THE READING EXPERIENCE THROUGH DEAF EYES:
A CASE STUDY OF SIGNING DEAF HIGH SCHOOL STUDENTS

by

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Abstract

A qualitative case study explored the reading experiences of two Deaf high school students from a sociocultural perspective that recognizes Deaf readers as part of a language and cultural minority. Consistent with a sociocultural perspective, these case studies described the participants' cultural, language and school background followed by details about their reading experiences in the context of a School for the Deaf, the Deaf culture and community as well as their home and larger community. Volunteer participants had a Deaf cultural identity and participated in social activities within the Deaf community, communicated in American Sign Language (ASL) and read at a Grade 3 reading level, or above (results from the Stanford Achievement Test, Ninth Edition). Multiple sources of data (i.e., videotaped structured interviews, questionnaires, Informal Reading Inventories, cued-recall interviews, informal conversations with students, teachers and parents, and document review) recorded how they approached reading tasks through observations of reading episodes at home, school and in the community. Overall, case study findings provided important information regarding ASL signing Deaf readers' opinions about the value or purposes of reading while living within the Deaf and Hearing worlds. Participants valued reading and used reading and writing to interface Deaf and Hearing cultures. Converging evidence revealed how participants used both ASL and English as tools for building comprehension and decoding while reading. Contrary to the literature, findings reflected how these two Deaf high school students were active, strategic readers.
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for all their love and inner strength.

Leong Wong Chow
Mook Shee Yip Chip Low
Helen Low Chow
Jean Valentine Major Rapps
CHAPTER I: OVERVIEW

Introduction

This chapter introduces the rationale and purpose for this qualitative case study investigating the reading experiences of two signing Deaf\(^1\) high school students. Although deaf readers' low reading comprehension levels are well documented in the literature, educators do not know how deaf students experience reading in their daily life contexts. For most hearing people, it is difficult to imagine living in a soundless world. As outsiders, we depend on deaf people for an essential insider's view on deafness and other details related to the experiences of living in both deaf and hearing worlds. Further, a number of arguments support the perspective that deafness is a difference. In particular, a sociocultural framework overshadows the traditional view of deafness as a disability or deficit and offers a culturally sensitive way to begin examining reading and writing within special populations. This study views literacy as a sociocultural phenomenon to create an opportunity to expand our understanding of literacy for deaf readers.

The Problem

Although the research literature often describes the performance of deaf readers in comparison to normally hearing readers, little information is actually available about how the reading experience differs for deaf readers. That is, we do not know exactly how deaf readers experience reading in daily life contexts. This study will look beyond the low reading grade levels observed for most profoundly deaf readers and focus instead on individuals' experiences, perspectives, understandings and knowledge about reading.

\(^1\)"Deaf" refers to the group of people who share a linguistic and cultural identity while "deaf" describes a lack of hearing that precludes the understanding of speech through the ear with or without amplification.
This focus is important because, as hearing teachers, we may not understand deaf students' experiences as they tackle reading English text. This problem is pervasive because 93% of the teachers of the deaf are hearing (Lane, Hoffmeister, & Bahan, 1996). To compound this problem, the percentage of hearing teachers is higher in schools where American Sign Language (ASL) is not used. If hearing teachers are not aware of the unique challenges deaf students face while reading, they may also have limited understanding about how best to help deaf readers. As Nelson (1998) argues, progress in understanding how to facilitate literacy skills with individual deaf children requires better assessments of where the child is “coming from” before instruction (p. 76). This study will focus on the perspectives of Deaf readers whose primary avenues of communication are through sign language, reading and/or writing, rather than speech.

Reading Comprehension Levels of Average Deaf Readers

Reading comprehension is a primary goal of reading text (Adams, 1990). In addition, reading comprehension is essential when students shift from “learning to read” to “reading to learn” (King & Quigley, 1985; Lipson & Wixson, 1997). Reading comprehension is the desired result of the interaction between the reader, text and the task within the context of a reading episode (Lipson & Wixson, 1997; McAnally, Rose & Quigley, 1999).

Overall, the reading comprehension skills of deaf readers are low (Allen, 1986; Musselman, 1998; Paul, 1998). Further, the greater the hearing loss, the more likely it is that an individual will have reading difficulties (Jamieson, 1994; Padden & Ramsey, 1998). “Among deaf children, reading is the single most difficult academic hurdle, and most do not surmount it without faltering” (Harris & Beech, 1998; Marschark & Harris,
Generally, researchers have assessed the average reading levels of deaf high school graduates to be at approximately the third to fifth grade level (Luetke-Stahlman, 1996; Strassman, 1992). Based on a 1991 survey, the Gallaudet Center for Assessment and Demographic Studies reported that only 3% of deaf 18-year-olds read at the same level as their "average" hearing age peers (Kelly, 1995). Previous analysis of the national school achievement scores of deaf and hard of hearing children focused on achievement status and growth patterns. On average, the reading achievement of deaf and hard of hearing students tends to increase at a rate of less than 0.3 grade equivalents per year (Trybus & Karchmer, 1977). The reading levels of deaf readers follow two general patterns: (1) the average 18-to-19-year-old student with a severe to profound hearing impairment reads no better than the average 9-to-10-year-old normally hearing student, and (2) there seems to be an annual growth rate of less than half a grade per year, with a leveling off or plateau effect occurring at the third or fourth grade level for most students with hearing losses (Bowe, 1998; King & Quigley, 1985; Marschark & Harris, 1996; Paul, 1997).

This plateau effect remains into post-secondary education. Erickson (1987) reported that even most college-aged deaf students are reading at, or below, the functional literacy level of fourth grade. From the 1992 group of Gallaudet University\(^2\) freshmen (N=211) a majority were required to enroll in non-credit developmental English and mathematics programs to increase their competence (Kelly, 1996). Likewise, in my personal teaching experience, I have found that the majority of Deaf adults who were graduates of various Schools for the Deaf did not initially meet the Grade 10 English

\(^2\) Gallaudet University leads the world in undergraduate and graduate programs for deaf and hard of hearing students. It is the center for educational resources, research and leadership for deaf people.
equivalency requirement for typical college programs. In fact, after completing an assessment (Canadian Achievement Test, 1994) and writing an essay from a choice of topics, Deaf students rarely scored within the required entry level for College Adult Basic Education English courses. These outcomes are not surprising, given research documenting the low reading levels of Deaf high school graduates (Allen, 1986; Musselman, 1998; Paul, 1998).

Highlighting the persistence of deaf readers’ low performance on standardized reading measures, Paul (1996) notes that, despite the adaptations and norms developed for the Stanford Achievement Test-Hearing Impaired version (SAT-HI), deaf students’ low text vocabulary scores and low reading achievement scores have persisted through the 1970s, 1980s, and 1990s. In fact, in a review of SAT-HI results over a ten-year period from 1968 to 1978, deaf students’ overall gain on the Word Meaning subtest was only 1.1 grade level (Quigley, Steinkamp, Power, & Jones, 1978). Another discouraging finding has been that, despite the widespread use of Manually Coded English (MCE) systems during the past 20-25 years to model English language for deaf children and prepare deaf children for literacy, reading achievement scores based on the Stanford Achievement Test (SAT Norms, 1996) remain virtually the same today as they were before the development of MCE systems (LaSasso & Metzger, 1998; Livingston, 1997).

*Deafness is a Difference*

Significant childhood hearing loss is a catalyst for a unique life experience. Many renowned researchers and professionals take the view that deafness is a psychological variable that causes the life experiences of deaf persons to consistently differ from those of hearing people (King and Quigley, 1985; Vernon & Andrews, 1990). Marschark
(1997) argues that the direct and indirect effects of hearing loss have a tremendous impact on deaf children’s development. Because deaf children begin their lives by heading down different roads than hearing children, simple comparisons between the two groups will yield only partial information and misleading conclusions (Marschark, 1997).

For most people, it is difficult to understand how living in a soundless world may dramatically impact life experiences. Researchers Carol Padden and Tom Humphries (1988) offer an important Deaf insider’s view, “For hearing people, the world becomes known though sound: Sound is a comfortable and familiar means of orienting oneself to the world” (p. 92). Myklebust (1964) argued that our senses provide sensations which constitute our experiences. Therefore, a sensory deprivation like deafness limits the world of experience. Myklebust proposed that the basic experience of deaf people is altered as a direct consequence of a significant prelingual hearing loss and that all subsequently developed behaviors are altered. Myklebust and Brutton (1953) offer a concrete description of deaf individuals:

Deafness causes the individual to behave differently, to see differently, to smell differently, and to use tactile and kinesthetic sensation differently....

To say that the deaf person is like the hearing person except that he cannot hear is to oversimplify and to do an injustice to the deaf child. His deafness is not only in the ears, it pervades his entire being (p. 347).

The descriptions of the pervasive effects of early, profound hearing loss come from attempts to define deafness. These discussions emphasize the essential differences and experiences between deaf and hearing people.
Traditionally, hearing loss and deafness have been treated as deficits or medical problems that require rehabilitation. Thus, the traditional approach to writing about deaf people is to focus on their condition – that they do not hear – and to attribute all other aspects of their lives to the consequences of hearing loss (Padden & Humphries, 1988). In contrast, Deaf perspectives of everyday experiences abandon the limited views that Deaf people are disabled and compensate for their deafness by using sign language (Padden & Humphries, 1988). Indeed, in the last twenty years, some sectors within the field of deafness have made a revolutionary shift away from a deficit model of deaf people as disabled to a sociocultural model of Deaf people as a minority group with its own language and culture (Lane, 1992; Padden, 1996; Padden & Humphries, 1988; Parasnis, 1996; Wilcox, 1989). Within the Deaf community and literature on deafness the lower case deaf is used as a generic adjective that refers to a lack of hearing, while the upper case Deaf is used as a sociocultural term (Marschark, 1997). Many deaf people celebrate their differences and embrace a Deaf cultural identity within a group that shares a common language, American Sign Language (ASL), and cultural experience.

Sociocultural theory focuses on understanding how cognitive, social, cultural, historical or institutional, and experiential factors influence learning and instruction (Vygotsky, 1993). From a sociocultural perspective it is impossible to separate the learning competencies and problems of individual children from the contexts in which they live and function (Keogh, Gallimore, & Weisner, 1999; Wertsch, 1990). According to Schlesinger and Meadow (1972), "Profound childhood deafness is more than a medical
diagnosis: it is a cultural phenomenon in which social, emotional, linguistic, and intellectual patterns and problems are inextricably bound together” (p. 1).

Thus, many researchers call for adopting a framework that considers literacy as a sociocultural phenomenon. In the context of literacy, a sociocultural perspective emphasizes the roles that cultural and linguistic differences and access or exposure to school reading activities play to influence students’ performance (Palincsar & Perry, 1995). Specifically, a sociocultural framework implies that understanding the literacy experiences of signing deaf students must consider a number of factors such as the language and communication needs in both ASL and English, access to information including print, school reading experiences, and influences from their familial culture and the Deaf culture. In particular, educators need to have a general understanding of how a Deaf cultural identity affects students’ learning styles, learning preferences and classroom behaviors (Hadadian & Allen, 1998).

Luis Moll (1994) examined the cultural meaning of literacy for a Hispanic community in Tucson, Arizona. He states that teachers must get to know the communities where their students live. Through dialogue and observation educators and members of a specific cultural community may jointly determine how its group uses literacy in their day-to-day lives (Moll, 1994). This is critical information to help create meaningful instruction.

Likewise, a researcher and educator of the deaf, Peter Paul (1998) argues that literacy may be defined differently by members of the Deaf world. Further, modes of literate thought, including reading, writing, computers and math, have specific purposes relative to the needs or values of community members (p. 137). Therefore, the study of
literacy from a deaf cultural context needs to examine practices in the Deaf community for using print and distributing literacy skills (Forman & McCormick, 1995).

The Individual Reader

Padden and Ramsay (1993) propose that the cultural perspective of reading and writing shifts the focus from mental processes of the individual to social practices and strategies used collectively by members of the Deaf community. But even if a sociocultural perspective emphasizes the roles that society and culture play on individuals' lives and learning, it is nonetheless important to examine the role of the individual within the literacy context. Interactive models of reading are useful in that respect because they take into account the contexts within which individual readers live and learn (Lipson & Wixson, 1986; 1991). Specifically, interactive models of reading describe the relationship between reading contexts, texts, tasks and the reader.

The literature on reading describes individual factors that affect all readers. These include individual readers' reasons for reading, self-efficacy beliefs (Bandura, 1993; Henk & Melnick, 1995; Schunk, 1986, 1985, 1994) and metacognition (Brown, 1980; Wong, 1991; Brown, Armbruster, and Baker, 1986). First, individuals have different reasons or motivations for reading. These are reflected in what, where, and when they read as well as their self-reports of the reasons for reading. Second, self-efficacy beliefs are their judgements or beliefs about themselves as readers based on personal evaluations of reading ability and comments from influential people. Specifically, positive or negative beliefs may influence the reader's motivations to read and perseverance especially if the reading tasks becomes difficult. Third, metacognition refers to thinking about our own thinking processes and knowing how we know. For example, the readers'
metacognitive thoughts and understandings about reading reveal their thinking processes. Specifically, the things that readers pay attention to and the strategies they use as they read tell us what they think about during the reading process. A related term, metacomprehension is a reader’s awareness and control over one’s own comprehension.

*Expanding Views of Literacy for Deaf Readers Revisited*

The research perspective underlying this qualitative case study builds on a number of tenets raised by reading specialists and teachers of the deaf. Nelson and Camarata (1996) caution educators against defaulting to a view that a deaf and hard of hearing student’s lack of progress in English literacy indicates deficiencies in the learner. Similarly, after examining research comparing good and poor normally hearing readers, Lipson and Wixson (1986, 1991) propose that research on reading disability must move away from the search for causes within the reader. Instead, they explain that the focus must specify conditions in which different readers can and will learn. Likewise, Nelson and Camarata (1996) identify a “supportive tricky-mix of learning conditions” for deaf and hard of hearing students that promote English literacy in sign, speech and text skills (p. 23). These include frequent, appropriate language challenges while maintaining students’ positive emotions, self-esteem, and motivation. They also contend that this “tricky-mix is quite difficult compared with achieving similarly supportive conditions for normally hearing children” (Nelson & Camarata, 1996, p. 23).

As another general critique, Samuels (1984) links the reading disability problem to the continued search for universal laws of behavior that will generalize across individuals and situations. This is a difficult quest in both the regular and special
education context. Each reader’s background and situation is unique. For deaf students individual differences appear in cognitive ability, communication preferences at home, school, and the community, family hearing status, Deaf cultural identity, English language skills, and characteristics of their hearing loss including functional hearing ability. Furthermore, although a deaf reader’s language, cognitive background, and literacy experiences are important foundations for reading, teachers cannot change their students’ previous experiential or cultural background. Consequently, we can only begin teaching based on a student’s background, present skills and interests, coupled with our own experiential, cultural and instructional perspectives.

Paul (1998) argues that there is a need to develop deafness theories and models to understand how deaf students learn, and particularly how they deal with literacy. These models can replace instructional strategies and techniques that are based upon our understanding of the literacy process of normally hearing individuals (King & Quigley, 1995; McAnally, Rose, & Quigley, 1999; Padden & Ramsay, 1993; 1998; Paul, 1998). We need to change our orientation, to stop “thinking like hearing people” and to begin asking individual deaf readers questions in order to understand reading from the perspective of a deaf world. This is possible if we begin adopting a truly culturally sensitive, learner-centered approach. One essential step in this process is to demonstrate attitudes and practices that respect Deafness as a cultural and language minority rather than a disability.

3 “THINK-HEARING” literally means to think and act like a hearing person (Padden & Humphries, 1988). This ASL idiom is a derogatory label for deaf people. It is not good to be “too” hearing (Rutherford, 1989).
Purpose of the Study

Previous research has documented the problems experienced by deaf readers, but many gaps remain in our knowledge about how severe to profoundly deaf readers, who communicate with American Sign Language (ASL) experience the reading process. So far, only a few investigations have included qualitative case studies of this unique group. Previous investigations include case studies of signing deaf preschoolers (Rottenburg & Searfoss, 1992; Williams, 1994) and the pre-reading and/or on-line reading habits for elementary-aged signing deaf children (Andrews & Mason, 1991; Padden & Ramsay, 1998; von Tetzchner & Rogne, 1997). Even fewer studies have described sustained reading episodes for severe to profoundly deaf signing adolescents (Ewoldt, 1981) and adults (Livingston, 1991). Consequently, we have little information about the reading experiences and reading contexts of signing deaf high school readers. To fill these gaps, these in-depth case studies will describe the reading experiences of two signing Deaf high school students.

In this study, I draw upon both sociocultural theory and interactive models of reading to explore what individual Deaf readers bring to different reading contexts. Consistent with a sociocultural perspective, these case studies begin by describing the reading experiences of two high school students who are members of the Deaf community in the context of Deaf culture, a School for the Deaf, and the Deaf community as well as the home and larger community. Drawing from participants’ personal contexts, I sought information from individual Deaf students to reveal aspects of how they as members of the Deaf community shared and viewed literacy practices. Currently we know little about ASL signing Deaf readers’ opinions about the value or
purposes of reading while living within the deaf and hearing worlds. Thus, I examine how these individual Deaf readers use reading in their daily lives. Little is also known about Deaf readers’ knowledge, beliefs and skills about reading. This study also explores what Deaf readers understand about reading processes, what motivates them to read or not to read, and the strategies they use to read. I also investigate how these ASL users perceive their reading skills and weaknesses. Another focus examines how participants’ comments and practices during reading episodes reveal their understanding of the reading process.

The Research Questions

Two overarching research questions guided this study:

• What are these Deaf high school students’ reading experiences in the contexts of a School for the Deaf, Deaf community and Deaf culture existing within a hearing world?

• How do these readers’ knowledge, beliefs, skills and motivations for reading play out in the context of being a signing Deaf high school student?

Précis of Future Chapters

Adopting the concept that literacy is a sociocultural phenomenon in which reading is an interactive process between the reading context and reader offers a new perspective to view deaf students and their reading problems. Chapter II describes aspects of the deaf context of literacy beginning with the significant impact of deafness on language and learning, Deaf cultural values, and ASL. Drawing from the research literature, descriptions focus on the unique difficulties many deaf readers experience while reading English text. Further discussion details interactive models of reading and
the role of the individual reader in relation to the sociocultural perspectives of developing literacy skills for deaf readers. The final section presents specific research questions within three focal areas: (1) the Deaf culture and context; (2) literacy contexts and tasks; and (3) individual knowledge, beliefs, and skills about reading. Chapter III describes the study design, the research site, and the study chronology. Details regarding the data collection and data analysis processes are also provided. Chapter IV presents the results for both case study participants. Results are presented thematically based on the initial research questions and focal areas. These results highlight similarities, differences and emergent sub-themes between and across cases. Lastly, Chapter V summarizes key findings across themes, draws links to the literature and identifies possible educational implications. In a final critical discussion, I examine the limitations of this study and provide suggestions for future directions.
CHAPTER II: LITERATURE REVIEW

Introduction

Reading comprehension is a challenging problem for many deaf children and adults. Despite the benefits of early intervention, special education, and greater use of sign language, it appears that the low reading comprehension level of deaf readers has not improved over time (Marschark & Harris, 1996; Paul, 1998). This chapter begins with a summary of the literature comparing deaf and hearing readers on different aspects of reading. I also provide an overview of the kinds of difficulties deaf readers experience while reading. Next, I discuss how deafness is a difference and how the influence of a Deaf cultural identity and the Deaf world shapes the Deaf context of literacy. Drawing on a sociocultural perspective, I discuss a number of interrelated reasons why deaf persons with a severe to profound hearing loss may have difficulties learning to read. For example, I describe the effects of a significant hearing loss on language development and communication skills. Other challenges associated with hearing loss that have implications for how children learn to read include late diagnosis, parental grief, limited access to language, communication isolation, structural differences between American Sign Language and English and confusion over the role of phonology in reading for deaf children. I close by showing how interactive models of reading provide a framework for investigating the role of the individual reader in relation to the sociocultural perspectives on developing literacy skills and by discussing how individuals' knowledge, beliefs and strategic approaches to reading affect literacy development within a sociocultural context.

The Problem: Deaf Readers Compared to Hearing Readers

The research literature often reports the low average performance of deaf readers
in comparison to younger, less-skilled hearing readers (Banks, Gray, & Fyfe, 1990; Beech and Harris, 1997; Davey, 1987; Jackson, Paul, & Smith, 1997; King & Quigley, 1985; Paul, 1997; Paul & Quigley, 1994; Wood, Griffiths & Webster, 1981). In general, researchers have found that, in comparison to hearing aged peers, most deaf teenagers and adults have reading comprehension skills at the grade 4 or 5 level (Holt, 1994). Indeed, Banks, Gray, & Fyfe (1990) associated the problems of deaf readers with those of hearing poor readers. They propose that hearing poor readers with no additional learning problems such as language impairments, intellectual deficiencies or dyslexia provide the best possible comparison group to deaf children because the two groups are similar except for their hearing. Banks, Gray and Fyfe (1990) also argued that both deaf and hearing poor readers tend to “bark at print,” that is, they become so entangled in their problems with word-recognition and syntax that the general meaning of the passage is lost.

An example of a study documenting the poorer relative comparative performance of deaf readers was conducted by Banks, Gray, and Fyfe (1990). These authors compared deaf pre-adolescents and adolescents to various groups of hearing readers. These researchers examined the free-written recall and cloze-written recall of three modified narratives. Sixteen prelingually, severe to profoundly deaf students from a School for the Deaf aged 11.3 – 15.2-years-old who communicated using Signed English and understood British Sign Language (BSL) were matched to a younger group of remedial-reading, hearing students aged 10.4 – 14.0-years-old. Recall protocols were scored for the amount, quality and presence of information in each series of story-grammar categories. The results indicated that older deaf readers had similar scores to
younger, remedial-reading hearing students. However, the deaf sample also gave more
temporal distortions than hearing students. One characteristic of ASL and British Sign
Language (BSL) is that temporal information is often incorporated within verbs and thus
formal distinctions common to spoken and written English may be unfamiliar to signing
deaf students. Another point of critique is the possible unfairness because deaf readers
gave written summaries rather than responding in their comfort mode, sign language.
Consequently, this comprehension task may not have reflected their true abilities.

As a second example, Davey (1987) used post-passage reading comprehension
questions to explore comprehension and metacomprehension with students with grade
equivalent scores between 5.0 – 7.9 on the SAT subtest Form E. The performance of 50
prelingually, profoundly deaf high school students (mean age 15.0) who attended a
residential School for the Deaf was compared to that of 61 proficient grade 5-6 hearing
readers (mean age 11.0 years) and 62 grade 9-10 disabled hearing readers (mean age 15
years). Each passage included eight text-based 4-stem, multiple choice comprehension
questions and WH-questions in paraphrased form. Each of the 12 expository reading
passages were about 250 words in length and rated at the 6th-grade level according to
both Fry (1977) and Dale-Chall (1948) reading formulas. Overall, findings showed that
deaf readers performed at significantly lower levels across all post-passage
comprehension tasks compared with both groups of hearing readers.

Some Difficulties Deaf Readers Experience with Reading

Research shows that, in addition to problems in reading comprehension, deaf
readers also have challenges developing reading-related knowledge and skills. For
example, deaf students have difficulty developing a rich vocabulary and knowledge or
skills in English syntax. Deaf readers also experience difficulties decoding words, which adds to the demands on working memory. In addition, limited understandings about the purpose of reading and little metacognitive awareness or knowledge about the reading process compounds deaf readers' struggles with reading. In the following sections, each of the kinds of difficulties often experienced by deaf readers will be described along with explanations of why development of skills in each area might be different for deaf students.

Limited Vocabulary

A deaf reader's limited vocabulary, and lack of knowledge of multiple meanings and English idioms, may contribute to lower reading comprehension. Waters and Doehring (1990) argue that deaf children's poor knowledge of the meanings of English words is a major obstacle to reading. They also contend that, in contrast to hearing children who know the names of most objects before learning to read, many deaf children have fewer verbal symbolic representations for objects. Based on over 25 years of experience teaching at schools for the deaf and deaf community college programs, Livingston (1997) estimates that Deaf readers read not more than 500 words during their first year of reading instruction. In comparison this exposure lags behind the 20,000 words typically read by superior hearing readers, 10,000 – 15,000 read by average hearing readers and 5,000 read by slow hearing readers in grade one. In addition, deaf readers also have been observed to retrieve excessively specific word meanings when more general meanings are required (Strassman, Kretschmer, & Bilsky, 1987). Kelly (1993) claims that many deaf readers make one of two errors: (1) they either retrieve word meanings at great costs in time and attention, temporarily derailing higher-level
comprehension processes; or (2) they often retrieve and apply wrong word meanings that misguide their comprehension.

Other studies of deaf and hard of hearing students typically conclude that their English vocabulary growth is significantly slower, and ultimately quantitatively reduced compared to normally hearing peers (de Villiers & Pomerantz, 1992; Kelly, 1996; King & Quigley, 1985). Generally, deaf children are more likely to understand and use concrete nouns and familiar action verbs rather than more abstract or general words with which they may have less experience, especially if they have hearing parents (King & Quigley, 1985). In addition, deaf students understand and use fewer English words across all the different classes: nouns, verbs, adjectives, adverbs, conjunctions, and function words (de Villiers & Pomerantz, 1992).

In different respects, American Sign Language (ASL) may hinder or enhance conceptual vocabulary development. For signing deaf individuals, one possible reason for a limited English vocabulary is that ASL vocabulary does not have a specific one-to-one correspondence to the same concepts in English (Chamberlain & Mayberry, 2000; Schein & Stewart, 1995; Treiman & Hirsh-Pasek, 1983; Williams, 1994). Many English words require multiple signs, words, or both to construct equivalent meanings across the two languages (Chamberlain & Mayberry, 2000). As one example, there is no sign for 'jury' and the meaning must be explained in sign. At the same time, unlike English, ASL is a polysynthetic language that has a unique visual clarity. ASL verbs can incorporate subjects and objects within signs and present complex adverbial, temporal, and other information (Wilcox, 1989). Further, a fluent ASL signer can use distinctive or multiple signs to correspond to a single English word with multiple meanings. For example, the
sign for ‘reading’ can be modulated to correspond with different variations and meanings such as reading a book or a page, skimming, studying, reading body language, or reading a thermometer or another instrument. Similarly, visually distinguishable signs translate the word ‘right’ as either meaning correct, a particular direction, or a privilege protected by laws and citizenship. The mismatch between distinct ASL signs and their corresponding homogenous spelling and pronunciation in English could be confusing when learning to read the word “right.” However, ASL may in some ways support vocabulary development in ASL because specific signs or combinations of signs can clearly depict multiple meanings or concepts that would be lost in spoken English or print alone.

Limited English Syntax

Based on classroom observations and a review of research, Marschark and Harris (1996) conclude that “deaf children’s difficulties in mastering English syntax have long been recognized, even if we have not made great strides in overcoming them” (p. 293). Similarly, Quigley, Power and Steinkamp (1977) found that the syntactic abilities of the average deaf 18-year-old were at a level below that of the average hearing 8-year-old. In a review of the literature on reading and deafness, Musselman (2000) also concludes that deafness usually results in limited spoken language abilities, and poor knowledge of the semantics and syntax of the spoken language. For example, many deaf readers do not recognize certain standard English phrase and sentence patterns and therefore do not comprehend the meaningful inter-word relationships signaled by those patterns (Kelly, 1995, 1996).
Differences Decoding Words

Another potential difficulty deaf readers may encounter may be in decoding print. Reading involves interaction with a standardized, external coding system that likely differs from the inner codes of deaf children, unless the primary communication mode for the child is the same language as the written text (Bebko, 1998). The latter alternative is impossible for profoundly deaf readers who use sign language or ASL for communication. Further, unlike hearing children, the letter–sound correspondence does not make sense for profoundly deaf children because they may have limited auditory experience before learning to read (Leybaert, 1993).

There is evidence that deaf individuals use a range of different strategies and methods in short–term memory, or working–memory, for decoding English words (Siedlecki, Votaw, & Bonvillian, 1990). For example, deaf readers report using both speech-and sign-recoding. Interestingly, speech-recoding was used by many deaf students who rarely use speech for communication and by students with unintelligible speech. On the other hand, sign-recoding was generally reported in addition to speech, and was used by many deaf students who had learned to sign in primary schools (Lichtenstein, 1985). However, the precise nature of deaf children’s encoding system is difficult to specify because they come from oral, signing, or combined oral and signing backgrounds that in turn shape the nature and diversity of their representations of words (Beech & Harris, 1997; Leybaert, 1993). Leybaert (1993) reviewed a number of studies and these individual reader factors were not always controlled in a systematic way; therefore, it was difficult to identify generally or specifically the nature of deaf readers’ decoding practices.
Yet another difference that causes difficulty for beginning deaf readers who sign is that the manual alphabet, or fingerspelling is of little help for the alphabetic strategy. This is because there is no relationship between each letter hand shape, position, or movement and the phonetic alphabetic code (Leybaert, 1993). Thus, these children must be given opportunities to match their internalized manual language to print (Andrews & Mason, 1986). Further support for this view comes from Padden and Ramsay (1998). They studied the reading and writing abilities of 31 deaf and hard of hearing children enrolled in public schools and residential schools for the deaf. One important observation was the repeated use of “chaining sequences” in which teachers and adult Deaf signers formed explicit relationships between a sign or printed word and a fingerspelled word. From videotape analysis of classroom instruction spread over three separate weeks in a school year, they found that deaf teachers fingerspelled significantly more than their hearing counterparts. On average deaf teachers fingerspelled 176 words compared to 75 words for hearing teachers (Padden & Ramsey, 2000).

Leybaert (1993) identifies another possible qualitative difference in the signing deaf reader's experience. After synthesizing evidence from a number of studies, Leybaert (1993) suggests that “deafness undoubtedly affects the way words are represented in the mental lexicon of the subjects.” She found that, as she expected the “lexical representations of deaf individuals differ from those of hearing individuals: They contain signed representations of the words, and due to the effects of hearing loss such as limited access to speech sounds and unintelligible speech the representations of phonology are less accurate” (p. 269). Given this scenario, deaf readers are likely to have difficulties decoding words.
Reading aloud differs from on-line comprehension of spoken and signed language in many aspects; however, lexical identification is one psychological process common to all tasks (Mayberry, 1995). Thus, in order for meaning to be extracted from sign, speech, or print, the surface pattern structure of the lexical item must first be discriminated, recognized, and identified (Mayberry, 1995). As Padden and Ramsey (1998; 2000) suggest, “reading in signs” is a common and familiar school task for deaf children, but it is not assumed that this task is identical to reading aloud for hearing children. Compared to a hearing student audience, deaf students would not experience some of the same benefits of relaxation from read-alouds and big-book readings. For example, deaf students need to maintain eye contact with the reader/signer; therefore, they cannot stretch out, relax and close their eyes without losing the story line. Likewise, the reader/signer would need to adjust the pacing of information during the read-aloud. These practices are important in order to maintain reasonable eye contact and monitor receptive sign language comprehension with a group of deaf students. Livingston (1997) argues that it is the rare hearing teacher who can “track” print in guided reading situations while keeping the integrity of sign language. Most reading lessons turn into sign-for-word translations of text, which substitute the written form of English for the signed form. In addition, unless meaningful sign is used to interpret text, deaf students will continue to be stymied by written English (p. 48).

Other issues come into play as deaf readers engage in read-alouds or signing from a book. McAnally, Rose and Quigley (1999) list a number of reasons why reading-aloud, or oral reading would be different for deaf readers who use sign language. First, for hearing readers much of the read-aloud, or oral reading experience is designed to allow
students the chance to experiment with language, enjoy the sound of language, and to focus on meaning. But, none of these goals is particularly relevant for deaf students even if they "read-aloud" by Manually Coded English (MCE).\(^4\) Second, when deaf readers attempt to read-aloud, they become so focused on translating the English text to English sign that they lose the meaning and, of course do not experience the sound of the language. Third, if they read the text and sign the meaning of the English words using ASL, the activity is changed from reading aloud to story retelling, which is a different activity with a different purpose.

*The Role of Phonology in Reading*

Good phonological skills are important for reading an alphabetic language. When learning to read, most children progress from using a whole-word, logographic strategy building on a limited sight vocabulary, to a phonic strategy in which letters are translated into phonemes via grapheme to phoneme, or spelling to sound rules (Marshark & Harris, 1996). However, deaf readers with a severe to profound hearing loss may have difficulty learning to use sound or phonology for reading. Problems mapping letters onto phonemes also may be compounded because of the inconsistencies in the English letter-to-sound correspondences and because only 30% of speech sounds are visible through speechreading (LaSasso & Metzger, 1998; Ling, 1976). For example, many people are surprised to learn that the average deaf adult with many years of speechreading practice does not read lips any better than the average hearing adult (Marschark, 1997). Hearing people with one practice session do just as well on lipreading tests as deaf people with years of training (Neisser, 1990).

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\(^4\) MCE is signed in English word order and often includes verb tense markers and word endings.
However, a debate exists over the role of phonology for deaf students learning to read. Some studies have shown that younger deaf children have poor phonological skills and are unlikely to use phonological coding as a reading tool. On the other hand, phonological coding is often used effectively by deaf adolescents and deaf college students (Hanson, 1989, 1990; Hanson & Lichtenstein, 1990; Harris & Beech, 1998; Kelly, 1993; Marschark and Harris, 1996). Chamberlain and Mayberry (2000) suggested that deaf children who become skilled readers acquire knowledge of the phonological system represented by orthography as a consequence of reading. Thus, they would show evidence of using phonological decoding only after they become skilled readers but not when they are beginning readers (p. 250). Further, some researchers argue that the acquisition of phonological knowledge does not exclusively depend on hearing or residual hearing, because phonological units of a language are not equivalent to sounds (Hanson, 1989, 1991; Hanson & Lichtenstein, 1990; LaSasso & Metzger, 1998; Leybaert, 1993; Transler, Leybaert, & Gombert, 1999). Instead, phonological units of a language can be defined as a set of meaningless primitives from which meaningful units are formed (Hanson, 1989, 1991). These linguistically defined primitives are akin to gestures articulated by the vocal tract of the speaker. When applied to ASL, phonology can be conceptualized as comprising meaningful units or visible gestures articulated by the hands, face, and body of the signer.

In a review of research on the roles of phonological codes and reading in the deaf, Leybaert (1993) concludes that children who are born deaf may make use of information provided by various sources to develop mental representations that are compatible with the phonetic structure of oral language. Moreover, this is possible for not only orally
educated children, but also for children educated with sign language. For example, research with signing deaf readers has shown that most demonstrate phonemic awareness while reading despite the presence of deafness (Hanson & Fowler, 1987; Hanson, Goodell, & Perfetti, 1991; Harris & Beech, 1998; LaSasso, 1996; Leybaert, 1993; Transler, Leybaert, & Gombert, 1999).

Further support for deaf signers’ phonemic awareness comes from studies showing that some college-aged, better than average, deaf readers utilize phonology while reading despite profound, prelingual deafness, unintelligible speech and ASL as a first language or primary means of communication (Hanson, 1989; Hanson & McGarr, 1987; Hanson, Goodell, & Perfetti, 1991; LaSasso, 1996). Although these deaf students do not have complete access to auditory information, they may use information derived from any combination of sources such as lipreading, experiences with speech or articulatory training, Cued Speech, fingerspelling or the manual alphabet, and the alphabetic orthography itself to develop a knowledge of the phonological contrasts of oral language (Leybaert, 1993; Waters & Doehring, 1990). Thus, although lack of access to oral English may hinder students’ access to sound-based phonological information, research suggests that, with support, signing deaf readers may be able to develop proficiency with phonological coding in order to promote reading development.

Working Memory

As one possible explanation for the reading comprehension difficulties experienced by deaf readers, Kelly (1995) proposes that the documented deficiencies in syntactic knowledge, lexical knowledge, and use of phonological code imply that the average deaf reader may process sentences inaccurately or inefficiently, consuming
working memory capacity and obstructing effective comprehension. Lichtenstein (1985) argues that considerable research has shown that prelingually deaf students are likely to exhibit processes at the working memory stage of reading that are both quantitatively and qualitatively different from those used by hearing readers. For most deaf students, the speech, sign, or visual codes are not as efficient as the speech code of hearing persons for maintaining English linguistic information in working memory. For example, Bebko and Metcalfe-Haggert (1997) suggest that deaf students demonstrate improved recall of high imagery compared to low imagery or abstract stimuli. Deaf signers encoded and retrieved words that could be expressed by a single sign more readily than they did words without a direct sign language equivalent or a series of signs. Further, it is widely known that decoding deficiencies make demands on working memory, so that memory resources are unavailable for integrating meaning at the sentence and text level (Garner et al., 1991). This is a critical issue for deaf readers as storage of information within a visual code, such as sign language, makes greater demands on short-term working memory (Bebko, 1984, 1998).

This section shows that deaf readers experience difficulties not only with reading comprehension but also with reading related knowledge and skills such as developing skills in English vocabulary and syntax, decoding words and working memory. I showed how the unique qualities deaf students’ experience when learning to read could be related to difficulties in each area. Together these difficulties contribute to the overall qualitative differences of the deaf readers’ reading experiences.
Deafness is a Difference: Sociocultural Designation of Deaf versus deaf

The previous section discussed some of the difficulties deaf readers experience with reading. But, to understand how to support these students, we need a new way to examine the reading problems of deaf students within the context of a Deaf community and culture. A Deaf educator and researcher challenged educators as he posed these questions:

"Are hearing teachers obligated to view the culture of their hearing society as a benchmark? If hearing and speaking is the norm, do teachers of the deaf need to seek educational solutions that will help normalize deaf students so they are more like their hearing peers?" (Stewart, 2001, p. 181).

As an educational community, we need to recognize the unique aspects of deaf readers. This section presents the perspective that deafness is a difference and discusses some of the literature to support a sociocultural view of deaf people.

According to Schirmer (2001), the sociocultural view of deafness focuses on the social and cultural experience of being deaf in a society in which the majority of individuals are hearing. Another characteristic of a sociocultural view is that deafness is seen as a linguistic and ethnic minority culture (Schirmer, 2001). Moreover, a sociocultural framework also considers language and cognition as outgrowths of the social milieu and not as separate entities (Paul, 2001). In contrast to the "mainstream culture" or "disability" perspective, the Deaf community embraces a sociocultural perspective that recognizes deafness as a socially constructed phenomenon (Leigh, 2001). People who adopt a cultural perspective of deafness tend to view deafness as a social
issue and not one of impairment or pathology (Leigh, 2001). Deafness is not a disability, but rather comprises an alternate lifestyle and culture (Padden & Humphries, 1988). However, the mainstream hearing world or dominant culture assumes that deafness is an unwelcome condition that requires medical, educational, and therapeutic interventions. This mainstream perspective also sees hearing loss as a significant potential impediment to the development and use of spoken language skills (Leigh, 2001). Further, in terms of group membership, deaf people are seen as members of the broader hearing community who have a disability that is to be overcome or ameliorated rather than members of a separate community.

Within the Deaf community and literature describing persons with hearing loss, the word *deaf* is used as a generic adjective that refers to a lack of hearing and includes people who are hard of hearing, deaf, and Deaf. The uppercase *Deaf* is a sociocultural term (Marschark, 1997) that refers to a group that shares a cultural-linguistic affiliation to a community of similar others (Beattie, 2001). However, recently, some Canadian Deaf leaders have decided not to make this distinction and use the capital ‘D’ in every use of the word Deaf. They claim that such usage is valid for the following two reasons: (1) it indicates that Deaf culture is the birthright of every Deaf individual by virtue of being born Deaf or having become Deaf in childhood, regardless of whether or not they have been exposed to Deaf culture, and (2) the use of Deaf is consistent with how individuals of other cultural groups such as Blacks or Jews spell their names regardless of the strength of their identity (Cripps, 2000).

According to Padden (1989), being Deaf usually means the person has some
degree of hearing loss; however, the type and degree of hearing loss is not a criterion for being Deaf. The important criterion is whether a person identifies with other Deaf people and behaves as a Deaf person. This "attitudinal deafness" depends on self-identification and acceptance by other members of the Deaf culture and it is a stronger basis for membership in the Deaf culture (Hadadian & Allen, 1998). Deaf pride is about accepting a different sensory orientation. For example, a deaf person would argue that, in the Deaf world we "hear" with our eyes and "talk" with our hands (Evans & Falk, 1986).

According to Jonathan Langone, a Deaf high school student:

Deafness is boiling blood flowing through my veins. It's my whole life.

Deaf culture is my soul. American Sign Language is my "voice" and "ears" because I hear with my precious eyes and I speak with my hands....

At the Learning Center, everyone is family, including teachers and staff.

I live in a world where I can communicate freely and go about my daily life with a complex group of people who see me as Jonathan and don't think about my deafness. We are just people living and growing together.

(Schirmer, 2000, p. 82-83)

In 1985, a Deaf sociologist, Barbara Kannappell, defined a humanistic viewpoint that draws from the disciplines of sociolinguistics and cultural anthropology. From this perspective Deaf people have their own language, American Sign Language, which is different from English, and their own culture which is different from hearing culture (Kannappell, 1993). For members of the Deaf community, "being Deaf" involves membership in a social group that has many characteristics of linguistic and cultural minorities (Leigh, 2001). These features include voluntary organization of groups and
networks, endogamous marital patterns, a shared historical awareness, respect for community behavioral norms, and the use of a common language.

Currently, the perspective that deaf people are a cultural and language minority rather than individuals with an audiological disability is gaining support among educators, linguists, and researchers involved in the education of deaf people (Parasnis, 1996; 1997). For example, some sociocultural changes are reflected in the thirty-year history of the Annual Survey of Deaf and Hard of Hearing Children and Youth conducted by the Gallaudet Research Institute (GRI) (Holden-Pitt & Diaz, 1998). In the mid-1980’s, as a response to the influence of the Deaf culture movement and the promotion of ASL, a section on communication was added to capture the variety of classroom communication methods. Later, in the 1997-1998 Annual Survey a number of additional questions reflected current practices, changing demographics, and legislation in deaf education (Karchmer & Allen, 1999). One significant change included questions to gather descriptions of functional hearing ability in the classroom versus a purely medical categorization of hearing loss (Karchmer & Allen, 1999).

This case study draws upon sociocultural theory and recognizes deaf people as a distinct cultural entity to examine Deaf students and literacy within a sociocultural context. As part of this perspective, members of the Deaf community including deaf educators and researchers recognize the differences between the two languages and cultures, ASL and English. A number of values exist regarding ASL, English language and literacy that are associated with a Deaf identity. For example, there is a very high value associated with bilingualism in sign language and a spoken language in the written form, as an important outcome for people who are Deaf (Lane, Hoffmeister, & Bahan,
As a community many Deaf individuals are strong advocates for acceptance of their language, better career opportunities, educational reform, and protection of the cultural identity of Deaf people (Hadadian, Studnicky & Merbler, 1995). The next section examines reading and English from a Deaf context focusing on Deaf cultural values within a Deaf world perspective.

*What Does Reading Mean? – A Deaf World Perspective*

Padden and Ramsey (2000) argue that viewing signing deaf children as cultural beings has always been controversial but it is probably the best strategy for mapping out the nature of reading development in this population. Within this new perspective, they began examining the reading development in 98 elementary and middle school deaf children enrolled in a School for the Deaf. Group characteristics included severe to profound deafness from birth or shortly after. The purpose of this study was to evaluate the interrelations between reading development, classroom instruction practices and signing ability. One of the research questions considered: Why is there a relation between specific sets of ASL abilities and reading ability given that the two systems have little in common? Analysis of videotape data showed examples of how young deaf children became aware of the associations between ASL and written text. Padden and Ramsey (2000) concluded that:

> Our findings emphasize that whereas reading is an individual accomplishment, it is fundamentally a cultural achievement in which forces of society and institutions combine to support an alternate route to reading....We suggest that the associations between elements of sign language and written language are not fortuitous or idiosyncratic
discoveries by individual deaf children, but result from systematic exposure to a culture of signers and adult Deaf readers who directly and indirectly teach young signers how to make sense of written English text (p. 168).

