read	I underline or circle information in the text to help me remember it

Participant	Reading strategy	Frequency of use with school-related texts				
		Never	**Occasionally**	**Sometimes**	**Usually**	**Always**
JA	Global		I use pictures and figures in the text to help me understand	I try to guess what the text is about when I read the title.	I have a goal in mind when I read	Before reading, I skim through to the text to see what it is about
	Problem Solving	I try to picture the information to help me remember what I read			I re-read when the text is difficult or when I lose concentration	I change my reading speed according to what I'm reading. I read slowly and carefully to make sure I understand
	Support	If a text is difficult I read aloud to help me understand. I translate into my first language. I think about the information in both English and my first language		I use a dictionary or glossary to help me understand what I read		I answer the unit questions at the end of the chapter and then check if I was right or wrong