These findings add important empirical evidence to the literature examining the Deaf cultural context for literacy.

Hadadian and Allen (1998) investigated the attitudes of 50 Deaf and hard of hearing adults toward Deaf culture, hearing and hard of hearing people, deaf non-ASL users, and multiculturalism within the Deaf culture. Participants completed a questionnaire that employed a 5-point Likert scale. The average age of group members was 25 years; 56% identified themselves as Deaf and 44% as hard of hearing. The main communication preferences included 55% who used English and 32%, who identified ASL as their primary mode of communication. Within this group 85% had hearing parents and 15% had Deaf parents. In their study, Deaf and hard of hearing individuals shared similar opinions despite differences in age, language preferences and degree of hearing loss. Findings indicated beliefs that: (1) ASL knowledge was necessary to communicate with Deaf people; (2) Deaf culture was valued but socializing within the hearing world does not diminish loyalties towards the Deaf community; and (3) beliefs that hearing people perceive themselves to be superior over deaf and hard of hearing people. In addition, Hadadian and Allen (1998) discuss a number of implications for practices and these include the following:

Teachers of Deaf children need to educate themselves about the Deaf community including its language, social norms, historical experiences,
value system and cognitive orientation. In particular, educators need to have a general understanding of how a Deaf cultural identity affect the students' learning styles, learning preferences and classroom behaviors. They also need to be aware of their own cultural values since underlying beliefs and attitudes profoundly affect how teachers relate to students with minority backgrounds (p. 36-37).

The following testimonials from members of the Deaf community illustrate how beliefs about reading and English language may stem from how Deaf students identify themselves in the hearing world. For example, the "we" and "they" dichotomy of this minority group is roughly: "we" are Deaf, "they" are hearing: "we" identify with ASL, "they" with English (Rutherford, 1989, p. 72). ASL is our "native" language; English is "their" language (Evans & Falk, 1986).

Evans and Falk (1986) conducted one of the first ethnographic studies of a large American residential School for the Deaf in a southeastern state. They argued that languages, symbols, and worldviews arise from and reflect particular social contexts. Given that framework, the researchers sought to observe and to discover how sign language, the interactional context of residential school life, and worldviews might be related. One of the researchers, Evans, is hard of hearing and fluent in ASL; both factors earned him a degree of insider status. During the four-month study he lived among the 350 students on campus and had access to classes including evening and weekend contact with students and staff. Evans and Falk (1986) gathered testimonials and concluded that:

Experientially, the daily pull for any individual is toward the central axis, toward fusion and sameness with the "deaf way," not the hearing way:
"They say study; they say English, they say no sex, no booze, no... etc.

But we know “deaf is better” (p. 197).

The next examples drawn from descriptions in the literature, also illustrate the strength of the Deaf identity in high school students attending a School for the Deaf. First, a Deaf teacher recounted a scenario when a deaf high school student visited his home and noticed a number of bookshelves full of books. The student responded and signed that “it was a hearing thing to collect books.” (Desrosiers, 1999). Second, Ritter-Brinton (1996) describes the case of a deaf student who attended specialized oral programs during elementary school, and was integrated into the regular education stream for junior high and part of high school. Later in high school, she decided to attend a provincial School for the Deaf. However, when she encountered a deaf peer at the school, the message she received was “You’re not deaf – you talk.” Ritter-Brinton (1996) argues that this scenario exemplifies the pressure on deaf children to reject both spoken and signed English and it is taught to deaf children by Deaf peers.

In another testimonial, a Deaf researcher, Carol Padden (1991), describes similar tensions of being Deaf in a Hearing world:

To invoke the labels DEAF and HEARING is to call up a web of relationships between what is central and what is peripheral, what is known and what is not known, and what is familiar and what is foreign. To talk of these terms is to offer a counterbalance between two large and imposing presences in Deaf people's lives – their own community and the community within which they must live, among hearing people. For Deaf people the poles of everyday life are the language and ways of the
community within the language and ways of others, the English-talking society of North America (p. 88).

Reference to “two worlds” and a Deaf perspective of reading also comes from a classic fictional account depicting the lives of a Deaf couple after they graduated from a School for the Deaf in the 1950’s. In the novel, *In this Sign*, Greenburg, (1970) describes one of the Deaf character’s thoughts about reading: “…he knew a few of the Two-World Deaf, the rare, beautifully signing, well-educated Deaf who did not consider reading an activity for Hearing alone” (p. 204).

Thus, Deaf people who separate Deaf and hearing worlds often consider reading as an exclusive “hearing world” activity (Erikson, 1987). If this attitude towards reading exists among deaf readers, it may create another barrier to reading success. By talking to Deaf readers, we may start to understand their perspectives about reading and begin to dispel the misperception that reading is only a hearing world activity.

*Reasons for Deaf Readers’ Reading Comprehension Difficulties*

There are several reasons that might account for the difficulties deaf students experience when learning to read and comprehend text. Some of these arise when deaf children are born into hearing families and their diagnosis of deafness is delayed. If hearing parents lack sign language fluency then deaf children may have few opportunities to develop language skills in their early years. Another major challenge arises when mismatches between the structures of English and the deaf students’ first language, ASL, inhibit children’s ability to learn to read. Lastly, other barriers to developing reading skills for deaf children include limited access to English language and information, the need to learn phonology when developing reading skills, and challenges within the deaf
education context. In this section, the potential impact of each of these challenges is examined.

**Late Identification and Late Language Acquisition**

A number of factors have contributed to the late identification of children who are deaf or hard of hearing. For one, a program for Universal Newborn Hearing Screening (UNHS) has only been established since the 1990s. Currently in the United States there are about 34 states with UNHS centers. However, in Canada a UNHS has yet to be established. According to a recent Canadian survey, less than 10% of the 400 participating hospitals (35 out of 400) had some sort of hearing screening. In practice, Canada does not have a systematic approach to early identification, diagnosis, and management of hearing loss in children (Canadian Association of Speech Language Pathologists and Audiologists – Canadian Academy of Audiology, 2000).

Early identification of hearing loss relies most typically on a high-risk registry. In most cases, hearing screening is based on following-up difficult births and high-risk registries. This continues to be the practice outside designated UNHS centers. The problem is that only 50% of deaf and hard of hearing children have high-risk factors, thus 50% of the children are not identified through the high-risk registry (Arhearth & Yoshinaga-Itano, 1999; Stredler-Brown, 2001; CASLPA-CAA, 2000). As a result, subsequent diagnosis of hearing loss relies on parental reports of concerns about their child’s hearing or speech and language development, referrals to pediatricians, audiologists, and/or kindergarten screening. Another common problem is that even after children are identified, a considerable amount of time passes, sometimes up to one year, before intervention begins (Arhearth & Yoshinaga-Itano, 1999).
Signing deaf children’s reading comprehension difficulties may be linked to their limited access to opportunities for language development in their early years. Research suggests that early diagnosis and acceptance of hearing loss and specialized language intervention are critical during the prelingual years from birth to age three (Arehart & Yoshinaga-Itano, 1999; Erting, 1992; MacTurk, Meadow-Orlans, Sanford-Koester, & Spencer, 1993; Strong & Prinz, 1997). Yet, for many deaf children, late diagnosis of hearing loss further delays their language development (Erting, 1992). Early identification of hearing loss is only the first step in ensuring successful outcomes for children with hearing loss. The second step is that identification must be followed by appropriate and immediate intervention (Arehart & Yoshinaga-Itano, 1999; Magnuson, 2000; Stredler-Brown, 2001).

Critical Periods or Sensitive Periods for Language Acquisition

According to Lenneberg (1967) the critical period for language acquisition is the period from about age two to thirteen-years-old, or the onset of puberty and after this time it is extremely difficult to acquire fluency in a first language. The critical period hypothesis of language acquisition for deaf children is still debated (Paul, 2001). Some linguists and researchers have argued that it is essential to capitalize on the critical or sensitive period for language learning between birth to 6 years of age (Johnson & Newport, 1989; LaSasso & Metzger, 1998). Others argue that this critical or sensitive period extends into adolescence (Lenneberg, 1967) and beyond (Strozer, 1994; Vernon & Andrews, 1990). Vernon and Andrews (1990) propose that other evidence cast doubts on the critical period theories as it relates to learning a visual, non-auditory language such as ASL. They point out that many deaf children may not meet other deaf adults or gain
exposure to ASL until their teens, or later, and yet are still able to acquire ASL fluency (Vernon & Andrews, 1990). In addition, references to deaf readers suggest that they continue to develop their competence in handling structural aspects of language at least to the age of 18 years (Wood, Wood, Griffiths & Howarth, 1986).

Much evidence over the last twenty years, including evidence from the acquisition of ASL, support Lenneberg’s (1967) critical period hypothesis for language acquisition (Strozer, 1994). In addition, no one has come up with a plausible alternative to the hypothesis that a critical period for language acquisition extends from infancy to some prepubescent stage (Johnson & Newport, 1989). Johnson and Newport (1989) examined first language growth in ASL in terms of first exposure to ASL. They compared three separate groupings: (1) native learners exposed to ASL from birth by deaf parents; (2) early learners first exposed to ASL between the ages of four and six; and (3) late learners first exposed to ASL at age twelve years or later. Johnson and Newport (1989) found the 4-6 years age group scored consistently better, although not significantly below native performance. However, the late learners, aged 12-years or older scored the lowest on all measures.

Mayberry (1995) demonstrated that learning a language in early childhood in any modality, speech and/or sign, positively influences the learning of other languages. Comparisons of two groups of deaf students included one bilingual group who learned ASL after acquiring a level of English proficiency and a second group that had experienced much difficulty learning English and learned ASL during adolescence. Although both groups had learned ASL, the first group that had a better understanding of English developed a first language proficiency at an earlier age. Results show that the
bilingual group made significantly fewer errors. They made more semantic errors such as confusing the meaning of ‘older and younger’ than phonological errors. In contrast, the late learners had the opposite error patterns, they produced more ASL phonological errors such as hand shape, hand movements and hand location than semantic ones.

Two patterns emerge from summaries of the research on the critical period hypothesis and ASL (Paul, 2001). First, there is strong support for the importance of early language acquisition; and second, the benefits of early language acquisition are independent of a specific language modality such as speech and/or sign language (Arheart & Yoshinaga-Itano, 1999; Stredler-Brown, 2000; Paul, 2001).

Further, the crux of the matter on critical periods is that when smooth preschool first language acquisition occurs in either speech or sign language, it proceeds within enormously rich learning conditions (Nelson, 1998). However, for many deaf children their communication environment is far from rich. Schirmer (2001) suggests that it is easier to learn language when the language is used consistently by significant adults and older children in conversation with the child. Conversely, it is more difficult to learn when the language is used inconsistently by adults and older children and conversation is infrequent. Further, language is easier to learn when the child has full access to the language and more difficult when obstacles prevent full access (Shirmer, 2001). Within a deaf context in a hearing world, deafness limits access to spoken language and expressive and receptive communication either in English or the preferred type of sign language.

Research Support for Early Language Intervention for Deaf Children

Magnuson (2000) used a case study to examine the social and linguistic development of two preschool aged boys with a profound bilateral hearing loss. The
cases differed in the age of diagnosis of hearing loss, one having been diagnosed at 4-months and the other at 24-months. Each family received education in sign language when the boys were 6-months and 2.5-years-old respectively. Data included interviews with parents and teachers, observations and video recordings in the children's own environment at home and in their sign language preschool. Magnuson (2000) concluded that differences in social and linguistic development between the two boys were related to the age of diagnosis of hearing loss. She also deduced that a profound hearing loss means a disadvantageous position for linguistic and social development, unless the hearing loss is detected early; and that linguistic stimulation can be effected by fitting hearing aids, sign language education, or both (Magnuson, 2000).

Further, researchers based at the University of Colorado and the Marion Downs National Center for Infant Hearing used an extensive database documenting the developmental profiles of children from birth to age 3 years from pediatric audiology centers in 17 states. Researchers found that early identification of hearing loss with appropriate intervention by age 6-months is the most effective strategy for the normal development of language in deaf and hard of hearing infants and toddlers (Arehart & Yoshinaga-Itano, 1999; Stredler-Brown, 2001). Many other significant findings support early identification of hearing loss and intervention. For example, children with normal cognitive abilities, identified by age 6-months, have language levels comparable to hearing peers and this language advantage is observed for all degrees of hearing loss, mild through profound. In addition, children benefit from early identification of hearing loss regardless of communication mode, gender, ethnicity, socioeconomic status, chronological age, or presence of multiple disabilities. Another finding compared within-
group differences. Children with early-identified hearing loss, at less than 6-months of age, have language development that is on average, one standard deviation above the average of children with later-identified hearing loss. In other words, only 14% of later-identified children have language development that is at, or above, the mean language age for early-identified children.

_Deaf Children of Hearing Parents_

For 90 to 95% of deaf children, language access and the language acquisition process may be delayed because they are born to hearing families (Mitchell & Karchmer, 2002; Stewart & Ritter, 2001). In the majority of cases, the diagnosis of a child’s deafness has a paralyzing effect on hearing parents and families. It is well documented that hearing parents go through a process of grieving the loss of their “perfect” hearing child in order to be able to accept a “new” deaf child (Densham, 1995). The research literature includes parent interviews and testimonials that commonly describe the shock, denial, anger, depression, and/or grief cycle associated with the loss of their perfect child (Beazley & Moore, 1995; Densham, 1995; Luterman, 1987). During this period of emotional turmoil, hearing parents are thrust into making major decisions, one of which is choosing a way to communicate with their child.

The three main communication options and educational approaches in deaf education are oral, total communication, and manual (Beattie, 2001; Moores, 2001). First, the oral method, also called oral-aural, focuses on spoken communication and listening. Children receive input through amplification and speechreading and they use speech for expressive communication. There are two streams within the oral approach. These oral variations include (a) the auditory-verbal, unisensory, or acoupedic programs
where visual stimuli are minimized and (b) the multisensory approach which may use more visual stimuli such as natural gestures, speechreading, and/or fingerspelling.

Second, total communication is a communication philosophy combining the oral method plus the use of signs and fingerspelling. Total communication options can include simultaneous use of various methods such as speechreading, speech, MCE sign systems, auditory training and amplification, writing, audiovisual methods, fingerspelling and graphics. Children receive input through speechreading, amplification, signs, and fingerspelling and express themselves using speech, signs, and fingerspelling. Traditionally, MCE signs were used simultaneously with speech, and not ASL. Currently, the trend is toward code-switching, that is alternating between MCE and ASL (Moores, 2001).

Third, in the manual approach, sign language is the primary means of instruction. It may incorporate Bilingual-Bicultural (Bi-Bi) methods using a natural sign language such as ASL, British Sign Language (BSL), Auslan (Australian Sign Language), or other native sign languages depending on the region. One of these natural sign systems is developed as the first language for face-to-face communication, then it is subsequently used to develop literacy in the oral language of the larger hearing community or culture (Beattie, 2001). Although speech, auditory training, and MCE are not used in the classroom, speech and auditory training may be provided on an individual basis (Moores, 2001).

Unfortunately, parents must sift through the rhetoric associated with each educational and communication option to make decisions regarding how to communicate with their child. Within this process, they may find themselves caught between the “war
of methods” in deaf education. Both Marschark (1997) and Stewart (2001) have compiled a list of the myths and rhetoric associated with both the mainstream and Deaf culture perspectives. According to Stewart (2001) some of these statements include the following:

Table 1. The Mainstream and Deaf Culture Perspectives

<table>
<thead>
<tr>
<th>Mainstream Perspective</th>
<th>Deaf Culture Perspective</th>
</tr>
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<tbody>
<tr>
<td>• “This is a hearing world therefore every deaf child must learn to speak.”</td>
<td>• “Every deaf child has a right to learn ASL as their first language.”</td>
</tr>
<tr>
<td>• “If you sign to deaf children they will not learn to speak well.”</td>
<td>• “Deaf children will eventually become members of the Deaf community, therefore teach them to sign.”</td>
</tr>
<tr>
<td>• “If deaf children learn to sign, they will become careless with their speech.”</td>
<td>• “Don’t send a deaf child to a mainstream school because he will grow up isolated and develop poor speech skills.”</td>
</tr>
<tr>
<td>• “Deaf children who go to a School for the Deaf learn to live in a deaf ghetto and never learn how to interact in a hearing world.”</td>
<td>• “Don’t give deaf children hearing aids because you are trying to make them hearing, which is something they will never be.”</td>
</tr>
<tr>
<td></td>
<td>• “Giving a child a cochlear implant is denying their deafness.”</td>
</tr>
<tr>
<td></td>
<td>• “Don’t teach deaf children phonetics because they can’t hear.”</td>
</tr>
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(Stewart, 2001, p. 180-181)

These statements capture the tension and dichotomy that exist in the field of deaf education. Once parents decide to use sign language, another dilemma is to choose the type of sign language, either Manually Coded English (MCE) or American Sign Language (ASL). Controversies among groups advocating the use of various approaches to manual communication have been as spirited as those between groups advocating oral versus manual education for deaf children (Allen & Woodward, 1987). The following observation serves as an appropriate summary for the predicament faced by parents and educators alike. “The great ASL-MCE debate is too frequently about being right, or
being oppressed, than it is about finding out what works best for individuals and why” (Ritter-Brinton, 1996, p. 24). Further, in critique of both deaf educational professionals and the Deaf community, Ritter-Brinton (1996) wonders why hearing parents who choose MCE are treated with such disrespect. To paraphrase her concern, “...How is it that parents who make a commitment to a world dominated by eyes instead of ears, should feel demeaned by some members of the profession and of Deaf communities?” (p. 33).

However, from the beginning, parents need to recognize that the majority of children who have greater hearing losses are unlikely ever to learn language through speaking and hearing or oral-aural methods alone (Marschark, 1997). The consensus with respect to communication and education is that most parents wish to do what is best for their deaf children (Eleweke & Rodda, 2000; Paul & Drasgow, 1998; Ritter-Brinton, 1996). Unfortunately, one problem is that parents often complain that they have trouble getting enough information to consider the pros and cons of sign language communication (Eleweke & Rodda, 2000; Marschark, 1997). This may be a natural consequence of the diagnosis cycle. Often when parents suspect a hearing problem, their initial contacts are with pediatricians, Ear Nose and Throat (ENT) specialists, and audiologists. Professionals such as audiologists often pay little attention to ASL and the Deaf culture and lean more towards hearing aids, FM amplifiers and related technology and services (Hadadian & Allen, 1998). These professionals operate within a medical model that views hearing loss as a disability needing rehabilitation. Most likely, their reference point stems from their caseloads and contacts in education who share an oral-aural philosophy.
Lack of ASL Fluency. A foundation for literacy development is shared book readings between parents and children, but this opportunity may be lost as “many hearing parents do not sign fluently enough to read strings of connected text” (Paul, 1998, p. 188). To magnify these problems, a lack of ASL fluency is also a problem among hearing teachers of the deaf (Ewoldt, 1986; Nelson & Camarata, 1996; Padden & Ramsey, 1998). For example, many children with a severe to profound hearing loss are English language-delayed, but their sign language skills often surpass those of their parents and most of their teachers (Nelson & Camarata, 1996). If language models in both home and school environments lack ASL skills, this major obstacle impedes access to a complete language for a signing deaf child. This problem is significant because language skills establish a critical foundation for literacy development (Adams, 1995; Paul, 1998; Shirmer, 1994).

Implications of ASL and English Literacy

Although learning sign language provides an important base of language skills, the mismatch between the structure and syntax of American Sign Language (ASL) and those of oral and written English may also contribute to the reading comprehension difficulties of deaf readers. It is often argued that reading and writing English are difficult for deaf children because they are attempting to read and write a language they “don’t know” (Mayer, 1999, p. 37). As a language, ASL is a spatial, visual-gestural language, with no written form and a grammar unlike English. For example, the English sentence: “I went to the grocery store Saturday morning.” would be signed in ASL as: SATURDAY MORNING, ME GO STORE—GROCERY. Likewise, the phrase “She likes her coffee black.” in ASL syntax is: COFFEE BLACK LIKE SHE; and the
sentence: "The girl reads the book." would be: GIRL BOOK READ. While maintaining respect for ASL, Schein and Stewart (1995) state that “all languages have their own syntax and transliteration of grammatically correct sentences in one language into a second language often renders sentences incomprehensible in the second language” (p. 56).

Thus, for deaf children who use ASL, learning English is qualitatively different than it is for hearing children and it is far more challenging than learning a second language. Livingston (1997) argues that Deaf students are not ESL (English as a Second Language) students. The majority of deaf students do not have a true first language when they enter school, unlike ESL students. Typically, ESL students focus on learning an additional language while signing deaf students must learn two languages, ASL and English. In practice, if it is difficult for normally hearing, language-delayed children to catch up in English once they are several years behind, the situation magnifies for deaf and hard of hearing children with similar, or greater degrees of language-delay (Nelson & Camarata, 1996).

The signing deaf reader is a uniquely different reader from normally hearing and oral deaf readers, different in the sense that he will never read in his own native language—sign [ASL] (Gormley & Franzen, 1978). In general, there is a strong reciprocal relationship between the conversational-based form of a language, the text-based, print or written language form of the language and between reading and writing skills (Musselman, 2000; Paul, 1997; Paul & Drasgow, 1998). However, in the case of sign language, its usage and fluency do not aid the deaf signer with reading to the same degree as similar language proficiency would enhance a spoken language user reading in the
same language. Unlike spoken language users, many deaf signers do not have the luxury of using a language that mirrors its written form and reinforces language learning through listening, speaking, reading and writing. Erting (1992) calls this disadvantage the “disjunction between the language of face-to-face communication and that of print” (p. 104). In reality, signing deaf individuals are often fluent in a visual language that is distinct from the written or spoken form of a majority language that they are expected to use and master to some degree. Likewise, Dolman (1992) argues that “deaf children may share some of the same obstacles to literacy development as disadvantaged children, including deficient exposure to print, infrequent interaction with books, and relative inexperience with standard English” (p. 281).

**Limited Access to English Language and Information**

Dependence on ASL or any sign language for communication means deaf children and adults are isolated from the non-signing, hearing world. The communication barriers imposed by a profound hearing loss often isolate young deaf children from meaningful interactive experiences with people, particularly during their formative years. Unfortunately, this communication barrier creates the most significant difference between the language experiences of many profoundly deaf children and the language experiences of hearing children (Williams, 1994). For example, the deaf child’s early social environment is different from that of the hearing child, because unless he or she is directly engaged in communication, he or she is not exposed to surrounding interactions (Limbrick, McNaughton, & Clay, 1992). Throughout their lives, deaf signers will have fewer options for communication partners, fewer opportunities for in-depth conversations, and limited access to information through incidental learning. The
combined effect leads to fewer opportunities to develop the world knowledge and rich vocabulary that serve as important background information for reading comprehension. Thus, one contributor to the reading difficulties of profoundly deaf readers is their lack of access to spoken English (LaSasso & Metzger, 1998). Limited opportunities to develop receptive and expressive oral language skills through frequent interactions, also may result in slower development of reading skills (Limbrick et al., 1992).

**Heterogeneous Characteristics of Deaf Students**

The inherent diversity of deaf students poses a challenge for reading instruction. Teachers of the deaf must deal with extreme diversity (Moores, 2001; Stewart, 2001). In a review of literature about the special case of deaf readers, Marschark & Harris (1996) state that “it must be emphasized that deaf children are far more heterogeneous than hearing children” (p. 296). Deaf students differ in cognitive ability, age of onset of hearing loss, age of diagnosis, degree, type, and etiology of hearing loss, and the presence of additional disabilities. As individuals, each also differs in terms of linguistic proficiency, and specifically the nature of subsequent delays he or she experiences while acquiring or developing language in either spoken English or sign language. Other unique characteristics include ethnic background, socioeconomic status of the family, and hearing status of the parents and siblings. Other qualities of the home environment also contribute to student diversity. For example, the level of effective communication experienced at home and the degree of authentic experiences that the child has had outside of the classroom also must be considered when teachers design instruction (Stewart, 2001). According to Etering (1992), another challenge for teachers is that, in most cases, Deaf children from Deaf signing families come to school proficient in a
natural sign language, but deaf children from hearing families often come to school with little or no conventional language competence. Although the ultimate educational goals for both groups of children are the same, the children begin in very different places (Erting, 1992).

Shortage of Deaf or Hard of Hearing Teachers of the Deaf

Teachers who are themselves Deaf and hard of hearing are uncommon. The number of teachers who are deaf will always be a minority of the full teaching workforce in deaf education (Martin & Lytle, 2000). Over 90% of the teachers of the deaf are hearing (Lane, Hoffmeister, & Bahan, 1996) and both hearing and Caucasian (Andrews & Jordan, 1993; Hadadian et al., 1995). Similarly, in a study of a group of 50 deaf education majors at a Midwestern state university in the US, a total of 92% were hearing and 8% were hard of hearing (Hadadian et al., 1995). Mason (1995) found similar profiles in his 1992-1993 survey of 29 deaf education training programs in North America and this group of graduate students included: 91% hearing; 5% hard of hearing; and 4% deaf graduate students. Allen and Woodward (1987) focused on teacher characteristics and sign language communication using information from the 1985 Gallaudet Research Institute’s Center for Assessment and Demographic Studies. From this data, based on a group of 888 teachers, the breakdown of hearing status included 84% hearing; 5% hard of hearing; and 11% deaf (Allen & Woodward, 1987; Woodward, Allen & Schildroth, 1988). These statistics compared the number of deaf and hard of hearing teachers to the number of hearing teachers in deaf education but current data are not available. My own observations confirm that the number of deaf teachers continues to be in the minority.
A number of reasons support the critical need for deaf teachers (Lane, Hoffemeister, & Bahan, 1996; Martin & Lytle, 2000; Neisser, 1990). First, according to Martin and Lytle (2000), compared to hearing teachers, Deaf teachers are more likely to have the unique capability to carry out two-way communication with deaf children. Also, deaf teachers who are skilled in ASL provide an important language model for deaf children. They can also provide direct access to language and information through fluent sign language. Second, deaf teachers share the first-hand understanding of the deaf child's worldview. Third, deaf professionals provide a much-needed positive role model for deaf learners, who often receive an implicit message in the hearing world that to be deaf is to be less than fully worthy as a person. Fourth, Deaf teachers provide a special means of enabling their hearing colleagues to continue learning about Deaf culture, the diversity in the Deaf community, communication issues and to better understand the special needs of deaf learners.

*Is Reading Different for the Deaf?*

In spite of these unique challenges facing deaf readers, the field of deaf education does not yet know the best tactics for helping the average deaf student become a competent reader (Bowe, 1998; Kelly, 1993; Musselman, 2000; Paul & Drasgow, 1998). Musselman (2000) reviewed the literature on reading and deafness to determine how deaf children learn to read an alphabetic script. She concluded that no one knows how deaf children learn to read. Indeed evidence of this dilemma existed decades earlier. Conrad (1979) emphasized that we do not know how to teach deaf, or even hard of hearing children to read or write. Likewise, Stewart (2001) argued that this problem remains despite a century of teaching and millions of dollars spent on research. To complicate
matters, Paul (1998) raises an issue that dominates deaf education and impacts everyday practice and approaches to reading instruction, namely, whether reading is different for deaf readers. Hanson’s (1989) response is both yes and no. Musselman (2000) concluded that the jury is still out on whether deaf children use processes that are qualitatively similar or dissimilar to those used by hearing children, for whom print is an alternative representation of spoken language. Unfortunately, our current practices of teaching reading to deaf students reflect this ambivalence.

Gruskin (1998) challenges educators to assume a new paradigm for literacy instruction. “Educators of the deaf have long viewed this population as being Hearing people without the auditory sense and used instructional approaches, especially in reading, that conformed to, or paralleled approaches taken with hearing children” (p. 179). Pehrsen (1978) also argued that most approaches to teaching reading to deaf children rely on techniques that are more appropriate for children who have mastered spoken English and its grammar. Likewise, much of our effort devoted to improving deaf children’s literacy focuses on teaching skills and strategies that work for hearing children, even though deaf and hearing children often have very different background knowledge and learning strategies (Marschark, 1997). Further, Padden and Ramsey (2000) examined the developing reading skills of deaf readers enrolled at a School for the Deaf and concluded that:

The picture that is beginning to emerge is one of a remarkably different route, one that draws from an assortment of cultural and individual capabilities. The portrait of the successful deaf reader must indeed be a unique one....Unfortunately, some of the reading literature on deaf
children is wistful and hopeful that somehow optimal strategies based on those used by hearing children can be adapted for use with deaf children (p. 186).

Perhaps teachers adapt practices used for hearing children because they themselves are most often hearing. Stewart (2001) posed a number of questions related to ethical issues in the preparation of teachers of the deaf:

Long before we approach the question of doing what is right in how we teach deaf children, the question of what is normal and appropriate for deaf children must be addressed. For example, are hearing teachers obligated to view the culture of their hearing and speaking society as the benchmark?.....If the answer to any of these questions is yes, are we being ethically irresponsible in our disregard for the values of the Deaf community? (p. 181-182)

In a related field of study, Freeman and Freeman (1994) also explored different factors that influence what ESL teachers in different schools and grade levels teach. They also found that teachers of students learning English as a second language teach as they were taught, or as they were taught to teach. But this presents an obstacle for teaching deaf or hard of hearing students, given that hearing teachers can never share the same experiences of being deaf.

*Summary of the Challenges Deaf Readers Face*

When taken together, the range of individual differences confronting a teacher, the instructional mismatch of teachers-to-students, and the uncertainties regarding the best way to teach reading to deaf children can be paralyzing for teachers. These
challenges compound so that educators of the deaf may unintentionally contribute to the problem of low reading skills because we do not know how to address deaf readers' needs. Consequently, as hearing teachers of the deaf, our biggest challenge is to understand the reading experiences of deaf readers and know where they are “coming from” (Nelson, 1998, p. 76). This understanding is crucial, so that we can attempt to teach reading as a meaningful activity for deaf readers. We must begin this process by talking to deaf readers to understand their reading experiences from uniquely deaf perspectives.

The Individual Reader

The individual reader is a significant driving force in the reading process. In general, the individual brings his background knowledge, interests, motivation, skills and ability to the reading context (Ewoldt, Israelite & Dodds, 1992). Readers require various knowledge and skills about language for effective reading. Further, reading comprehension depends on individual knowledge of text-based characteristics such as orthography, words, grammar, discourse conventions, anaphoric reference rules, and linguistic redundancies (Drasgow & Paul, 1995).

Many deaf educators argue that the complex reciprocal relationship between the conversational and written forms of English is best described by interactive models of reading (Drasgow & Paul, 1995; King & Quigley, 1985; Paul, 1993). Interactive models of reading describe the reader's role as an active information processor whose goal is to make meaning from text (Paul, 2001). Within this view, reading is an interactive process between the reader-writer and the text. For example, readers integrate information from the text with their own knowledge to construct meaning. This section begins with a
description of both bottom-up and top-down reading processes within interactive models of reading. Next various interactive models of reading are discussed, beginning with Rumelhart (1977). Other successive models proposed by Stanovich (1980, 1984) and Lipson and Wixson (1986, 1991) have added essential elements to create a more realistic description of the interactive nature of the reading process.

*Interactive Models of Reading*

Prior to the development of interactive models of reading, researchers proposed either “bottom-up” or “top-down” models. Bottom-up skills refer to initial recognition of letters, vowels, consonants, and morphemes, which are the smallest meaning parts of words. This decoding process continues through successive levels involving larger meaningful units such as phrases and sentences until meaning is constructed at the top, or the reader’s mind, with comprehension by the reader. However, reading is also top-down, and conceptually driven, shaped by the information within the reader’s head, not only by the print (Paul, 2001). In other words, ideas or concepts in the reader’s mind trigger information processing during reading (Vacca, Vacca & Gove, 1991). Reading is also considered top-down because the processing begins at the top, in the reader’s head, with predictions and inferences, and proceeds downward to the text to confirm this information or generate new ideas.

In contrast, interactive models of reading include both bottom-up and top-down processes. Rumelhart (1977) proposed an interactive model of reading for normally hearing readers, but different adaptations of his model of reading may offer a general conceptual framework for understanding the reading process for deaf readers. Originally, Rumelhart (1977) described reading as a simultaneous, interactive process that involves
“perceptual” text-based and “cognitive” reader-based processes. The initial stages focus on bottom-up skills. In the first stage, graphemic information is registered in a Visual Information Store. Next, a Feature Extraction Device extracts critical information from the Visual Information Store. This device houses non-sensory syntactical, semantic, orthographic and lexical knowledge. These sensory input features move to a Pattern Synthesizer. Finally, the Pattern Synthesizer uses all available information to produce a “most probable interpretation” from the interaction of different levels of processing (p. 588). Inside the Pattern Synthesizer top-down action flows and “all that is interesting in the model takes place” as this is where interpretation occurs (Rumelhart, 1977, p. 589).

Rumelhart (1977) maintains that the key to understanding reading is to determine how bottom-up and top-down processes interact. He states that various sources of sensory and non-sensory knowledge combine so the reading process is the product of the simultaneous joint application of all the knowledge sources within the Pattern Synthesizer. As such, Rumelhart’s model has provided the basis for thinking about reading as an interactive process. At the same time, however, others argue that Rumelhart focused too much on explaining word identification (Lipson & Wixson, 1991; Samuels & Kamil, 1984). Perhaps this conclusion was based on the fact that readers initially focus their attention on the graphemic information and this activity is characteristic of bottom-up, text-based models of reading.

Stanovich (1980, 1984) believes that interactive reading models provide a more realistic account of the reading process for both good and poor readers than strictly top-down or bottom-up models. His central argument is that reading is neither a bottom-up nor top-down process because it involves a synthesis of simultaneous processes at several
different levels. Adding to Rumelhart’s (1977) model, Stanovich (1980, 1984) includes a critical compensatory component to explain developmental and individual differences in using context for word recognition. Stanovich argued that the various component subskills of reading might interact in a compensatory manner. Specifically, a deficit in any particular process will result in a greater reliance on other knowledge sources, regardless of their level in the processing hierarchy (Stanovich, 1980). For example, Stanovich thought it was possible that given a deficit in a lower-level process such as phonetic decoding, poor readers might rely more on higher-level contextual factors.

Thus, Stanovich (1980) argued that his “interactive-compensatory model” is useful to study developmental and individual differences. As such, this model may have more relevance to deaf readers than did Rumelhart’s earlier model. For example, although Stanovich did not directly address the case of the deaf reader, his conclusions were similar to those of deaf educators (Ewoldt, 1986, Pehrsen, 1978, Yukowski & Ewoldt, 1986), who found that deaf children rely on their semantic abilities to compensate for English grammatical deficiencies (Moores, 2001). Given the potential link, Moores (2001) suggests developing a reading curriculum to test the applicability of Stanovich’s principles to reading and deaf children.

As reading specialists, Lipson and Wixson (1986, 1991) added other important dimensions to both the Rumelhart and Stanovich models. Their model incorporates social views of literacy into the cognitive information processing models. They proposed that: (1) reading and writing are meaning constructing processes; (2) meaning is constructed as a result of the interaction between the reader/writer and the context of the reading/writing situation; and (3) the interaction is dynamic, or variable, as a function of
numerous reader/writer and contextual factors (Lipson & Wixson, 1986, 1991). In their expanded interactive model of literacy, both cognitive information processing structures and sociocultural aspects of context influence reading and writing processes and performance. Learner factors that affect reading and writing performance include prior knowledge of content, knowledge about reading and writing processes, attitudes and motivation. Important contextual factors include the learning setting, the reading and writing curriculum, instructional methods, materials, and tasks employed. Each of these learner and contextual factors has been shown to affect how individuals approach reading and writing tasks and how well they perform (Lipson & Wixson, 1991, p. 11).

Another significant addition is that Lipson and Wixson (1986, 1991) expanded their interactive model of reading ability to conceptualize reading (dis)ability. These modifications mirror the ever changing reality for deaf readers and other individuals who may have difficulties reading. Lipson and Wixson (1986, 1991) believe an interactionist perspective matches reading (dis)ability because it predicts variability in performance within individuals across texts, tasks, and settings. In this model, reading disability is not a static state. It is not an absolute property of the reader, but rather is a relative property of the interaction among specific reader, text, and contextual factors within a reading situation. In practice, each individual may have several reading abilities depending on the texts, tasks, and contexts. For example, in some reading contexts a reader can be quite able while in others he or she may have more difficulty and appear to have a reading disability.
Interactive Models of Reading and Links to the Sociocultural Perspective

Lipson and Wixson (1991) argue that a learner’s linguistic background, motivation, and/or cultural understanding and values are as relevant to a learner’s reading comprehension as whether the learner can read sight words or understand punctuation. In the case of deaf readers, the sociocultural context of the Deaf community exerts an important influence on the context in which learners read, and on literacy practice for members of the Deaf community. For example, Padden and Ramsay (1993) point out that although most deaf high school graduates are barely functionally literate, little is known of what happens when their basic schooling ends. They believe these Deaf adults might seek different avenues related to further development of English literacy skills. In the context of Deaf culture and deaf literacy, some of the potential reading options for Deaf individuals also include activities, personal reflections and decisions. For example they may: (1) realize the need to read for specific purposes, for pleasure, or work and seek instruction from Deaf friends, relatives, and adult education programs; (2) become proficient readers of captioned TV and skilled readers and writers of TDD (Telephone Devices for the Deaf) messages; (3) join Deaf Bible-study groups, where older Deaf people teach the reading skills needed to understand and discuss written texts; and (4) enter post-secondary education (Padden & Ramsay (1993).

Self-Perceptions, Matthew Effects and Motivations

The affective domain plays an important role in reading and is influenced by a reader’s self-perceptions, motivations and potential Matthew effects. Firstly, readers’ self perceptions are their judgments or beliefs about themselves as readers based on personal evaluations of reading ability and feedback from influential people such as
teachers, peers, parents or family members. For example, in her study of deaf adolescents’ metacognitive knowledge about reading, Strassman (1992) found that deaf readers judged their reading ability based on teacher feedback and grades. Overall, a reader’s self-perceptions can shape the individual’s perspectives about the meaning or purpose of reading and his or her degree of motivation and persistence with reading tasks (Bandura, 1993; Henk & Melnick, 1995; Schunk, 1986, 1985, 1994).

Self-efficacy is one important type of self-perception. Self-efficacy is a term that originates from Bandura’s studies during the early 1980s and refers to what we believe ourselves capable of doing or learning (Guthrie, McGough, Bennett, & Rice, 1996; Ruddell & Unrau, 1997). Students’ beliefs in their efficacy help them regulate their own learning; subsequent mastery of academic activities determines their aspirations, level of motivation, and academic accomplishments (Bandura, 1993). In addition, Bandura (1997) states that effective personal functioning is not simply a matter of knowing what to do and being motivated to do it. According to Bandura (1997), a number of factors must come into play:

Efficacy is not a fixed ability that one does, or does not have for personal use. Instead, efficacy is a generative capability in which cognitive, social, emotional, and behavioral subskills must be organized and effectively orchestrated to serve various purposes. There is a marked difference between having subskills and being able to integrate them appropriately into action under difficult circumstances (p. 36-37).

Individual beliefs in reading ability or reader self-efficacy can range from positive to negative. Following Bandura’s theory, a reader with high or positive self-efficacy will
work harder, longer and more willingly than one with low self-efficacy (Ruddell & Unrau, 1997), while readers with low self-efficacy are more likely to avoid reading or give up. In the case of deaf readers, Ewoldt (1983) states that many deaf students are dependent readers who may not read outside the classroom because they do not regard reading as something they can do alone. Further, Ewoldt, Israelite and Dodds (1992) suggest that teachers, however unknowingly, support deaf students’ negative perceptions of their own abilities to process text independently by focusing on strategies that necessitate reliance on the teacher.

Researchers have argued that positive or negative reading experiences can influence a reader’s feelings of self-efficacy, motivation and persistence with reading activities (Bandura, 1993; Ruddell & Unrau, 1997). Bandura (1997) points out that an individual’s efficacy beliefs negatively affect his or her thought processes. He describes a possible escalating cycle of negativity:

People who doubt their capabilities in particular activities will shy away from difficult tasks in these areas. They find it hard to motivate themselves, and they slacken their efforts or give up quickly in the face of obstacles. In difficult situations, they dwell on their personal deficiencies, the formidableness of the task, and the adverse consequences of failure. They are slow to recover their sense of efficacy following failure or setbacks. They are also prone to diagnose insufficient performance as a deficient aptitude so it does not require all that much failure for them to lose faith in their capabilities (Bandura, 1997, p. 39).
Likewise, for many deaf readers the reading experience can be described as frustrating and unsatisfactory. "Failure is not fun, so it is not surprising that unskilled readers have unfavorable attitudes toward reading" (Garner, Alexander, & Hare, 1991, p. 289). In addition to low reading skills, many deaf readers also lack self-confidence as independent, efficient readers (Ewoldt, 1983, 1986). As a cumulative result, reading is avoided because it is not a pleasurable activity. Thus, the reading habits of a deaf reader establish a vicious cycle as the less they read, the less they practice and build reading and language skills.

The above description mirrors Stanovich's (1984) and Stanovich, West, Cunningham, Cipielewski, and Siddiqui's (1996) definition of the "Matthew effects" phenomenon. Stanovich explains that good readers generally read more often than poor readers which spurs further increases in knowledge and reading skill that underlie future increases in comprehension efficiency (Stanovich et al., 1996). In contrast, for poor readers inadequate exposure to print and poor reading skills prevent readers from building the vocabulary, metalinguistic knowledge, general world knowledge and reading strategies that promote successful performance (Stanovich et al., 1996). Hence, Stanovich paints an analogy for the cumulative deficits that emerge, "the rich get richer and the poor get poorer." Although Stanovich generated this description to explain the escalation of cognitive and metacognitive deficits for poor readers, particularly learners with learning disabilities, this description appears equally applicable to the experience of poor, deaf readers. For example, researchers have applied principles of interactive models of reading and the Matthew effects to studying deaf readers (Banks, Gray & Fyfe, 1990; Webster 1986; Wood, Wood, Griffiths, & Howarth 1986). Likewise, Paul (2001)
proposed that the script-literacy problems of the deaf are a combination of accessibility, oppression and the Matthew effects:

There is some support for the idea that there is a critical or optimal period for developing script-literacy ability in view of the Matthew effects proposed by Stanovich (1986). If, for example, the “rich get richer,” then good readers are bound to become better and more advanced readers because of their ability to read widely and voraciously. Conversely, the poor stay the same or become poorer. That is, poor readers do not read extensively and cannot experience much growth and learning solely by engaging in print-related tasks. In addition, as poor readers get older, the more difficult it is to improve their script-reading ability and the greater the lag between their achievement levels and those of good readers....

(p. 614)

Motivations to Read

The interactive, theoretical perspective of reading ability presumes motivation to be a key internal variable affecting reading success (Lipson & Wixson, 1986, 1991; McCormick, 1994). As Lipson and Wixson (1986) mention, “a child can choose to use his skills or not” (p. 120). They cite factors such as interest, the amount of time and effort required, willingness to take risks, self-concept, or fear of failure as potential influences on a reader’s performance. They emphasize that the variability within and across individuals means that reading and writing performance are a function of what learners can and will do at any given moment (Lipson & Wixson, 1991, p. 11). Further,
in a model of reading as an interactive, meaning-construction process, Ruddell and Unrau (1994) propose that affect is influenced by a range of factors extending from the motivation to read, attitudes toward reading and content, to personal sociocultural values and beliefs about reading and schooling. Together these beliefs influence and shape affective conditions critical to the reader’s meaning-construction process.

Different reasons or motivators for reading can be either intrinsic or extrinsic. According to Guthrie, McGough, Bennett and Rice (1996), motivations for reading are internalized reasons for reading that activate cognitive operations, which enable the individual to perform such acts as acquiring knowledge, enjoying aesthetic experiences, performing tasks, and participating in social contexts. They also outline various motivations for reading that can include those related to students’ school-relevant reading, including (a) curiosity, or desire to learn about a topic; (b) aesthetic involvement, or enjoyment of experiencing a literary text; (c) challenge, or orientation to learning complex ideas from text; (d) recognition, or gratification in receiving a tangible form of reward for success in reading; and (e) grades, or favorable evaluations from a teacher. Furthermore, they also propose that motivations for reading may include (a) those of a social nature, reading to share meanings in groups, and (b) those related to compliance, adaptation to an external goal or requirement. Lastly, Guthrie et al., (1996) suggest that reading motivations that are more intrinsic such as curiosity, aesthetic involvement, challenge, social and self-efficacy will increase in number and in strength across time, as a student becomes a more active reader. Although Guthrie et al., (1996) have described possible motivations for hearing readers, deaf readers’ motivations may be different.
Thus, one interest of this study is to explore the reasons why these Deaf high school students choose to read, or not to read.

**Metacognition and Deaf Readers**

Metacognition is fundamental to active reading for meaning (Brown, 1980; Wong, 1991). According to Brown, Armbruster, and Baker (1986), metacognition comprises both knowledge about reading and regulation of the reading processes:

The term [metacognition] which literally means transcending knowledge, refers to one’s understanding of any cognitive process. Understanding in the context of reading can be revealed in two ways: first in one’s knowledge of strategies for learning from texts, differing demands of various reading chores, textual structures, and one’s own strengths and weaknesses as a learner; second, in the control readers have of their own actions while reading for different purposes. Successful readers monitor their state of learning; they plan strategies, adjust effort appropriately, and evaluate the success of their on-going efforts to understand (p. 49).

There are four elements associated with metacognition: (1) knowing when you know or knowing when you don’t know; (2) knowing what you know; (3) knowing what you need to know; (4) knowing the utility of active intervention (Brown, 1980).

One problem common to deaf readers is metacomprehension and judging one’s own reading ability. A reader’s perceived comprehension and individual criteria for comprehension are essential aspects of metacomprehension. Erikson (1987) proposes that most deaf readers generally fall into an area of low comprehension and metacognition in that they “Do not know, but think they know” (p. 291). From
interviews with 68 deaf students in grades 7 through 12 enrolled in the Oregon State School for the Deaf, McCarr (1973) found that most deaf students reported that they were reading well above their assessed reading level. For example, a ninth grader might estimate his reading level at grade 7, 8, or even 10 when his actual reading grade level was assessed to be much lower at grades 3 or 4 on the Iowa Reading Test (p. 488).

Similarly, other studies have found that deaf readers have more difficulty judging their “feeling-of-knowing” (Krinsky, 1990) than do hearing readers. Wood, Griffiths, and Webster (1981) compared how younger hearing children and older prelingually, severe to profoundly deaf students reading at a 9-year-old reading level performed on a metalinguistic reading test. For this test, the student reads a sentence on the left-hand side of the page and chooses one word from this sentence to fill in a blank in a second, unrelated sentence on the right. In comparison, the two groups tackled the test materials in very different ways (Wood et al., 1981). The 9-year-old hearing children always stopped when they knew they had begun to make many errors. In contrast, the 15 to 16.5 year-old-deaf readers continued answering every test item to the end of the test. Webster (1986) argued that deaf students do not inhibit their responses even when the task exceeds their comprehension and becomes meaningless.

In another example, Krinsky (1990) asked 40 prelingually deaf high school students in grades 7 to 12 enrolled in a state School for the Deaf to define words from the Peabody Picture Vocabulary Test. After they defined words they judged their “feeling of knowing” for missed words by ranking them for expected difficulty. Krinsky (1990) found that hearing adolescents were able to assess their “feeling of knowing” judgments with above-chance accuracy, but the deaf adolescents were unable to do this. Also, while
attempting to define vocabulary items deaf students were less likely to guess and more likely to say “I don’t know” (Krinsky, 1990).

Another problem is that deaf and hard of hearing students have limited metacognitive understanding about the reading process. In a review of the research on metacognition and deaf readers, Strassman (1997) found that deaf students had an “incomplete metacognitive knowledge about reading as it is generally done in society” (p. 144). Similarly, Ewoldt (1986) interviewed 20 inner-city deaf students aged 8 to 14 about reading, and when asked whether or not they were good readers, 13 out of these 20 deaf students said “yes.” Surprisingly, the students’ definitions of a ‘good reader’ did not include someone who comprehends or learns from text. Instead, when asked: What accounts for good or poor reading?” deaf and hard of hearing students mentioned factors unrelated to the reading process, such as being smart, or being hard of hearing rather than deaf, or not being born deaf. Furthermore, when asked: “Why do you read?” about 30% of the responses were related to practicing speech skills even though all students used sign language for communication or a combination of sign language and speech. Overall, deaf readers’ responses to questions about their reading experiences showed a limited understanding about reading (Ewoldt, 1986).

Strassman (1992) interviewed 29 prelingual, profoundly deaf high school students enrolled in a state residential School for the Deaf to investigate their metacognitive knowledge about school-related reading. From this study, Strassman (1992) concluded that the deaf readers in her study were passive participants in reading. Their perceptions about the purposes for reading also reflected school reading activities, focusing more on tasks such as vocabulary sheets and work sheets than on building meaning from text. In
other words, Strassman (1992) found that deaf high school students interpreted school-related reading tasks as assignments given by the teacher and not as a means for learning. This perception was illustrated by one student who explained that he did not read in school because he “did not have a language or reading class that semester!” (p. 328). In conclusion, it is not clear that these deaf high school students had metacognitive knowledge about what they did in school-related reading, or indeed, what was the long-term goal of reading in school (Strassman, 1992).

Reading Comprehension Strategies of Deaf Readers

When deaf readers encounter difficulties while reading, most appear to depend upon others for help (Ewoldt, 1986; Ewoldt et al., 1992; Strassman, 1992). For example, Ewoldt (1986) asked 20 deaf and hard of hearing readers aged 8 to 14 what they would do if they did not understand a word and 75% of the students mentioned that they would ask the teacher for help. Ewoldt et al. (1992) replicated this finding in a study of text understanding strategies identified by 16 signing deaf high school students. Furthermore, Strassman (1992) found that deaf adolescents favored a similar help-seeking strategy when they did not understand text.

Further examination of research findings shows that deaf readers use a limited range of reading comprehension strategies. In a discussion of her results, Strassman (1992) categorized the reading comprehension strategies that students reported using if they did not understand what they read, or needed to remember information in a story, or answer questions. She found that most of the responses fell into just three categories: (1) asking someone; (2) matching the words on the work sheet to those in the texts; and (3)
rereading; studying, thinking and outlining the text. Another consistent finding was that when deaf students could not identify a strategy they often said, "I don’t know."

Davey (1987) also found that deaf readers used a limited range of reading comprehension strategies. In her study, participants were students who had scored between 6.0 to 7.9 grade level on the Reading Comprehension Subtest of the Stanford Achievement Test. This comparative sample included 61 proficient hearing readers (mean age 11 years), 62 hearing poor readers (mean age 15 years), and 50 prelingually deaf readers who attended a residential School for the Deaf (mean age 15 years). Subjects evaluated their perceived comprehension immediately after reading each of 12 expository passages. Then after answering eight text-based questions about each passage, they rated their metacomprehension again. The results indicated that in the hearing sample, proficient and poor readers self-reported that looking-back to the text increased their comprehension. In contrast, deaf readers did not identify look-back as a helpful comprehension strategy, although looking back increased the number of correct answers. Davey (1986) concluded that deaf readers were unaware that a look-back strategy could improve their reading comprehension. This is because deaf readers used look-back as a visual-matching strategy to answer questions and not to improve comprehension.

Andrews and Mason (1991) also investigated reading and metacognitive strategy usage in three different groups of students. These included hearing elementary, hearing reading-disabled high school and prelingually, profoundly deaf high school students enrolled in a state residential School for the Deaf. The deaf participants were male, skilled in ASL, born to hearing parents, and had no additional learning problems.
Participants included students from each reading grade level from grade two through to grade six. First, students read three expository passages, considered to be at, below, and above their assessed reading levels, each of which was missing key words or phrases. The students’ task was to fill in the blanks and to explain their reasons for their choices. The findings suggested that deaf students had more difficulty filling in the deletions and explaining the strategies they used. Further, on average, the deaf group used 3.8 different strategies for filling in the blanks while the hearing group used 4.7 different strategies (Andrews & Mason, 1991). Deaf readers reported using the following strategies to help with the task: (1) drawing on background knowledge; (2) rereading the sentence; (3) looking-back in the text; (4) looking-ahead in the text; (5) finding context clues from the surrounding text; and (6) looking at the title. Although the deaf students reported using similar strategies as the hearing readers, the frequency of each type of strategy differed. For example, less able deaf readers exclusively relied on rereading the text and background knowledge. Only the more able deaf readers, who read at the 5th-grade level or above based on the Stanford Achievement Test – Hearing Impaired, used the title and context clues as additional reading comprehension strategies.

Contrary to the results of other studies, Ewoldt et al., (1992) identified an extensive list of reading comprehension strategies used by 16 deaf readers enrolled at a large residential day School for the Deaf. These subjects included 8 males and 8 females, aged 13 to 17-years-old, with prelingual, profound hearing losses greater than 85 dB, with a normal range of intellectual functioning, and no disabling conditions. Stanford Achievement Test – Hearing Impaired (SAT-HI) reading levels were from grade 2 to 8. These deaf students self-reported 12 reading comprehension strategies including 11
independent and only one dependent strategy. These in rank order by frequency
included: (1) rereading the text, (2) asking someone, (3) using prior knowledge, (4) using
picture cues, (5) continuing to read more text, (6) using the dictionary, (7) reading the
text slowly, (8) reading other materials, (9) reading the text carefully, (10) memorizing
aspects of the text, (11) using text features, and (12) using mental imagery. The last two
reading comprehension strategies were inferred from deaf reader’s metacognitive
interviews and retellings.

In separate interviews, Ewoldt et al., (1992) asked the same deaf students to
identify reading comprehension strategies that they thought their teachers would suggest
using. In response, deaf students predicted their teachers would recommend 11
strategies, six dependent on the teacher and five self-sufficient or independent. These, in
rank order by frequency, included: (1) teacher explains, (2) reader rereads text, (3) reader
uses dictionary, (4) teacher reads text, (5) teacher rewrites, (6) teacher questions, (7)
reader reads carefully, (8) reader take notes, (9) reader uses encyclopedia, (10) teacher
gives other materials, or (11) teacher discusses. The major distinction between the
reading comprehension strategies that deaf students reported using and those they
predicted their teachers would recommend were the number of independent and
dependent strategies. However, unlike other investigations of deaf readers, the results of
this study seem optimistic as these deaf adolescents identified a far greater repertoire of
reading comprehension strategies.

In summary, deaf readers appear to have limited metacomprehension and
metacognitive knowledge of reading, and to use a limited repertoire of reading
comprehension strategies. In terms of deaf readers’ metacognition and reading, Williams
(1994) posed this question: "Could it be that deaf students' poor literacy achievement is in part the result of instructional practices which have failed to emphasize meaning-based strategies and the orchestration of semantic, syntactic, and graphophonemic cueing systems?" (p. 150). Likewise, Erickson (1987) argues that "many educators of the deaf were preoccupied with teaching bottom-up, analytical reading strategies while failing to teach metacognitive and metacomprehension strategies as well. Very seldom were the deaf taught that they must make sense out of this 'hearing world' contrivance called reading" (p. 292). While teachers have been preoccupied with teaching component reading skills, perhaps these teaching practices have created a mystery of the reading process for many deaf readers.

Chapter Summary

This chapter opens with a summary of the literature comparing deaf and hearing readers on different aspects of the reading process. But this comparative approach uses a hearing benchmark and reflects a deficit, or remedial model that inadvertently contributes to a limited view of the reading problems of deaf readers and overlooks the realities of being deaf in a hearing world. In contrast, I have argued for a sociocultural perspective that recognizes deaf readers as part of a language and cultural minority. From this perspective, I discussed how the values of a Deaf cultural identity shape the Deaf context of literacy along with other possible reasons for reading comprehension problems that emerge from their experiences. Finally, building upon a sociocultural framework, I described interactive models of reading and how individual knowledge, beliefs and skills must be considered within a broader sociocultural context. In the remainder of this chapter, I present the rationale for this research and an elaborated list of my research
Purpose of the Study and Research Questions

Deaf students who depend on ASL for communication are part of a language and cultural minority. Given this fact educators need a new way to examine deaf students and their reading problems. We need to examine literacy in a broader sociocultural context in order to begin understanding the reading experiences of deaf students within the context of a Deaf community and culture. In order to do this, in this study I draw upon both sociocultural theory and interactive models of reading to examine the reading experiences of two signing Deaf high school students who are members of the Deaf community. I look at these two Deaf readers, not in isolation, but by examining how the links between individual knowledge, beliefs and skills related to reading play out in the context of being a signing Deaf, high school student.

The Research Questions

To analyze these Deaf students’ reading in context, two overarching research questions that are interconnected at three levels guided this study (see Table 2). The two overarching questions focus first on describing the reading experiences of these Deaf students from a sociocultural perspective; the second focuses on how individual knowledge, beliefs and skills influence the reading process. To answer these broader questions, I defined ten more specific questions grouped into categories according to focus. My first two sub-questions address the Deaf culture and contexts in which the students read. The following three questions focused more specifically on literacy contexts and tasks. This included details of where they read, the possible influences of other people, and influences of different instructional environments on each reader.
Lastly, five questions focused on these students' individual knowledge, beliefs and skills about reading as they played out in the Deaf culture and literacy contexts.
## Table 2. The Research Questions

<table>
<thead>
<tr>
<th>The Deaf Culture and Context:</th>
<th>Literacy Context and Tasks:</th>
<th>Individual Knowledge, Beliefs and Skills about Reading:</th>
</tr>
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<tbody>
<tr>
<td>• How do these Deaf high school students use reading within the Deaf culture, the Deaf world, and the hearing world?</td>
<td>• In what contexts do these Deaf high school students read?</td>
<td>• Why do these Deaf high school students read?</td>
</tr>
<tr>
<td>• How do the language differences between ASL and English impact on these Deaf high school students' reading?</td>
<td>• How does the instructional context and nature of support influence these Deaf high school readers’ perspectives of reading?</td>
<td>• How do these Deaf high school readers who communicate with ASL approach reading tasks?</td>
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<tr>
<td></td>
<td>• How do other people influence the reading context?</td>
<td>• What metacognitive knowledge do these Deaf high school readers possess about reading?</td>
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<td></td>
<td>• What do these Deaf high school readers think about their reading abilities?</td>
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<td></td>
<td></td>
<td>• What kinds of literacy skills do these individual Deaf high school students think are needed for life after high school?</td>
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CHAPTER III: THE METHODOLOGY AND PLAN

Introduction

A qualitative case study was used to examine the reading experiences of two signing Deaf high school students in order to create comprehensive, in-depth descriptive profiles of the deaf students and of the contexts in which they read. There are many strengths of case study research. For example, it usually occurs under naturalistic conditions with in-depth investigations of individuals and descriptions of the holistic and meaningful characteristics present within real life contexts (Yin, 1994). In addition, a case study approach allows for a broad, flexible collection of the multiple sources of data needed to produce in-depth, holistic, naturalistic, descriptive profiles (Merriam, 1998). With planning and attention to detail, these profiles may reflect the experiences, perspectives and understandings about reading and the motivations to read from these two deaf readers.

The Research Setting

This research study was conducted in the Secondary program of a School for the Deaf in western Canada, located within a large, high tech, public secondary school in a suburban area adjacent to a major city. This secondary school’s unique physical design includes a School for the Deaf core within a larger hearing school. Thus, Deaf students have the choice of taking classes with their Deaf peers or participating in regular education classes with their hearing peers while receiving appropriate support services. The Deaf core includes a student commons area with lockers and seating where Deaf students can meet outside class time. It also has designated deaf classrooms, a teacher-staff planning area, as well as resource rooms for science and home economics located
within departmental wings of the school. Other general school areas such as the library, student services, cafeterias, gymnasium and administration offices are shared spaces for both Deaf and Hearing secondary school programs.

The School for the Deaf provides public education for deaf and hard of hearing students from grades 8 to 12. The population at the School for the Deaf includes a mix of residential and day students. All out-of-town-students have the option to live in a dormitory that was a specially designed home-style residence centrally located off-campus.

The school was based on a number of guiding principles that include student leadership, technology, accessible communication, bilingual-bicultural methodology (Bi-Bi), cross culturalism and an integrated curriculum. It was designed to accommodate the auditory and visual needs of deaf and hard of hearing students. For example, features include acoustic treatment with wall-to-wall carpeting and acoustic tiles, plus a visual public address system and visual fire alarms. A visual public address system allows announcements to be made through television monitors in classrooms, hallways and meeting areas throughout the entire school. Audible presentations often include captioned text and an on-screen visual language interpreter using American Sign Language. Another design detail includes wider hallways with rounded corners for better visibility while walking and using sign language communication.

Participants

This case study was conducted at a School for the Deaf where all students must have a significant hearing loss in order to meet the Provincial Government Ministry of Education eligibility criteria for school enrollment. Since this investigation examined the
reading experiences of two signing Deaf high school students, the specific criteria for selecting volunteer participants included the following. First, participants needed to have a Deaf cultural identity and participate in social activities within the Deaf community. Second, students needed to be in Grades 9 to 11. I eliminated the lowest and highest grades for different reasons. I chose not to include Grade 8's because the first year of high school is often a year of transition as many students adjust to the particulars of a new school environment. I also purposely eliminated Grade 12's as potential participants because I was sensitive to the demands placed on graduates in their final year of high school. Third, participants needed to have a prelingual, sensorineural, severe to profound hearing loss in both ears. Fourth, they needed to read at a Grade 3 reading level, or above, as determined by standardized assessment such as the Stanford Achievement Test, Ninth Edition (SAT-9). Fifth, each student needed to have expressive and receptive language skills and no documented learning problems. Overall, communicative competence was essential as this study involved a series of interviews and on-going dialogues to gather the thoughts, opinions and perspectives of Deaf readers. Sixth, participants needed to have shared some classes with each other including some common reading contexts. Ideally, participants would have shared at least one English class and perhaps one or more classes within a common timetable. Lastly, the estimated volunteer commitment was 12 hours of student time outside school observations spread over 10 weeks. Participants needed to be willing to commit this amount of time to the study.

Initial selection of a pool of potential participants was based on school recommendation of students who were able to read to some degree and were competent communicators. From this pool, six multicultural Deaf high school students expressed an
interest to volunteer for the study. Within this group, some parents worried that participation in the study would distract from their child’s focus on school and thus did not provide consent. Also, two other students were only willing to be observed and interviewed at school, not across multiple contexts. The remaining two volunteers met all aspects of the participant criteria listed above. These students included a grade 9 male, Rhys /reese/, and a grade 10 female, Thea /tay-ah/ (pseudonyms). However, these participants were unique because they were born overseas and had immigrated to Canada at different times of their lives (see Table 7). Thus, their first language or heritage language currently spoken at home was not English. Without a doubt, each student’s unique cultural heritage and language background influenced his or her perceptions about reading English. These issues and further details about each individual will be addressed in the discussion of the results in Chapters IV and V.

Chronology of the Case Study

One of the characteristics of qualitative research is that the researcher is the primary instrument for data collection and analysis (Merriam, 1998). As a researcher, a number of factors created a favorable climate for my initial contact with the School for the Deaf administration. My background included over thirteen years of extensive experience as a sign language interpreter and resource teacher of Deaf and hard of hearing adults enrolled in literacy coursework, through high school, college and university. Recently, I had also successfully completed a teaching practicum at the affiliated elementary School for the Deaf and was currently employed part-time as an Itinerant Hearing Resource Teacher for Grades K – 12. Since I completed a practicum at the elementary School for the Deaf, one of the Vice Principals had been following the
progress of my graduate studies. During this study, she became designated as my on-site administrative contact.

Once I received approval to proceed from the school district and the university’s Behavioural Research Ethics Board, I met and discussed the research project with school administration. They told me that I was considered a “low risk” graduate student researcher because many of the teachers knew that I could communicate in sign language with their students. As a school team, they decided that it would be possible to proceed with the study before the end of the school year. After this initial meeting, the Vice Principal sent an e-mail message to all staff summarizing our discussion. This included a brief description of the focus of the study, the student participant criteria, and the anticipated minor impact on teachers and their classes. They emphasized the fact that participants would not lose class time. After considering the criteria for potential participants, the school administration suggested three possible groupings and requested teacher feedback. These students were flagged based on the participant criteria described earlier.

The next challenge was deciding how I would be introduced at future meetings. Attention to introductions is a double-sided issue, requiring consideration of both how to frame the research study and Deaf cultural norms related to making introductions. For example, one Deaf cultural practice is to introduce your place or roots in the wider Deaf community (Smith, Lentz, & Mikos, 1988). Specifically, a hearing person is expected to “name drop” and declare if they have any deaf family members, deaf friends, or colleagues, as well as any work experience within the Deaf community. To address this challenge, I presented an overview of the study during a regular School for the Deaf staff
meeting for teachers, support staff and administrators. After introductions, I acknowledged and recognized group members for their ongoing involvement in the local and national associations of teachers of the deaf and hard of hearing. Then to locate myself in the Deaf community, I highlighted my work experience in deafness and named former Deaf colleagues who are highly respected educators and leaders. I thanked them for the opportunity to provide an overview of my research project before I proceeded with my presentation. Various topics discussed included the purpose of the study, research questions and focal points, participant criteria, data sources, both student and teacher volunteer commitment and the possible impact of this study. A question and answer period followed the presentation to clarify any concerns. As a whole, the School for the Deaf staff and administration agreed to support the project and were ready to proceed with the next step.

With the support of school administration and a teacher-nomination process, I then met with potential students who fit the participant criteria. The Head Teacher and a school-based sign language interpreter also attended this lunch hour meeting. After introductions, students were encouraged to ask questions throughout the presentation. Using ASL, notes on the board and overhead transparencies, I gave a brief overview of the purpose of our meeting, the research project and the volunteer commitment. Other details included volunteer participants' rights to privacy, confidentiality and the freedom to withdraw from the study without penalty. Next, we reviewed a sample student consent form. Students who considered volunteering picked up copies of the student and parent consent forms inside large envelopes with my return address (see Appendix B). All
student volunteers were asked to return these forms to the secretary at the School for the Deaf as soon as possible.

Confidentiality

The names of the school and all participants involved in the study including students, teachers, support staff, allied professionals and administrators have been changed or omitted to protect their identities. Within the case study, the research site is referred to as the School for the Deaf instead of naming the school. A number of procedures helped maintain the confidentiality of the data. In addition to assigned pseudonyms to each participant, all research materials were stored in a locked file cabinet with access limited to the researcher. In addition, for reference purposes, videotapes and transcripts used pseudonym identifiers, actual dates, classes and basic label information so the researcher knew whose interview or interaction she was transcribing. While on the school site, care was taken so all research materials remained with the researcher or were kept in a secure location with access limited to the researcher. In addition, all drafts or work in progress for the final report were either in the possession of this investigator, the research supervisor, or remained in a locked office to be destroyed after use.

Steps were taken to maintain anonymity of the participants in the final report by avoiding the inclusion of any identifying information, direct or indirect. However, it is recognized that the identification of participants may be unwittingly revealed due to the in-depth descriptive characteristics of case study research. Other unavoidable factors that may contribute to participant identification are the small size, interconnectedness, and talkative nature of the Deaf community. These factors are compounded by specific attention to the deaf high school community plus the high visibility and memory of the
association between the researcher and participants within this school setting. This
reality, along with the lengthy data collection process, are factors that may help those
within the school environment recall or piece together these strings of details. I discussed
concerns regarding the possibility of breach of identification and confidentiality with
each participant before interviewing. As a preventative step, I solicited feedback from
teacher and student participants in reviewing and editing summaries or information to
ensure, as much as possible, that such breaches should not occur.

Entering the School

Table 3. Case Study Timeline

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Observations</td>
<td>Observations and Interviews</td>
</tr>
<tr>
<td><strong>Context:</strong></td>
<td><strong>Contexts:</strong></td>
</tr>
<tr>
<td>• School for the Deaf</td>
<td>• School for the Deaf</td>
</tr>
<tr>
<td></td>
<td>• Home</td>
</tr>
<tr>
<td></td>
<td>• Community</td>
</tr>
<tr>
<td><strong>Weeks 1 – 3</strong></td>
<td><strong>Weeks 4 – 8</strong></td>
</tr>
<tr>
<td><strong>School in Session</strong></td>
<td><strong>School Closed</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Summer Break</strong></td>
</tr>
</tbody>
</table>

In the first 3 week phase of the study, I concentrated on observing students at
school (see Table 3). As a way to immerse myself in their environment, I also observed
students in their shared classes and during school events such as assemblies and noon-
hour intramural sports at the School for the Deaf. In addition to data collection, one of
the goals for this initial observation period was to begin establishing rapport with
members of this community, such as student participants, their peers, educators, and
teaching assistants in the classes. So for example, being part of the audience during school assemblies provided important topics for social conversation. Because I became a familiar presence, the Deaf participants, educators and I had opportunities to interact and get to know each other before conducting interviews during the second phase of the study. Other major goals were to re-familiarize myself with visual communication and practice my ASL skills. This initial observation period provided an essential time-cushion to re-build sign language fluency with a high school cohort that used various signing styles, localized sign vocabulary and idiomatic language. Concurrently, the Deaf participants assessed my sign language skills and perhaps formed judgments or made decisions as to how much ASL or English to use in their signed communications with me. Thus, this familiarization process had an important reciprocal function in Deaf culture, particularly for a hearing person entering the Deaf community.

Of equal importance, this observation period provided an opportunity to become familiar with a high school context and gain greater insights and background information about deaf high school students before I conducted individual interviews. I was cautious in my interactions with study participants as well as other people in the school environment. I respected their space and sought permission to venture into areas or ask questions. During this phase, I started a research journal to record observations and questions for planning purposes and future reference. It became a valuable original data source to cross check information during data collection and analysis. For continuity, there was no break between the initial observation and subsequent observation and interview phases (see Table 3). As the weeks passed, I continued learning about the participants’ school reading experiences while I observed within the school site.
throughout both phases of the study. But during the subsequent data collection period, I extended observations to home and community settings, both during the remainder of the school year and in the first two weeks after school had ended.

Data Sources and Methods

This qualitative case study examined and documented the reading experiences of two Deaf high school students who use ASL to gain insights about different aspects of reading within their everyday contexts of home, school, and the community. To address the research questions, a number of pieces of evidence were collected within the back-to-back observation and interview phases of this case study (see Table 4). Data sources included observations within home, community and school contexts, in-depth, structured and informal interviews, questionnaires and document collection. As part of the structured interviews, materials from two informal reading inventories were collected to examine participants’ reading within a common context. Other interviews focused on completing questionnaires or discussing videos of reading episodes (i.e. cued-recall interviews). In addition to one-to-one interviews, one of the main sources of information came from 46 hours of observations of 33 different classes over an 8 week period. Consequently, short post-class discussions with various teachers became important opportunities to clarify questions about the reading or instructional contexts and other points about each participant. As well, from time to time, I engaged in informal conversations with support staff including the school librarian, audiologist, counsellor, social worker, interpreters and administrators. These contacts also served as a means to debrief, share general comments and build a congenial relationship with teachers and staff in the school community. Other sources of information included reviewing
documents in student files such as report cards, results from school activities such as
formal and informal testing or assessment and samples of student work. Together these
data sources served as a means to look for themes and patterns, and to confirm and
disconfirm conclusions. Additional details regarding each data collection method are
provided in the following sections.
<table>
<thead>
<tr>
<th>Types of Data:</th>
<th>Evidence Collected:</th>
<th>Record:</th>
</tr>
</thead>
</table>
| Observations  | 33 School observations in classes  
|               | 8 Reading 9/10  
|               | 8 English Skills 9/10  
|               | 5 Science 9  
|               | 5 Science 10  
|               | 4 Math 9/10  
|               | 1 CAPP 10  
|               | 1 Computer Applications 9/10  
|               | 1 Home Economics 9  
|               | 5 Home observations  
|               | 5 Community observations |
| Interviews and Questionnaires | Structured Student Interviews:  
|                       | Reading survey  
|                       | Views of the Reading Process  
|                       | Motivations to Read  
|                       | Student Background Information  
|                       | Informal Reading Inventories:  
|                       | Stieglitz (1997) Informal Reading Inventory: Graded Words in Context.  
|                       | Informal Reading-Thinking Inventory (Manzo, Manzo, & McKenna, 1995).  
|                       | Cued-recall on reading episodes  
|                       | Thea (8)  
|                       | Rhys (4)  
|                       | Informal conversations with students, teachers, staff and others  
|                       | Member checks  
| Interviews and Questionnaires | | video; field notes  
|                       | questionnaires; video; field notes  
|                       | video; student responses; running records; miscue analysis  
|                       | video; field notes  
|                       | field notes  
|                       | field notes; video |
| Document Review     | Student files  
|                    | Reading logs  
|                    | Writing samples  
|                    | Class assignments  
| Document Review     | | copies |
Observations

Throughout this case study, I conducted observations in the school, home and community to observe and describe contexts in which students read and how they approached reading tasks. Observations documented aspects of the readers’ reading context such as the nature of reading instruction, materials, tasks and expectations of reading assignments, and the interactions between the Deaf reader and any other people. As an observer, I exercised great care so my presence would not create any discomfort for the participants or others. For example, during observations at school, home and the workplace, I remained present but not obtrusive, and allowed participants to take the lead if they chose to interact or initiate conversations.

I observed specific classes on a regular basis (i.e. all day on Wednesdays to Fridays) throughout the 8 week period in the last term of the school year (See Table 5). Within this schedule, I followed Rhys and Thea throughout their school day as much as possible. Since they only shared four out of eight courses in their common timetable (Reading, English Skills, Math and Computer Applications) these courses were initial priorities for class observations. Later, separate Science classes became a new priority as the course content involved more reading and teacher-student interaction than the Math and Computer Applications classes. Given their alternating Day 1–Day 2 timetable, as a courtesy to teachers, suitable observation times and days were arranged in advance. However, after initial observations in various classes most teachers extended invitations for me to drop-in at anytime. This was welcome news as it eliminated the need to make prior arrangements and allowed much flexibility for spontaneous observations and conversations with teachers, administrators and support staff.
Table 5. Rhys’s and Thea’s Class Timetables

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rhys</td>
<td>Thea</td>
</tr>
<tr>
<td>08:50 – 10:10 AM</td>
<td>(A) PE</td>
<td>(A) Science 10</td>
</tr>
<tr>
<td>10:25 – 11:40 AM</td>
<td>(B) Reading</td>
<td>(B) Reading</td>
</tr>
<tr>
<td>Lunch</td>
<td>(C) Computer Applications</td>
<td>(C) Computer Applications</td>
</tr>
<tr>
<td>01:55 – 3:11 PM</td>
<td>(D) Social Studies</td>
<td>(D) Visual Arts</td>
</tr>
</tbody>
</table>

Timetable – Day 1 (Blocks A-D) and Day 2 (Blocks F-I) alternate throughout the week.

During observations, I tried to capture a descriptive snapshot of the interactions in each class in my running notes. Two factors made it easier to record observations and deliberately focus on one participant at a time. For one, the small class sizes of two to three students allowed for an unobstructed view of the teacher and students. Second, for effective sign language communication, not everyone can sign at once unlike classes which use spoken language communication. Thus, the inherent turn-taking nature of visual communication helped structure the interactions in the classroom. Decisions about whether to focus on one student at a time, or to divide attention among both cases during a given in-class reading episode were determined by the ever-changing class context. A number of factors shaped this ongoing decision process including information from observations, consultation with classroom teachers, students’ course work demands, and student availability. Given that I started this study in the last 8 weeks of the school year many events had been planned far in advance. For example, Thea was away on a
weeklong outdoor education camp and her absence limited the number of Science 10, English and Math observations I could make. Coincidentally, Rhys's attendance began to slip; therefore, I did not observe certain classes in their common timetable, as both participants were absent. As originally planned, the school became my primary base for observations and contacts with Rhys and Thea. Thus, the absence of face-to-face contact with Rhys created a challenge to confirm future interviews. However, on occasion I also used e-mail and TTY to contact him with limited success as he was rarely home and messages remained unanswered.

I needed to establish a workable system to record and organize the volume of data collected over the observation and interview stages of this case study. Initially, I recorded field notes and impressions in my research journal as soon as possible. Many of these comments were included in my source database as important background or contextual information. The journal was sub-divided into different sections for different functions. These included a running-log or dialogue from my perspective as a researcher, notes on discussions with colleagues and graduate students, notes for reference checks or resources and queries for my research supervisor. Another general purpose of this journal was to keep my personal reactions and preconceived notions separate from the data collected from the participants.

I recorded field notes of my observations for each class in ruled, centre line, coil-bound steno books. Starting from the top of the divided page, I staggered my notes with ample spacing between entries. I kept a running-record of the interactions within each class including descriptions of the print context. Notes from post-class discussions with teachers were recorded in these books. On the front cover, I labelled each book by
number and included the calendar dates of that period. On the inside cover, I kept a table of contents for each observation day. Information included the date, Day 1 or Day 2 of the school timetable, the specific class (i.e. Science 10-2, meaning the second class observed), student attendance, and a star system to denote if this observation followed a previous class observation. For example, EngSkills-3** denoted the third class observed and the second consecutive class. I added this information to track the number of consecutive classes observed in case I needed it in my analysis of participant responses or the classroom instructional context. As the study progressed, I devised other practical organizational markers such as a series of checkboxes in order for me to track the status of typed versions of various observations.

As a means to immerse myself in the data, I made it a practice to re-read my observation notes as soon as possible in order to trigger my memory to fill-in details and to make any changes. During free time outside of class observations and discussions with teachers and staff, I often reviewed my notes and began typing the expanded version onto a laptop computer. For consistency, I used a corresponding labeling system as I organized computer data files into individual folders for each course subject. I named computer files to identify each class for example, Science10-2.doc. Page headers included an abbreviation for each class, the date, and the page number of the document.

Since I often worked in the teacher prep area, my activity often pulled staff and teachers into discussion about various topics including Deaf students and reading. It seemed as though my presence became a magnet for informal discussions with teachers and staff. One of the most common questions asked was whether I was getting all the information I needed. I always responded with a positive statement yet tried to keep the
conversation flowing to engage further dialogue from each person. Once, the school librarian voluntarily gave me copies of various articles from current journals about deaf students and reading. Another teacher said that my study of the reading experiences at the School for the Deaf made everyone think about reading more than usual (TP-11). These interactions became an added source of information, since my class observations depended on the participants' course schedules; I did not have opportunities for regular contact with all members of the school staff.

*Interviews and Conversations*

In this section, I provide details on the methods used to conduct interviews and on data recording methods such as videotaping and field notes. After the first 3 weeks of school observations all interviews occurred over a 7 week period during the second phase of this study. I used three types of interviews for several data purposes. These included structured interviews with students, informal conversations with students, teachers, staff and parents, and member checks. See Appendix C for copies of the student interview protocols.

Throughout the study, each participant was involved in a series of individual interviews that sought their opinions related to different reading situations. One focal area included a general reading survey that specifically addressed aspects of the readers' motivations to read, self-efficacy beliefs, and preferences for how text is presented. The second focal area sought reflections about the readers' views of the reading process specifically descriptions about reading strategies, how they defined a good deaf reader and what they remembered about learning to read. The overall goal for each interview was to gather specific information from each deaf reader or to serve as an another means
to back-up, or corroborate previous observations, statements or responses to questionnaires. In some cases, an interview began with a student’s previous response to questions as a jumping-off point to seek more clarification. Other times, a question arose from a previous student observation. Together, these questions served as target areas to clarify and build information to develop a full description of each participant’s reading experiences to address the research questions.

One of the critical issues of using interviews with signing deaf individuals is the degree of sign language fluency required by both the interviewer and interviewee to establish a successful communication partnership (Strassman, 1997). I practiced direct communication between myself as the researcher and the deaf participant. As the researcher and interviewer, I used ASL in all my conversations with Rhys and Thea. However, as the interviewer, I continued a critical assessment of my expressive sign language skills to determine if it matched the language needs of each Deaf participant.

Before each interview, I reviewed my reasons for conducting the conversation. To start interviews, Hill and Thompson (1997) recommended beginning with a general “warm-up” question. In fact, Strassman (1992) asked four warm-up questions when she interviewed deaf adolescents about their metacognitive knowledge about reading. I used this practice so the participant and I could each have an opportunity to adjust to each other’s signing style. More importantly, a series of warm-up questions created a preliminary focus for the interview. This generated background information in order to facilitate the building of an equal and open relationship, and “eased the respondent into disclosing [the sought after] personal information” (Hill & Thompson, 1997, p. 9).

Interviews assumed a conversational flow and began with open-ended questions similar
to this example; “I’d like to know more about what you think about reading. Please tell me, What you think about reading?”

Since this case study involved ongoing communication with students, teachers and staff, clear communication and understanding were priorities during my interactions with all parties. To ensure understanding during face-to-face interactions, Deaf interviewees were encouraged to seek clarification of signed communication and written materials whenever the need arose.

*Structured Interviews*

Structured interviews were used to uncover students’ opinions about reading such as motivations to read, metacognitive knowledge, and self-efficacy beliefs. Structured and informal interviews took place in a private one-to-one setting with the participant and researcher. Before each structured interview, each participant and I worked out mutually agreeable times and places to meet for the next interview. When we met at the school, participants were free to choose drinks or snacks from the school cafeteria or vending machines before the interview started. To avoid being totally task oriented, we always chatted informally before and after each interview. Throughout the interviews, I was conscious of the participants’ time and let each one decide when they needed to take breaks or wanted to stop the interview. Further, participants were free to decide when they wanted to stop recording and speak off-camera. Throughout this study, neither participant chose this option.

Individual structured interviews were videotaped to capture the nuances of ASL communication as well as to allow me complete focus on the interaction rather than shifting visual attention away from the Deaf participant and onto my research notes. A
video camera and tripod focused on the each participant within the typical signing-space window from his or her head to waist. Before each interview, we chatted, checked and adjusted for the correct camera angle. Since I was limited with one camera, I chose to zoom in on each student to capture individual facial expressions and allow for the best angle for ASL to English translation. I positioned myself at a comfortable distance in-front of each participant and right beside the video camera. Our proximity to the camera allowed the internal microphone to record sounds such as each others' verbal comments and audible non-manual markers such as "lip-pops and pahs" that added meaning in ASL. Since I was an off-camera interviewer, as a precaution, as soon as possible I voiced my comments and questions so there would be a running commentary of what I recently said to each participant. For example, following natural breaks in our discussions, I interjected brief spoken summaries of my recent comments. They understood the reason for the pause and often concurred with the summary, or used it as a jumping-off point for further comments.

One priority was to review videotapes before follow-up contact with the same participant and future contact with any other participant. This immediate review of each videotape forced me, as the researcher, to self-assess a number of factors. One important step was to plan for the next meeting with participants and take advantage of the opportunities for obtaining more information, as well as completing member checks for clarification. As previously emphasized, as a hearing person, I needed to continually monitor my ASL in terms of clarity of expressive fingerspelling and sign language communication.

However, since only one camera remained focused on the participant in the
structured interviews, I missed these opportunities for personal critique of my sign language style. Nevertheless, I could evaluate my audible comments and Rhys’s and Thea’s responses as a means to monitor the clarity of concepts or probes used, and overall interview techniques. For much of the evaluation regarding my sign language style, I relied on direct feedback from our face-to-face interactions. Both participants were self-assured and were not afraid to seek clarification whenever needed.

For individual structured interviews, I used a double-spaced copy of the interview protocol with generous blank spaces between items for written notes. I used this extra space for brief notes during my initial post-interview review of each videotape. I also used steno books as I transcribed the interviews from ASL to English. I used a similar labeling system as the class observations for each one of the participant’s interview books. All books were labelled by number and participant with a table of contents listing the date of each interview. As a caution, to protect the original interview, I made VHS copies of each interview tape. These VHS copies became the source tapes for the continuous cycle of stops, rewinds and starts during the arduous transcription process. The corresponding number for both the original and VHS copy of the interview tape were also noted in the steno books. As the typed transcripts were works in-progress, I added the date and time in the header of the actual document. This notation helped determine which printed copy was the most current and up-to-date version.

Structured Interviews Using Questionnaires

I used two questionnaires as another way to gather information about the students’ motivations to read and their individual histories. These written protocols also helped verify data from other sources. First, the Student Background Information Questionnaire
included a series of eight questions with a choice of answers and space for additional comments. Topics included the type of schools attended, sign language history, communication preference, knowledge of their own hearing loss and family hearing status. Second the Motivations to Read included 30 multiple choice questions pulled and adapted from various published sources (Estes, 1971; Gambrell, Palmer, Codling & Mazzoni; Guthrie & Wigfield, 1997). These topics covered a wide array of motivations to read linked to self-efficacy beliefs and various attitudes toward reading such as values, degree of challenge, curiosity, and reasons for reading such as social, school compliance and work avoidance (See Appendix C for copies of the questionnaires).

These questionnaire-based interviews were conducted much like other structured interviews where I directed the flow of questions depending on the student’s responses. However to ensure access to the information with the written questionnaires Steph, a Deaf adult acted as a sign language interpreter. If students requested, Steph interpreted the questions and multiple-choice answers to clarify any misunderstandings. Each of us had a print copy of the questionnaires and an overhead projector projected the same information on the wall. Steph sat along this wall between the projected image and in close proximity to the participant. I stood beside the video camera that was focused tightly on both Steph and the participant. As a member check she also monitored their responses and checked if they matched what Rhys and Thea really meant to say. For example sometimes they would choose a certain answer but their subsequent commentary would contradict it. In these cases, Steph paraphrased what they just said and often clarified exactly what this response meant. Through this interaction, participants
confirmed that their responses matched one of the given choices or were explained in further discussion.

*Structured Interviews Using Informal Reading Inventories*

Another type of interview was structured around two published Informal Reading Inventories (Manzo, Manzo & McKenna, 1995; Stieglitz, 1997). I completed these informal reading inventories at the end of the study with each participant individually. Both of these items provided a common reading episode for Rhys and Thea and thus helped capture the individuals' knowledge, beliefs and skills about reading using a common framework. These reading episodes also added to the data from interviews and conversations about how students' tackled reading.

For example, in the Stieglitz (1997) Graded Words in Context Inventory, target words appear in boldface type within the context of a sentence. Wordlists are graded in difficulty from pre-primer to Grade 8. The other words in the sentence are below the grade level of the target word to increase fluency in reading each sentence. I used this inventory to gain a sense of each participant's vocabulary and comprehension skills and to examine patterns in any miscues. Beginning with the Grade 2 list, I gave each student a list of 20 sentences with instructions to notice the specific word in boldface type and to demonstrate how they would read the sentence. After they finished each list, I also asked them to comment on their performance or tell me how easy or difficult they found the exercise. I continued until the participant wanted to stop a session or hit the ceiling level of five or more errors.

Second, the Informal Reading and Thinking Inventory (Manzo, Manzo, and McKenna, 1995) involves reading a passage and answering metacognitive questions
about a reading comprehension task. To build on information derived from students' reading words in context, the longer reading passages provided another snapshot of each participant's reading strategies, vocabulary and comprehension skills and miscue patterns. I chose grade level passages within the "ballpark" after considering the students' results on the Stieglitz (1997) inventory and the student file information on the reading comprehension subtests of the Stanford Achievement Test (SAT-9). I asked the prior knowledge questions for two selections, then each student chose one of two expository reading passages of about 3 or 4 short paragraphs in length depending on the grade level (see Appendix D). If needed, I had other lower and higher grade level passages available as options. Both Rhys and Thea chose to read their passage silently at least once before reading it again in front of the camera in sign language and these practices were considered non-standard administration for this Informal Reading Inventory. When they finished reading, I used ASL and interpreted the second part of the inventory. Here each student responded to a series of literal, inferential and critical or creative comprehension questions (Manzo, et al., 1995). At the first level of difficulty, literal questions determine if the reader can recall facts from the text or relate the text to prior knowledge (i.e. vocabulary or general information). Second, inferential questions challenge the reader to logically combine facts available in the text. Third, critical or creative questions require "reading beyond the lines" and extracting essential ideas such as seeing or drawing meaning and insights from parallel facts or situations (i.e. concepts, judgements, explanations, open-ended responses, problem solving and schema connection).

5 Grade 3-Thea and Grade 5-Rhys (Informal Reading Thinking Inventory, Manzo et al., 1997)
Cued-Recall Interviews

Cued-recall interviews followed some of the observed reading episodes in order to determine students' ideas about what was easy or challenging to understand, or the reasons why they used certain reading strategies. During prompted or cued-recall interviews participants were asked to view videotapes of selected reading episodes and to describe what they were doing and thinking at specific moments. These responses provided additional data regarding the strategies they reported in other interviews and offered further details about the reading process, self-efficacy beliefs, and recommendations for reading instruction. For post-reading cued-recall interviews, I used the same techniques as Mayer (1999), a deaf educator and case study researcher, who videotaped individual subjects while they were in the process of composing written texts. In this study, to facilitate recall immediately following a reading episode, the students also viewed their reading videotape with me. At this time, I provided prompts for the students' thinking by stopping the tape at critical moments, such as when the student paused, corrected a mistake, or fingerspelled to themselves. Then I asked the student to describe what they were doing and what they were thinking at that moment. In addition, individual reader habits, selected behaviours, or other points of interest were used as jumping off points for questions and discussion. A second video camera zoomed in on both of us as we watched the reading episode seated to the left and right of the television. Use of this second video camera not only recorded student responses, but also allowed me to critique my signing style for these combined reading episode-cued-recall interviews. I also monitored the extent of visual noise used as an interviewer such as any of erratic movements or mannerisms that could distract the deaf interviewee. For
example, when not signing, it is important that the hands are still and are not inadvertently conveying unintentional comments.

In support of these practices, Mayer (1999) argued that the prompted recall interview, conducted immediately after a task and accompanied by videotaped cues to memory, was the technique most likely to elicit the most accurate retrospective description. Other researchers exploring metacognitive functions and think-aloud methodology (Ericsson & Simon, 1993; Garner, 1988; Pressley & Afflerbach, 1995) have also advocated use of this technique.

Informal Conversations

Throughout this case study, I had many informal conversations with Rhys and Thea and their parents as well as teachers, support staff, other students at the School for the Deaf. Topics generally focused on Deaf students and reading, for example, in post-class discussions with different Teachers of the Deaf, I clarified any of my misunderstandings about the classroom reading context. This practice often acted as an opening for further discussion with teachers and support staff. See an earlier discussion about these informal conversations within the observation phase of the case study.

Member Checks

According to Miles & Huberman (1994), several tactics can be used to make conclusions based on evidence, such as noting patterns or themes and building a logical chain of evidence. In this study, a variety of practices was used to verify observations and strengthen the chain of evidence. As an integral step to build credibility in this study, member checks included verifying signed communication, translations and
interpretations of information with the deaf participant. According to Morse (1994), a member check:

reaffirms [for participants] their active participation and their desire to make the findings meaningful, accurate and credible.... The informants are the primary gatekeepers and the researcher is the secondary gatekeeper for information and to substantiate findings...they know their worlds (p. 108).

For example, during interviews, I often summarized participants’ lengthy discussions so they knew I understood them. They often confirmed the information, or kept the conversation going with additional comments. Other member checks occurred during the structured interviews involving questionnaires. As a communication facilitator, Steph the Deaf interpreter, monitored each student's multiple choice responses to ensure every item matched the individuals’ intended meaning.

Document Review

Additional data were collected by reviewing student files for information about each student’s background, school and mode of communication history, hearing loss profile, and results from standardized testing (i.e. Stanford Achievement Test Reading subtests). This document review corroborated the students’ responses to the Student Background Questionnaire. Throughout this study, both students and teachers also shared copies of text materials including various class assignments and textbooks. In addition, copies of a reading log and writing samples were other pieces of evidence that reflected each student’s reading context.
Data Analysis

Data analysis was conducted throughout the data collection phase of the research consistent with the emergent design of this case study. As a continuous activity, I wrote notes and memos to record my thoughts, impressions and reactions to various interactions during the data collection period (Janesick, 1998; Miles & Huberman, 1994). Throughout this study, these materials along with my research journal captured information or thoughts in progress. These documents served as valuable records for future reference as I reviewed, edited, added comments, or regrouped and extracted information as new perspectives arose. Furthermore, these artifacts contributed to an “audit trail” of the research process (Miles & Huberman, 1994) and were useful for making ongoing decisions as part of the emergent design of this case study.

Process for Transcribing Interview Videotapes

I transcribed each videotape into a verbatim transcript as soon as possible. However, I only transcribed the sections judged essential to the research questions. After an initial review of each videotape, time-codes of important sections were noted as a priority for full transcription. The remaining parts of the interview were summarized to retain the continuity of the conversation for future transcriptions. For example, conversations about sports events or other peripheral incidents in the school day remained as summaries.

I started using standard conventions to transcribe ASL and sign language vocabulary into English. These include upper case letters to indicate sign vocabulary (READ) and capital letters joined by hyphens to indicate fingerspelling (C-O-M-I-C-S). Soon these conventions became cumbersome since all participant responses were in ASL
with only a few instances of spoken English. Later I used sentence case to transcribe their comments and decided to use shorter abbreviations such as adding the suffix -FS to indicate when specific words were fingerspelled (i.e. MAGAZINE-FS). Given the nature of ASL, and the communication style of each deaf participant, I also described visual nuances that added emphasis or meaning to the message in brackets. For example, I added notations to indicate exactly when participants used speech (-voices), “quotation marks” and rhetorical questions as a running transcript of their comments. I decided to record these detailed notes to capture exactly how participants responded for both data collection and just in case it would reflect any patterns for subsequent data analysis.

Transcribing videotapes from ASL to English took incredible concentration to process the rapid-fire pace of visual information to produce coherent English translations. I inevitably missed information if I broke eye-contact and looked down, or away from TV. Because the whole process was so intense, I consciously tackled each bit of tape viewed and transcribed from the perspective of adding another layer of varnish to polish the product. Following this approach helped me guard against being overwhelmed by all the details.

Lastly, as reliability check, Shelley, an experienced freelance interpreter verified the signed communication in some of the structured interviews. I lent Shelly copies of the interview videotapes so she could preview them before we met. First, we viewed the interview video and cross-referenced any trouble spots until we came to a mutual understanding of the ASL. Next, we played this videotape on a television and with a video camera we filmed the TV images of each participant with Steph the Deaf interpreter and recorded the freelance interpreter’s voice-over. This new voice-over
videotape was a concrete means to check and verify participant responses against my initial typed transcript. Thus, as a member check, after my initial typed transcription, I reviewed over 20% of the interview videotapes with a freelance interpreter. These included the Stieglitz (1997) Informal Reading Inventory and two other structured interviews that I conducted with the Deaf interpreter. All efforts to verify data kept the researcher honest. This was a crucial step and foundation for subsequent analysis and reporting.

Researcher Bias

Although experience can be a valuable backdrop for any study, the researcher’s experiences and biases need to be recognized and kept in check. Yin (1994) argued that one of the principles for good social science and high quality analysis is “to bring your own prior, expert knowledge to your case study” (p. 124). Further, Janesick (1998) suggested a number of exercises for qualitative researchers to identify their biases. One suggestion was to identify the researcher’s background and beliefs as well as to set forth one’s agenda and biases. Thus, as a researcher, I needed to bracket my biases, expectations and beliefs and focus solely on the data. Consequently, bracketing my biases helped ensure that the data analysis came from the participants’ meanings rather than my own. As a reminder, according to Beck (1992) bracketing “involves peeling away the layers of interpretations so the phenomena can be seen as they are, not as they are reflected through preconceptions” (p. 167). Continual dialogue with my research supervisor and colleagues as well as personal reflection were two ways to bracket my own background experiences as a teacher who has had years of experience developing English literacy skills with signing deaf students.
Data Organization

Throughout the data collection phase I labelled and identified each piece of evidence. I also created a database for each participant. Both this database and a computer printout of my desktop folders and contents served as important organizational check-lists. These tools become a quick method to keep track of all the tasks I needed to complete in order to get the data in a workable form for data analysis. For example, interview transcripts and class observations were typed into Word documents and line numbers were added before files were printed, hole-punched and stored in marked binders. Further, I used a system of orange flags to mark final copies for quick access.

One of my challenges was to devise a general analysis plan to deal with the data and organize it into workable chunks. First, I created semantic webs for each research question and areas of interest with a computer graphic program called Inspiration (Helfgott & Westhaver, 1997). This program was designed as a versatile tool for visual thinking and one feature includes the option of switching back and forth from a diagram to an outline mode. Using printed copies of these webs, I made a mind map poster and used this as a reference while I completed the transcriptions for reading episodes and prompted recall interviews. Later as I began highlighting data of interest and coding items this poster served as a useful reference.

The priority for data analysis was to concentrate on analyzing the data that answered the research questions. One method of data reduction involved a critical read through the transcriptions while highlighting data of interest with vertical lines along the page margins. This step consisted of focusing on evidence relevant to the research questions and a-priori global areas of interest. As an example, one research question
focused on whether these participants considered reading a "hearing" activity. As I reviewed the data pertinent to answering this question, I found data relevant to this question in interviews and in observations of when students read (e.g., within deaf and/or hearing worlds). As part of this process, I reviewed evidence thoroughly several times, in order to gain further insights about each participant.

Database

After consultation with my research supervisor, the next step in this analytical process was to move the data of interest into one comprehensive Microsoft Excel computer database to enable further data analysis. One procedural step was to devise a short, consistent method of labeling and dating each research episode and quotation for reference purposes. I used abbreviated forms of the original file names to track each quotation or piece of evidence. Reference line numbers on each transcript and observation helped identify evidence back to its source data. Once established, this system of identifying evidence remained part of each successive version of the database (see Appendix E).

As I became more adept with the Excel program, successive revisions improved the utility of my databases. A few structural additions also improved the utility of the source database and security that the version I was viewing was accurate. My main database (Interview Dialogue Data) was organized into three sections that corresponded to different needs and clusters of research questions (see Appendix E). Moving from the left to right in the database, the first section of columns identified the data. In the second section, descriptive codes reflected details of the reading context, text type, motivations to read, and reader responses to reading. In addition, brief field notes described the
context of the evidence. The third and last section used numerical codes indicating the data's relevance to various research questions. Thus, each piece of evidence could have multiple data codes. Depending on the focus for data analysis, specific data and columns of interest could be selected for closer inspection and irrelevant columns could be hidden in the background.

To aid in interpreting the data, I constructed two additional databases in which data were sorted and coded at a more detailed level based on selected research questions. The original database focused on the interview dialogue data within individual structured interviews. During my initial analysis of this interview data, descriptive codes linked to research questions described some of the participant's self-reported actions and reactions within the reading process. However, adding detailed multilevel codes for reading and decoding strategies would have made it too unwieldy. Thus, I created two other databases to reflect the different natures of the other reading data. The second database dealt with the reading strategies evident in various reading episodes and prompted recall interviews. The third database focused on the decoding strategies and miscue patterns as Rhys and Thea read words in context from the Stieglitz (1997) Informal Reading Inventory.

Building each database was a time-consuming process that demanded a critical look at the cost-effectiveness of this exercise. I soon realized that some evidence could be interpreted without being included in a comprehensive computer database. In making this decision, I considered the nature of the evidence, and whether or not the required effort would enhance other databases during analysis. For example, within the classroom observations a systematic and complete review of the data revealed some consistent
patterns that emerged regarding the reading tasks, instructional context, and nature of
teacher support. In this case, highlighting examples and summarizing the emergent
patterns and themes sufficed to capture the meaning of the data. As I combed through
my observation notes, I flagged items of interest with coloured tabs. Later, I transferred
this information onto note cards for use as a quick reference and manual sorts when I
discussed the results of this study.

Data Coding

The process of defining terms and establishing data codes went through several
revisions. In general, data codes emerged based on a-priori areas of interest, emergent
patterns in the data, and the focus of the research questions. I considered all research
questions and areas of interest as I established data codes using meaningful one-word
descriptors, abbreviations, numbers, and number-letter pairs. First level codes related
each piece of evidence to the original research questions. For example, one numerical
code (e.g., Code 1) identified data relevant to the question: Is Reading Valued? This was
a general category that evolved from initially wondering if reading was considered
valuable by participants in either a Deaf and, or Hearing world context. Any information
related to how participants saw reading as a useful activity were identified as relevant to
this first code as were any value statements by participants reflecting the different
purposes or functions of reading and the importance of reading in their lives. Table 6
show these first level codes and criteria for linking evidence to each code. After
associating pieces of evidence with questions, I generated subcodes within each area. For
example, when examining motivations to read I identified different contexts for reading
(home or school) and stated purposes for reading such as written communication, practice, or homework).
Table 6. Codes Used to Categorize Interview Dialogue Data

<table>
<thead>
<tr>
<th>Links to Research Questions</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Reading Valued?</td>
<td>Uses, purposes and functions of reading</td>
<td>1</td>
</tr>
<tr>
<td>Motivations to Read</td>
<td>Flags all reported reading activities.</td>
<td>2 + other Info.</td>
</tr>
<tr>
<td></td>
<td>• Rationale: all reported reading activities will have a motivation to read.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Descriptions captured in other columns.</td>
<td></td>
</tr>
<tr>
<td>What metacognitive knowledge do these Deaf high school readers possess about reading?</td>
<td>Metacognitive knowledge about reading.</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>• Statements regarding thoughts about the reading process without judgement to the accuracy or inaccuracy of opinions.</td>
<td></td>
</tr>
<tr>
<td>How do these Deaf high school readers who communicate with ASL approach reading tasks?</td>
<td>How do they code text when reading (actual, or reported preferences)</td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>• ASL; translating English to ASL; Sign (type unspecified)</td>
<td>3C</td>
</tr>
<tr>
<td></td>
<td>• List reported reading strategies used.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Definition: A good deaf reader.</td>
<td>3D</td>
</tr>
<tr>
<td></td>
<td>• Beliefs about the skills and practices of good deaf readers.</td>
<td></td>
</tr>
<tr>
<td>Self Efficacy Beliefs: What do these Deaf high school students think about their reading abilities?</td>
<td>Are they satisfied with their reading abilities?</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>• General reflection of self-efficacy beliefs.</td>
<td>4B</td>
</tr>
<tr>
<td></td>
<td>• What do they think about their strengths and weaknesses?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• General thoughts and opinions about their strengths and weaknesses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identification of specific strengths and weaknesses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What do they want to improve, if anything?</td>
<td>4C</td>
</tr>
<tr>
<td></td>
<td>• Identification of specific areas or skills (i.e. vocabulary skills, fluency, etc.)</td>
<td></td>
</tr>
</tbody>
</table>

Table continued
<table>
<thead>
<tr>
<th>Links to Research Questions</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
</table>
| **Self Efficacy Beliefs:** What do these Deaf high school students think about their reading abilities? | What do they think would help them improve?  
- Identifies opinions re: different activities or type of support that would help them improve (i.e. reading more, writing, ASL support etc.).  
What do they think would help another deaf reader improve?  
- Answers to this direct question  
- Opportunity to step outside of self  
- May reflect how the student views reading. | 4D 4E |
| What kinds of literacy skills do these individual Deaf high school students think are needed for life after high school? | Vocational and/or educational goals  
- Stated future vocational or educational goals  
Reading skills needed to meet these goals.  
- Opinions re: the kind of reading skills needed for (post-secondary studies; educational goals or specific careers or vocations)  
- Definition of “good reading skills” (comprehension, fluency)  
- Lists of skills or types of reading materials needed to meet future demands  
Writing skills needed to meet these goals.  
- Opinions re: the kind of writing skills needed for (post-secondary studies; educational goals or specific careers or vocations)  
- Definition of “good writing”  
- Lists of skills or writing products needed to meet future demands | 5A 5B 5C |
<table>
<thead>
<tr>
<th>Links to Research Questions</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
</table>
| How does the instructional context and nature of support influence these Deaf high school readers’ perspectives of reading? | General teacher help  
• Sub-code: Teacher (in general); Deaf Teacher; Hearing Teacher; N/A  
Personal reflections and comments on learning to read.  
Language learning environments believed to be most effective  
• identify sign language systems associated with learning to read  
• comments re: the use of sign language support for reading.  
Instructional strategies they thought are most effective in helping learn how to read.  
• class structure  
• instructional sequence  
• content or activities for reading and writing.  
Recommendations for hearing teachers  
• general advice to hearing teachers  
• sign language  
• expectations, beliefs, characteristics of deaf students  
• teacher attitudes  
• content and level of challenge.  
Teaching young deaf readers to read.  
• Thoughts or reflections on how they had taught or would teach young deaf readers to read  
• comments re: steps, strategies or process involved. | 6A |
|  |  | 6B |
|  |  | 6C |
|  |  | 6D |
|  |  | 6E |
|  |  | 6F |

Table continued
Codes Used to Categorize Interview Dialogue Data (Continued)

<table>
<thead>
<tr>
<th>Links to Research Questions</th>
<th>Description</th>
</tr>
</thead>
</table>
| Deaf Identity Issues (What are the influences of the Deaf culture and context on these students’ reading?) | Participants’ references to the following:  
- Deaf world  
- Hearing world  
- Deaf culture  
- Hearing culture |
| Technology (What contexts do these Deaf high school students read?) | Participants’ reference to different technology:  
- TTY access  
- Computer access  
- Internet access  
- Closed Captioner, Closed Captioning |

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>DW</td>
</tr>
<tr>
<td>HW</td>
</tr>
<tr>
<td>DC</td>
</tr>
<tr>
<td>HC</td>
</tr>
<tr>
<td>13A</td>
</tr>
<tr>
<td>13B</td>
</tr>
<tr>
<td>13C</td>
</tr>
<tr>
<td>13D</td>
</tr>
</tbody>
</table>

As I analyzed my data, I used my coloured, data-coding guide and running-list of descriptive codes as a reference. I coded one interview at a time in order to draw from the same thought patterns. Sometimes I just looked for instances of one item, or code to ensure consistency. Most of the time, I highlighted data of interest and often added data codes directly on the transcripts in pencil. Throughout the coding process, I often referred to my valuable data-coding notebook. It included definitions of each code and my thoughts in progress as I puzzled over different issues throughout the data analysis stage. This written dialogue helped maintain my focus as I dealt with the volume of data collected. It also served as reference for ongoing discussions with my research supervisor.

*Checking and Testing the Codes*

I followed different steps as part of the process of ensuring the codes were discrete and meaningful. First, after this preliminary source database for interview data was established, I used a form of the constant comparative approach to check the robustness of the codes and to organize, manipulate and mine information from the data.
On a computer file copy of the original database, I pulled out all instances of one code, printed the list and compared each item for its similarity to other data within the group. As another checkpoint, I selected specific codes in turn to check if the evidence met the criteria for each code. Sometimes terms and codes needed slight adjustments to describe the data accurately. This cycle continued until all categories became discrete entities. After this scrutiny, I added the code, "not applicable" (N/A) to cover situations where the data did not clearly indicate a certain feature. Sometimes this lack of specificity was one of the realities of the participants' self-reported information. However, I needed to check that the N/A code was used consistently and based solely on the data.

Attention to detail and consistent practices during data collection provided rich data for subsequent more detailed coding and data analysis of the reading episode data for reading strategies and the range of ASL and English used by Rhys and Thea. During various reading episodes, cued-recall interviews and informal reading inventories, I videotaped exactly what participants did as they read and discussed their actions. I had completed detailed transcriptions of these videotapes and the emergent patterns were apparent. This groundwork enabled the process of explicit coding and subsequent microanalysis. For both the Reading Strategies and Stieglitz (1997) Words in Context databases, I borrowed terms from a teacher of the deaf and hard of hearing (French, 1999). Data codes fell into three main areas: 1) comprehension monitoring strategies; 2) general strategies used to understand text; and 3) language codes. Specifying the language codes used while reading was an example of a microanalysis of how participants used ASL, fingerspelling, and English while reading. For example, I
developed codes that would capture how these Deaf readers used fingerspelling in their reading practices. These included fingerspelling appropriately; fingerspelling excessively; and fingerspelling when one does not know the word, concept or meaning. I was careful to use this last code only when definitive evidence existed. For example, sometimes Rhys or Thea fingerspelled a word and admitted that they did not know what it meant.

Searching for Patterns and Themes

Once established the three source databases (Interview Dialogue Data; Reading Strategies; and Stieglitz Words in Context) remained in a separate computer file with individual workbooks. An organized system made the next steps of the data analysis process manageable. During and following data scrutiny and coding, data were examined for key phrases, statements, patterns or themes (Miles & Huberman, 1994). These interpretations, quotations or observations were grouped to answer various research questions and identify emergent themes within various semantic webs (Miles & Huberman, 1994). With ongoing reviews of the semantic webs and filtered or sorted Excel workbook datasheets, the common elements, as well as differences became apparent between both cases. Thus, changes and patterns were incorporated into subsequent semantic web summaries. Every semantic web, datasheet and subsequent revision was labelled, dated and saved for future reference. These materials were used as a framework to begin reporting the case study results describing the reading experiences and perspectives of individual deaf readers. Following this process, I constructed detailed individual profiles and completed a single case analysis of each deaf student. From this initial single case analysis, a cross-case analysis was completed to look for
common themes or patterns across cases. In particular, I looked at each of the research
questions across cases and extracted common or distinguishing elements. According to
Yin (1994) one goal of multiple-case study "is to build a general explanation that fits
each of the individual cases, even though the cases will vary in their details" (p. 112).

Credibility Building Strategies

To strengthen the credibility of the findings I collected and cross-referenced
multiple sources of information related to each finding through a process known as
triangulation (Merriam, 1998; Stake, 1995). Other features of this study added to the
internal validity such as the use of member checks with participants, teachers and staff.
In addition, the long observation period and the lengthy data collection period resulted in
repeated observations of the same phenomena and strengthened the findings. Another
checkpoint included peer examination of different points for feedback. In the end, these
procedures ensured that my interpretations of results were consistent with the data
collected (Lincoln & Guba, 1995).

In addition, in terms of data analysis, Yin (1994) argued that researchers should
aim for high-quality analysis. The tenets for a high quality analysis include: (1) reliance
on all the relevant evidence, (2) examination of all major and rival interpretations, (3)
addressing the most significant aspect of the case study and (4) bringing your own prior,
expert knowledge to the case study. To complement these guidelines, Janesick (1998)
offered other areas or checkpoints for data analysis, reporting and interpretation. I tried
to follow these suggestions as I worked through the data analysis process. First, I looked
for empirical assertions supported by the data. For example, I used various data sources
including narrative vignettes and exact quotations from the participants to validate my
assertions. In my initial writing, I provided multiple examples from data that back up my interpretations. Whenever relevant, I include a description of my role as a researcher as part of the analysis and history of this case study. These steps along with a detailed description of how data was collected and analyzed, including discussions about ethical issues that arose created a full account of the case study. According to Janesick (1998), these checkpoints make it possible for readers to experience the study in its entirety. Thus, the report is a comprehensive synthesis of the study. It includes information to describe the social context and setting, the range of evidence used to support any assertions, and a view of the work in progress throughout the history of the inquiry (Janesick, 1998). As a new researcher, both lists of suggestions and checkpoints served as a valuable guide during the evolution of data analysis, interpretation, and reporting.

Chapter Summary

Chapter Three chronicles the multiple steps involved in conducting this case study so readers may follow an “audit trail” of this research process (Miles & Huberman, 1994). One major consideration involved careful planning and attention to the details to be respectful of Deaf cultural norms and the unique needs of communication in ASL. This chapter began with an overview of the methodology and description of the research setting and participant selection procedures. Further details describe the purposes of various data sources and specifics of how I collected and recorded data during the 10 week observation and interview phases of this study. Descriptive details indicate how data analysis occurred throughout the data collection phase as part of the emergent design of this case study. A general analysis plan focused on organizing the data and initial data reduction highlighted data that answered the research questions including emergent
themes between both case study participants. Lastly, I summarized credibility building strategies that maintained confidentiality, recognized researcher bias, and implemented various member checks throughout this case study.
CHAPTER IV: RESULTS

Introduction

This chapter presents results of case studies examining the reading experiences of two signing Deaf high school students and the contexts in which they read. I start by introducing Rhys and Thea (pseudonyms), the case study participants. Next the discussion focuses on describing their reading experiences and highlighting findings within three areas: (1) the Deaf culture and context in relation to participants’ reading experiences; (2) literacy contexts and tasks in which Rhys and Thea participated; and (3) the students’ knowledge, beliefs, and skills about reading. Results are presented thematically based on the initial research questions and focal points. Within this discussion, I highlight similarities, differences and emergent sub-themes between and across both participants.

Participant Overview

Both Rhys and Thea were born overseas and had lived in various countries before each immigrated to Canada with their families. But each described himself or herself as having a Deaf identity and sharing a Deaf culture along with their individual family’s cultural heritage. Both were born in non-English speaking countries and each of their families continues to speak their heritage language at home. However, Rhys admitted he has forgotten most of his heritage language now that he has been in Canada for over seven years. In contrast, Thea and her family have lived here for nearly two years and she still depends on her first language for communication with her family. Thea described herself as a Deaf new-Canadian who wants to improve her English reading and writing skills.
Prior to attending the Secondary School for the Deaf, both participants had attended deaf preschools and schools for the deaf that had practiced communication philosophies with a strong oral language focus. Thea used sign language communication as a preschooler, but once school-aged she was educated orally until immersed in ASL at her present high school. Likewise, Rhys began signing during preschool and received oral education in his heritage language, followed by oral Hebrew when his family moved. Later, once in Canada, he began English instruction within an Oral-Total Communication environment before he enrolled at this signing School for the Deaf. Nevertheless, as high school students, both preferred to use ASL for communication whenever possible.

According to school records, each student had a prelingual, severe to profound hearing loss without additional documented learning problems. As a snapshot, for reference purposes, recent standardized testing results for the reading vocabulary and comprehension subtests of the Stanford Achievement Test, Ninth Edition (SAT-9) were pulled from student files. Average percentile rankings based on the percentage of deaf children of the same age falling at or below a given score, spanned from 25-75 (Gallaudet Research Institute, 1996). Thus, Rhys’s and Thea’s individual scores fell within the average range for similar aged deaf readers. Table 6 summarizes the descriptive characteristics for each participant including cultural, family, and school history, communication preferences, deafness, and assessment information.
Table 7. Summary of Participant Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Rhys</th>
<th>Thea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Grade</td>
<td>09</td>
<td>10</td>
</tr>
<tr>
<td>Age</td>
<td>16 years</td>
<td>17 years</td>
</tr>
<tr>
<td>Cultural Identity</td>
<td>Deaf identity + Eastern European heritage</td>
<td>Deaf identity + Western Asian heritage</td>
</tr>
<tr>
<td>Birthplace</td>
<td>non-English speaking country</td>
<td>non-English speaking country</td>
</tr>
<tr>
<td>Age Moved to Canada</td>
<td>9 years</td>
<td>15 years</td>
</tr>
<tr>
<td>Elementary School</td>
<td>• School for the Deaf (Oral*)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>School for the Deaf (Oral*)&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>• (Oral** and Total Communication)</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>School for the Deaf (Sign Language - ASL)</td>
<td>• School for the Deaf (Oral*)&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• (Sign Language - ASL)</td>
</tr>
<tr>
<td>Communication Preference</td>
<td>ASL</td>
<td>ASL</td>
</tr>
<tr>
<td>Age Began Signing</td>
<td>3-years-old</td>
<td>2-years-old</td>
</tr>
<tr>
<td>Spoken Language Skills</td>
<td>qualities/characteristics of Deaf speech</td>
<td>qualities/characteristics of Deaf speech</td>
</tr>
<tr>
<td>Method of Communication with Family</td>
<td>uses fingerspelling and sign language; speaks, speechreads and writes notes in English</td>
<td>speaks and speechreads her heritage language</td>
</tr>
<tr>
<td>Hearing Loss</td>
<td>prelingual, bilateral, severe–profound sensorineural hearing loss</td>
<td>prelingual, bilateral, severe–profound sensorineural hearing loss</td>
</tr>
<tr>
<td>Age of Onset</td>
<td>5-months</td>
<td>birth</td>
</tr>
<tr>
<td>Age of Diagnosis</td>
<td>9-months</td>
<td>3-months</td>
</tr>
<tr>
<td>Etiology</td>
<td>childhood illness (unspecified)</td>
<td>unknown</td>
</tr>
<tr>
<td>Age of Amplification</td>
<td>9-months</td>
<td>unknown</td>
</tr>
<tr>
<td>Current Hearing Aid Status</td>
<td>unaided</td>
<td>unaided</td>
</tr>
<tr>
<td>Family Hearing Status</td>
<td>Hearing</td>
<td>Hearing</td>
</tr>
<tr>
<td>SAT-9 Vocabulary Grade Equivalent</td>
<td>end of Grade 3</td>
<td>beginning of Grade 3</td>
</tr>
<tr>
<td>Percentile</td>
<td>54&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>45&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>SAT-9 Comprehension Grade Equivalent</td>
<td>beginning of Grade 4</td>
<td>end of Grade 2</td>
</tr>
<tr>
<td>Percentile</td>
<td>58&lt;sup&gt;th&lt;/sup&gt; percentile</td>
<td>26&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
</tbody>
</table>

* in heritage language

**English
The Deaf Culture and Context

This section examines possible influences of Deaf culture and the Deaf world on the everyday reading experiences of Rhys and Thea. Two research questions guided my data analysis here. First, I wanted to examine how Rhys and Thea used reading within both Deaf and Hearing worlds. Second, I wanted to explore how differences between ASL and English may have impacted their reading. To answer each question, I reviewed data from observations, interviews and documents and drew conclusions from both cases looking for similarities as well as differences across cases.

Perceptions about Reading in Cultural Contexts

First, both participants described their personal reasons for reading within both Deaf and Hearing worlds. The evidence I collected clearly showed that both Rhys and Thea valued reading and saw its importance as a communication tool across Deaf and Hearing contexts. For example, one of the major reasons for reading involved written communication with hearing people who do not know how to sign. Rhys explained how he communicates in face-to-face situations:

Out in the world with hearing people I use gestures or write notes with hearing people. (Int. 1, 113-114)

If the hearing person can't sign ASL, then they would write notes back and forth...The deaf person would read the sentences and understand. That's it. (Int. 4, 449-451)

In addition, according to Rhys, reading also supports communication through writing letters and refining speechreading skills: Deaf people also need to write letters (mimes an interaction between himself writing a letter and another person reading
it)...“and I ask you do you understand?” OK, you also use reading to learn

speechreading (Int. 4, 647-650). Often in speech-language therapy sessions, deaf people

have been given lists of English phrases as a reference to practice their speechreading

skills. Similarly, lists of troublesome words in different conversational contexts are often

used as cues to read and practice receptive and expressive language skills.

Both students discussed how they used technology to different degrees as communication tools. This showed that students used reading and writing as supported by technology to interact with others. For example, Rhys was highly computer literate and regularly interacted via on-line networks such as ‘I Seek You’ (ICQ) and MSN (Microsoft Net). He also used various technologies including the recent purchase of a personal pager to keep in touch with both deaf and hearing friends: When I make plans with my friends I use TTY, e-mail, ICQ and MSN (Int. 1, 70-71). Further evidence supports the extent of his computer use for his daily communication needs:

I use e-mail and ICQ with deaf and hearing friends but ICQ is better.
ICQ, I type something it shows up on line. Other people can read it and answer. It goes back and forth like that...other systems MSN, but I prefer ICQ (Int.1, 72-81). I get over 30 messages a day, once I got 75. [Lists the people he is in regular contact with via e-mail.] It’s boring to read sometimes. I send out messages but not everyone sends back (EngRead-5, 30-33).

In contrast, Thea checked her e-mail only about three or four times a week. She used e-mail on a limited basis and only kept in contact with a few friends now that she had been in Canada for nearly two years. Although Thea usually received a weekly
message or e-mail card from a former neighbour, a hearing teenager, she never responded right away. However, Thea wondered why her Canadian friends were not interested in e-mail cards. Note that when she explained why she had no e-mail contact with her former deaf peers, she linked the use of computers with English language skills:

I'm really good friends with some deaf girls from my old School for the Deaf. We've known each other for 10 years, but we don't e-mail because they are not comfortable using computers and typing English; because over there we never used computers. People who are skilled in English use computers, but if you know nothing about English at all, you don't use computers. Back there they had computers but with different programs. Many people over there, they can't connect to things we have here in Canada because it's English here and typing would be hard. (RE-3, 61-69)

But, she used e-mail infrequently to interact with her deaf friends at her current School for the Deaf:

I don't use e-mail to make plans with my deaf friends (RE-3, 45-47). I live so far away here. Everyone is spread around the city. I have one good friend, she lives north of our school but most of the time we see each other at school. My friends that live in the dorm go home on weekends and during breaks. Now it's summer, everyone is off all over. At school, I chat with my friends but now in the summer, we e-mail once in awhile. (PR3, 108-112)

Again, these findings suggest that reading and writing provided an important interface
for students to enable interactions with others both inside the Deaf world and outside in the larger hearing community. Thus contrary to expectations that Rhys and Thea might see reading as an exclusive “hearing” activity, both embraced the importance of reading and gave concrete examples of situations in which they actively used reading within both Deaf and Hearing worlds.

In addition, when explicitly asked to explain where reading belonged in relation to Deaf or Hearing culture, without hesitation Rhys immediately thought of how reading was the key to accessing electronic, text-based communication systems used in the Deaf world:

- Deaf culture. You also send messages on the computer, ICQ, Messenger
- MSN, sending e-mail back and forth, on the phone with TTYs, call
- through the MRC [Message Relay Centre] and the operator reads your message and types back...that's it. (Int. 4, 640-646)

Although Thea believed reading had a place in both Deaf and Hearing cultures and contexts; she thought that reading was particularly important within the Deaf culture because it provides one of the only avenues for learning English:

- I think it is important for both. But, most important for the deaf. I'd attach the label there. Very important\(^6\) for deaf. Hearing people can hear, so reading is easier for them. If deaf people want to learn English, through what? Reading a book, that's it. (Int. 6, 131-142)

Later, Thea offered further insights about the importance of reading English for deaf people. She recognized the differences in languages between Deaf and Hearing worlds.

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\(^6\) **underlined italicized words** denotes Thea’s added emphasis.
and argued that these were the reasons why reading was more important for deaf people especially when seeking to interact with the hearing world:

Why do deaf people read? Well, it’s the same, deaf people are the same as other people. But, for deaf people, the reason they want to read is for their future, and jobs. English is important because English is not our natural language and that means I’ve got to read for my future. (Int. 1, 216-220)

In the Deaf world, reading is very important because the deaf can’t hear. That means with reading you learn English words plus tremendous knowledge about the world and what’s happening, for example vast information. We can read about that. I can read an English book and understand what happens. That’s really important for the deaf. That’s better than asking and depending on hearing people to answer questions, or give us the story. We read it ourselves, understand it, and know what’s up or what’s happening, plus we learn English and that’s important for university or college. (Int. 6, 60-71)

If you don’t read then that means you must need to go to a special university or college, and it is a lot smaller and harder for education. If you have English skills and read a lot, then it is a lot easier to get into any university you want. You have future freedom. Then you don’t have any of the frustrations like those in the Deaf culture. (Int. 6, 62-77)

With passion, Thea named the many benefits of having English skills such as independence from hearing people but also inclusion in their world and greater freedom.

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7 **underlined italicized words** denotes Thea’s added emphasis.
to make choices for her future. She alluded to the limitations of some specialized programs for deaf students. For example, it is common knowledge that high school graduates from Schools for the Deaf, including Thea's, attend English literacy programs or vocational exploration programs specifically designed for deaf and hard of hearing adults at a few local community colleges.

Similarly, Rhys argued that being deaf is one of the major reasons why deaf people should read:

Should be because they can’t hear ...it’s good for them because they can’t hear. They should use their eyes and learn words and big words for reading. Then when they are reading, they will learn what these words mean through reading and taking in information for understanding. (Int. 4, 21-27)

These remarks suggest that Rhys believed he could figure out the meaning of words in context and that reading is a way to learn information. Rhys also believed reading could help in building skills for his future in the workplace and personal life as a parent. He expressed his opinions about reading during a discussion in reading class (EngRead-5):

It’s good for my future. Reading is for understanding and understanding words. Suppose I get a job and I’m reading something with hard vocabulary; I’ll understand it because I’ve seen it before, because I read it. Later, when I’m a Dad, I can open a book, look at it and be able to sign stories. (Int. 4, 50-53; Int. 1, 37-38)

In summary, both students felt strongly that reading has an important place within the Deaf culture and this was where they believed the label ‘reading’ belonged.
However, other than TTY use, they did not associate different reading activities as being exclusively part of either Deaf or Hearing cultural contexts. Rhys and Thea also shared the belief that deaf people should read to enhance communication with others and to build skills for the future. Without doubt, they also saw their deafness as one of the major reasons why deaf people should read because it would be the key to learning and meeting their future workplace needs.

Further evidence of Rhys’s and Thea’s beliefs in the value of reading was provided by their positive opinions about books. For example, in a class discussion about the pros and cons of computer books versus traditional books, Rhys’s comments reflected his appreciation of books in either format:

A computer book can break down. A book is forever and you can write notes on the book; but you can lose the book. So maybe a computer book is better because you can keep your notes and always bring it up.

(EngRead-5, 89-95)

Similarly, Thea wrote a paragraph for her English Skills class in which she was free to write on any topic. Her paragraph captured the importance she ascribed to books:

“Books”

Books is making people improve study every courses or their own life for example how to find a good job. Also people who read book always know about everything about the world, earth, history. My obsession [obsession] is reading book is the most important of world for us. (EngSkills-4, 124-129)

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8 Thea included these double quotes in the title of her unedited paragraph.
This paragraph captured her views about the importance of reading books. Further comments revealed Thea’s personal beliefs about the value of reading for both her present and future life. She linked reading to brain development, perhaps influenced by many discussions in her Reading class (EngRead-5):

When I see the word ‘reading’ – Reading is for enjoyment, developing the brain, constant exposure to information develops the brain and is for enjoyment that’s what reading is. Reading is about brain development. Things about the world. Books talk about things in the world. Many countless, different things and information. Reading explains about different information. Tells us about native people, what their life is like. You can learn about it. For example, if I’m curious about native Indians, or anything...(Int. 3, 1133-1144)

When Thea considered the advice she might give to a younger deaf student she expressed her opinions about the importance of reading:

If a deaf kid in Grade 2 asked me why read. I would tell them…reading is very important for everything in your life: important for your future, education, get jobs, go to school, university, college, everything. Reading is important for many reasons; there’s a long list of things reading is important for. Reading is better than TV, better than movies, or playing games…. It’s cool. It’s for enjoyment….I’d emphasize, it’s really good, great, cool. I don’t want to say it’s homework. Kids hate homework. I’d keep quiet about that. But, I’d emphasize it’s a priority to read. The kid

Underlined italicized words denotes Thea’s added emphasis.
might ask really? – Yes, you’ll enjoy yourself when you read, and read a lot. It’s important for your future, plus reading is for enjoyment. It’s better than struggling with something boring, studying hard and not enjoying anything. With reading books you can learn and enjoy it too.

You can do both. (Int. 3, 995-1004, 1149-1155)

Likewise, Rhys succinctly defined his positive perspectives on the importance of reading when he recognized the connection between reading and writing: Reading is very important. Reading is what you are talking about in writing. (Int. 4, 626-627)

The evidence presented so far show that Rhys and Thea valued reading and used reading for multiple purposes. At the same time, Rhys and Thea did not seem to read materials specific to the Deaf world. Few magazine and newspaper publications are published specifically for Deaf readers. Most of the existing materials consist of newsletters for various deaf organizations or research papers. Thus it is not surprising that neither Rhys nor Thea read much Deaf literature, as Rhys explained: No, not much reading about Deaf culture, I don’t read Deaf magazines or newspapers. (Int. 1, 62-63)

*The Influences from a Deaf Context*

This next section reports data to describe influences within a Deaf context and culture on reading at the School for the Deaf. Observations of the school environment suggested that various print media throughout classrooms and hallways at the School for the Deaf promoted a positive Deaf identity. For example, coloured posters incorporated ASL with inspirational messages from Deaf role models. One prominent banner featured a famous quotation from Dr. King Jordan, the first Deaf President of Gallaudet

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10 *Underlined italicized words* denotes Rhys’s added emphasis.
University, "Deaf people can do anything but hear." Another poster artfully displayed time-lapse photographs fingerspelling the word "success." Similarly, students' artwork depicted motivating ASL idioms such as "PAH" which means, "finally; finally something has happened or something was a success!" Together these messages combined print and ASL to create positive messages that promoted acceptance of Deaf students and Deaf culture.

Reading practices within the School for the Deaf show how students helped each other as they read. Rhys recalled how helpful it was to read beside Deaf peers. First, he described reading with a Deaf friend who has Deaf parents:

I remember both-of-us\textsuperscript{11} reading the same book. I have my book; she has her book. I would check what happened in the story with her. Sometimes I would read something and not get it; but she would read the same thing and get it. She told me her [Deaf] parents would give an ASL summary first, then she would read the English. I think that's why she understands what she reads. (EngRead-5, 153-159)

He also mentioned the help he received from a Deaf senior high school student whom he considered a good Deaf reader: When I read and don't understand she helps me. She reads it, understands and explains to me. She understands better than me (Int. 4, 324-325). Likewise, Thea echoed what she saw as a natural tendency for deaf people to help each other as they tackle reading. She explained how she would approach another deaf person and use ASL if they had difficulty understanding something they read:

Deaf people all around do help each other a lot. They do it naturally. It's

\textsuperscript{11} both-of-us was signed in ASL as one sign (i.e., "we-two")
easier that way. (Int. 6, 113-115)

If I’m reading something and understand it and that deaf person reads and doesn’t understand – I’d tell them in ASL…or if that person doesn’t want me to explain it, fine. I would suggest this will help: well you can read it again, go back and read it until you understand. I’d give them a chance. If they still don’t understand and are behind, I’d ask, “if you don’t mind, I can explain it in ASL until they understand. (Int. 3, 622-634)

As role models Deaf teachers also exerted a positive influence by assisting students with reading and writing. An example of how a Deaf teacher set a positive context for reading and writing is provided by one teaching sequence between Thea and the Deaf teacher for her Career and Personal Planning (CAPP) class. I had the opportunity to observe an interview as they discussed two sections of Thea’s Student Learning Plan. Thea’s task during the interview involved reading and responding to a responsibility and self-discipline rating scale and numbering personal rankings for employee expectations. Thea carefully read each item, clarified vocabulary and asked questions of her teacher before she considered her responses. For example, one item sought her priority rating for this employee expectation: “Co-workers who are friendly and pleasant to work with.” To support Thea, her Deaf teacher started explaining the meaning of this term. Then, as part of developing the contextual meaning, he launched into detailed descriptions of possible work environments. Next, he shared his own experiences when he had been the only Deaf person in different workplaces. Last, he strongly advised Thea to learn from his experiences. When she starts working, he told
her to go out at lunchtime and coffee breaks to mix with her hearing co-workers and chat
with them by writing notes back and forth. Thea appreciated the explicit nature of her
teacher's explanations. After class she told me that working with this Deaf teacher was
"relaxing to watch the ASL information instead of reading all the time" (Capp-1, 59-60).
Her ready acceptance of this teacher's advice reflected the high priority she placed on
communication, her respect for Deaf role models and her fascination with his personal
anecdotes.

Another influence of the deaf context and culture on Rhys and Thea arose from
the impact on their development of a Deaf identity. Thea has a strong self-identity
foremost as a Deaf person in combination with her family's cultural heritage. This
identity shaped how she sees herself in the world. Further, Thea has certain expectations
about reading because she is Deaf. In a discussion about how reading may be different
for a Deaf person in a hearing world, Thea felt that deaf people need to tackle reading
aggressively especially if their hearing families do not sign. She explained that deaf
people need to change how they approach reading in order to become better readers and
seek knowledge in a hearing world:

Oh wow, if a deaf person is in a hearing world, it means the deaf person
has to be more aggressive, more active. They have to be more aggressive
and read closely, ask people questions. Read and ask questions again.
What does this say? They require support. They need to be much more
active and aggressive....If reading without active involvement or
aggressiveness, that means they don't improve, and that doesn't help.
They learn nothing because people in the world are all the same. But, deaf
people require more active aggressiveness, and need to try to work hard.

Aggressive means more energy, more focus, more determination to try harder, take more effort. (Int. 6, 102-113, 124-125)

As a Deaf person living in a Hearing world, Thea has certain personal beliefs and practices associated with reading. She suggested that reading takes a tremendous amount of work that demands determined effort if a deaf person wants to improve his or her reading skills.

Impacts of ASL and English on Reading Experiences

One other impact of the Deaf culture and context on student reading derives from the language differences between ASL and English. To address my second research question, insights from the students, in conjunction with my own observations, revealed how the qualities of both ASL and English impacted Deaf high school students’ reading experiences.

Often at the School for the Deaf students asked teachers to explain the idiosyncrasies of the English language. Across different classes, hearing teachers responded to student questions and introduced their explanations about English nuances as “stupid English rules.” It seemed that a little humor helped ease the frustrations of deciphering meaning from text, learning grammatical rules and writing English. This tension breaker also helped bridge the language and cultural differences between ASL and English. Teachers always praised students’ efforts and gave explicit explanations of English grammar, idioms or other aspects of Hearing culture such as rhyme-based jokes. Sometimes they directed students to notice various teacher-made charts that contrasted elements of ASL and English. For example, one chart listed the sequence of explicit
features to include when asking questions in ASL or English.

In another example of the centrality of ASL – English differences in Deaf students’ reading experience, consider the underlying humor in the expression: “English is Lousy ASL.” This sign can be found prominently displayed in English classrooms and this statement is a refreshing change of perspective for Deaf people. Instead of reinforcing messages such as “ASL is lousy English,” “never use ASL if you want to improve your English,” or “your English is lousy,” this expression frames ASL as a bona fide language. At the same time, it acknowledges that deaf people have had difficulties with English and for amusement, covertly pokes fun at English-like sign language systems.

Rhys and Thea also offered perspectives of what it was like to use two, and sometimes three languages. During data collection, I was curious to know if these Deaf readers used both ASL and English as they read English text. So I asked them what language they “saw” when they read English (i.e., Do you see ASL when you read English? – Do you follow the English grammar, what do you do?) In response to my question, Rhys explained how he normally approached reading English text: I read the English first, then I translate it into ASL so I can make and see the picture (pause) and yes, yes I understand… I change the English to ASL myself naturally (Int. 4, 287-288; 306-307). Although Thea liked the support of others to translate English to ASL, she split her attention back and forth between teachers’ ASL translation and her reading material. Thea also attempted the same bilingual approach when she read material on her own:

Yes, for reading I like ASL [support]. I prefer to read a book first, then if
I don't understand shift to an ASL interpretation. But, it's not that I understand nothing at all [when I read]. I'll check the ASL.

When it's finished, then I go back to the book, pick out things I know like verbs, and remember and try to think about the ASL explanation and connect it to the English text. I'll make a match in my mind, I understand so clearly. It's as if I'm thinking, ah I see, I understand it. It's clear now.

But sometimes, when I'm reading and don't understand something – if there is no one there to support me, I try to figure it out in ASL and see a picture in my mind, and think about it, then I go back and read sort of like that. (Int. 3, 197-207)

Although Thea relied on having the ASL support, she reiterated her preference to read materials first, before she sought help. If she happened to be reading alone, she still attempted to figure out the meaning of the text in ASL.

Consistent with students' descriptions, I observed their use of this strategy of translating the information into ASL as both students read the Stieglitz (1997) vocabulary words in context in sign. Secondly, as evidence of metacognitive thinking processes, both mentioned how they tried to “see a picture” of what they were reading. In another discussion, Rhys explained the time consuming process of completing multiple translations from English to ASL. This example is based on his experience with the common school reading activity of identifying the 5-W’s (who, what, where, when and why) within written materials. Here Rhys imagined reading some simple English statements with different present and future tense markers. In detail, he explained what
goes through his mind as he reads:

Yeah, yeah. First, for example, I read and I pick out “when” – “where” change it to ASL then I understand... suppose for example, if there is a picture and it says, “will be” – that “it will be” means “will-future” in ASL. “It is” means now, “were – was” (Manually Coded English signs) means past; “now” means right now or future-progressive (-voices). So that for example is first, then I go on... For example, in English: (Manually Coded English signs: I am going to camp – go + -ing ending) and I sign in ASL: “Go (ASL: open 5-hand to flat O-hand) camp” that means I will very soon (-signed close to ear) will/future work. But if I say, “I future (ASL: signed slower past ear: will/future) go to the movie” that means go (ASL: open 5-hand to flat O-hand) movie will. So that’s the translation, finish. I change it myself naturally. (Int. 4, 290-298; 301-309)

This excerpt shows that Rhys clearly understood the different meanings of the future tense including use of formal grammatical terms. He also demonstrated his command of both languages as he described how these English verb tenses correspond to different ASL and Manually Coded English (MCE) structures and vocabulary. But, this example illustrates just how much effort is needed to complete multiple translations even when reading these isolated simple sentences. Imagine how much more demanding the reading task becomes when these students attempt to read more difficult text.

Similarly, Thea described all the different language translations she went through as she read an e-mail message from her former homeland:

In this e-mail from my friend, she types SHALLOM-FS that means hello.
It’s hard, very slow to read. It takes me about half an hour to read it
[length: 2 computer screens]. When I read my heritage language,\textsuperscript{12} I’ve
got to see the picture in my mind. It’s like reading an English book – I
read down the page and I have to think. See the picture in my mind and
see ASL and think make understand. You see, that’s the same idea as
what I do to read this e-mail. It’s the same. I read the lines on screen,
make a picture in my mind. When I look at my heritage language, I think
and change it, and then I understand and go back to the e-mail.
Sometimes I forget my heritage language and have to grab a paper and
write it down at the same time I’m reading the e-mail. One hand I write,
and my eyes are on the screen. Then I read my notes and understand
(PR3, 23-33).

These vignettes evoke empathy and respect for all the efforts that Rhys and Thea
expended in order to read simple texts.

To avoid repetition, I will elaborate my analysis of the interaction between ASL
and English later in this chapter, in conjunction with my discussion of students’ reading
strategies and coding options. In that discussion, I will further describe how Rhys and
Thea used both languages as they read. I will examine further the use of ASL skills,
fingerspelling, and English to reflect the multifaceted ways they tackled reading.

For now, I close this section by summarizing the findings related to the influences
of the Deaf culture and context on the participants’ reading experiences. First, their
perceptions about reading in cultural contexts clearly showed how they valued reading

\textsuperscript{12} To maintain confidentiality the term “heritage language” refers to Thea’s native spoken language.
for different purposes. Rhys and Thea felt that reading was essential for communication involving Deaf and hearing people and their future needs as a Deaf person living in two worlds. From a Deaf context, both acknowledged that they needed to read because they were deaf. In fact, Thea had certain expectations about reading and described how her efforts needed to be attentive and aggressive because of her Deaf identity. In addition, within a Deaf context they looked for support from Deaf teachers and peers because they recognized the strength of having similar experiences with reading. Both Rhys and Thea appreciated Deaf peers for their willingness to help each other as they attempted to read. Also mixing humor and recognition of the historical tensions between ASL and English helped create a positive atmosphere to learn more about both languages. Lastly, students drew upon their knowledge of ASL and English to execute time-consuming, multiple translations involved in reading. This was one of the major impacts of the differences between the two languages on students’ reading experiences.

**Literacy Contexts and Tasks**

This next section examines how participants’ reading was enacted with various literacy contexts (see Figure 1). I will present my results by describing students’ reading within three overlapping types of context, namely, the (1) environment (school, home, community); (2) specific reading contexts (e.g., reading materials, tasks and purposes and any instructional context); and (3) the social context of the Deaf reader, (alone or with other people). Subsequent sections will address the results as they pertain to specific research questions within each of these areas.
Figure 1. Literacy Contexts

- Literacy Contexts
  - Environments
    - Home
    - Community
    - School
  - Instructional Contexts
    - Materials
    - Tasks
    - Purposes
  - Social Contexts
    - Deaf Reader
    - and
    - Other People
Three research questions guided my data analysis here. First, I wanted to identify the different contexts within which these Deaf high school students read. Second, I looked at how the instructional context and nature of support influenced these students’ perspectives on reading. Third, I wanted to explore how the presence of other people such as teachers, peers and family members may have influenced the reading context. To address each research question, I reviewed data from observations, interviews and conversations with teachers, support staff and one parent as I drew conclusions from both cases simultaneously.

Environments in which Students Read

As part of examining the contexts and motivations to read, this first subsection addresses the different environments within which Rhys and Thea read, including home, the general community and school (see Figure 1). Evidence derives from student interviews, observations of students in each environment along with observations and dialogues with parents, teachers and staff at the School for the Deaf.

Home. Both participants talked about reading at home, but each had different reading habits. At home, Rhys made only a few references to reading for school while Thea mentioned more reading episodes for school purposes. Also, in comparison, Rhys reported reading for pleasure for longer periods than Thea. Indeed, one pattern that emerged was the stark contrast between his pleasure reading habits and the minimal time he spent on school-related reading. For example when the Reading teacher asked if students had read any of the assigned novel for homework, Rhys admitted that he had not read beyond the first chapter (EngRead-5, 101-102). However, when he read for pleasure his reading habits were quite different:
At home, I read the newspaper in the morning [Fingerspells the names of two daily newspapers and mimes reading from top to bottom of each page] (EngRead-5, 22-23). I read the cartoons and comics, computer language and Web pages. (Int. 1, 142-144)

Rhys also listed many activities that he did for enjoyment and each involved reading: If I'm doing nothing, and its boring, I'll pick something up and read. I take advantage – do something with my time....I enjoy reading, enjoy computer, enjoy TV, enjoy telephone TTY (Int. 4, 90-91, 151-152). This self-report about his habit of staving off boredom by reading was verified by one of the support staff at the School for the Deaf. She recounted many times when Rhys read anything that was available including her notes, newspapers and maps as they drove to different appointments in the community. I also noticed that he would read magazines and newspapers while I set up the video equipment and during other minor lulls in our interviews. Simultaneously, Rhys discussed his routine of reading library books in bed at night: I go to the library near home to get books always. I get books to read at night in bed. I read for one hour and a half until I fall asleep (Int. 1, 155-157; 168-171). I never saw physical evidence that he frequented the public library, but in subsequent interviews Rhys discussed detailed plot summaries and personal reactions to the different mysteries he had read at home. These discussions were consistent with his self-reported home reading habits.

Contrary to Rhys’s reading habits, the Reading teacher felt that, in general, the students did very little reading outside of the School for the Deaf. In her opinion other than closed-captioned television and videos, most of what they read was environmental print such as signage. In contrast to Rhys, and consistent with her teacher’s description,
Thea did not read much at home and suggested she only sometimes completed her reading homework:

I feel most of the time reading is at school because of English grammar. I might read my science textbook at home and once in awhile English if the teacher gives me a book to read. I’ll read it sometimes. (Int. 3, 161-166)

Similarly, when Thea described her reading habits at home her responses show that she attempted her reading homework, but did not always succeed:

NOVELS-FS I don’t read, but if it’s for school, like the Reading teacher gives me something for homework and says I have to read it, then I will go home and try reading it (Int. 1, 30-32). I read Chapter 1, 2, and 3 sort of…(EngRead-5, 107-109).

Thea candidly admitted that captivating headlines and pictures may pique her curiosity to read briefly. For example, she explained:

I read at home, but you understand not continuously – never. I tend to read on and off. I stop then come back to it. Sometimes at home I read on the couch, read during or watching TV or any place at home. If I’m bored at home, I’ll pick up whatever is on the table like newspapers or magazines. I’ll pick up and glance through them first, look at the pictures and headlines. If there is something that catches my eye, or something interesting and I want to know what’s up, I’ll keep reading it. Most of the time I spend about five minutes at a time reading. I never read for long periods. That’s not me, but just brief times (Int. 3, 147-155).
Further evidence of Thea’s short, infrequent periods spent reading that typify her home reading habits are found in a class assignment recording the materials she read over a three-day period (Table 8). Her account of watching a movie with closed-captions for “5 minutes” is another indication of how little time she spends reading for pleasure.

Table 8. Thea’s Reading Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>Reading Material</th>
<th>Pages</th>
<th>Time</th>
<th>Comments (Responses or Reactions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-11</td>
<td>Home</td>
<td>Letter</td>
<td>4</td>
<td>2 minutes</td>
<td>Reading many time (enjoying)</td>
</tr>
<tr>
<td>06-12</td>
<td>Home</td>
<td>News (really) TV</td>
<td></td>
<td>15 minutes</td>
<td>Interesting</td>
</tr>
<tr>
<td>06-12</td>
<td>Home</td>
<td>Movie</td>
<td></td>
<td>5 minutes</td>
<td>Not bad</td>
</tr>
<tr>
<td>06-13</td>
<td>Class</td>
<td>English grammar</td>
<td>3</td>
<td>1 hour and 15 minutes</td>
<td>on.off.on.off (slow) normally</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>half</td>
<td></td>
</tr>
<tr>
<td>06-13</td>
<td>Class</td>
<td>mathood (cook food)</td>
<td>1</td>
<td>2 minutes</td>
<td>cooking. (fun)</td>
</tr>
<tr>
<td>06-13</td>
<td>Home</td>
<td>science</td>
<td>1</td>
<td>20 minutes</td>
<td>normal (a little hard to read)</td>
</tr>
</tbody>
</table>

* Verbatim typed copy

Consistent with Thea’s self-descriptions, her mother expressed concerns that her daughter did not seem to read very much at home. However, her strategy was to encourage Thea to read whenever possible. In fact, sometimes when Thea asked her parents and siblings to explain things about specific segments on television programs they insisted that she try to read the closed-captions herself. As Thea explained:

If I read the closed-captions; then I miss what’s happened in the picture.

I’m looking back and forth to two different places. It’s a hard problem.....

Most times, I miss the closed-captions. Sometimes I ask my family what they said? They say, “Come on, you can read the closed-captions.” But, I can’t do both, my eyes are moving back and forth, back and forth, back
and forth when I watch the news I miss the captions. (Int. 3, 290-291; 294-297)

These comments reflect Thea’s frustrations as she tried to read the closed captioning. Consistent with Thea’s experience, when I taught in a literacy program for Deaf adults some students found the captions so frustrating that they chose to ignore them. In fact, some blocked them out with a piece of paper taped to the bottom of the TV screen.

At home, both participants reported having access to various reading materials including print media such as magazines, newspapers, mail, books, computer based text, e-mail, closed-captioned television and videos, and TTY. For everyday communication with her hearing family and friends, Thea preferred to read written and faxed messages more than TTY phone conversations. She admitted having little experience using TTYs because these devices were not widely available in her native country. She preferred to send Arabic script messages back and forth to her family and deaf friends via a facsimile machine. Once she moved to Canada, TTYs were a novelty that she found awkward to use. Here she complained that the speed of the real-time TTY text was too difficult to read especially if the other party typed fast and she used the telephone message relay center operators:

...Please understand at TTY is really new for me because in my country we used FAX-FS because the writing system is Arabic and it doesn’t make sense to use a TTY....When I moved and arrived to Canada and saw a TTY with the blue letters moving along the screen, it was strange. Kind of awkward at first, but I gradually got more used to it. I use one I borrowed from the school to contact my mom because I find going through the MRC
(Message Relay Centre) so-so, and not so good. Before that, I remember using a TTY and going through the MRC operator to contact my mom. It felt weird, reading the blue letters speeding across the screen. It’s taking me awhile to get used to it. (Int. 3, 249-255)

Well reading TTY is fine, but if the other person is a fast typist—wow! The message flashes back to me and I feel pressure and it is frustrating. I get angry trying to read as the sentences roll quickly along the screen. I have to say excuse me, say that again. It’s just awkward; I’m just not used to reading it so quickly. It’s [TTY] fine for communication and interacting with people out in the world….if it’s rolling by so fast well, I’m trying to read it quickly and think about it. I haven’t yet got it and I’m trying to figure it out and get the picture of what they said before I get back to them and answer. (Int. 3, 258-261; 268-270)

As a recent TTY and Message Relay Centre user, Thea felt pressured to read and respond within a reasonable time.

In contrast, Rhys was quite comfortable using TTYs for telephone contact. His opinions about his TTY skills were validated when I observed Rhys as he used a TTY to contact his hearing brother at home (Int. 2, 4-5). He had no difficulty reading the text as it streamed across the one-lined screen: Yes, I have a TTY at home. [My TTY] No printer…No, it’s not too fast to read. It’s fine. No problem (Int. 1, 64-69). On a TTY each typist’s conversational turns are distinguished by upper case or lower case text depending on who initiated the call. If the TTY has a printer, text is printed on a 5 centimeter wide roll of thermal paper. Sometimes deaf people prefer to have TTYs with
printers so they can refer to the text message once it has vanished from the screen. This handy feature saves time as it reduces the need for repetition of phone numbers, addresses, appointment times and other detailed information.

In summary Rhys and Thea discussed reading at home and their comments revealed different patterns. Rhys read for pleasure for extended times including reading library books until he fell asleep. In contrast, Thea read sporadically for very short stints but attempted reading for homework more than pleasure. Both used reading to access technologies used by Deaf persons such as TTY for telephone use and closed captioning for TV viewing. Thea’s multicultural background added another dimension to her learning of English. She may have avoided reading because of her relative discomfort with English since she was a recent new Canadian and English is not her native language. However, on another level, many members of the Deaf community argue that English is not their native language; but instead ASL is their natural, native language.

The Community. There were only a few observations and self-reports of reading episodes outside home and school settings. At the same time, Rhys’s and Thea’s Reading teacher argued that reading environmental print constitutes one aspect of deaf students’ limited reading experiences outside school. Consistent with her suggestion, while out in the community, one of the factors Rhys credited for helping him read was to “read the signs when he’s driving in a car” (Int. 4, 558-561). Likewise, Thea also mentioned reading signage:

When I’m out and I see a sign, more than one word, like - word, word, word...I know all the words and know what it is talking about. I can find information. I understand, it’s fine, it’s easy. (Int. 1, 481-485)
A signing deaf individual is in the minority in most environments outside of Schools for the Deaf. Deaf signers must rely on written communication when others do not use sign language and interpreters are not present. But, in the observations of reading episodes in the community, it was clear that Rhys worked part-time in an environment where communication was easier because his hearing supervisor was a fluent signer and his co-workers were all deaf. The deaf cohort in the work site knew each other and the ease of communication created a relaxed workplace atmosphere. Just before the start of the shift, staff sat around a large meeting table and chatted in ASL or read newspapers and magazines until everyone arrived and work tasks were assigned. In contrast, during leisure time with his hearing friends, Rhys said he communicated by using gestures or written notes without difficulty. Sometimes when his hearing brother was part of the same group, his brother used his sign language skills and helped relay information back and forth between Rhys and others.

Thea did not have a job and other than school she reported that "most of the time, I'm just home alone with my family" (Int. 1, 78-79). Two community observations happened by coincidence when a local cinema played a foreign movie that was filmed and produced in Thea's homeland. After I saw the film, I thought it might be of interest for Thea. The next time we met at school, I gave her a newspaper advertisement and movie review and let her decide if she wanted to see it. She was keen and willing to attend the next showing, and I attended with her. Since it had English subtitles, this outing doubled as a community observation that involved reading. For a change, Thea enjoyed two advantages as a native speaker of this foreign language. First, she could understand the dialogue by either lipreading or reading the English subtitles. Second, she
could fluently read all the Arabic signage and credits. Also throughout the movie, Thea was pleased to act as a cultural mediator as she told me about various cultural practices and translated the meanings of different signs, peoples’ names, places and jobs. Another interesting aside was that the movie’s central character was an eight-year old boy who attended a School for the Blind. In further discussions of this movie, I gained more understanding of her previous schooling experiences at a School for the Deaf in her homeland. For example, in the classroom scenes, Thea recognized certain textbooks because all schools used the same materials. She also described how her English dictation classes were similar to the classroom scenes in the movie.

After the movie, Thea admitted that she did not understand 100% of the English subtitles but got enough to follow the story line. She thought the movie was easy to understand even if there was little action, but mentioned that the visual back-up helped (CO-M, 44-46; 92-96). She repeatedly said how much she enjoyed the movie and was proud of how the beautiful scenery portrayed her homeland. In further discussion about watching this and other subtitled movies in theatres, Thea described how she decided where she should focus her attention:

Movies on TV are alright, no problem, easy. But, like in a big theatre, or audience and I’m trying to read, the priority is the closed-captions. First I read the captions, then in between, if I’m alright, I’ve not missed anything I look up at the picture. But, if I’m behind, I focus on the closed-captions first (PR-2, 78-81).

At movies, Thea made it a priority to read the captions along the bottom of the screen. She also thought that the large screen format in theatres enabled her to focus on the
captions and either look directly at the picture or use her peripheral vision to follow the scenes.

After we saw the foreign film together, Thea wanted to see if a nearby bookstore had a copy of a book\textsuperscript{13} that she had borrowed and started reading the previous week. Once inside she found the extensive magazine selection impressive, but because of limited time, she only wanted to focus on getting her book. On a computer terminal she typed in her request and was amazed that the title appeared with a picture of the front cover (CO-1, 58-59). Indeed, she thought the visual image was a perfect way for her to know it was indeed the correct book. This successful outcome spurred her interest to find other books with deaf characters and materials on deafness. However, as she experimented with various search commands, the number of titles overwhelmed her. Next, we went to the information desk, where I interpreted the dialogue between Thea and the clerk. Returning to the computer terminal, she read the commands and after a few tries she learned how to input information with the precise spacing requirements to complete her order. It seemed that this positive experience of reading and navigating her way through this store was a great boost to her confidence.

In summary, I collected only limited evidence pertaining to reading activity within community contexts such as social and workplace settings. But based on the data I did collect, I found that both Rhys and Thea commonly read signage. Rhys had an atypical workplace as everyone could sign ASL so there was no need to read and write notes for communication. However, in social situations Rhys was comfortable writing notes and using gestures or having his hearing brother relay information in sign language.

\textsuperscript{13} A Sudden Silence (Bunting, 1988)
Thea did not often venture outside of her home. But, in one excursion I set up, I did observe her reading movie captions. Also, inside a bookstore, Thea read to access a computer database search, but I interpreted her questions to a salesperson. If Thea had been on her own she may have had to rely on her own resources and communicate in writing.

_School._ This next section reports findings related to the contexts in which students read at school, and draws upon the majority of the data collected during this case study. Data summed here include observations of 33 classes over 46 hours, interviews with students and post-class discussions with teachers and staff. I begin with a description of the types of reading materials and a general overview of the different classes in Rhys’s and Thea’s common timetable. After introducing the school context more generally, I describe the participants’ reading in their various classes.

In general, the materials in Rhys’s and Thea’s school setting included written information on the board, handouts, workbook or worksheet activities, textbooks, computers, charts and posters and print-media. Participants also read electronic text using communication devices such as television monitors displaying daily announcements with text and a sign language interpreter, closed-captioners, and teletype writers for telephone use (TTYs).

Rhys and Thea took a mix of eight academic and elective courses using ASL as the language of instruction (see Table 5). During this study, they shared four of the same classes in the more academic grade 9-10 grouping with only one other deaf student. Various experienced hearing teachers of the deaf taught this same trio of students. Courses in their common timetable included English Skills, Reading, Math and
Introduction to Computer Applications. The English Skills course focused on developing English grammar and writing skills. In contrast, the Reading course focused on developing reading comprehension through text, plus ASL summaries of text and written assignments. To complete his course requirements, Rhys took Social Studies and Science within the School for the Deaf, and PE and Home Economics with hearing students. Similarly, Thea was enrolled in Science and Career and Personal Planning with a deaf cohort, and was integrated for Visual Arts and International Foods.

Science was the only academic subject where the participants’ grade 9-10 cohort split into different grades with the same teacher. These small, 2-student science classes are typical of the class sizes within the School for the Deaf. Thea expressed her frustrations with having such a small class and the lost opportunity to complete science labs:

Understand in hearing classes the teacher is more relaxed because the students do it themselves, they can help each other. Perfect. But our classes few students we are not allowed to do it. We watch the teacher do the lab...(PR5, 161-164).

Despite Thea’s comment, throughout my class observations it seemed that the tiny class size never deterred her Science teacher’s instructional style. Throughout each 80-minute class, his highly animated presentation and varied tasks maintained students’ attention. Likewise, both English teachers also maintained a high-energy output throughout their classes. Within this climate of mutual respect and humor, students were engaged learners who freely participated in all aspects of these classes including the lecture, discussion and question-answer sequences. Clearly, the pattern of consistent student attendance seemed
to reflect students’ interest in these classes. Rhys’s school attendance pattern appeared to be linked to teacher attitude. This conclusion comes from reviewing the participants’ voluntary candid opinions about different teachers and classes as they discussed school reading experiences.

The Instructional Context and Nature of Support

This next section examines the instructional contexts and nature of support at the School for the Deaf and its role in shaping the participants’ literacy experiences and perspectives on reading. Generally, reading and writing activities were part of each class but they remained a secondary focus. The exception was that a more direct emphasis on reading and writing was promoted in the two English classes, Reading and English Skills. All teachers were conscious of their students’ needs and the many English language difficulties they faced. Consequently, teachers used various techniques as scaffolds to support student learning and participation. These approaches prepared students for some degree of independent reading and writing. In each of the classes I observed, the nature of teacher support was primarily procedural. Most of the teachers’ time was spent on direct instruction and giving directions with minimal time used for the distribution of materials. Only the English teachers used methods that offered instrumental support to students to develop metacognition, strategic action and more independence for English literacy.

At the School for the Deaf, the overall goal was to provide an accessible learning and communication environment for deaf students. The use of ASL as the language of instruction was the primary means of providing access to information. For students who took regular education classes and electives outside of the Deaf program, a sign language
interpreter interpreted for all parties including the teacher and both deaf and hearing students. In addition to interpreting everything that was spoken in the class, when the deaf student signed the interpreter translated the ASL to English and voiced for the student. Access to English text was supported in many different ways across the curriculum. The following instructional techniques reflected principles of bilingual-bicultural education.

_Science._ One of the most common practices observed in the participant’s classes was the use of code-switching back and forth between the two languages: English text and ASL. For example, the Science teacher used an overhead projector for lecture notes that were written using English vocabulary following ASL grammatical structure. Liberal use of headings, colour-coding and diagrams enhanced the visual presentation and details about various topics including human body systems and the molecular structure of atoms and compounds. These techniques clearly established a topic before elaborating on each point and thus reflected the explicit nature of ASL. After the lecture, students received copies of the notes with the assignment to read, to highlight areas as presented, and to colour diagrams.

Often in-class science quizzes and tests were given “in-the-air” in ASL as a means to bridge understanding of English text. The teacher provided a print copy of the exam along with a live ASL interpretation of each question and possible answers if it was a multiple-choice format. If a visual barrier was not available in the classroom, each student completed short-answer questions in turn to avoid the temptation of copying and other benefits of being in each others sight line. Expectations for response formats varied depending on the individual. Students had the option to answer in ASL or written.
English in brief point-form or sentences. If needed, the teacher translated the English to ASL.

**Reading.** For many assignments in the Reading class, students presented their work in ASL in front of the class. These were videotaped as an alternative to submitting the entire work in writing. However, as part of video-taped assignments, students were expected to write brief point-form notes in English to help structure their responses. Alternate response formats enabled students to focus on presenting their ideas in ASL rather than struggling to produce written English. This teacher felt that some students, particularly Rhys, tended to be paranoid about writing anything in English (EngReadPD1). To bridge this challenge she followed the principals of the Language Experience Approach and asked the students to express their ideas in ASL as she recorded their thoughts on paper. The feedback process consisted of a series of animated, joint student and teacher editing exercises to clarify the students’ meaning. Many examples of English phrasing and word choices were discussed along with clarification of specific English and sign language vocabulary. Throughout this dialogue students chose the terms that matched their intended meaning while expanding their understanding of English vocabulary and structure.

Another example of bilingual use of English and ASL was the way students prepared for a regional communication contest for deaf and hard of hearing youth. Participants followed a multi-step process as they developed their sign language presentations. To begin they wrote notes in English, signed to themselves in ASL, re-checked their English notes and added any missing points on a separate page. The draft cycle included repeated practice, joint editing, videotape analysis, and peer feedback until
the student was satisfied with the outcome. As the assignment evolved, both students used their written point-form notes as cues to expand their ideas in ASL in preparation for their final presentation. Although students expressed themselves in ASL the expectations for organization and level of detail were similar to that of a written paragraph or essay (see Appendix F for the final co-written form of their presentations).

During a novel study, the Reading teacher gave ASL summaries of the text as a way to highlight information before students read specific sections. In a typical sequence of activities the teacher introduced the scenario and provided background information. A group discussion based on clarifying student questions followed. Next, the open novel was set-up on a music stand and the teacher read-aloud in ASL. Once she was confident that the students had a framework to understand this reading passage she gave them a chance to read independently. Further discussion often followed based on specific teacher directed questions and student questions or comments before the whole cycle repeated.

To support reading comprehension the Reading teacher gave direct instruction on three basic questioning techniques that are successively more difficult. She classified these question types as "on the line; between the line; and beyond the line." This example of direct instruction included both procedural and instrumental support to students by helping to develop inference abilities and metacognitive skills for overall reading comprehension and independence for academic reading. Throughout the course students practiced defining, creating and answering the different types of questions. In discussion with students they could comfortably define and give examples of the various question types. For example, in the excerpt below, Thea explained the difference
between the three question types with reference to the novel she was reading in class:

On the line, means book read information have there. Read down the page. Then for example, I can make up a question. The boy was tired because it says the information is right there in the book, that’s on the line.

Between the line means for example (pauses – grabs and holds biceps of her arm) sore arm. Read the page and go back several pages and there is something about blood. So there is this point and that point at different places in the book and you make the connection. You flip the pages back some more and understand there is a gunshot wound in the arm. That’s the connection to the injured arm and an example of between the line.

Beyond the line means I read, my brain itself thinks and makes a question. For example, let me think (pauses) on the line means you see it there, it’s obvious. Two, between the line, connects two different points in the story. Three, beyond the line with the brain itself, it has to think. (Int. 6, 7-30)

*English Skills.* The English Skills class focused on developing written English skills through direct instruction on various aspects of English grammar. Teacher support was primarily procedural beginning with returning assignments, introducing the day’s topic and distributing materials. However class content was learner driven as students’ questions and comments steered the topics for impromptu instruction. It appeared that students lacked confidence and seemed to need the security of constant input from the
teacher. In particular, Thea often sought his advice as she worked through each grammar question. As students completed worksheets or assignments he immediately marked their work and gave feedback in ASL. The flexible class structure allowed students the option to work independently or discuss and compare answers with their peers. Other times they could choose to participate in an instructional session with the teacher or join another tutorial with one of their peers. Other interactive activities included the reciprocal editing process between the teacher and student, peer-editing, and peer-marking.

A number of other visual techniques helped clarify meaning. Often both student and teacher examples were written on the board. Then students were directed to examine their sentences and underline subjects and verbs with single and double lines. This teacher argued that this initial recognition task helped develop students' editing skills. It was his contention that students can build knowledge of English structure from this foundation and then for example, prepositional phrases and other grammatical features can be identified. Another visual tool used in class were teacher-made diagrams incorporating English text and ASL time markers to illustrate verb tenses. Often the teacher used drama and acted out the student's written sentence to demonstrate the meaning of their message. As the student watched these dramatizations, he or she determined if it matched what they meant to communicate. In subsequent discussions with the teacher they clarified their intended meaning and jointly edited their writing.

Math. The step-by-step instructional sequence in Math classes also clearly demonstrated code switching between written English and ASL. Again, the nature of teacher support was procedural and involved direct instruction, giving directions and distributing materials. At the beginning of each Math class students often copied notes
from the board on congruent triangles or other geometry topics of the day because it was impossible to copy notes and watch ASL simultaneously. After a while the teacher explained the terms or theorems in ASL and added colour to enhance her diagrams and points. New terms were explained explicitly tying the print to meaning through chaining (Padden & Hanson, 2000).

As an example of a chaining sequence, the math teacher made a direct reference to the written word, 'congruent,' fingerspelled it, and gave a definition in ASL to correspond with the written notes: “Exactly equal. Equal in size and shape.” Next, she drew pairs of large congruent triangles in the air. An expanded definition was presented in ASL: “CONGRUENT – equal sides and equal angles.” More written notes on the board included: Congruent Triangles: The angles of sides of one Δ triangle equals the angles of sides of another Δ triangle. Under the heading Δ ABC ≅ Δ FED she drew an example on the board. The new symbol ≅ is in red. A direct reference was made to the symbol ≅. This means CONGRUENT (fingerspells). Following mathematical conventions, she added a series of one, two or three diagonal marks as she checked and noted the corresponding equivalency of each side and angle of the triangles in turn. After each instructional sequence students had time to copy any additional notes.

*Computer Applications.* Introduction to Computer Applications focused on individual project based assignments with minimal group instruction. Most often teacher support was procedural as she distributed materials, gave directions and some direct instruction to individual students. During class time students worked at their own computer and focused on their final year-end project of planning and designing a

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14 Δ This symbol was used in class to represent a triangle.
personal Web page with specific topics. They completed Internet searches and gathered ideas about the topics listed on different sites. In one class, the students were directed to check a specific Web site and summarize their observations of the main topics and subtopics on a worksheet. In a follow-up discussion the teacher hoped this exercise would illustrate by example and help students organize their own Web site ideas according to the main topic and sub-topics.

In summary, many of the instructional techniques and approaches used across the classes I observed focused on bridging the language differences between ASL and English (see Table 9). Providing an accessible learning and communication environment was the underlying goal of direct instruction. The teachers met the challenge of planning creative instructional and learning activities to accommodate the range of students' language and literacy skills at the School for the Deaf. With scaffolds to support students' learning and participation, classes were dynamic, and included shared learning experiences between teachers and students, and students to students. As expected reading and writing were the primary focus of the two English courses (Reading and English Skills) but the secondary focus of other classes.

The instructional context of the classes observed such as Science, Reading, English Skills, Math and Computer Applications appeared to have a major impact in shaping the students’ perspectives on reading. As various subject teachers planned curriculum and learning activities they were cognizant of the reading and writing abilities of students at the School for the Deaf. Each teacher implemented a number of creative accommodations to facilitate successful English literacy experiences for their students.
Table 9. Summary of Instructional Techniques Used Across Classes

<table>
<thead>
<tr>
<th>Instructional Techniques</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Instruction</strong></td>
<td></td>
</tr>
<tr>
<td>• Teacher-centered instruction</td>
<td>All</td>
</tr>
<tr>
<td>• Explicit explanations following ASL rules (i.e. Topic + Comment: establish topic, then add specifics)</td>
<td></td>
</tr>
<tr>
<td><strong>Instrumental Support</strong></td>
<td></td>
</tr>
<tr>
<td>• Promotes metacognition, intrinsic motivation, strategic action, independence and academic reading.</td>
<td>Reading + EngSkills</td>
</tr>
<tr>
<td>• i.e. Reading class topic: Inference Skills: 3 types of questions (on the line; between the line; beyond the line)</td>
<td></td>
</tr>
<tr>
<td><strong>Visual Enhancement of Presentation:</strong></td>
<td></td>
</tr>
<tr>
<td>• Use of charts and diagrams</td>
<td>Science EngSkills Math</td>
</tr>
<tr>
<td>• Colour coding / colour highlighting</td>
<td></td>
</tr>
<tr>
<td>• Underlining</td>
<td></td>
</tr>
<tr>
<td>• Diagram sentences</td>
<td></td>
</tr>
<tr>
<td>• Dramatizations</td>
<td></td>
</tr>
<tr>
<td><strong>Bridging the Language Differences Between ASL and English</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Alternate Response Formats:</strong></td>
<td></td>
</tr>
<tr>
<td>• Tests given “in-the-air” (i.e. tests and quizzes given in ASL; students respond in ASL)</td>
<td>Science Reading</td>
</tr>
<tr>
<td>• Video taped assignments (written work is kept to a minimum; students submit brief written notes but the bulk of the assignment is completed in ASL)</td>
<td></td>
</tr>
<tr>
<td><strong>ASL Summaries + Read-Aloud in ASL</strong></td>
<td>Reading</td>
</tr>
<tr>
<td>• Provide an ASL synopses of text.</td>
<td></td>
</tr>
<tr>
<td>• Give students a chance to read independently.</td>
<td></td>
</tr>
<tr>
<td>• Follow-up with a group discussion.</td>
<td></td>
</tr>
<tr>
<td>• Repeat the cycle.</td>
<td></td>
</tr>
<tr>
<td><strong>Chaining:</strong></td>
<td></td>
</tr>
<tr>
<td>• Repeated use of fingerspelling, ASL and print to tie meaning to specific words or terms.</td>
<td>Math Science</td>
</tr>
<tr>
<td><strong>Code-Switching:</strong></td>
<td></td>
</tr>
<tr>
<td>• English to ASL</td>
<td>All</td>
</tr>
<tr>
<td>• ASL to English</td>
<td></td>
</tr>
<tr>
<td>• Science notes written in ASL grammatical structure</td>
<td></td>
</tr>
<tr>
<td><strong>Language Experience Approach / Reciprocal Writing</strong></td>
<td>Reading + EngSkills</td>
</tr>
<tr>
<td>• Student expressed their ideas in ASL.</td>
<td></td>
</tr>
<tr>
<td>• Teacher translates ASL into written English.</td>
<td></td>
</tr>
</tbody>
</table>

* Techniques are listed in alphabetical order.

** Classes refer to where these practices were observed.
However, I found that the cumulative effect of these practices might have inadvertently reinforced the message to Deaf students that they can only read independently with limited understanding. For example, in these next excerpts, Thea summarized her thoughts about her attempts to read a novel and Science textbook independently:

Chapter 1 is about the escape. But the escape, it was more deep, very detailed descriptions, incredibly deep and detailed. *I didn’t understand all of it.*[^15] I mean the teacher explained it in ASL then I understood more.

First, when I read it slowly, well I thought it’s better than nothing; so-so understanding.

Then Chapter 2, she wasn’t there, but I have to read. I started to read chapter 2 and didn’t understand. But it talks about “hiding” (inserts quotes) – but more deep and I read it, but didn’t understand it. So, I had to give-up and just skim-read. So that’s what I did. I feel I understand some of it, I sort of remember. I’m trying to remember. I’ve never experienced reading it alone before. (Int. 3, 902-911)

Although she persevered, Thea admitted that it was the first time she had attempted to read the novel on her own only because her regular Reading teacher was absent.

Consequently, following this class, the Reading teacher explained that Thea had taken the initiative to request some extra time to discuss the second chapter before the next class meeting (EngReadPD-4). In this next example, Thea discussed how she handled reading her textbook to complete Science questions for homework:

In Science we have homework given to us, like #1, #2 that we give written

[^15]: *Underlined italicized words* denotes Thea’s added emphasis.
answers. If I read along and understand, then I think that’s OK. It’s easy
to answer in writing. But, if I don’t understand, then I have to hold it, and
tomorrow ask the teacher to explain. Then I see, I understand and write
my answer. (Int. 3, 923-926)

These excerpts illustrate Thea’s persistence to gain some meaning from the materials she
read. As reported, she conscientiously brought her questions to her teachers for
clarification the next day. All of the teachers at the School for the Deaf were readily
available to address students’ questions and reinforced this option as part of their
responsibilities as teachers. Perhaps in some ways teachers have created this student
dependency as part of the natural teaching–learning cycle.

The Social Context

This section examines how other people influence the reading context at school
and home, and it is the third and final research question involving the students’ literacy
contexts and tasks (see Figure 3). Based on extensive class observations, another
influence on the school reading context appears to be the impact of the positive
relationships among deaf students. Indeed the small class sizes did not appear to inhibit
the number of lively interactions between the students and teachers alike. Throughout
various classes deaf students willingly helped each other and engaged in much friendly
banter back and forth. Once Thea puzzled over the fact that both ‘night’ and ‘knight’
were indistinguishable in speech and speechreading. This sparked Rhys to voluntarily act
out the meanings of the two words (EngSkills-1, 144).

Perhaps one of the benefits of being together over the years is that students and
teachers become familiar with each other’s personalities and interests. In some respects,
each student has a reputation to uphold within an atmosphere of cooperative learning. For example, Rhys had established himself as the resident computer expert along with his strengths using ASL and English. Another student was the self-appointed historian and everyone deferred to him for information regarding the historical context for the class novel study. Lastly, Thea had earned the reputation as being a serious, inquisitive student who always recognized the efforts of her peers with praise and encouragement. Another indication of the friendly, egalitarian atmosphere at the School for the Deaf was that students referred to teachers and support staff by their first names which is a common practice in the Deaf community.
Figure 2. The Social Context: The Deaf Reader and Others

Literacy Contexts

Environments
- Home
  - Community
  - School

Instructional Contexts
- Materials
  - Tasks
  - Purposes

Social Contexts
- Deaf Reader
- and
- Others

Teaching
- Teachers
  (Hearing) 
  (Deaf)

Siblings
- (Hearing)

Parents
- (Hearing)

Peers
- (Hearing) 
  (Deaf)
During instructional time and subsequent interactions with students, teachers conveyed important information about the value of reading. Both English teachers played an influential role for students especially because they had the ASL skills to engage in detailed discussions with their deaf students. For example, Rhys’s and Thea’s teacher engaged the class in a lengthy discussion about everyday reading habits. She shared the fact that she reads every night to practice reading: As a couple I read, my husband reads. We read for practice (Eng. Read 9/10-5).

To pique the students’ interest, she began describing the furniture layout of her bedroom including the location of the bed, night tables and lamps on either side of the bed. Next, she explicitly role-played the bedroom banter between herself and her husband as they read for relaxation. Then she asked the class if they could guess one of her favourite activities. Everyone was surprised when she admitted that it was whenever anyone, especially her husband, read to her. Judging from the students’ reactions, I think they were fascinated to discover more details about her private life and equally astounded that a teacher, let alone a hearing person would need to practice reading.

Next, the discussion shifted to the students’ descriptions of when they read. After each response, the teacher commented or pointed out different technological advances and formats of reading materials that would continue to affect their lives. She continued to give examples of what she liked to read and how she used reading to access information such as the daily news. Together they discussed different Internet Web addresses, e-mail lists and bulletin boards that they found useful. She also told them that the School for the Deaf was considering purchasing software that had thousands of book titles. Next, they launched into a discussion of which format students would prefer to
read, either a computer book or a regular book.

Then she asked the class to be honest about how much of the novel\textsuperscript{16} they had read. After they responded, she described a similar high school experience with a novel assignment. She confessed that she only read the first few chapters, not the third, skipped the middle section, but read the end. In addition, she personally preferred the movie version because she found the author's details were so vivid and detailed that it made her sick, much like the writing style of the current class novel. Then she admitted she got an "A" for an essay but felt like a cheat because she had not read the whole book. In her final comment about the novel, she acknowledged the students' efforts: I don't blame you, for not wanting to read the whole novel, but I encourage you to read for practice (EngRead-5, 119-120). When Rhys saw her comment he was both relieved and ecstatic that their teacher was so sympathetic. In response, he excitedly, kept repeating: See that, she doesn't blame us! (EngRead-5, 121-122)

Despite this sympathetic tone of the Reading teacher's previous comment, the constant message was her encouragement "to read for practice." She often told students to think about reading as a skill to develop:

Think about reading as a skill development. If you focus on something, you take-off, improve. Suppose there is another area that you leave or ignore...What happens? You will not progress - No improvement period. So better to shift your attention to that area and you will see gradual increments of improvement. (EngRead-5, 123-125)

\textsuperscript{16} A Question of Loyalty (Greenwood, 1984).
Another ongoing message promoted in her Reading class was the analogy that “Reading is food for the brain” (EngRead-1, 10). Together, a number of positive messages about reading from a highly respected teacher helped reinforce the value of reading. Indeed, during subsequent interviews, both Rhys and Thea mentioned many of the same points raised in this class. I made a note in my data records whenever specific student comments appeared to be influenced by class discussions with this teacher. For example, Thea respected her Reading teacher and sought her suggestions for something she could read for practice during the summer. Later during one of her reading episodes, Thea explained why she was reading this book and in doing so, she reiterated all of her teacher’s cautionary points:

My [Reading] teacher gave me this book, [because] I decided I wanted to read a book this summer. I asked her what kind of book I could read, something easy, basic because in the summer I want to enjoy reading something. If advanced, straight level that means I require support. But, during the summer – who will help me? My family, or anyone else help me? – not. That means a lower level book, I can read and enjoy it, something funny, or cute, or sweet. I feel like a child with the big print, but I don’t mind. I don’t care...I’m reading and learning English and that’s important. Understand this book “Woods”¹⁷ is for private reading, when I am alone some place. I don’t want all eyes looking at me and bothering me – no. (RE-4, 7-13)

¹⁷ *Little House in the Big Woods* (Wilder, 1971)
Thea’s ultimate goal was to practice reading and continue to develop her skills. Thus, she accepted her teacher’s book and the rationale for reading it in private made good sense.

The English Skills teacher also promoted the value of reading in his class by taking advantage of the students’ interest in sports. He made a habit of bringing in the daily newspaper and various magazines as incentives for students to read after they finished their assignments. Throughout the year, the class also set up different sports pools to predict outcomes of major sporting events and series. For the sports’ enthusiasts in the class the newspapers became an important source of information and evidence.

Thus, predicting scoring details and results accurately became a great motivator for researching, reading and interpreting charts. However, all students strove to win and the ultimate personal victory was to “beat the teacher.”

In the same class, Rhys reported how much he enjoyed the challenge when this teacher presented reading materials and posed questions for his response:

I think he thinks I’m a good reader because he always gives me reading to explain the newspaper, etc. He always asks me if I don’t mind reading and explaining it. He asks if I understand it, if it is good, or bad? So I take it to read....He encourages me, and asks: Do you understand it, or not understand it? He tests my reading or whatever....I like that challenge.

(Int. 4, 205-213)

It seems that Rhys interpreted his teacher’s requests as an overall compliment and testimony to his reading skills. Overall, his comments reflected his pride in his own reading abilities and sense of accomplishment.
Lastly, attitudes and opinions of other teachers also shaped the expectations for reading in different classes. In my discussions with the Computer teacher, she expressed concerns that the students were not good researchers because of the combined effects of their individual language skills and the fact that they could not read well. Similarly, the science teacher understood the challenges deaf students faced when reading and thus only assigned textbook readings as homework after topics had been covered in depth. Rhys and Thea both discussed how helpful it was to recall their Science teacher's explanations when they encountered difficulties reading class materials:

When I don’t know vocabulary, big words...I ask my Science teacher what’s-up. Int.1, 124-125). For example, a word like TACHOMETER- FS (+ASL classifier-thing). I turn to the Science teacher as he explains what it is. So later, when I’m reading and I see that same word, I’ll think and remember what the teacher said and I can go on. (Int. 4, 618-621)

If I don’t understand, well...I have to remember the teacher’s explanation when I get home and read my science. I have to think back to the teacher’s ASL, remember it and get that mental picture, connect it to the reading and understand. (RE-5, 115-117)

The evidence presented so far shows that the positive relationships amongst deaf students and teachers influenced the reading context. It also appeared that teachers earned the respect of students and their ideals about reading became a strong influence on students. For example, one teacher believed that reading was part of skill development and analogous to food for the brain. Throughout subsequent interviews, evidence of the influence and acceptance of these beliefs rippled into the students’ comments about
Lastly, when I examined the situations in which Rhys and Thea read, it was clear that other than teachers, family members also influenced them by communicating the fact that reading was valued. Rhys and Thea both talked about the variety of reading materials available at their respective homes. These materials included different current magazines, newspapers, books and computer access. Rhys gained valuable knowledge about computers and Web page design from his younger hearing brother who told him to learn these skills because it was important for the future (Int 1, 50-51). Also, when Rhys had questions about things he was reading his parents would always answer his queries, explaining information in sign language. Likewise, sometimes Thea’s family would explain things she may have missed while watching television but they always encouraged her to read the closed-captions as well.

*Individual Knowledge, Beliefs and Skills about Reading*

In this next section, different aspects of the participants’ knowledge, beliefs and skills about reading are examined in turn. I begin with a discussion of the explicit reasons why Rhys and Thea said they read. Then I describe the participants’ personal reading interests, how they approach reading tasks, their metacognitive knowledge about reading, and their self-efficacy beliefs.

*Reasons for Reading*

To present findings related to students’ reasons or motivations to read or not to read, I present major themes using a metaphor of a delicately balanced scale on which their personal judgements acted to tip each side of the scale towards or away from reading (see Table 10). On one side of the scale are reasons for reading, on the other are
reasons not to read. Note that these motivations to read, or not to read are not all simply matched pairs of polar opposites. For example, students explained, “I will read if I am bored; but I will not read if it is boring.” Thus, Rhys and Thea were motivated to read if they were bored as both wanted to use their time productively; however, if the reading material became “boring” they opted to stop reading. Similarly the feeling of challenge was a motivator to read, but once materials were considered too challenging (i.e. “It’s over my head”) Rhys and Thea quit reading.

Table 10. Motivations to Read or Not to Read

<table>
<thead>
<tr>
<th>Reasons for Reading</th>
<th>Reasons for Not Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’m bored</td>
<td>It is boring</td>
</tr>
<tr>
<td>It is interesting</td>
<td>I don’t connect or can’t relate</td>
</tr>
<tr>
<td>If I understand</td>
<td>I don’t understand</td>
</tr>
<tr>
<td>It is a challenge</td>
<td>It is over my head</td>
</tr>
<tr>
<td>I like the topic</td>
<td>I dislike the topic</td>
</tr>
<tr>
<td>I have support</td>
<td>I have no support</td>
</tr>
<tr>
<td>Compliance (school task)</td>
<td></td>
</tr>
</tbody>
</table>

* Motivations to read are listed in random order.

Although in general these patterns were observed for both Rhys and Thea, some differences were apparent. For example, Thea, much more than Rhys, talked about
reading only if she had support. Thea did little independent reading because she depended on ASL support to clarify the meaning of text. In contrast, Rhys read independently but sought help from others if it was available. Thea's reluctance to read independently is a concern because one of the steps in becoming a better reader is to take the opportunity to practice reading. If readers will only read when there is support from a more experienced reader who has ASL skills then the number of opportunities to practice will be limited.

Personal Reading Interests

Building from these descriptions of the major reasons Rhys and Thea chose to read or not to read, in this section I discuss specifics as they pertain to the reading interests of each participant separately. However, in order to understand Rhys and Thea as individuals, a brief description of their social milieu and interests is required. First, Rhys maintained an active social life and he pursued sports and recreational activities with a wide network of both deaf and hearing friends. In his own words, “home is the place he eats and sleeps” (Int. 1, 178). He participated in school intramural and team sports as well as Deaf Youth Club activities jointly organized by the School for the Deaf and the local Deaf Association. Extremely active outside school, he often joined Deaf peers and staff for dormitory activities, visited Deaf friends who attended other schools and had a part-time job with a cohort of Deaf students. As the middle child, he admitted that he had little contact with his older hearing sister but shared many sports and recreational activities including computer time with his younger hearing brother. Rhys took pride in the fact that he is computer literate and technologically savvy. Together all
of the characteristics of his personality, lifestyle and interests had a major influence on his reasons for reading.

Likewise, Thea's background, social milieu and interests contributed to her individuality as a reader. Although Thea was highly motivated to improve her English skills, the fact that she had been in Canada for only two years was a major factor that affected her confidence with English literacy. Socially, Thea took an active leadership role in a number of school-sponsored clubs such as Students' Council and the Outdoors Club and various other events with her Deaf peers and hearing teacher sponsors. However outside school, her social life was limited to her hearing family because of the distance separating her home and those of her Deaf peers. Thea lived in a different suburban area, far from her Deaf peers and she admitted that it took too much effort and too many bus trips to socialize outside school. As the youngest in her family, she spent most of her free time either alone, or with her older hearing sisters and mother. Unlike Rhys, she found her lack of computer literacy and comfort with deaf technology such as TTYs and Closed-Captions frustrating. Together all of the characteristics of Thea's personality, lifestyle and interests influenced her reasons for reading.

For example, Thea expressed her frustration about her lack of computer skills. In the following excerpt, reference to "deep English" refers to English that is complex and beyond basic reading and writing (Int. 4, 409):

Back home people who are skilled in English use the Internet, but me, am I skilled in English? – No....Computers are deep English....Here in Canada I have a computer class but it doesn’t help me much. I don’t learn fast. That’s why I don’t use the Internet much. Sometimes I use the
computer once and awhile for e-mail. The point I want to make is...I love the computer. I think it's cool. I notice that people use the Internet a lot. Why not me? It's not fair! My family uses it, my brothers and sisters are skilled users. they try to teach me, but they don’t teach me WELL, because they don’t use sign language. (Int. 3, 407-414, 416-420)

Both Rhys and Thea had different motivations to read that appeared to reflect their personal interests. Rhys was highly motivated to read information that would feed his quest for knowledge about various sporting events or sports celebrities, especially hockey. For example, he clearly stated his belief that sports were the best part of reading: The best part about reading...I like sports, what's-up, who penalty, who scored, who traded, who retired...who the high scorers, who’s the best player, who’s the best goalie, that stuff...(Int. 4, 125-130). He also credited various text-based technologies for helping him learn to read: Yeah other things that helped me learn to read...the computer, computer messages. New technology is so interesting! Lists: e-mail, TV, books, letters (Int. 4, 562-564). Rhys’s keen interest in various new technological advances has played an important part in his comfort with technology and his motivations to read.

Similarly, Thea’s personal interests influenced her motivations to read. Her main interest was learning more about people and the language they used to communicate with each other. For example, some of her favourite television programs included central characters that were young adults such as “Blind Date and Friends.” This interest steered her choices for television viewing and motivated her to persist as she attempted to read the closed-captions as shown in the next pieces of evidence:

When I’m watching closed-captions I feel my eyes are not relaxed. But, if
I’m emotionally involved and stubbornly want to get through and know what they are talking about I’ll try my best, my eyes are following the captions, and I try IT-FS. But, normally, if the closed-captions are too fast, I almost give up. (RE-2, 39-42)

Further she discussed reading the class novel and mentioned that dialogue between characters is what she considered the best part of reading:

I think the best part about reading is reading dialogue. HE-FS said “blah, blah, blah...” then the other person answers. For example, he fell because he’s got a sore arm, he says. I feel like it’s like a real movie. But, if it’s a detailed description then I get bored. For example, if I read: ‘I walked over there and put my book on the table.’ That’s fun? No, not at all! But, if there is dialogue/talking… there’s something interesting I want to know about. (Int. 1, 444-452)

Thea was excited when she discovered a character in a novel was deaf:

Well first I read the back of the book and as I read along I saw the word DEAF-FS and was fascinated, and curious. So I thought to myself, “why not read this?” I finally found a book with a deaf character! I picked it up and started reading it from chapter one…I’m really interested in reading it because I’m deaf. My goal, I want to read it until the end, right to the last page…I want to read it all, not half of it, and miss the rest. I don’t want that…I feel like it’s a “special book for me.” (adds quotes). He and I can’t hear. I really enjoy it. (RE1, 88-90, 103, 110, 126-130, 199-200)

Thea was so intrigued by this book that she asked if she could borrow it from me.
As I described earlier, she later purchased her own copy so she could read it at her own leisurely pace. Thea found other features of this book appealing such as the pocket-book format, normal print size, and the relative thinness of the book (1 centimeter) which did not seem daunting (RE1, 195-196).

*Approaches to Reading Tasks*

This next section focuses on evidence to answer the research question examining how Rhys and Thea approached reading tasks. I begin by discussing Rhys's and Thea's preferences as they initially approached reading tasks. Then, I report strategies that Rhys and Thea used for building comprehension, decoding individual words, and monitoring and repairing comprehension. This evidence documents how Rhys and Thea were both active readers, engaged in interpreting text.

Further, throughout this section, I show how students' knowledge of both ASL and English influenced the strategies they used while reading. I draw upon observations of students' reading to illustrate how both languages contributed to the range of options for decoding words, building, and monitoring comprehension (i.e., ASL, fingerspelling, English vocabulary, speech and phonics). Building from my previous discussion on the interplay between ASL and English in Deaf students' reading, I present data focused on how Rhys and Thea used ASL, fingerspelling, English and speech while reading. Taken together, these data provide evidence of the kinds of tools Rhys and Thea used based on the different communication modes they have experienced and perhaps mastered within their school experiences.

*Initial Reading Strategies.* When Rhys and Thea read, one common strategy was a preference to read the text themselves before they asked for help. This was a strong
preference as they chose to read independently even when Steph, a Deaf adult, was available as a sign language interpreter for two questionnaire-based structured interviews.

In the excerpts below, Rhys and then Thea explained how they read the questions themselves first, and occasionally used the Deaf sign language interpreter. For example, Rhys explained:

In the interview with Steph, I preferred to read first, then the ASL if I needed it. First read it, read it first, I always DO that. I read it and do the signing myself. I always do that. Oh yeah, because when I read the questions they were easy. (Int. 4, 268-274, 281-284)

Rhys admitted that he had no difficulty reading the questionnaire items on his own. Indeed, during these interviews, his replies indicated that he had understood the nature of the questions. However with less confidence, Thea shared her perspectives about the same questionnaires:

I understand each individual word. I know what each word means but when I read the whole line and see the question mark at the end, well I’m trying to see the picture and I’m not sure. I’m in a dilemma and I don’t know what it means. I turn to Steph for the ASL. (Int. 3, 452-462)

Thea’s remarks suggest that she can decode and understand individual words with confidence, but has difficulty figuring out the collective meaning of the text, especially questions. Often the English grammatical structure of question forms can be confusing to deaf students. Consistent with Thea’s previous comments, the following quote reflects her lack of confidence as a reader and just how much she depends on a teacher introducing vocabulary in ASL as a crucial step before reading herself: When the teacher
Comprehension-Building Strategies. Some evidence captured comprehension building strategies when participants made sentence level translations from one language to another. For example, although Thea knew the individual words in a simple English sentence, she chose to read-aloud in ASL. Here, Thea translated English to ASL using an ASL structure (i.e., “topic (zoo) + comment,” with details about the action and time):

[We went to the zoo yesterday.] (Stieglitz: Gr. 3, Q5)

ZOO ZOO-FS go-there yesterday.

[ASL incorporation of directionality: go-there]

Similarly, Rhys showed how he translated from English to ASL as he read-aloud in ASL then repeated the same information in English:

[A few children hid under the table.] (Stieglitz: Gr. 2, Q3)

Table under have a few children – children hide under table.

Evidence suggested that Rhys and Thea also used a combination of English to build comprehension when reading materials beyond the sentence level. As they read, I observed many examples of effective reading strategies that illustrate Rhys’s and Thea’s use of ASL and specifically ASL incorporation when reading, (i.e., modifying verbs and nouns with adjectives and adverbs or directionality within one fluid sign). Data on students’ use of ASL demonstrated both their text comprehension and how they chunked information into meaningful units as an overall effective comprehension-building strategy.
Table 11 shows how Thea read a passage from an Informal Reading Inventory (Manzo et al., 1995). Thea's use of ASL reflected her tendency to translate and summarize the text in ASL. I initially thought that Thea omitted paragraph 2; yet, on closer examination, I discovered that she signed a very ASL-like translation of the information she understood:

Table 11. Thea's Read-Aloud

<table>
<thead>
<tr>
<th>Reading Passage</th>
<th>Thea's Read-Aloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>The desert is a place that gets very little rainfall. The ground is often sandy</td>
<td>Some animals, some people can live there without water without food. Still can</td>
</tr>
<tr>
<td>and rocky. When the sun beats down, the sand and rocks grow hot and dry. It is</td>
<td>live there, desperate-want-something (ASL sign). For example, snake (rattlesnake,</td>
</tr>
<tr>
<td>hard to imagine that a place like this is full of living things.</td>
<td>cobra) some animals for example, camels live there. Have not water and no nothing</td>
</tr>
<tr>
<td>All living things need food, weather, and some kind of shelter to survive. Some</td>
<td>but it doesn't matter. They live there. &quot;I don't know why.&quot;¹⁸</td>
</tr>
<tr>
<td>plants and animals are well suited to survive in the desert. They can live off</td>
<td></td>
</tr>
<tr>
<td>the food, water, and shelter that are there.</td>
<td></td>
</tr>
</tbody>
</table>

Participants also used fingerspelling as a comprehension strategy when reading. For example, one useful strategy was to fingerspell to hold a place in the text even if participants did not always understand the word or phrase in context. In many cases they admitted that they “didn’t know” the meaning of the word. Other options included fingerspelling following ASL conventions such as naming proper nouns, loan-signs¹⁹ (i.e., BUS, PAY, BACK, etc.) or if a specific sign for the term or concept was not part of ASL vocabulary. In the latter case, fingerspelling was followed by an ASL description.

¹⁸ Thea's comment appears to be a personal reflection and response to reading this segment of the passage.
¹⁹ Repetitively used short common verbs and nouns are fingerspelled in rapid, distinctive style.
Further evidence suggests that Rhys and Thea were bilingual as they used their knowledge of both English and ASL as a reading comprehension strategy. Throughout their reading episodes, there were many indications of students’ abilities to use oral and manual English. For example, both Rhys and Thea often had “English on the lips” when they mouthed words, or used speech and phonics as they read. Here Rhys used syllabication and phonetic word play when he signed: “kid + knee” for “kidney” (Sci.9-1, 32-34). Similarly, Thea discussed how she relied on syllabication of words and her oral language skills to study and memorize vocabulary:

...INTEREST-FS –“in” TER-FS – “rest” + ING –ending (inserts “quotes”). It depends on my thinking and how it goes together. If I can’t, then I have to go ahead and memorize...OK, sometimes, I DO-FS that, but sometimes I ask the teacher: “How do you say that?” It makes it easier for me to memorize. For example, I read along and wow, let me think, well I have three reasons: (1) I figure out, plan how to break up the word easily, just as I talked about recently the “interesting” example; (2) When I read and memorize, fingerspell, if I can’t break it apart, I memorize it, but wow...it depends on the word. I can’t memorize words that are hard to spell. (3) Strange spellings that I can’t hear. What do I do? I go ahead and ask the teacher how to make my voice say it. I practice saying it and feeling my throat here. I’m hoping that I’ll be able to make a connection from the back of my brain to the written word and that will help me. (Int. 3, 808-810; 816-826).
This excerpt listed the different strategies Thea used in order to help her memorize vocabulary. In general, despite their different heritage languages, the use of various English and ASL skills reflected Rhys and Thea’s education in oral communication and ASL – English bilingual settings.

Another common comprehension-building strategy was that both Rhys and Thea described “seeing pictures in my mind” as they read:

I read the English first, then I translate it into ASL so I can make and see the picture, and yes, yes I understand (pause) ASL (Rhys Int. 4, 287-288).

But sometimes when I’m reading and don’t understand something – if there’s no one to support me; I try to figure it out in ASL and see a picture in my mind and think about it, then go back and read…sort of like that (Thea Int. 3, 204-207).

This self-reported goal of reading is another internal metacognitive monitoring strategy inside the readers’ head. Evidence from each of the participants’ reading episodes specifically the read-aloud signed re-codings, or retellings of text support use of this metacognitive monitoring strategy. Specifically a deaf reader must “see pictures in their mind” in order to execute a translation of the English text into ASL. I pulled a few of the many examples from reading episodes that depicted clear ASL translations of sentences and passages from two Informal Reading Inventories (Stieglitz, 1997; and Manzo, et al., 1995). See Appendix N and O for more examples. In place of video clips, these descriptive notes of various ASL features attempt to capture the “pictures” in their minds:

[If there were enough towers and enough soldiers with loud voices, important news could be sent over a long distance.]
If there enough TOWERS-FS through and enough soldiers shout – shout-to tower; shout-to tower, shout-to tower important news could send over a LONG DISTANCE-FS + LD.

In this example of “seeing pictures in the mind,” as he read, Rhys used ASL classifiers and placement to set up rows of towers in space. He also used ASL role-shifts to depict each of the soldiers shouting messages from one tower to the next. Similarly, Thea’s example of reading and “seeing pictures in her mind” follows:

[Our earth is but a small part of the universe.]

Our earth...my earth here; different-different-different all here (-gestures in space) where-what?20 universe UNIVERSE-FS.

Here, Thea used ASL placement to set up the relationship in space and relative size of the earth and the universe. Rhys and Thea’s use of ASL clearly showed that they pictured what they were reading to better build comprehension. In summary, Rhys’s and Thea’s use of ASL clearly showed how they were using a variety of reading strategies, including translating between ASL and English, fingerspelling, and picturing information in their minds in order to build comprehension.

Strategies for Decoding Words. To examine how Rhys and Thea decoded individual words, I analyzed how they read the graded words in context from the Stieglitz Informal Reading Inventory (1997). In separate interviews, each had copies of the word lists with instructions to read the sentences with attention to the underlined target word. Without prompting they read each sentence to themselves before they “read-aloud in ASL” or signed what they read or understood in the sentence. As they read, I made note

20 Rhetorical question: it is a common ASL grammatical structure used to establish a topic.
of the errors they made (i.e., miscues to provide a window into these decoding strategies. See Appendix H and I for a full listing of their miscues.

As I began to analyze this miscue data, it was clear that Rhys and Thea used a variety of strategies for decoding individual words. For example, some common patterns emerged for both students. First, most of their miscues were substitutions for graphically similar words (Appendix J and K). For example:

[I do my best to treat my pets well.]

TREAT-FS “I don’t know, I think”... I do my best to “threat” my pet well

(Thea: Gr. 3, Q14).

These error patterns suggest that Rhys and Thea tend to decode text at the lexical level. Specifically when I examined the miscues in detail, Rhys had approximately 1/3 (11 out of 28) and Thea made 1/5 (7 out of 35) errors that were graphically similar miscues.

Second, the next largest number of miscues included semantic substitutions of contextually appropriate words or concepts (Appendix L). This suggests that these readers referred to a personal bank of English vocabulary and background knowledge combined with context clues such as text structure to draw appropriate meaning from the text. As a result, these types of semantic errors seem less serious. One example of a contextually appropriate miscue:

[The ball hit me so hard, it knocked me unconscious.]

The ball hit-me so hard it knocked-me confused; hurt me.

(Rhys: Gr. 6, Q14).

Third, the fewest number of miscues were substitutions for visually similar signs (Appendix M). For example, sign language errors included incorrect letter hand shapes,
hand positions, hand movements or hand locations that altered meaning in ASL. Perhaps only some of the errors substituting similar signs were genuine mistakes, others may have been unintentional as Rhys and Thea may have thought they were using the correct sign. For example:

[It is wise to eat only a minimum of candy.]

It is wise to-eat only large-limit of sweets—“candy.”

(Rhys: Gr. 6, Q6).

In summary, the data on students’ reading of individual words suggested that they did use context to support interpretation of individual words. However, the fact that the majority of miscues were graphically rather than semantically similar provides important evidence related to how the students approached identifying words in text. The high percentage of errors involving substitution of graphically similar words suggests that Rhys and Thea focused on the visual characteristics of, or patterns within words as a decoding strategy. Converging evidence from students’ beliefs that they could improve reading skills if they learned more words suggests that this focus on words may also reflect how these deaf readers were taught to read.

Strategies for Checking Comprehension. This section examines different reading comprehension and repairing strategies. Both Rhys and Thea described how they used self-questioning to check what they understood as they read, and how they varied their reading rate and used look-back, re-reading or reading ahead as the main fix-it strategies. Also Rhys and Thea often asked their teachers to explain information until it was understood. As Rhys explained:

When I don’t understand what I am reading, I go-back and check until I
understand. I go-back, check; go-back, check; read, go-back, check, read, go-back (EngRead-5, 175-177). Reading...pow 21 I got it! I try to understand by reading, and reading ahead. If I can’t figure it out, then I ask the teacher, ask my friends, or ask my parents. I show them it and ask, “what does this mean?” Or, I look it up in the dictionary myself, “Ah OK, I see,” and I read the explanation (Int. 4, 75-79).

Similarly Thea self-questioned to check her understanding, re-read parts of the text and also sought help by asking her teacher for explanations:

If I have questions to answer, first I start to read, I have to go back to what I’ve read before. But, understand, when I read I’m not usually clear. I have to think back to the pictures in my mind and remember the signed information from Science lecture. I have to think about it; plus, I have to make sure by reading again and going back. If the picture or concept I forget, I have to go back and read it again. It’s so-so. The word is so-so, if I’m not so sure what it means I’ll have to ask the teacher. If I read it and understand, then fine. (Int. 3, 928-935)

My observations of students while reading provided converging evidence of the readers’ active interactions with the text. For example, I observed students using their finger to guide their eyes on the page, and fingerspelling or signing to themselves. Their active reading was also reflected in their personal comments, questions to themselves or others, summaries and on occasion predictions or inferences. For example, Rhys added his commentary as he read the following paragraph within a passage in an Informal Reading Inventory (Manzo, et al., 1995):

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21 ASL sign description: punch the upright index finger.
[Greek soldiers sent message by turning their shields toward the sun. The flashes of reflected light could be seen several miles away. The enemy did not know what the flashes meant. **But other Greek soldiers understood what the message said.**]

Rhys: But Greek soldiers understand what the message say.

(Comments: “mmm interesting”)

In another example, in one cued-recall interview, Thea reflected on how she started reading a novel with a deaf character (A Sudden Silence):

I’m really interested, fascinated in reading this, but you understand when I started to read it, it was hard to read. It felt like it was quote, “boring.” But I had to have patience. I wanted to skip ahead but I know if I do that, later on, I’ll come to something I don’t understand and I would need to go back and read it. So, I kept on reading it until I know everything and perfect. I had confidence…. I hate starting, or reading in the beginning. I’m reading everything, so slowly and sometimes I’ll read it 2 or 3 times again until I understand more, and more of it. (RE1, 49-53; 55-57).

In these examples, Thea emphasized the importance of needing patience as she read fiction. But she also described how she monitored her comprehension and actively re-read until she understood. The next excerpt provides further evidence of Thea’s re-reading strategy:

Many times I’m just following along, maybe I don’t quite understand but, I keep reading, there’s maybe a vocabulary I don’t understand – I just ignore it, hold it, or skip it, and continue reading, or read it over again, and
over again, or skim over that part. Sometimes I see the English and change it to ASL, but ASL; I don’t always want to do that, I prefer to read the English myself and keep reading it until I can figure out the English. If I can’t understand the word (vocabulary), I use a dictionary. Sometimes an Heritage Language—English dictionary. (Int. 1, 163-169).

Other examples illustrate how Thea actively interacted with the text as she read. In subsequent cued-recall interviews, I asked her why she fingerspelled to herself and used her index finger to guide her reading. First, she explained about how she used fingerspelling to herself as a cue to draw upon her background knowledge to understand the text:

Ah right, I fingerspelled to myself because when I saw the capital letters UCLA-FS, I knew it meant it was an abbreviation or something. For example, USA, means the United States. I knew it connected to something and I was trying to think – each letter expanded, what word is it? (RE1, 149-153)

Then Thea explained the reasons behind her habit of using her finger on the page:

(Laughs)...Because (opens the book and fans the pages)...you see the print is small. If I don’t use my hands, I’ll lose my place. My eyes will be all over the page. It’s my thing, something I’ve done since I’ve grown up. I practice reading without my finger, but don’t improve. Sometimes I use my hands along the line, especially if the print is small. It’s more efficient (gestures tracking across a line) instead of jumping up and down all over. It’s just if the print is small...I’m not confident. If it’s large print, I don’t

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22 To maintain confidentiality the term “Heritage Language” refers to Thea’s native spoken language.
As another example of metacognitive monitoring, Rhys and Thea personally rated how well they each answered comprehension questions from an Informal Reading Inventory (Manzo et al., 1995). Using a 5-point scale rating card (1-Poorly; 2-Not Well; 3-Half- &-Half; 4-Well; and 5-Very Well), each assessed how well they thought they answered. Initially, Rhys chose “Number 4, I think [Well],” but just as I begin asking the next question he interjected, “But I understand everything, 5, very well.” Similarly, Thea chose Number 4 [Well] and explained her rationale, “it means when you asked me questions I can tell you the answers.”

In this quote, Rhys demonstrates another instance of metacognitive monitoring as he read:

[In later years, Roman soldiers built long rows of signal towers.] In later years, ROMAN-FS soldiers build long-path (-ASL) + voiced “long-rows” signal TOWERS-FS + (pauses puzzled expression); signs-tall-thing. (Manzo, 41-43)

His puzzled response, shows how he registered his dissatisfaction when things did not make sense.

In another example, Thea described what goes through her mind as she reads a novel (A Sudden Silence) for pleasure and encounters difficulties understanding vocabulary:

When I read some words I understand but others no. I have a gut reaction that sometimes that word is not really important and I can leave it for now. It’s not that I have to immediately go and figure out what that word
means. I can do it later, if I have a gut reaction that a word is really important. Sometimes I ignore a word, read on, and don’t have a clue. It might be really important. So later, I’ll need to figure it out. Sometimes I’m reading and I’ll come to a word, or a big word that I don’t know. Sorry, it’s sad, but I’ll skip it and jump ahead and continue reading.

(RE1, 177-185)

After reading parts of two novels during different reading episodes, Thea discussed her reactions. Her candid comments illustrated a keen awareness of her own thoughts in the active process of metacognitive monitoring:

Funny when I read the book, “Woods,” I’m understanding OK, and I see a word they’re talking about food. There’s a lot about food. When I read it… it’s like, “here they go again.” Then I start to daydream (laughs). I start to think about my life, private things, my personality, going travelling to different countries… I switch back to the book and if I don’t understand a word I have to think and figure it out. Ah – OK, then I read some more. If I don’t understand, I’m daydreaming… (laughs). It’s easier (than another novel: A Sudden Silence), and I read it faster, but I feel like its boring. My mind wanders. I go back and re-read because I’ve missed something. (RE-4, 90-91; 158-165; 170-173)

When I’m reading (A Sudden Silence), and it’s way over my head, I start daydreaming because I’m stuck. My thoughts are drifting more off the point here and there. Then I come back to the point and back to figuring it out. If I can’t figure it out and don’t understand anything, I
These excerpts illustrate how Thea recognized that her mind wandered when the reading materials were boring or too challenging.

In summary, Rhys and Thea both used various aspects of ASL and English when reading, and their use of both languages was apparent when building comprehension, decoding words, and monitoring and repairing comprehension. Both translated English into ASL and gave ASL summaries of the information they read. Converging evidence revealed their strengths as ASL and English bilinguals. For example, while reading, they fluently “chunked” information into meaningful units of ASL through incorporating descriptive information (i.e., adjectives, adverbs and directionality) into nouns and verbs. Often the choice for ASL vocabulary matched the meaning of the print. In addition, sometimes fingerspelling was used merely to hold a place in the text even when the reader did not understand the meaning of the word or phrase. As an important comprehension strategy, both Rhys and Thea also described trying to “see pictures in my mind” and showed their ability to “make mental pictures” as they translated the information they read into ASL. Overall, the participants were both clearly active readers using a variety of comprehension monitoring, building and repairing strategies while engaged in interpreting text.

**Metacognitive Understanding of Reading**

This section examines Rhys’s and Thea’s metacognitive understanding of reading. One way to explore this information was to ask how they personally remembered learning to read, or how each thought they would teach a younger, elementary aged Deaf student about reading. First, Rhys recalled how he focused on all the print details and

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learned to read:

First, I started and learned the alphabet: A, B, C, D, E, F, G, etc. Then I started reading kid books with one sentence and one large picture here at the top or middle of the page. You turn the pages and carefully look, or read, notice all the details. You look at the sentence at the bottom of the page and add sign language with the print. And the last step is that the sentences gradually become smaller. You know the print, shrinks to this size (demonstration). (Int. 4, 514-521)

In the above example, Rhys described a “bottom-up” approach to reading with attention on individual letters and other details on the page. However, when he described how he would teach a younger deaf reader about reading he emphasized different comprehension monitoring strategies (i.e., direct questions, summarizing the text, turn-taking and re-reading passages together) that communicated the idea that the purpose of reading was understanding:

Let’s say a Grade 2 student... what would I do, well...Open the book, and point to the print, and sign the story ASL. Pat him or her on the head....Point to the page or line and ask: “Do you understand?” If not, sign it in ASL, check his or her understanding by going back and asking about different parts. Give them praise. Turn the page and say OK, now it’s my turn. I’d sign more of the story in ASL, then go back to him or her: “Your turn” and continue pointing out lines to see if they understand or not. So, that’s it – excellent! (Int. 4, 531-538)

Likewise, as Thea described how she would teach a young Deaf student she started with
the alphabet but also emphasized building a foundation and connection between letters
and fingerspelling:

Start by showing pictures, then simple, short sentences....First in
Kindergarten, start with teaching the alphabet “A, B, C....” Teach them
the signs. Copy the letters in writing. Then at home, reading would be
easier to understand. They would understand the ABCs then the letters
would connect to words and the words would connect to pictures. Mom
could sign ASL and it would be clear. (Int. 3, 1013-1021)

In the next excerpt she discussed how she would approach introducing simple stories and
detailed how ASL should be used to captivate a young child’s interest:

I would start with simple stories. I want to start with ASL, make sure
there was lots of facial expression and make it cool. Influence them, so it
would be nice, enjoyable, make it interesting so they want to read more.
Don’t do straight reading, real reading, that’s not the way to do it. First,
it’s better to present information in ASL. Show them that reading is
enjoyable, then they will pick it up fast themselves, and will take off. (Int.
3, 980-986)

Thea’s comments about not “doing straight reading” referred to sign re-coding to match
the text. Further her reference to “real reading” meant a more sophisticated style of
reading beyond a primary student’s needs or abilities.

In the next examples, Rhys and Thea discussed thoughts about how to improve
their reading skills. For example, Rhys listed a number of suggestions linked to building
and understanding vocabulary as one of the main practices to follow in order to become a
better reader:

I must remember all words. When new words pop-up, I’ve got to study them, learn them, understand them, and remember them. As words come up and I don’t understand, I could ask the teacher or use the dictionary. Try to remember from when I asked the teacher and make progress from there…Maybe I could look at the pictures, I don’t know what else to do. (Int. 4, 594-596, 600-602)

I have no idea how the brain learns so I’m not sure what would help me remember words. Maybe read along a page (mimes reading using his index finger as a guide) and remember, remember, remember. As I’m reading along, if a problem shows up and I don’t understand, then I get the teacher’s attention and ask what it means…(Int. 4, 610-614).

Similarly, Thea described a preoccupation on vocabulary as she recalled how she learned about reading English when she began schooling in Canada about 2 years ago:

When I first moved to Canada, I didn’t know anything about school reading and I was in a real panic, my heart was racing. What did I do? I asked the teachers tons of questions: What do these words mean; this sentence; and every word; every new vocabulary word that I didn’t know, or didn’t understand the meaning of. I tried to read, read and read, and felt that I was moving forward and making huge improvement. That, in my opinion was how I learned by reading and reading. I moved ahead and became more fluent. (Int. 3, 960-966)
However, in the next excerpt, Thea sees the connection between reading and writing. In this dialogue, she emphasized the importance of reading for practice, and this comment appears to be influenced by class discussions in the Reading Skills classes:

To improve you have to read more and practice. Also writing, I forgot for example, write and talk about friends, the world, developing issues, your family, or whatever. For example, you know essay topics, do extensive writing. I think if you just focus on reading and reading improvement your writing skills don’t develop and they go downhill. You’ve got to keep attention on writing too. Attention on reading and writing skills should be balanced. Reading ability helps writing. Plus, you can do any kind of writing, talk about yourself, what you are doing at home. You don’t have to limit it to simple writing... start writing simple sentences, then later go in-depth and expand. (Int. 3, 1094-1107)

In summary, when discussing early literacy practices for a young deaf reader Rhys and Thea identified the importance of making the connection that the text, or alphabetic script matched ASL fingerspelling. As they imagined interactions with young deaf children, Rhys and Thea emphasized engaging the young reader with stories, animated interactions to check the youngster’s understanding and using the expressive qualities of ASL to its full advantage. Further, both participants knew that the purpose of reading is for understanding. However, in terms of suggestions for improving their own reading skills, both fixated on vocabulary learning as one of the keys to reading. Perhaps this reflects how Rhys and Thea have been taught to read. In addition, Thea saw the connection between reading and writing and how efforts on both areas would enhance
reading, especially reading for on-going practice. A subsequent section on Rhys’s and Thea’s opinions about the kinds of literacy skills needed for success in post-secondary studies also illustrates their realistic understanding of the goals of reading.

**Self-Efficacy Beliefs**

This section examines Thea’s and Rhys’s thoughts about their own reading abilities. To answer this research question I reviewed data from observations, interviews and conversations with students and their teachers. In general, evidence suggests that participants’ opinions of themselves as readers were shaped by how they responded to different reading activities, including writing tasks that involved reading, their perceptions of themselves in relation to others and the feedback they received from various teachers. I begin with Thea’s personal assessment of her own reading abilities:

> When I read, I understand specific words, I can understand simple words; it looks simple, but I can’t understand them in sentences. I feel like I am asking simple questions to the teachers for explanation; but when they answer me, it still doesn’t always make sense to me. I have this big struggle with the text to understand it. (EngRead-5, p. 4)

Thea’s beliefs about her own reading abilities stem from comparisons she made between herself and other Deaf and hearing students. First, Thea compared herself to someone she considered to be a good deaf reader:

> If I compare myself to a good deaf reader... well, they read fluently. I read again, read again, read again, read – skip, skip, skip, then maybe read again...skip, skip, skip, again read understand, read-skip, read again, back and forth like that. I feel I’m not smooth or fluent and they are more
fluent; I continue reading and turn the pages, but not too quickly, that’s
not me. I have to figure it out. (Int. 3, 493-502)

In another example, she compared herself to hearing peers within one of her integrated
classes (neglecting to mention that she was the only deaf student in this class): I read so
much slower, everyone else is finished and the last one is me...I have to stay over into
lunchtime, my God (Int. 3, 859-862).

In addition, Thea’s self-efficacy beliefs were based on how she imagined her
teachers would judge her. For example, she considered:

Well I think my Reading Teacher thinks I’m so-so because sometimes I
need to ask her about reading and what it says. She knows I don’t
understand, so that’s why she’d think my reading is so-so. Sometimes I
understand what I am reading, and sometimes I don’t. It’s not bad.
(Int. 3, 72-76)

My English Skills teacher thinks I’m a good reader because I
answer right to the point and everything is correct. (Int. 1, 533-534)

My Science teacher thinks I’m a lousy reader, because on exams,
questions and answers sometimes I answer off topic and I think he thinks
I’m a lousy reader. (Int. 1, 530-532)

In contrast, Rhys’s descriptions of his reading reflected a greater degree of self-
confidence:

Is reading hard or easy for me? Well, reading is “normal,” in between, for
me....I’m a regular normal reader. Reading it’s normal, in-between for
me. [sets-up spatial continuum in ASL] A good reader here; in-between,
or so-so; and a “sucks” reader. I’m in the middle, if I pick, that’s me.

(Int. 4, 70-72; 157-161)

In addition, Rhys derived more confidence when his English Skills teacher challenged him to explain different reading materials:

I think he thinks I’m a good reader because he always gives me reading to explain the newspaper, etc. He always asks me if I don’t mind reading and explaining it. He asks if I understand it, if it is good, or bad? So I take it to read....He encourages me, and asks: Do you understand it, or not understand it? He tests my reading or whatever....I like that challenge.

(Int. 4, 205-213)

His feelings of competence were also linked to the feedback from his Reading Teacher:

I guess so, my Reading teacher thinks I’m a good reader yes, yes because I can write ASL sentences. I can translate English sentences to ASL, she thinks I’m the best reader because I can understand the switch (-voices this) from ASL to English. I understand that. (Int. 4, 195-197)

Lastly, Rhys also defined his reading in relation to a “good” deaf reader, specifically Deaf Grade 12 student, Bailey (pseudonym). As he compared his own reading abilities to those of Bailey, Rhys linked her reading skills to her overall high ability:

Bailey is a good reader ....She’s a good reader. Oh yeah, she’s in Grade 12. She’s smarter than me....Because when I read and don’t understand Bailey helps me. She reads it, understands and explains it to me. That’s why. She understands better than me....Compared to her she beats me,
she’s so smart....She’s a good reader, a good writer, good at everything!

(Int. 4, 171; 320-325; 330; 335)

In participants’ descriptions of their own reading performance, an emergent theme relates to their comparison of their own abilities to those of a mythical hearing person. For example, Thea discussed her general beliefs about her own reading abilities in contrast to hearing people. Based on her beliefs about the thinking abilities of hearing people, Thea gave different reasons why reading is so difficult for the Deaf. From her perspective hearing people have superior skills and abilities because they can hear. These natural skills, combined with the ability to hear gives them advantages when they read. In short, she seemed to indicate that hearing people can read because they are hearing.

Throughout our discussions, Thea often compared the abilities of deaf and hearing people, describing the many challenges deaf people faced when they read (see Table 12). Thea’s comments about reading also reflect her beliefs that reading involves memorizing vocabulary and understanding information including background knowledge.

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24 good denotes Rhy’s added emphasis.
Table 12. Thea’s Beliefs about Deaf and Hearing Readers

<table>
<thead>
<tr>
<th>Hearing Readers</th>
<th>Deaf Readers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing people can hear, so reading is easier for them. (Int. 6, 141)</td>
<td>Deaf people have trouble reading because of not hearing. No hearing means paralyzed, not moving ahead, that you are behind, things go over your head. You don’t understand lots of information. (Int. 3, 532-535)</td>
</tr>
<tr>
<td>Hearing people can learn so fast, they can translate [information] and progress quickly because they can hear! Hearing supports reading and their ability to understand. (Int. 3, 544-546)</td>
<td>I memorize vocabulary. Why? Because if I read the vocabulary over, and over again, it’s easy to forget because I’m not a hearing person. It’s easier for a hearing person to hear speech and have it in the back of their mind. It helps and is much easier for them to memorize vocabulary. (Int. 3, 781-785)</td>
</tr>
<tr>
<td>Hearing students think quickly and almost automatically. They understand what a speaker is saying quickly. (Int. 3, 1054-1055)</td>
<td></td>
</tr>
<tr>
<td>Understand, that most, or all hearing people, what do they do? They read the question and look for the information, read it once and find it. It’s easy. (Int. 3, 850-852)</td>
<td>...But [for] me, it’s a struggle (Int. 3, 852).</td>
</tr>
<tr>
<td>[re: reading]...Deaf people require more active aggressiveness and need to try to work hard. Hearing people they don’t have to do that, <em>it’s not fair.</em>(^\text{25}) (Int. 6, 112-113)</td>
<td></td>
</tr>
</tbody>
</table>

Consistent with Thea’s beliefs, when I taught in a literacy program for Deaf adults these learners never imagined that hearing people would have difficulties reading and writing English. As a group, the Deaf accepted the myth that hearing people who had attended regular schools and earned a living could read. Thus, the Deaf students were

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\(^{25}\) Underlined italicized words denotes Thea’s added emphasis.
astounded to meet so many hearing adults who recognized they had difficulties reading and writing and made the commitment to attend an affiliated Adult Learning Program to improve their literacy skills.

*Self-Reflections on the Literacy Skills Needed after High School*

Rhys and Thea both offered opinions about the kinds of literacy skills that they need in post-secondary education and adult life. In their responses to interview questions, for example, they talked about what they planned to do after high school, in a time referred to in the Deaf world as “being out in the world.” Their comments consistently showed that both students perceived the importance of literacy to success in post-secondary education and to the kinds of careers they wished to pursue. In addition, both appeared to have realistic perceptions of the demands of reading tasks in post-secondary or vocational settings as defined by teachers or reading researchers. As they discussed the future, their various comments further elaborated their individual knowledge, beliefs and skills about reading.

For example, as one career, Rhys discussed becoming a dormitory counsellor at a School for the Deaf. He also expressed his desire to study at the Deaf Mecca, Gallaudet University. Since 1864, it has had the distinction of being the only liberal arts institution in the world established to serve the needs and interests of deaf students. Besides counselling, other career interests included engineering, mechanics and computers. However, to become a counsellor Rhys thought he needed to complete various courses and one priority was English writing skills:

Take-up studies to become a counsellor. Take courses to become an English writer, computer person, child development and how to teach,
communicate and interact with kids. That kind of thing... English writing, how to interact with kids and counselling. (Int. 4, 239-241; 248-252)

Further when asked to explain the kinds of reading skills he needed to study at Gallaudet, Rhys made the following predictions:

Book reading, tough challenging stuff (pauses) but I really do not know.... English literacy, reading and writing, oh yes. How to write English, how to write properly, connecting and flowing. That's it. (Int. 4, 253-255; 645-646)

In this example, Rhys specifically mentioned different aspects of literacy important to his success at Gallaudet. Previous sections in this chapter have reported evidence that reflects his confidence as a reader. Given his perspective, perhaps as he considered the demands of university, he recognized the additional challenge of expressing himself in written English.

Similarly, Thea admitted that she was still considering several different career interests:

I'm not decided what I’ll take-up, but I’m just getting a picture of what I like... Teacher, Psychiatrist, Graphic Designer or Graphic Artist. I’ve not yet researched these areas or careers. (Int. 1, 553-554; 560)

As Thea considered her future, she gave a detailed list of the literacy skills she felt are needed to reach her goals, beginning with the following:

Vocabulary knowledge needs to be high. Need to know various concepts and specialized vocabulary in many different areas. Writing skills, beautiful writer, to be able to express yourself and to be able to write
ESSAYS-FS well. The ability to read and understand questions and answer them correctly. That's a requirement, you can't be answering off topic and getting confused, wasting too much time. Reading, you've got to be able to read books really well, comprehend clearly, and read quickly. That's better than reading slowly. You need to read quickly. (Int. 1, 564-567)

Later as I summarized her answer, she interjected and took the opportunity to reiterate her points with further specifics:

I don’t mind telling you again. Reading should be fast, fluent, not slow. Read things quickly and understand the information. Written papers, ESSAYS-FS and questions on exams, answers need to be on topic and to the point. That means I understand what the question is about. If there is a question and I answer off topic that means I really didn’t understand the question correctly. (Int. 1, 574-581)

In summary, when discussing reading and post-secondary studies, both participants identified the importance of being able to read books. Rhys and Thea also seemed to have a realistic reflection of what a good reader and writer needs to do to meet the demands of post-secondary study. For example, to paraphrase their comments, a good reader has extensive vocabulary knowledge, reads quickly and is able to comprehend exam questions and challenging reading materials. Both Rhys and Thea made comments that confirmed their belief that there is a connection between reading and writing skills. In their opinion, good writers can express themselves in essay form, answer to the point and produce work that is connected and flowing.
Participants' Recommendations to Hearing Teachers

This final section examines the participants' recommendations to hearing teachers for developing deaf students' reading skills. When asked to provide suggestions for hearing teachers about how to support literacy development by deaf readers, Rhys's and Thea's responses fit into three broad areas: (1) sign language use; (2) course content and level of challenge; and (3) teacher interaction with deaf students. Most of these suggestions direct hearing teachers on how to use sign language for both classroom instruction and general communication with Deaf students.

Two recommendations focused on the importance of sign language and their suggestions for teachers on how to refine their expressive ASL skills. For example, before the question rolled off my hands Rhys interjected with the following highly animated response: You should learn sign language and sign quickly! (Int. 4, 569-573) In this context he referred to a group of hearing teachers and used the ASL plural form of the pronoun "you." Although his answer had a brief, directive quality, this text does not capture the intensity of his response.

When discussing ways for teachers to refine their expressive sign language skills, Thea explained the importance of using adequate facial expression, and then also focused on signing speed and giving in-depth information. In her opinion, using a slow signing style is like talking down to deaf students and pitying them as if they have limited understanding.

Do not sign flatly and monotone. Sign with lots of facial expression, animation and energy. That catches the deaf person's eyes, it pulls us in, gets us to focus. It is as if something is pushing the back of our heads to
look over here. So, it is important to give us information in sign. Do not sign slow and pity us. Give us all the information (Int. 3, 1060-1065).

Unfortunately, I never verified if she had indeed experienced similar situations to the one she describes. Aside from personal encounters, this comment may also stem from observing sign language communication between staff and students and the large number of deaf students with special needs at the School for the Deaf. In another recommendation for expressive sign language skills, Thea addressed the need for elaboration:

When you sign ASL, give lots of information, elaborate on the point in detail. Not just simple points and that's it... hearing students think quickly, and almost automatically. They understand what the speaker is saying quickly, and almost automatically. But, a deaf person needs to watch, is often puzzled. He has to think about what the speaker is talking about. They have to stop and ask questions. That's why, the point has to be explained in detail until it is clear. (Int. 3, 1045-1058)

Rhys offered similar advice in response to how a teacher should help a deaf student who was having trouble reading:

Suppose the teacher is hearing and they already know how to sign ASL, well they would use ASL. Explain\textsuperscript{26} what it means. Point to the word and explain in detail. Point to it again and explain more. That's it. (Int. 4, 435-440)

\textsuperscript{26} \textit{Explain} denotes Rhys's added emphasis.
Both students recommended that teachers needed to elaborate on the point and include explicit details. This advice seems to mirror the explicit nature of ASL communication that was evident in observations of Math, Science and Reading classes. One of the best examples of explicitness was the interaction between Thea and her Deaf teacher in her CAPP class (discussed previously).

Thea also provided advice for a hearing teacher who does not understand a deaf student’s sign language. For example, when asked what she might tell a new teacher who was supporting her reading, Thea responded:

Phew... that’s a good question. Please ASL slow, clear. If you see a deaf student and can’t understand, relax. We can meet one-to-one and sit down and explain things again, again, and over again. Let you know that we deaf students have a tendency to ask a lot of questions. We are not the same as hearing students. (Int. 3, 659-669)

I found it surprising that she assumed I meant the new teacher would be a hearing teacher. Like members of the Deaf community, Thea correctly assumes that many hearing people have difficulty understanding ASL. I also found that the above comment concerning teacher signing speed contradicted her previous advice that teachers should avoid signing “slowly and pitying deaf students.” However, the context of the above comment concerning “signing slow and clear” had a neutral tone unlike the emotionally charged tone of her comment linking slow signing speed to pitying deaf students.

Further, Thea suggested additional recommendations as to how she prefers to use ASL support when reading a novel:

If it is a new NOVEL-FS, first give a simple introduction; then let me
read. Give me the next part in ASL again, then let me read, then give me
the ASL...[cycle repeats].  (Int. 3, 672-678)

First, the teacher gives us information in ASL, first. Because if we
start reading – what²⁷ [happens], I don’t understand. It’s like we are
wading through mud. So if we watch the ASL, ah, then we understand,
before we start reading. Then myself, I go ahead and read, then watch the
teacher’s ASL some more.  (Int. 3, 875-879)

In these examples, Thea justified her reasons for sequential use of ASL interspersed
between time for students to read on their own. Her next comments offered more
opinions on how to use ASL to support reading novels:

For the NOVEL, I like looking at the ASL, but I do not mind reading and
focusing on the novel myself. I do not want the ASL only; that makes me
angry. I am not a kid. I do not like that... I like to read the novel myself
and have the ASL to check my understanding and go on reading too.

However, I do enjoy having the ASL support.  (Int. 3, 221-227)

Rhys gave a similar suggestion regarding his focus of attention as he reads a book. For
example, when asked if he prefers reading it himself first, or having the teacher give him
information in ASL he said:

Both. Suppose, if I read myself then, if I don’t get the idea and can’t
understand or see the picture in my mind; I turn to the teacher and ask if
they don’t mind signing in ASL, then I understand.  (Int. 4, 259-265)

²⁷ Thea asked a rhetorical question. It is a common ASL grammatical structure used to establish a topic.
Indeed these comments concur with my observations (8 classes) and accurately describe the sequence of how their hearing teacher of the deaf used ASL in her English Reading classes.

Both students felt that the work they were given should be challenging. For example, Thea strongly believed that teachers should:

Give us hard work. We can do it. We are smart of course. Do not give us a bit and only the surface information. Give us appropriate information, not so advanced that it is over our heads so we are pressured. Not really low stuff but somewhere in between, a normal level. (Int. 3, 1066-1069)

Rhys exclaimed, in a highly animated style that teachers should give students the opportunity to read and do challenging work; but he also wanted teachers to be friendly and encouraging:

You should encourage us. Give us a chance to read and give us challenging work. (Int. 4, 580-583)

[First] ASL. Be friendly to deaf students. Do not insult them....(ASL Role Shift: I’ll punch you!). Do not criticize...(ASL Role Shift: I’ll beat you up!). Ah, encourage teachers to understand. Do not fly-off-the-handle and scream, “Ah, we can’t do that!” Be patient. Calm down. Think positive. Encourage us to be successful. (Int. 4, 574-576; 584-587)

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28 Using ASL role shifts, the signer assumes the role of different subjects (people or other animate objects) with subtle shifts in positioning. These positions distinguish dialogue between more than one subject.
Likewise, when Thea stated that she needed to read and write more in order to become a good reader, her comments focused on the degree of challenge and the workbook materials used in the English-Skills class:

The red grammar book\textsuperscript{29} is simple. We don't learn a lot. Sometimes the teacher gives us words and we write sentences ourselves... We had to expand our sentences into paragraphs. So we write, the teacher helps us edit and make changes. Wow! I feel, deep down, I have learned so much more with this ESSAY-FS exercise. I feel wonderful. I prefer focusing on writing ESSAYS-FS, that really helps far more than the worksheets and questions from the red book. I look and read this and that, and can understand it. I think, what's the point of writing answers in the workbook? Writing ESSAYS-FS is more important. (Int. 3, 1013-1023)

Further Thea offered more advice to hearing teachers about course content to make reading a priority:

Also, I suggest that you teach us about NOVELS-FS. Read all the time, most of the time, and not be involved in drama, poetry or video [assignments]. That's enough. First, focus on reading \textit{that's very important - paramount}.\textsuperscript{30} That's key. I suggest the priority is to focus on reading English alone. Reading is for life. Classes should take the chance because school is free....It's better that we focus entirely on reading English for the full year, that's better. The best thing for us to do, is read books. It will help us so much. It's better than other things like projects,

\textsuperscript{29} Azar, (1996). Basic English Grammar (2$^{nd}$ ed.)

\textsuperscript{30} Underlined italicized words denotes Thea's added emphasis.
they are so meaningless. Reading *it is so important* (Int. 3, 1069-1080)

One final suggestion summarizes Rhys’s praise for hearing teachers. When asked “if he had any more comments or suggestions for hearing teachers to help deaf students learn to read,” Rhys paused for a moment and replied: Thank you...teach us everything. (Int. 4, 577-579)

In summary, Rhys and Thea offered many explicit suggestions of how hearing teachers should use sign language to facilitate a deaf student’s understanding and development of reading skills. Further, these recommendations also reflected their knowledge, beliefs and skills about reading. One consistent message was that both participants wanted the opportunity to read information on their own first. They also wanted more chances to read and emphasized that reading should become a higher priority over other course content and assignments in Reading classes. This last comment reflected a belief that effort spent reading helps one become a better reader. Another point they raised is the need for challenge while completing meaningful activities rather than so much emphasis on workbook grammar exercises. Thus, students’ reflections should remind teachers to clarify the purpose of activities and to consider use of eclectic approaches for literacy development. Teachers might consider incorporating the participants’ recommendations for sign language use, course content, degree of challenge, and teacher interaction with students.

*Chapter Summary*

This chapter reported results of case studies examining the reading experiences of two signing Deaf high school students and the different environments in which students

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31 Underlined italicized words denotes Thea’s added emphasis.
read. The chapter begins with descriptive profiles of Rhys and Thea to situate each individual within the contexts in which they lived, studied and socialized during the course of this case study. In reporting results, one section focused on the possible influences of the Deaf culture and context on the participants' reading experiences. Evidence revealed Rhys's and Thea's perceptions of how they used and valued reading within both Deaf and Hearing Worlds. Evidence also demonstrated the impact of the language differences between ASL and English on these students' reading. As developing bilinguals, both Rhys and Thea used their knowledge of both ASL and English as strategies for decoding words, as well as building and maintaining comprehension. Also as a recent new-Canadian, Thea used her fluency in her heritage language as another multilingual tool. A second section focused on literacy contexts in which students read, at home, community and school. Evidence showed how instructional contexts and nature of support for reading at the School for the Deaf played a central, positive role in shaping the participants' reading experiences (i.e., attitudes and beliefs about reading, practices employed during reading and self-efficacy beliefs). The third section described each participant's knowledge, beliefs and skills about reading. Here evidence detailed Rhys's and Thea's motivations for reading and how they approached reading tasks, detailing how they used ASL and English as decoding and comprehension-building and comprehension maintenance tools. In addition, Rhys's and Thea’s self-efficacy beliefs about themselves as readers surfaced as they reflected on how they handled various reading tasks, feedback from teachers, and their performance in relation to peers. Lastly, this report highlighted participants' realistic self-reflections on the literacy skills needed after high school and culminated with their recommendations to
hearing teachers for reading instruction.
CHAPTER V: DISCUSSION

The purpose of this case study was to explore how severe to profoundly Deaf readers who communicate with American Sign Language experience the reading process. In this study, I drew upon sociocultural theory and interactive models of reading to explore what individual Deaf readers brought to the environments in which they chose to read. Consistent with a sociocultural perspective, I recognized participants’ personal contexts and collected information to reveal aspects of how they as members of the Deaf community shared and viewed literacy practices. Thus, I examined how these Deaf readers used reading in their daily lives. This case study also explored what these Deaf readers understood about reading processes, what motivated them to read and how they preferred to approach reading tasks. I included detailed descriptions of the strategies they used for decoding, comprehension-building, and comprehension monitoring and repair. Another focus examined how participants’ comments and practices during reading episodes revealed their understanding of the reading process and self-efficacy beliefs about reading.

This study began with extensive observations and dialogue with two severe to profound, signing Deaf readers in order to understand their reading experiences. Data from observations, interviews and video recordings of Deaf readers during reading episodes and subsequent cued-recall interviews were used to examine how signing Deaf students read, viewed themselves as readers, as well as recognized and chose to use reading in their daily lives.

Over the 10 weeks of this study, I was able to establish a comfortable rapport with each participant. Both Rhys and Thea openly shared their thoughts and experiences
about reading in candid discussions throughout the study. Volunteer participation in the study by students, teachers and staff helped raise individuals’ consciousness about reading at this School for the Deaf. Thus, I believe this in-depth case study offers some insights about the perspectives of reading from these two case study participants.

In this chapter, I highlight key findings related to each of my research questions, and discuss how my findings parallel or contradict those from previous research. As previously mentioned, two overarching research questions guided this study:

• What are Deaf high school students’ reading experiences in the contexts of a School for the Deaf, Deaf community and Deaf culture existing within a hearing world?
• How do readers’ knowledge, beliefs, skills and motivations for reading play out in the context of being a signing Deaf high school student?

A series of specific research questions were linked to three different focal areas: (1) the Deaf culture and context; (2) literacy contexts and tasks; and (3) knowledge, beliefs and skills about reading (see Table 2). Generally findings within each area are discussed in turn, however when findings are relevant across sections (e.g. describing how participants’ approached reading including reading strategies) topics are discussed together to avoid repetition.

*The Deaf Culture and Context*

Two research questions framed my examination of the possible influences of the Deaf culture and context on participants’ reading experiences. The first of these questions was: How do these Deaf high school students use reading within the Deaf Culture, the Deaf world and the hearing world? I found that Rhys and Thea valued reading and felt it was useful for many purposes. These included reading for knowledge,
communication (combined with writing), development of English skills, future success in the workplace and as parents. I also found that reading and writing provided an important interface for my participants that enabled interactions with others both inside the Deaf world and outside in the larger hearing community. For example, one of the participants' major reasons for reading involved written communication with hearing people who do not know how to sign.

However, Rhys and Thea did not associate reading with Deaf or Hearing contexts. This finding may have arisen because neither Rhys nor Thea really functioned within a totally separate Deaf context, because, consistent with 95% of the deaf population (Mitchell & Karchmer, 2002), both have hearing families. Furthermore, Rhys actively socialized with both Deaf and Hearing friends. Another possible reason for this lack of association between reading and a particular context is that as deaf adolescents, Rhys and Thea were still developing an identity (Glickman, 1996). Research indicates that deaf people from hearing families must be socialized into the Deaf experience by peers or non-related adults at school age or later (Glickman, 1996). Nevertheless, contrary to the reports by Deaf adults in the literature (Rutherford, 1988), Rhys and Thea did not see reading as an exclusive "hearing" activity. Similarly, although Rhys and Thea admitted having Deaf identities, and valued ASL and Deaf culture, they also held English in high regard contrary to the separate "We are Deaf – You are Hearing" dichotomy that other Deaf researchers proposed (Evans & Falk, 1986; Padden & Humphries, 1988). Indeed, both students professed they needed to read more because they were deaf.

The second research question I examined pertaining to the relationship between the Deaf culture and context and students' reading experiences was: How do the language
differences between ASL and English impact on these Deaf high school students’
reading? Important findings emerged in this study related to how participants’
bilingualism impacted on their reading experiences, and these findings are summarized in
this section. At the same time, when analyzing Rhys’s and Thea’s approaches to reading,
I found that the strategies they used for building, decoding, and maintaining
comprehension were also strongly influenced by use of ASL, and their heritage
languages. Thus, in the remainder of this section, I also summarize my findings related
to another of my research questions: How do these Deaf high school readers who
communicate with ASL approach reading tasks?

Use of ASL and English as Comprehension-building Strategies

One central finding in my study was that Rhys and Thea drew upon elements of
both ASL and English as tools to tackle reading tasks. One of the major costs of the
differences between ASL and English was that reading for Rhys and Thea required
executing time-consuming, multiple translations as they read (i.e., English to ASL and
ASL to English). This arduous process taxed their resources, such as working memory,
and consequently often compromised comprehension (Bebko & Metcalfe-Haggert, 1997;
Garner et al., 1991; Musselman, 2000).

Further, I also found that Rhys and Thea both used various aspects of ASL and
English when building comprehension during reading (Siedlecki, Votaw, & Bonvillian,
1990). Strategies they used included translating English into ASL and giving ASL
summaries of the information as they read. While reading, they also fluently “chunked”
information into meaningful units of ASL that incorporated descriptive information (i.e.,
adjectives, adverbs and directionality) into nouns and verbs (French, 1999; Wilcox,
As an important comprehension strategy, both Rhys and Thea described trying to “see pictures in my mind” and showed their ability to “make mental pictures” as they translated the information they read into ASL (French, 1999). I found that Rhys’s and Thea’s use of ASL clearly showed that they pictured what they were reading to better build comprehension. Finally, Rhys and Thea sometimes used fingerspelling to hold their place in text when they didn’t understand a word, so that they would have an opportunity to build comprehension during further reading (i.e., use of context clues or semantics to predict meaning).

These findings add to previous research by showing that at least these two Deaf high school readers used good reading strategies (Ewoldt, 1992; French, 1999; Padden & Ramsay, 1998) and contradicts findings that Deaf readers are not strategic readers (Davey, 1987; Erickson, 1987; Krinsky, 1990). Further, these findings show how understanding approaches to reading by Deaf readers requires considering the interface between the two languages that they speak (i.e., ASL and English), rather than just thinking of them as disabled hearing readers. This involves recognizing various sociocultural dimensions of Deaf culture and literacy such as the influences of their cultural backgrounds, heritage language, ASL, and English (Padden & Ramsey, 1993; Paul, 1998; 2001; Qualls-Mitchell, 2002).

Strategies for Comprehension Monitoring and Repair

Another finding in the present study was that both Rhys and Thea were active readers who used a variety of comprehension monitoring and repair strategies. For example, both Rhys and Thea described how they used self-questioning to check what they understood as they read, and how they varied their reading rate and used look-back,
re-reading or reading ahead as the main comprehension repair strategies. My observations of students while reading provided converging evidence of the readers’ active interactions with the text. For one, sometimes students used their finger to guide their eyes on the text; a practice often associated with beginning readers (Adams, 1995; Johns, 1997). However, the use of a finger while reading also suggests that Rhys’s and Thea’s reading rate might be slow enough to compromise comprehension. Further research might also be warranted to investigate where Deaf readers focus attention while reading (i.e., individual letters, patterns in words, or whole words). Other indications that Rhys and Thea were active readers included the observation of their fingerspelling or signing to themselves to create a personal dialogue in search for meaning, their personal reflections, questions to themselves or others, summaries and on occasion predictions or inferences while reading. Again, these findings contradict findings in other research that describes Deaf readers as passive or non-strategic (Davey, 1987; Erickson, 1987; Krinsky, 1990). Evidence that students used their finger on the page and other active reading strategies such as their “self-talk” have implications for practice. As teachers of the deaf we need to monitor how we teach reading and continue to model effective strategies for reading.

Strategies for Decoding Text

Evidence from Informal Reading Inventories and various reading episodes showed that Rhys and Thea used a variety of strategies for decoding individual words. Again, the finding that most of their miscues were substitutions for graphically similar words (i.e., threat vs. treat\textsuperscript{32}, chop vs. crop) suggested that Rhys and Thea tended to

\textsuperscript{32} underlined word is the target word
decode text at the lexical level. The prevalence of graphically similar miscues suggests that they were focused on the visual characteristics of, or patterns within words as a decoding strategy. It may also reflect how these Deaf readers have been taught to read, given their focus on vocabulary learning as a tool for reading. The second largest number of miscues included semantic substitutions of contextually appropriate words or concepts (i.e., amaze vs. fascinate). This suggests that these readers referred to a personal bank of English vocabulary and background knowledge combined with context clues, such as text structure, to draw appropriate meaning from the text. The fact that they could use contextual clues is a positive finding that shows that they were striving for meaning as they read. The fewest number of miscues were substitutions for visually similar signs. For example, sign language errors included incorrect letter hand shapes, hand positions, hand movements or hand locations that altered meaning in ASL (i.e., large-limit vs. small-limit). That few mistakes were tied to ASL errors suggests that these Deaf readers were becoming fluent users of ASL, supporting previous findings that deaf adolescents from hearing families have the potential of developing native-like sign language fluency (Vernon & Andrews, 1990). Taken together these decoding patterns need to be put into the perspective of Rhys’s and Thea’s status as beginning readers (Grade 3 – 5 reading levels). Thus, perhaps, the implications for practice is that we can better understand their reading level by considering how they are decoding words as beginning readers.

However, I do not assume that these Deaf readers follow a stage-by-stage-pattern of developing reading strategies.

In summary, findings from this study indicated that Rhys and Thea valued reading as an activity that crosses both the hearing and Deaf worlds. At the same time,
understanding their reading experiences and approaches to reading required understanding how their identities as Deaf students and their previous language experiences impact on their approaches to reading. This study contributes by providing a detailed analysis of the relationship between the participants’ cultural background, language and reading.

_Literacy Context and Tasks_

A central goal in this study was to document the contexts in which these Deaf high school students read. In this thesis, I report findings related to students’ reading experiences in home, school, and community contexts. One interesting finding is that both students valued reading and reported reading at home “if they were bored” because they wanted to use their time wisely. At home, each had access to a variety of reading materials including newspapers, magazines, dictionaries, books, closed-captioned television, TTYs and high-speed computer access. In addition, contrary to the expectations of Rhys’s and Thea’s Reading teacher, I found that Rhys reported reading more for pleasure than for school purposes. He read for extended times including reading library books until he fell asleep. In contrast, Thea read sporadically for very short stints and attempted reading for homework more than pleasure. At the time of this study Thea had only been in Canada for about 2 years, and her multicultural background added another dimension to her learning of English. She may have avoided reading because of her relative discomfort with English since she was a recent new Canadian and English is not her native language (Gunderson, 1991; Qualls-Mitchell, 2002). In the school context, Rhys and Thea generally read in compliance with course related tasks and, as expected, there was a greater emphasis on reading in two English classes (Reading and English
Skills). Outside of the home and school, the primary purpose for reading was for communication, including writing notes to communicate with hearing people who do not use sign language.

These findings are interesting because they show that at least for Rhys, he was exposed to a wide range of reading activities both within and outside of school. Because he also valued reading and saw its importance for his future, he was more likely to draw from these activities to improve his reading skills. In contrast, Thea’s experiences with reading were more limited across home, community, and school contexts. Even though she too saw the value of reading, it is of some concern that she was not gaining much of the practice with reading that might be associated with continued growth in reading ability. The findings suggest that Rhys’s and Thea’s pattern of reading appear to reflect Stanovich’s (1986) Matthew effects (i.e., the analogy that the “rich get richer and the poor get poorer”). Although it is significant that Thea values reading this factor alone will not help if she does not begin to read more. In the participants’ last few years of high school, the opportunity to continue developing reading proficiency with the luxury of small classes and ASL support is key, particularly for Thea.

Instructional Context

The participants’ shared reading experiences occurred within their common classes with teachers of the deaf at the School for the Deaf and observational data detailed descriptions of the instructional context and nature of support. Many of the instructional techniques and approaches used across the classes I observed focused on bridging the language differences between ASL and English. Consistent with Parasnis (1996; 1997) the teachers represented a new wave of hearing teachers of the deaf who
respected Deaf students as part of a cultural and language minority. Accordingly, teachers met the challenge of planning creative instructional and learning activities to accommodate the range of students’ language and literacy skills. Subsequent analyses of various data sources also suggested that the instructional context and nature of support provided to these participants had a positive influence on their perspectives on reading. As various subject teachers planned curriculum and learning activities they were cognizant of the reading and writing abilities of students at the School for the Deaf and planned activities to ensure positive, successful experiences with reading and writing. However, as I noted earlier, I wondered if the cumulative effect of these practices might have inadvertently reinforced the message to Deaf students that they can only read independently with limited understanding. For example, students depended on teachers giving ASL summaries of complicated texts and on teacher availability to clarify misunderstandings or translate the text into ASL, similar to Ewoldt, Israeliite and Dodds (1992) and Strassman’s (1992; 1997) findings that the most prevalent reading strategies used by deaf adolescents were teacher dependent strategies.

Consistent with interactive models of reading (Lipson & Wixson, 1986; 1991), other people involved in the reading context influenced the participants in this study. I found evidence that the positive relationships between deaf students, and teachers’ actions and support for reading practices shaped students’ reading experiences (Gambrell, 1998; Strassman, 1992). I also found that some teachers earned the respect of their students and consequently the teachers’ ideals about reading became a strong influence on students. For example, one teacher believed that reading was part of skill development and analogous to food for the brain. Throughout subsequent interviews,
Evidence of the acceptance of this belief was reflected within the students' comments about reading. Further, when I examined the situations in which Rhys and Thea read, it was clear that other than teachers, family members influenced them by communicating the fact that reading was valued.

*Individual Knowledge, Beliefs and Skills about Reading*

*Motivations to Read*

The students shared similar reasons for reading. They read if they were bored, liked the topic, found it interesting, and if they were challenged at an appropriate level (not “over my head”). They also continued reading as long as they understood or had someone to clarify questions such as a teacher, friend, parent or sibling. However, some differences between the two cases were apparent. For example, Thea, much more than Rhys, talked about reading only if she had support. Consistent with Ewoldt (1983; 1986) Thea did little independent reading because she depended on ASL support to clarify the meaning of text. In contrast, Rhys read independently but sought help from others if it was available. Again, Thea's reluctance to read independently is a concern because it limited her opportunity to practice reading. The interactive, theoretical perspective of reading ability identifies motivation as a key internal variable affecting reading success (Lipson & Wixson, 1986; 1991; McCormick, 1994) and other factors such as interest, the amount of time and effort required, willingness to take risks, self-concept, or fear of failure as potential influences on a reader's performance (Guthrie & Wigfield, 1997).

*Metacognitive Knowledge about Reading*

Rhys and Thea had more sophisticated knowledge about reading tasks than is typically described in the literature. Contrary to Erickson's (1987) findings that deaf
students have low reading comprehension and metacognition in that they "Do not know, but think they know," my study found evidence that Rhys and Thea could specifically pinpoint when they did not understand reading materials. Both participants also had realistic expectations for the kinds of literacy skills they would need for success in post-secondary studies and the workplace. Further, their descriptions about literacy requirements in those contexts reflected metacognitive knowledge about the reading process. For example, consistent with the findings of Paul (1998) these students knew that one of the purposes of reading was understanding information and that reading involved using background knowledge and striving to read with fluency. Other findings suggested that Rhys and Thea also saw the connection between reading and writing as they both talked about balancing efforts on developing and practicing reading and writing. However, some of their suggestions for how to improve reading skills reflected beliefs that reading involved memorizing vocabulary (Kelly, 1996; Paul, 1996). This simplistic view of reading might reflect how they were taught to read as often teachers of the deaf make it a practice to introduce vocabulary as a pre-reading lesson (Schirmer, 1994; 2000).

Self-Efficacy Beliefs

Rhys’s and Thea’s opinions of themselves as readers were shaped by their reading experiences, and the feedback they received from various teachers. Rhys had more confidence as a reader. He felt teachers challenged him to explain different reading materials and thus he believed such activities reinforced his confidence. This has important implications for teaching practices as teacher feedback, choices, and expectations for reading tasks can influence students’ self-efficacy beliefs (Guthrie,
Participants' perceptions of self-efficacy were also established by comparing their reading abilities to their Deaf peers. In Rhys's and Thea's opinions, "good" deaf readers read fluently, understood the materials, and thus have the ability to help explain information to others. In summary, Rhys and Thea felt these were valuable attributes that distinguished "good" readers from less able deaf readers.

One theme related to students' development of perceptions of self-efficacy that emerged from my data, focused on the assumed skills of a mythical hearing person. For example, when Thea discussed her own reading abilities she did so in contrast to hearing people. Building from her beliefs about the thinking abilities of hearing people, Thea gave different reasons why reading is so difficult for the Deaf. From her perspective hearing people have superior skills and abilities because they can hear. These natural skills combined with the ability to hear gives them advantages when they read. Consistent with Hadadian and Allen (1998), Thea perceived a general superiority of hearing people. This suggests that educators, especially hearing teachers of the deaf, need to be sensitive to avoid promoting myths that deaf persons are less able than hearing people. Instead, teachers need to create a climate of acceptance of deafness as a positive difference.

Limitations of the Study

When interpreting the results from this case study, several general limitations should be kept in mind. First, one limitation is that I am a Hearing outsider researching deafness (Foster, 1994; Hauser, 1994; Pollard, 1994). Despite the fact that I have had over twenty years experience as a sign language interpreter and Teacher of the Deaf and
hard of hearing, I am not Deaf. In many respects, a researcher who begins from a Deaf perspective would have greater potential to uncover information about the reading experiences of Deaf high school students. One advantage is that a Deaf researcher shares a natural affinity to these Deaf high school participants. Thus, the benefits of having a shared life experience living within Deaf and Hearing worlds and of membership within a Deaf culture may provide greater access to uncover core issues. As a Hearing researcher, despite member checks, the evidence collected and subsequent data analysis remain limited by my perspectives as a Hearing teacher of the deaf and hard of hearing.

Second, readers should be cautious when generalizing findings because observations were limited to one school context. Further, although an in-depth case study approach involving two participants allowed for extensive observation and data analysis, the small number of participants limits generalizability to Deaf high school students’ reading experiences. Within a Deaf context, Rhys and Thea were developing competencies as ASL–English bilinguals; however, their fluency with different heritage languages added another multicultural and multilingual dimension to their individual perceptions of reading English. Indeed, for both participants, a third language was a confounding variable that is recognized for its own merit within interactive models of reading (Lipson & Wixson, 1986; 1991, 1997) and sociocultural perspectives of reading (Moll, 1994; Qualls-Mitchell, 2002). However, some readers of this case study report may find parallels to other Deaf high school students in their teaching practice. A third limitation to the present study was that the bulk of this data was collected late in the school year, from the last week of April until the end of June. I recognize that there is a natural ebb and flow of energy levels within a school year for both students and teachers.
Thus, as a researcher, I may have lost potential opportunities for data collection simply because some reading activities were not part of the curriculum or classroom activities during the 7 week observation period. In addition, with the spring season comes warmer weather and longer daylight hours that are more conducive for outdoor pursuits rather than reading, completing homework, and for some students, school attendance.

Finally, another reality is that much of reading is an internal “in-the-head” process in which some processes become automatic and thus remain unidentifiable by the reader (Brown, 1980; Garner et al., 1991). Therefore, some reading processes may not have been mentioned by the participants or observable by the researcher or teachers at the School for the Deaf, and may not be represented in this study’s findings.

**Future Directions**

This case study focused on the reading experiences of two Deaf high school students who preferred to communicate using ASL. This preliminary work raised many more questions. Suggestions of future directions for research may involve the following areas:

1. Replicate this study using both Deaf and Hearing co-researchers. Including a Deaf co-researcher could provide opportunities to forge immediate, and perhaps deeper inroads into the Deaf culture and context.

2. Replicate this study at another School for the Deaf to determine if subsequent data collected would parallel or contradict the findings from this present study.

3. Examine the reading experiences of Deaf readers in the full range of the types of educational settings. For example, the majority of signing Deaf high school students also attend regular education classes, and resource programs outside a School for the
Deaf. Subsequent studies could seek to capture the reading experiences of signing deaf students to realistically reflect the different educational options available.

4. Explore the reading instructional contexts that Deaf teachers employ for various high school courses, specifically reading and writing, in order to document the influences of Deaf teachers as role models of linguistic and cultural knowledge.

5. Explore comprehension-building strategies such as “making mental pictures.” In practice, how would teachers guide Deaf students to use this approach? One avenue would be to experiment using various exercises to develop visualizing descriptive text or “making mental pictures.” For example, some text materials and topics are more descriptive and visual than others (i.e., directions from point A to point B; the structure of the human heart).

6. Examine the reading errors of ASL signing Deaf high school readers to determine if any miscue patterns would concur with the results of this study (i.e., the prevalence of errors that were substitutions for graphically similar words). Further research might also be warranted into where Deaf readers focus attention while reading (i.e., individual letters, patterns in words, or whole words).

7. Examine the Deaf community’s use of literacy and interactive technologies (e-mail, on-line computer communications including TTY, text-messaging cell telephones, pagers, and other portable communication systems).

8. Investigate the sociocultural aspects of literacy and examine the literacy practices within the Deaf community such as existing Deaf Bible Study Groups, Homework Clubs or peer-tutoring situations.
Contributions of this Study

I framed this research study from a different centre than previous studies and considered these Deaf high school readers from a sociocultural perspective that recognized them as part of a language and cultural minority instead of a narrow deficit model of deaf readers as “disabled” hearing readers. With attention to detail, this study employed an extensive observation period of two students’ reading episodes combined with multiple data sources (i.e., structured interviews, questionnaires, informal reading inventories, document review) and data analysis to uncover information about Deaf readers’ knowledge, beliefs and skills about reading. Overall, this study provided important information for teachers regarding ASL signing Deaf readers’ opinions about the value or purposes of reading while living within the Deaf and Hearing worlds. One surprising finding was that Deaf participants valued reading, they used reading and writing for many everyday purposes, and never considered reading a “hearing” activity. Converging evidence also revealed these participants’ strengths as developing ASL and English bilinguals. For example, both Rhys and Thea used various aspects of ASL and English when reading as tools for building comprehension and decoding words. One common comprehension-building strategy was that Rhys and Thea reported “seeing pictures in my mind” as they read. Evidence from reading episodes of “read-aloud” signed re-codings or retellings of text, indicate that they pictured what they were reading to better build comprehension. Adding to the data of recent studies (Mayer, 1999; Schirmer, 2003), this investigation also showed that the post-reading, cued-recall interview is a reasonable methodology to use with signing Deaf high school students. Lastly, given that the majority of teachers of the deaf and hard of hearing are hearing,
they may be well advised to consider the participants' recommendations for shaping their interactions with Deaf students and planning reading curriculum. Taking the role of an advisor seriously, Deaf students in this study made suggestions for hearing teachers to polish their expressive sign language skills with specifics such as refining facial expression, speed, clarity and being more explicit. This is important feedback, as educational programs are adopting more stringent sign language policies detailing the language of instruction. Lastly, the participants also advised hearing teachers on the need for challenging class materials and activities, and in particular that the purposes of reading and writing activities need to be stated clearly. In summary, this in-depth case study explored reading from observations and testimonials of two articulate Deaf high school readers who reported their experiences with reading in the contexts that they lived, studied and socialized.
APPENDIX A  TERMS RELATED TO DEAFNESS

Hearing Loss: Hearing loss is measured as the increase in decibel levels (dB) above a standard (designated 0) which a person requires in order to detect the presence of sound. Sound levels are defined using international standards outlined by the American National Standards Group (ANSI).

Severe to Profound Hearing Loss: A severe hearing loss may fall between 71–89 dB or a profound hearing loss greater than 90 dB pure tone average (PTA). The PTA is calculated from hearing thresholds at 500, 1000 and 2000 hertz (Hz). For example, a 90 dB PTA hearing loss, means that an individual requires the sound to be 90 dB louder than a particular sound level. As a functional definition, people with a severe to profound hearing loss will have difficulty processing spoken language through hearing, with or without amplification.

deaf or Deaf: The specific use of lowercase deaf refers to the audiological condition of not hearing, and the uppercase Deaf refers to a particular group of deaf people who share a language, American Sign Language (ASL), and a social, cultural, and political allegiance.

deaf: As a functional definition, deaf, refers to the severely reduced ability to hear and understand speech though the ear, with or without amplification. Although individuals may be able to hear some sounds, what they hear is insufficiently clear for effective verbal communication. For communication deaf people are usually visually dependent (Schein & Stewart, 1995).

hard of hearing: As a functional definition, hard of hearing, refers to someone with a permanent or fluctuating hearing loss who uses speech and speechreading for
communication. The level of hearing ability may make it difficult to understand speech through the ear alone, with or without amplification. Generally, hard of hearing persons have a less severe degree of hearing loss and may use personal amplification devices. However, given the range of hearing loss, individual differences and communication preferences each person will determine his or her own identity.

**Hearing Impaired**: Is a term intended to include Deaf/deaf people as well as other people who do not hear well. The term “impaired” carries a negative, or deficit connotation. Individuals who have a hearing loss prefer to be identified as either, Deaf, deaf or hard of hearing as each term best describes their distinct needs. The term, hearing impaired is now dated and use of this term in older research or literature will be substituted with the terms deaf or hard of hearing.

**Cued Speech**: Is a system to cue or represent spoken language phonemes. Cued speech or cueing uses specific movements and, or positions of eight distinct handshapes around the face and mouth in conjunction with speech and lip movements. Cues cannot be read on their own, and require the presence of facial cues to complete the signal. Together these visual markers provide an unambiguous representation of speech. Cued speech is not a method of communication as unlike any language or sign language, it is only used by the “speaker” to represent phonemes to enhance speechreading. For example, it is never used as an expressive language as a deaf individual would never use cued speech with communication partners who do not depend of cueing.
Fingerspelling: Is part of manual or signed communication in which words are spelled out by the sequential production of letters of a manual alphabet. The manual alphabet consists of 26 distinct handshapes to correspond with each letter of the alphabet.

American Sign Language or ASL: American Sign Language is a “through the air language” that is a complete language independent of English. ASL is the defining characteristic of the North American Deaf Community. It does not have a commonly accepted written system outside of linguistic research.

Manually Coded English: Sign systems designed to represent English word order, grammar, and vocabulary.

Contact Sign: A type of sign language using a mixture of ASL and English structure that is frequently used by hearing people when interacting with deaf people.
Privacy and confidentiality:
• Your real name will not be used. All videotapes and papers will be kept in a locked file cabinet.
• Any interviews and discussions will happen where and when you want. They will be private and other people will not be able to interrupt you.
• During interviews, you may stop, re-start or erase the videotape at any time.
• Only you, and the UBC researchers will know what you talked about.
• All computer information will be kept in a locked office. Only the UBC student will have keys or know the computer password.
• We will destroy your videotapes and any papers 5 years after this study is finished.

Contact:
• If you have questions about this reading study, contact the Principal Investigator at the University of British Columbia, Dr. Deborah Butler at 822-0575 (Voice), Fax: 822-3302, or e-mail: deborah.butler.ubc.ca
• If you have any concerns about your volunteer rights, contact the Director of Research Services at the University of British Columbia, Dr. Richard Spratley at 822-8598 (Voice), Fax: 822-5093.

Consent:
• I volunteer to join this reading study. I agree to share information about reading with the UBC student researcher.
• I may refuse to participate or withdraw from this study at any time without affecting my marks and grades.
• I have received a copy of this consent form to keep.

Student Consent:

Date: ____________________________

Name: ____________________________
(Print your name)

Signature: ____________________________

Address: ____________________________

Postal Code: __________

Contact Numbers: Home: ____________________________

E-mail: ____________________________
Privacy and confidentiality:
• Your son’s name will not be on any videotapes, video transcripts and descriptions. His name will not be used in any paperwork associated with this study.
• Any interviews and discussions will happen where and when he wants. These interviews and discussions will be private and other people will not be able to interrupt.
• During interviews, he may stop, re-start or erase the videotape at any time.
• Only your son, the co-investigator and the principal investigator will see the video tapes and English transcripts.
• All materials will be identified only by code numbers and will be kept in a locked filing cabinet. Information stored on computer hard drive and computer disks will be kept in a locked office. Only the co-investigator will have keys or know the computer password.
• All research materials will be destroyed 5 years after this study is finished.

Contact:
• If you at any time have questions about this research, contact the Principal Investigator, Dr. Deborah Butler at the University of British Columbia. Phone: 822-0575 (Voice), Fax: 822-3302, or e-mail: deborah.butler.ubc.ca
• If you have any concerns about your son’s treatment or rights as a research participant, contact the Director of Research Services at the University of British Columbia, Dr. Richard Spratley at 822-8598 (Voice), Fax: 822-5093.

Consent:
• I understand that my son is a volunteer in this research study and that he is free to refuse to participate or withdraw from the study at any time without affecting his class standing (grades or marks).

• I consent for my son to participate in this study and share information about reading in discussions with the co-investigator.

• I have received a copy of this consent form for my own records.
Parent or Guardian Consent

Please check and complete one of the choices below:

☐ I, ____________________________ consent for my child (print name) ____________________________ to participate in this study. (print name of child)

☐ I, ____________________________ do not consent for my child (print name) ____________________________ to participate in this study. (print name of child)

Date: ____________________________
Name: ____________________________ (Print your name)
Signature: ____________________________
Address: ____________________________
Postal Code: ____________________________

Signature of a Witness ____________________________ Date __________
Confidentiality will be maintained by:
1. Videotape transcripts and descriptions of the classroom reading context will not contain your name. All materials will be identified only by code numbers and will be kept in a locked cabinet. Your name will not be used in any documents associated with this study.
2. Data stored on computer hard drive and computer disks will be housed in a locked office with password protection and only accessible by the co-investigator.
3. Following a standard university practice, all research data materials will be destroyed 5 years after the completion of this study.

Contact:
1. If you at any time have questions regarding this research, contact the principal investigator, Dr. Deborah Butler at 822-0575 (Voice), Fax: 822-3302, or e-mail: deborah.butler.ubc.ca
2. If you have any concerns about your treatment or rights as a research participant, contact the Director of Research Services at the University of British Columbia, Dr. Richard Spratley at 822-8598 (Voice), Fax: 822-5093.

Consent:
1. I acknowledge that my participation in this research study is completely voluntary and that I am free to withdraw from the study at any time, without jeopardy from the researchers, school staff and administration.
2. I consent to participate in this study and share information in discussions with the co-investigator.
3. I give my permission for the co-investigator to re-establish contact with me if there are any questions about things that I have said. If I wish, I may contact the researcher as well.
4. I have received a copy of this consent form for my own records.
Teacher Consent

Date: __________________________________________

Name: __________________________________________
(Print your name)

Signature: _______________________________________

Address: _______________________________________

_________________________________________

Postal Code: __________________________

Contact Numbers:

School: _______________________________________

E-mail: _______________________________________

Home: _______________________________________
APPENDIX C STUDENT INTERVIEW PROTOCOLS

Semi-Structured Interviews with Students

These introductory questions targeted ten areas for a series of semi-structured interviews over the data collection period. Subsequent questions built from the reader’s initial responses and clarified points to develop a full description of participants’ reading experiences. Other questions were added as this study progressed and information from concurrent conversations and observations evolved.

Part I: A Reading Survey

Variety of Reading Materials:
1. Do you have books, magazines, newspapers, or comic books at home? List or name some titles.
2. Do you have a TTY, CC machine or CC-TV, or computer at home?
3. If you had to guess, how many reading materials would you say you have read in the last week? List the things you have read in the last week.
4. What kinds of things do you like to read? Why?
5. What are your favourite things to read? (List as many as you can).
6. What kinds of things are boring to read? Why?
7. How do you decide if you will read something?
8. What do you think about when you read textbooks?
9. What do you think about when you read books or novels?
10. When was the last time you read something? What did you read? What was it about? or What was the title?

Reasons for Reading:
1. Why did you read it? (related to the example above)
2. Why do deaf people read?
3. Who reads in your home?
4. Why does he/she read?
5. Why do you read?
6. Do you ever read because you are curious about something? Why or why not?
7. Do you ever read something just for fun? (give an example or examples) Why or why not?
8. What do you think is the general reason or purpose for reading?

Likes and Dislikes About Reading:
1. Do you like to read? Why or why not?
2. Are there some things that you like about reading? What are they?
3. Are there some things you don’t like about reading? What are they?
Self-Efficacy Beliefs:
1. Is reading hard or easy? Why or why not?
2. What makes you feel good about reading?
3. What makes you feel bad about reading?
4. What is the worst part about reading?
5. What is the best part about reading?
6. How good a reader are you? (excellent, above average, average, below average, very below average). Why do you think so?
7. How does a teacher decide if a student is a good reader?
8. Does your (subject) teacher think you are a good reader? Why or why not?
9. What are your future career and/or educational goals for the future? What kind of reading skills do you think you will need to reach your goals?

When and Where Do You Read?
1. When do you read?
2. Where do you read?
3. Do you ever read when you are not in school? Why or why not?

Presentation of Text:
1. When you read, do you like people to translate or interpret the English into ASL, or sign language? Why or why not?
2. If so, is there a story or any kind of reading you prefer watching in ASL or sign language?
3. Tell me what you think about when you are reading and using a TTY?
4. Tell me what you think about when you are watching closed-captioned TV or closed-captioned movies?
5. Tell me what you think about when you are reading:
   • Electronic notes or announcements
   • E-mail
   • Internet information
6. When you answered these questions, did you read the English questions? or prefer the ASL interpretation? or rely on both reading the questions and ASL?

Part II: The Reader’s View of the Reading Process

Definition of a Good Deaf Reader:
1. Who do you know who is a good deaf reader?
2. Compared to that reader, how good a reader are you?
3. What makes him/her a good deaf reader?
4. When he/she is reading, do you think he/she ever comes to something that he/she doesn’t know?
5. Why do you think some deaf people have trouble reading?

Reading Strategies:
1. Suppose he/she comes to something that he/she doesn’t know, what do you think he/she would do?
2. When you come to something you don’t know, what do you do? Do you ever do anything else?
3. If you know someone who was having trouble reading, how would you help that person?
4. What would your teacher do to help that person? (Note the subject area and teacher’s hearing status).
5. What would you like your teachers to know about you and the way you read?
6. Do you read in a different way when you are reading different kinds of things? Explain.
7. [Example from the student’s textbook]. If you are reading this, what things could help you understand what you are reading?
8. What are some things you do before you reading something? Give some examples and explain.
9. What are some things you do while you are reading something? Give some examples and explain.
10. What are some things you do after reading something? Give some examples and explain.
11. If you had to remember information in this story or chapter, what would be the best way to do this?
12. If you had to answer questions after reading something, what would be the best way to do this?

Learning to Read:
1. How did you learn how to read?
2. Pretend you are teaching a deaf Grade 2 student how to read. What would you teach him or her about reading?
3. What are some things that have helped you learn to read?
4. Please suggest some ideas to hearing teachers who are teaching deaf students to read.
5. What things does a deaf person need to learn to be a good reader?
6. What things do you need to learn to be a better reader?
7. What do you think would help you learn this?
8. What does “reading” mean?

Some of these questions were adapted from:


Strassman, B. K. (1992). Deaf adolescents’ metacognitive knowledge about school-
Structured Interview
Motivation to Read

Directions: These questions will ask you to think about how you feel about reading. There are no right or wrong answers. I want to know how you honestly feel about reading. Think about each statement and each possible answer. Circle one letter (a, b, c, or d) beside the answer that matches how you feel about reading. Do not write your name on these pages.

1) My friends think I am ________________.
   a) a very good reader
   b) a good reader
   c) an OK reader
   d) a poor reader

2) Reading a book is something I like to do.
   a) Never
   b) Not very often
   c) Sometimes
   d) Often

3) I read ________________.
   a) not as well as my friends
   b) about the same as my friends
   c) a little better than my friends
   d) a lot better than my friends

4) My best friends think reading is ________________.
   a) really fun
   b) fun
   c) OK to do
   d) not fun at all

5) When I come to a word I don’t know, I can ________________.
   a) almost always figure it out
   b) sometimes figure it out
   c) almost never figure it out
   d) never figure it out

6) I tell my friends about good things I read.
   a) I never do this.
   b) I almost never do this.
   c) I do this some of the time.
   d) I do this a lot.
7) When I am reading by myself, I understand ____________.
   a) almost everything I read
   b) some of what I read
   c) almost nothing of what I read
   d) nothing of what I read

8) People who read a lot are ____________.
   a) very interesting
   b) interesting
   c) not very interesting
   d) boring

9) Reading becomes boring after a short time.
   a) I do not agree.
   b) I think this is always true.
   c) I agree some of the time.
   d) If it is school reading, I agree.

10) I think libraries are ____________.
    a) a great place to spend time
    b) an interesting place to spend time
    c) an OK place to spend time
    d) a boring place to spend time

11) Reading is for learning but not enjoyment.
    a) I do not agree.
    b) I think this is always true.
    c) I agree some of the time.
    d) If it is school reading, I agree.

12) Knowing how to read well is ____________.
    a) not very important
    b) sort of important
    c) important
    d) very important

13) When my teacher asks me a question about what I have read, I ____________.
    a) can never think of an answer
    b) have trouble thinking of an answer
    c) sometimes think of an answer
    d) always think of an answer
14) I think reading is ____________________.
   a) a boring way to spend time
   b) an OK way to spend time
   c) an interesting way to spend time
   d) a great way to spend time

15) Reading is ____________________.
   a) very easy for me
   b) kind of easy for me
   c) kind of hard for me
   d) very hard for me

16) When I am not in school, I will spend _________________.
   a) none of my time reading
   b) very little of my time reading
   c) some of my time reading
   d) a lot of my time reading

17) When I am in a group discussing stories or other reading, I _________________.
   a) almost never talk about my ideas
   b) sometimes talk about my ideas
   c) almost always talk about my ideas
   d) always talk about my ideas

18) There should be more free reading time in class.
   a) I do not agree.
   b) I think this is OK.
   c) I agree some of the time.
   d) I agree.

19) When someone gives me a book for a present, I feel _________________.
   a) very happy
   b) sort of happy
   c) sort of unhappy
   d) unhappy

20) If a something to read is interesting, I don’t care how hard it is to read.
   a) I do not agree.
   b) If I can get some help.
   c) I agree some of the time.
   d) I agree.
21) If the project is interesting, I can read difficult reading material.
   a) I do not agree.
   b) I have never tried reading difficult materials.
   c) I agree some of the time.
   d) I agree.

22) If someone discusses something interesting, I might read more about it.
   a) I never do this.
   b) I almost never do this.
   c) I do this some of the time.
   d) I do this a lot.

23) I make pictures in my mind when I read.
   a) I never do this.
   b) I almost never do this.
   c) I do this some of the time.
   d) I do this a lot.

24) My friends and me like to trade things to read.
   a) We never do this.
   b) We almost never do this.
   c) We do this some of the time.
   d) We do this a lot.

25) When we read at school, I do as little reading as possible.
   a) This is not true for me.
   b) I wish we didn’t read so much at school.
   c) This is true for me some of the time.
   d) This is really true for me.

26) I only read because I have to do it.
   a) This is not true for me.
   b) I wish I didn’t have to read.
   c) This is true for me some of the time.
   d) This is really true for me.

27) I don’t like reading something when the vocabulary is too difficult.
   a) I do not agree.
   b) I agree some of the time.
   c) I agree.
   d) I hate reading when the vocabulary is difficult.
28) I don’t like vocabulary questions.
   a) I do not agree.
   b) I agree some of the time.
   c) I agree.
   d) I hate vocabulary questions.

29) Complicated stories or textbooks are no fun to read.
   a) I do not agree.
   b) I never read complicated stories or textbooks.
   c) I agree some of the time.
   d) I agree.

30) I don’t like it when there are too many characters in the story.
   a) I do not agree.
   b) I do not read stories with too many characters.
   c) I agree some of the time.
   d) I agree.

The Motivation to Read Questionnaire was adapted from:


Please provide the following information about yourself. For each question, read each choice and choose the answer that matches your life. Do not write your name.

**Background Information**

1. What kind of school program did you attend most of the time?
   - □ An oral School for the Deaf.
   - □ A signing School for the Deaf.
   - □ A classroom for deaf students in a hearing school
   - □ A hearing school with no deaf program
   - □ Other, please describe: ________________________________

2. Which best describes you family (check one)
   - □ Both of my parents are hearing.
   - □ One or both of my parents are deaf.
   - □ One or both of my parents are hard of hearing.

3. What age did you first begin to use sign language? __________________________

4. How do you prefer to communicate? (check one)
   - □ Orally (speech and lipreading, using my hearing)
   - □ Sign language and speech at the same time
   - □ ASL
   - □ Sign English
   - □ Writing
   - □ Other, please describe: ________________________________
5. Can your mother or father sign?
   □ Yes □ No

6. Can your sister(s) or brother(s) sign?
   □ Yes □ No

7. Can other people in your family sign? Who?
   □ Yes □ No

8. What age did you become deaf? (check one)
   □ I was born deaf.
   □ I was born hearing and became deaf before age 5.
   □ I became deaf between ages 6 and 10.
   □ I became deaf between ages 11 and 20.
   □ I do not know.
Signals and Messages

Even in the earliest times, people tried different ways of communicating quickly. Sometimes they sent letters by messenger. Sometimes they communicated by using signals. Greek soldiers sent messages by turning their shields toward the sun. The flashes of reflected light could be seen several miles away. The enemy did not know what the flashes meant. But other Greek soldiers understood what the message said.

In later years, Roman soldiers built long rows of signal towers. When they had a message, the soldiers shouted it from tower to tower. If there were enough towers and enough soldiers with loud voices, important news could be sent over a long distance.

American Indians used smoke signals to send messages. In Africa, people learned to send messages by beating on a series of large drums.

(Grade 5 Passage)
The Desert: What Lives There

The desert is a place that gets very little rainfall. The ground is often sandy and rocky. When the sun beats down, the sand and rocks grow hot and dry. It is hard to imagine that a place like this is full of living things.

All living things need food, weather, and some kind of shelter to survive. Some plants and animals are well suited to survive in the desert. They can live off the food, water, and shelter that are there.

The cactus is one kind of plant that is suited to survive in the desert. The cactus has a special way of getting water in the dry desert soil. It spreads its roots out close to the top of the ground. When rain comes, the cactus roots soak up the water quickly before it drains deep into the sand.

Once a cactus plant gets water, it can store it for the dry days ahead. A cactus can store enough water from one rainstorm to last a long time.

(Grade 3 Passage)
### Appendix E  Interview Database Column Guide

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<td>reading context or ASL notes</td>
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</tr>
</tbody>
</table>

Table continues
<table>
<thead>
<tr>
<th>Links to Research Questions</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Reading Valued?</td>
<td>Uses, purposes and functions of reading</td>
<td>1</td>
</tr>
<tr>
<td>Motivations to Read</td>
<td>Flags reported reading activities.</td>
<td>2</td>
</tr>
<tr>
<td>Reading Process</td>
<td>Metacognitive knowledge about reading</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>How do they code text when reading? (actual, or reported preferences)</td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>ASL; English to ASL (Eng-ASL); Sign (type unspecified)</td>
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</tr>
<tr>
<td></td>
<td>What strategies do they use?</td>
<td>3C</td>
</tr>
<tr>
<td></td>
<td>Definition: A good deaf reader.</td>
<td>3D</td>
</tr>
<tr>
<td>Self Efficacy Beliefs</td>
<td>Are they satisfied with their reading abilities?</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>What do they think about their strengths and weaknesses?</td>
<td>4B</td>
</tr>
<tr>
<td></td>
<td>What do they want to improve, if anything?</td>
<td>4C</td>
</tr>
<tr>
<td></td>
<td>What do they think would help them improve?</td>
<td>4D</td>
</tr>
<tr>
<td></td>
<td>What do they think would help another deaf reader improve?</td>
<td>4E</td>
</tr>
<tr>
<td>Future Goals</td>
<td>Vocational and/or educational goals</td>
<td>5A</td>
</tr>
<tr>
<td></td>
<td>Reading skills needed to meet these goals.</td>
<td>5B</td>
</tr>
<tr>
<td></td>
<td>Writing skills needed to meet these goals.</td>
<td>5C</td>
</tr>
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<td>Recommendations for Reading Instruction:</td>
<td>General teacher help Sub-code: Teacher (in general); Deaf Teacher; Hearing Teacher; N/A</td>
<td>6A</td>
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<tr>
<td></td>
<td>Reflections on learning to read.</td>
<td>6B</td>
</tr>
<tr>
<td></td>
<td>Language learning environments believed to be most effective</td>
<td>6C</td>
</tr>
<tr>
<td></td>
<td>Instructional strategies they thought are most effective in helping learn how to read.</td>
<td>6D</td>
</tr>
<tr>
<td></td>
<td>Recommendations for hearing teachers</td>
<td>6E</td>
</tr>
<tr>
<td></td>
<td>Teaching young Deaf readers to read.</td>
<td>6F</td>
</tr>
<tr>
<td>Deaf Identity</td>
<td>Deaf World</td>
<td>DW</td>
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<td>Hearing World</td>
<td>HW</td>
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<td></td>
<td>Deaf Culture</td>
<td>DC</td>
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<tr>
<td></td>
<td>Hearing Culture</td>
<td>HC</td>
</tr>
<tr>
<td>Technology</td>
<td>TTY access</td>
<td>13A</td>
</tr>
<tr>
<td></td>
<td>Computer access</td>
<td>13B</td>
</tr>
<tr>
<td></td>
<td>Internet access</td>
<td>13C</td>
</tr>
<tr>
<td></td>
<td>Closed Captioner; Closed Captioning</td>
<td>13D</td>
</tr>
</tbody>
</table>
APPENDIX F

RHYS’S COMMUNICATION CONTEST ESSAY

Growing Up in Today’s World

This is essay I will tell you about why Deaf people often complain. The reason is because hearing people always make new technology that ignores the needs of Deaf people. For Deaf youth growing up in today’s world, they need to learn how to be proactive and positive. We need to teach hearing people about our needs. If people continuously complain nothing positive will happen. Deaf youth need to work with hearing people to get the support we need.

You know, they are making more new Skytrain Stations here in Vancouver. A woman come to present information about the new Skytrain Stations in our MPR. She is responsible for controlling the new Skytrain Stations. I have noticed that there is no technology for Deaf people's needs. So I asked her, "Why don't you set-up a TTY for each Skytrain Station?" She told me that she would see if it is possible, but she has to talk with the government first. So that's why I have to face and tell her what Deaf people need. If I didn't face her, she will not know about Deaf people's complaints. I am growing up to face all hearing people.

There are many new vehicles for only hearing people, because things like alarms that warn if someone is trying to break and enter or steal. Hearing people can hear the alarm, but Deaf people can't! Other things like systems that tell hearing people, "You left the key in the car." The Deaf person wouldn't hear this warning - "Darn - I left my keys in the ignition!" Deaf people need to request that lights or closed captioning be installed in these cars to match our needs.
Many Deaf people are eager to buy new computers. They can use systems such as ICQ or video cameras to communicate with Deaf friends. Sometimes though, games or programs rely on voice technology and the ability to hear. The Deaf person had no access to this kind of information. I think that all computer technology should include closed captioning. The use of headsets doesn't allow Deaf people access.

There are many police officers in the world. Do they understand how to sign? No, very few do. In Boston, a young police officer can sign because his parents are Deaf. He can support the needs of Deaf people. For example, if a Deaf person were to witness a crime such as a purse-snatching, the signing officer can interview them. Most officers can speak a second language, and for an extremely small number this second language is ASL. Definitely I wanted like to encourage more officers to have ASL as their second language.

Deaf people can do things for themselves and can live independent lives. They should not wait around expecting hearing people to do things for them and to be self-centered, only focussing on their own issues. This leads to negativity and continues their frustration and anger. Deaf people need to confront the issues that trouble them, meet with the people who can support them, and be positive to ensure good things happen.
Growing Up in Today’s World

I want to share with you information about our Deaf culture. Deaf people have a lot of different experiences during their teenager years. These experiences really help them to become optimistic adults. A variety of experiences is required to help teenagers learn how to control their emotions and face future issues.

Adult Deaf people have already known how to improve their lives because they live together with hearing people. It is not always easy, but they have learned how to be diligent too. For example, there can be miscommunication and misunderstandings between Deaf and hearing people. While Deaf people may be angry they must learn to carry on. They may carry some anger inside of them, but this is part of life and they must learn to carry on.

Some people tend to travel to other countries and they have a lot spend to study their cultures and their habit. But the Deaf world is so special and cool and yet hearing people have little knowledge of Deaf people are close by and free!

Do you think that I mean the Deaf world is better than hearing people’s world? This is not true, maybe we still do not know what is in their world for example I little dislike music because I am a Deaf person. However, I learned that hearing people always listen to music. That music has a good effect on them, music can calm them, and soothe them.

I am the only Deaf member in my family. A long time ago when I was a two-year-old child, my parents still did not know I was Deaf. At that time, I was frustrated
with our communication. For example when I needed food I did not know how let her know. It was on awful time. I remembering, my parent enrolled me in a hearing school for the week I attended I was always in a bad mood and crying all the time then the teacher found out I was a Deaf so she informed my parents. They started worrying and my mom became so sick that overwhelmed with emotion, she lost her voice for one week. She asked herself about her feelings. She began to realize I would be fine. She knew daughter was smart. She had to become optimistic so that everything would be fine. She really had to work hard to overcome negative feelings. A short time later her voice better and they found a Deaf school for me. When I entered for the first time, I felt it in one second, happy. My parents started to learn sign language and there were fewer problems with me. I could let mom know that I needed food!

I admire a woman named Helen Keller. When she was two years old, she was so sick she became deaf-blind. Her family struggled to communicate with her. With the help of a special tutor, Anne Sullivan, Helen Keller quickly learned sign language, writing and reading in Braille in only three years! After that she learned to speak and become an author. She went on to college and graduated with honors. She has given many Deaf and Deaf-Blind people optimism. She was persistent and was diligent. She never gave up and she became famous.
APPENDIX G GRADED WORDS IN CONTEXT TEST: FORM A

Stieglitz (1997, pp. 77-80)

Grade 2
1. The water in the lake is very low.
2. Will the little deer find her mother?
3. A few children hid under the table.
4. Some children are afraid of the dark.
5. He took a rest in his bed after dinner.
6. The school is a mile from her house.
7. The boy said, "you have such a nice smile."
8. I would like to see my friend next week.
9. She has many books to carry to school.
10. Look at the puppy run up the hill!
11. The owl is a bird with two big eyes.
12. There were seven fish in the lake.
13. The quick rabbit ran faster than the mouse.
14. The top of this mountain is very high.
15. Grandma will visit us next week.
16. When will your sister follow us to school?
17. I heard a story about a bad dragon.
18. Is there anyone in this room who has a snake?
19. I know a farmer who has many animals.
20. He reads to his children every evening.

Grade 3
1. The farmer had a nice crop of corn.
2. Give it to me at once, or I will force you to!
3. A car cannot run without a motor.
4. He was late to school as usual.
5. We went to the zoo yesterday.
6. She will like you more if you do not bother her.
7. You will really enjoy this magic show.
8. We will learn about the history of our country.
9. A rabbit likes to nibble on a carrot.
10. If you are not careful, this cat will scratch you.
11. Which parent will visit the school today?
13. The man found a gray whisker growing on his chin.
14. I do my best to treat my pets well.
15. I spilled paint on your pants by accident.
16. I dare you to take that frog to school.
17. Did you understand the answers to that question?
18. I write everything down in my notebook.
19. Your magic tricks will amaze everyone.
20. The man in the green shirt looks so familiar.
Grade 4
1. Do you understand the plot of this story?
2. “Name” and “game” are two words that rhyme.
3. There was uproar when the lion escaped from his cage.
4. The bold girl protected her friend from danger.
5. It is in fashion to wear this kind of shoe.
6. Do you know how much property he owns on this street?
7. I was too sleepy to be aware of how cold it was.
8. I bought a cookbook with nine recipes for making fish.
9. A bad cold often makes a person sound hoarse.
10. He has a friend that will represent him in court.
11. It is hard to climb a mountain with a steep slope.
12. She earned a high or excellent grade on this test.
13. A telegraph is used to send a message to someone.
14. This pearl came from an oyster.
15. She was fortunate to have won the contest.
16. Reading is my favorite subject in school.
17. This taxi will take you to the airport.
18. It is lots of fun to ride a sled downhill.
19. If you eat too much, your weight will increase.
20. Children are usually frightened by a thunderstorm.

Grade 5
1. The terrible king tried to conquer the world.
2. If you are not careful, this saw will injure you.
3. Many crops can be grown on a large plantation.
4. He wore a gold watch on his wrist.
5. I am filled with gratitude for the favor you did.
6. Sweets can attract flies at a picnic.
7. One day we had a delightful ride in the country.
8. Can you furnish this room with only two chairs?
9. An emerald is a bright green stone or jewel.
10. The manufacturer of this car also makes trucks.
11. She was shrewd to buy this house ten years ago.
12. This pill is a good treatment for that illness.
13. It is obvious that two and two make four.
14. He was happy to earn a satisfactory grade in spelling.
15. Your assignment for tomorrow is to read Chapter 5.
16. The brightness of the sun can damage your eyes.
17. A cloudy, rainy day is a dreary day.
18. Our earth is but a small part of the universe.
19. We are learning to somersault in gym class.
20. The dinosaur is an example of a prehistoric animal.
Grade 6
1. The mistakes you made on this test are only minor ones.
2. We feel sympathy toward people who are ill.
3. It is quite evident that they are twins.
4. Many people were hurt in the collision of the two trains.
5. An igloo is filled with blocks of ice.
6. It is wise to eat only a minimum of candy.
7. An election year is a busy time for a politician.
8. It was always an ordeal to take me to the dentist.
9. Offer more money and he will yield to your plan!
10. I can’t comprehend a story with many hard words.
11. This difficult puzzle is sure to frustrate you.
12. I study hard for every examination in science.
13. The old man was a legendary figure in his sport.
14. The ball hit me so hard, it knocked me unconscious.
15. I slouch in my favorite chair when I am tired.
16. Putting things off is her greatest weakness.
17. A note of appreciation was sent to everyone who helped.
18. There is an equal quantity of nuts and raisins in this cake.
19. The wanderer moved from city to city.
20. I felt much embarrassment when I slipped and fell.
<table>
<thead>
<tr>
<th>Target Words in Context</th>
<th>Score + Miscues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20/20</td>
<td>Base Level</td>
</tr>
<tr>
<td><strong>Grade 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The farmer had a nice crop of corn.</td>
<td>18/20</td>
<td>Instructional Level</td>
</tr>
<tr>
<td>I do my best to treat my pets well.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grade 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you understand the plot of this story?</td>
<td>14/18</td>
<td>Ceiling Level</td>
</tr>
<tr>
<td>There was an uproar when the lion escaped from his cage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The bold girl protected her friend from danger.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was too sleepy to be aware of how cold it was.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A bad cold often makes a person sound hoarse.*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He has a friend who will represent him in court.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>She earned a high or excellent grade on this test.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>She was fortunate to have won the contest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children are usually frightened by a thunderstorm.*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grade 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The terrible king tried to conquer the world.</td>
<td>14/20</td>
<td>Ceiling Level</td>
</tr>
<tr>
<td>I am filled with gratitude for the favor you did.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One day we had a delightful ride in the country.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can you furnish this room with only two chairs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He was happy to earn a satisfactory grade in spelling.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* sound-based item: no penalty

FS = fingerspells
<table>
<thead>
<tr>
<th>Target Words in Context</th>
<th>Score + Miscues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are learning to <em>somersault</em> in gym class.</td>
<td>some</td>
<td>signs-some, FS-SOMERSAULT, guesses “some exercise”</td>
</tr>
<tr>
<td><strong>Grade 6</strong></td>
<td>11/20 Ceiling Level</td>
<td></td>
</tr>
<tr>
<td>The mistakes you made on this test are only minor ones.</td>
<td>circle</td>
<td>signs-circle</td>
</tr>
<tr>
<td>It is quite evident that they are twins.</td>
<td>evident</td>
<td>skips</td>
</tr>
<tr>
<td>It is wise to eat only a minimum of candy.</td>
<td>large-limit</td>
<td>signs-large-limit vs. small-limit</td>
</tr>
<tr>
<td>An <em>election</em> year is a busy time for a politician.</td>
<td>electric Ø</td>
<td>signs-electric for election.</td>
</tr>
<tr>
<td>It is always an <em>ordeal</em> to take me to the dentist.</td>
<td>order</td>
<td>signs + FS; + signs-order-to</td>
</tr>
<tr>
<td>I can’t <em>comprehend</em> a story with many hard words.</td>
<td>compare</td>
<td>signs-compare</td>
</tr>
<tr>
<td>This difficult puzzle is sure to <em>frustrate</em> you.</td>
<td>anger</td>
<td>signs-anger</td>
</tr>
<tr>
<td>The old man was a <em>legendary</em> figure in his sport.</td>
<td>legendary</td>
<td>signs description of an old man + FS</td>
</tr>
<tr>
<td>A note of appreciation was sent to everyone who helped.</td>
<td>approximate</td>
<td>signs-approximate; + FS-APPRECIATION</td>
</tr>
<tr>
<td>There is an equal <em>quantity</em> of nuts and raisins in this cake.</td>
<td>quality</td>
<td>signs-quality; + FS-QUANTITY</td>
</tr>
</tbody>
</table>

* sound-based item: no penalty
FS = fingerspells
Ø No Penalty – miscue was not the target word
### APPENDIX I
THEA: STEIGHLEITZ (1997) TARGET WORD MISCUES

<table>
<thead>
<tr>
<th>Target Words in Context</th>
<th>Score + Miscues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>She has many books to carry to school.</td>
<td>18/20</td>
<td>Below Base Level</td>
</tr>
<tr>
<td>I heard a story about a bad dragon.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Grade 3**             |                 |                |
| The farmer had a nice crop of corn. | 14/20 | Ceiling Level |
| The man found a gray whisker growing on his chin. |               |                |
| I do my best to treat my pets well. |               |                |
| I dare you to take that frog to school. |               |                |
| Your magic tricks will amaze everyone. |               |                |
| The man in the green shirt looks so familiar. |               |                |

| **Grade 4**             |                 |                |
| Do you understand the plot of this story? | 6/18 | Ceiling Level |
| There was an uproar when the lion escaped from his cage. |               |                |
| The bold girl protected her friend from danger. |               |                |
| Do you know how much property he owns on this street? |               |                |
| I was too sleepy to be aware of how cold it was. |               |                |
| I bought a cookbook with 9 recipes for making fish. |               |                |
| A bad cold often makes a person sound hoarse. |               |                |
| He has a friend who will represent him in court. |               |                |
| A telegraph is used to send a message to someone. |               |                |
| The pearl came from an oyster. |               |                |
| She was fortunate to have won the contest. |               |                |

* sound-based item: no penalty
FS = fingerspells
Ø No Penalty – miscue was not the target word

FS = fingerspells
<table>
<thead>
<tr>
<th>Target Words in Context</th>
<th>Score + Miscues</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading is my favorite subject in school.</td>
<td>subject</td>
<td>skips + shakes head</td>
</tr>
<tr>
<td>Children are usually frightened by a thunderstorm.</td>
<td>thunderstorm*</td>
<td>admits “don’t know” + shakes head</td>
</tr>
<tr>
<td><strong>Grade 5</strong></td>
<td><strong>6/20</strong></td>
<td>Ceiling Level</td>
</tr>
<tr>
<td>The terrible king tried to conquer the world.</td>
<td>damage/destroy</td>
<td>FS-CONQUER, signs damage/destroy</td>
</tr>
<tr>
<td>If you are not careful, this saw will injure you.</td>
<td>injure</td>
<td>FS-INJURE; signs-will not like you; admits “don’t know”</td>
</tr>
<tr>
<td>Many crops can be grown on a large plantation.</td>
<td>plantation</td>
<td>FS-PLANTATION; admits “don’t know”</td>
</tr>
<tr>
<td>I am filled with gratitude for the favor you did.</td>
<td>gratitude</td>
<td>FS-GRATITUDE; admits “don’t know”</td>
</tr>
<tr>
<td>Sweets can attract flies at a picnic.</td>
<td>meet</td>
<td>signs-meet (context: people)</td>
</tr>
<tr>
<td>One day we had a delightful ride in the country.</td>
<td>delightful</td>
<td>FS-DELIGHTFUL; signs-light; admits “don’t know”</td>
</tr>
<tr>
<td>Can you furnish this room with only two chairs?</td>
<td>furnish</td>
<td>FS-FURNISH; admits “don’t know”</td>
</tr>
<tr>
<td>An emerald is a bright green stone or jewel.</td>
<td>emerald</td>
<td>FS-EMERALD; admits “don’t know”</td>
</tr>
<tr>
<td>The manufacturer of this car also makes trucks.</td>
<td>manufacturer</td>
<td>FS-MANUFACTURER</td>
</tr>
<tr>
<td>She was shrewd to buy a house ten years ago.</td>
<td>shrewd</td>
<td>FS-SHREWED; admits “don’t know”</td>
</tr>
<tr>
<td>The pill is a good treatment for that illness.</td>
<td>treatment</td>
<td>FS-TREATMENT; admits “don’t know”</td>
</tr>
<tr>
<td>It is obvious that two and two make four.</td>
<td>obvious</td>
<td>FS-OBVIOUS; admits “don’t know”</td>
</tr>
<tr>
<td>He was happy to earn a satisfactory grade in spelling.</td>
<td>answer; right/appropriate</td>
<td>signs-answer right/appropriate</td>
</tr>
<tr>
<td>We are learning to somersault in gym class.</td>
<td>some game</td>
<td>signs- some game</td>
</tr>
</tbody>
</table>

* sound-based item: no penalty

FS = fingerspells
### APPENDIX J  Rhys’ Graphically Similar Miscues

<table>
<thead>
<tr>
<th>Stieglitz Target Words in Context</th>
<th>Rhys’ Graphically Similar Miscues</th>
<th>Comprehension Repair Strategy (if explicit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The farmer had a nice <strong>crop</strong> of corn. Gr.3. Q1</td>
<td><strong>chop</strong>-<strong>tree</strong></td>
<td></td>
</tr>
<tr>
<td>I do my best to <strong>treat</strong> my pets well. Gr.3. Q14</td>
<td><strong>nice</strong>/<strong>clean</strong></td>
<td></td>
</tr>
<tr>
<td>Do you understand the <strong>plot</strong> of this story? Gr.4. Q1</td>
<td><strong>pilot</strong></td>
<td></td>
</tr>
<tr>
<td>There was an <strong>uproar</strong> when the lion escaped from his cage. Gr.4. Q3</td>
<td><strong>mimes:</strong> lion roars</td>
<td></td>
</tr>
<tr>
<td>I was too sleepy to be <strong>aware</strong> of how cold it was. Gr.4. Q7</td>
<td><strong>awake</strong>/<strong>wake-up</strong></td>
<td></td>
</tr>
<tr>
<td>He has a friend that will <strong>represent</strong> him in court. Gr.4. Q10</td>
<td><strong>present</strong>/<strong>lecture</strong></td>
<td></td>
</tr>
<tr>
<td>The terrible king tried to <strong>conquer</strong> the world. Gr.5. Q1</td>
<td><strong>control</strong></td>
<td></td>
</tr>
<tr>
<td>It is quite <strong>evident</strong> that they are twins.</td>
<td><strong>very quiet</strong></td>
<td><strong>pauses + scratches his head</strong></td>
</tr>
<tr>
<td>An election year is a busy time for a <strong>politician</strong>. Gr.6. Q7</td>
<td><strong>electric</strong> for <strong>election</strong></td>
<td></td>
</tr>
<tr>
<td>It is always an <strong>ordeal</strong> to take me to the dentist. Gr.6. Q8</td>
<td><strong>ORDEAL-FS; + order-to</strong></td>
<td></td>
</tr>
<tr>
<td>There is an equal <strong>quantity</strong> of nuts and raisins in this cake. Gr.6. Q18</td>
<td><strong>quality</strong> + <strong>QUANTITY-FS</strong></td>
<td></td>
</tr>
</tbody>
</table>

FS = fingerspells
### APPENDIX K  Thea’s Graphically Similar Miscues

<table>
<thead>
<tr>
<th>Stieglitz Target Words in Context</th>
<th>Thea’s Graphically Similar Miscues</th>
<th>Comprehension Repair Strategy (if explicit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>the target word</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### I do my best to treat my pets well.  
Gr.3. Q14  

- **target word**: treat  
- **Miscue**: threat  
- **Comprehension Repair Strategy**: error no recognition  
  - meaning: threat does not match context i.e. “well”

#### The man in the green shirt looks so familiar.  
Gr.3. Q20  

- **target word**: familiar  
- **Miscue**: family

#### The bold girl protected her friend from danger.  
Gr.4. Q4  

- **target word**: bold  
- **Miscue**: blood  
- **Comprehension Repair Strategy**: error no recognition

#### He has a friend that will represent him in court.  
Gr.4. Q10  

- **target word**: represent  
- **Miscue**: present/lecture

#### He has a friend that will represent him in court.  
Gr.4. Q10  

- **target word**: represent  
- **Miscue**: count-up*

#### A telegraph is used to send a message to someone.  
Gr.4. Q13  

- **target word**: telegraph  
- **Miscue**: PHOTOGRAPH-FS  
  - + comments: “same as”  
  - **Comprehension Repair Strategy**: reflects + responds

#### One day we had a delightful ride in the country.  
Gr.5. Q7  

- **target word**: delightful  
- **Miscue**: DELIGHTFUL-FS; light; admits “don’t know”  
- **Comprehension Repair Strategy**: comprehension monitors + admits “I don’t know”

Other examples:

- Dictionary definition: …‘huge claws.’ EngSkills-1, 87-92  
  - **target word**: hug

- A cactus can store enough water from one rainstorm to last a long time.  
  (RE-Manzo, 126)  
  - **target word**: last – ordinal meaning

- In their first experiment, Faraday and Henry used electromagnets.  
  RE5, 180  
  - **target word**: experience

---

* FS = fingerspells  
  * sign choice is also a ‘similar sign’ miscue
<table>
<thead>
<tr>
<th>Stieglitz Target Words in Context</th>
<th>Miscues Contextually OK</th>
<th>Strategy (if explicit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>target word</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rhys

She earned a high or **excellent** grade on this test. Gr.4. Q12

SHE-FS earn a high or exact graduation (self-corrects) grade ON-FS this test. (mimes: a person holding their paper with a pleased expression + “Yah-Yey!”)

We are learning to **somersault** in gym class. Gr. 5. Q19

We are learn + ING (MCE) to some SOMERSAULT-FS in gym class. “I guess that’s some exercise. Like running or something.”

This difficult puzzle is sure to **frustrate** you. Gr. 6. Q11

Difficult puzzle is (MCE) sure anger you.

The ball hit me so hard, it knocked me unconscious Gr.6. Q14

“Let me think”…The ball hit-me so hard it knocked-me confused; hurt me.

### Thea

Your magic tricks will **amaze** everyone. Gr.3. Q19

Your magic tricks will **fascinate** everyone.

We are learning to **somersault** in gym class. Gr.5. Q19

We learn-learn-learn some (pauses) gym game? [looks at me] Learn some game in gym class? – “right?”

FS = fingerspells
MCE – Manually Coded English Sign or Verb-Ending
## APPENDIX M  MISCUES: VISUALLY SIMILAR SIGNS

<table>
<thead>
<tr>
<th>Stieglitz Target Words in Context target word</th>
<th>Substitutes Visually Similar Sign (ASL-Phonological Error)</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is wise to eat only a minimum of candy. Gr.6. Q6</td>
<td>large-limit for small-limit</td>
<td>voices: “candy”</td>
</tr>
<tr>
<td>It is wise to-eat* only large-limit of sweets-“candy.”</td>
<td>An election year is a busy time for a politician. Gr.6. Q7</td>
<td>electric for election</td>
</tr>
<tr>
<td>An electric year is a busy-time zoom-year** for politics/politicians.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He has a friend that will represent him in court. Gr.4. Q10</td>
<td>count-up for court</td>
<td>voices: “court”</td>
</tr>
<tr>
<td>Friend himself will present/lecture him count-up “court” (-voices).</td>
<td>court: sign choice is also a ‘graphically similar’ miscue</td>
<td></td>
</tr>
</tbody>
</table>
| Sweets can attract flies at a picnic. Gr.5. Q6 | to-meet (unmodulated, i.e. no verb match) for attract | • reflects + responds  
• questions others  
seeks help  
• admits “I don’t know” |
| • Sweets can to-meet PICNIC-FS (“I don’t know”).  
• [I respond to her question and explain the meaning of ‘picnic.’]  
• Sweets can to-meet PICNIC-FS (“I don’t know”). | | |

FS = fingerspells  
* ASL verb incorporation  
** ASL Idiom: zoom-year (holding space)
APPENDIX N  
Rhys Makes Mental Pictures

Rhys's Self-Reports: “see pictures in my mind”

Suppose I read myself, then if I don’t get the idea, and can’t understand or see the picture in my mind; I turn to the teacher and ask if they don’t mind signing in ASL, then I understand (Int. 4, 263-265)

If [another deaf reader] was reading along and didn’t understand the meaning. I’d show them to read along this line. If they can’t get the meaning and don’t see the picture in their own mind, or can’t get the word that pops-up, like what it means I’d explain it in ASL (Int. 4, 421-425)

I read the English first, then I translate it into ASL so I can make and see the picture, and yes, yes I understand (pause) ASL (Int. 4, 287-288)

<table>
<thead>
<tr>
<th>Evidence:</th>
<th>ASL Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[The school is a mile from her house.]</td>
<td>placement separates house ----school</td>
</tr>
<tr>
<td>Her house far one MILE-FS from her school.</td>
<td></td>
</tr>
<tr>
<td>Signals and Messages (Manzo et. al, 1995):</td>
<td></td>
</tr>
<tr>
<td>[The flashes of reflected light could be seen several miles away]</td>
<td>placement separates light A------light B</td>
</tr>
<tr>
<td>The flash-light-back+forth see several MILES-FS away.</td>
<td>verb incorporation: flash-light-back &amp; forth</td>
</tr>
<tr>
<td></td>
<td>placements sets up towers in space</td>
</tr>
<tr>
<td></td>
<td>classifier – towers</td>
</tr>
<tr>
<td></td>
<td>LD – abbreviation</td>
</tr>
<tr>
<td>[If there were enough towers and enough soldiers with loud voices, important news could be sent over a long distance]</td>
<td>ASL visual</td>
</tr>
<tr>
<td>If there enough TOWERS-FS through and enough soldiers shout – shout-to tower; shout-to tower, shout-to tower important news could send over a LONG DISTANCE-FS + LD.</td>
<td>incorporation-send messages</td>
</tr>
<tr>
<td></td>
<td>placement separates</td>
</tr>
<tr>
<td></td>
<td>Drum A-----Drum B</td>
</tr>
<tr>
<td>[American Indians used smoke signals to send messages]</td>
<td>FS = fingerspells</td>
</tr>
<tr>
<td>American Indians use smoke-signals “to” (voices) send-messages.</td>
<td></td>
</tr>
<tr>
<td>[In Africa, people learned to send messages by beating on a series of large drums.]</td>
<td></td>
</tr>
<tr>
<td>In Africa, people learn to send messages BY-FS (pauses) “beating on” (voices) a SERIES-FS large drums; beating-on-large-drums-beating-on-large-drums...</td>
<td></td>
</tr>
</tbody>
</table>
**APPENDIX O**  **Thea Makes Mental Pictures**

<table>
<thead>
<tr>
<th>Evidence:</th>
<th>ASL Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[The school is a mile from her house.]</td>
<td>placement separates home ———— school</td>
</tr>
<tr>
<td>School here – home here; how much far? (RQ) – one MILE-FS</td>
<td>Rhetorical Question</td>
</tr>
<tr>
<td>[Our earth is but a small part of the universe]</td>
<td>placement in space</td>
</tr>
<tr>
<td>Our earth…my earth here; different-different-all here</td>
<td>earth ———— universe</td>
</tr>
<tr>
<td>(-gestures in space) where/what? (RQ) universe UNIVERSE-FS.</td>
<td>Rhetorical Question</td>
</tr>
<tr>
<td>The Desert What Lives There (Manzo et. al, 1995)</td>
<td>ASL visual</td>
</tr>
<tr>
<td>[When the sun beats down, the sand and rocks grow hot and dry.]</td>
<td>zigzag-zigzag</td>
</tr>
<tr>
<td>Grow hot, grow hot and dry. You know black cracks (draws a</td>
<td></td>
</tr>
<tr>
<td>zigzag line along the horizontal) like breaks-zigzag zigzag line.</td>
<td></td>
</tr>
<tr>
<td>Science Probe 10 (p. 80)</td>
<td></td>
</tr>
<tr>
<td>[In 1831, Michael Faraday and the American Scientist Joseph Henry</td>
<td></td>
</tr>
<tr>
<td>(1797-1878) showed that this was possible. Faraday and Henry worked</td>
<td>name signs</td>
</tr>
<tr>
<td>independently to produce and electric current with a magnetic field,</td>
<td>placement separates</td>
</tr>
<tr>
<td>but he methods they used were very similar...]</td>
<td>2 scientists</td>
</tr>
<tr>
<td>Electric field electric CURRENT-FS. American scientist, himself</td>
<td>F ———— JH</td>
</tr>
<tr>
<td>named JOSEPH HENRY-FS: name sign JH. Can himself, he found out – invent</td>
<td></td>
</tr>
<tr>
<td>that it can work. You know other scientist named FARADAY-FS, name-sign</td>
<td></td>
</tr>
<tr>
<td>F and JH both worked…try to connect electric CURRENT-FS but their</td>
<td></td>
</tr>
<tr>
<td>methods were almost the same.</td>
<td></td>
</tr>
</tbody>
</table>

FS = fingerspells
(RQ) Rhetorical Question

Thea’s Self-Reports: “see pictures in my mind”

Reading is good because it makes me think…I can see pictures in my mind like a movie (Int. 1, 424-431).

If I don’t understand, what I’m reading it’s frustrating. My brain is like a movie that has no actions or activity (Int. 1, 437-438).

When I read that book [A Sudden Silence] I think, I know nothing about some words, but I can still create a picture in my mind, visualize because it’s cool [Deaf character in the novel] (RE-1, 198-200).

When I read I have a picture in my brain but sometimes I’m wrong and I’ve misunderstood something and have a different perspective…(Int. 1, 153-154).

But sometimes when I’m reading and don’t understand something – if there’s no one to support me; I try to figure it out in ASL and see a picture in my mind and think about it, then go back and read…sort of like that (Int. 3, 204-207).
REFERENCES


Paul, P. V. (1997). Reading for students with hearing impairments: Research


Stanford Achievement Test (9th ed.). (1996). Norms booklet. Houston, TX: The


