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## The language and literacy skills and behaviours of two middle primary severely to profoundly hearing impaired students in the school environment

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*Edith Cowan University*

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**THE LANGUAGE AND LITERACY SKILLS AND BEHAVIOURS  
OF TWO MIDDLE PRIMARY  
SEVERELY TO PROFOUNDLY HEARING IMPAIRED STUDENTS  
IN THE SCHOOL ENVIRONMENT**

**by**

**Renée M. Kinsman., B. Sc (Speech and Hearing)**

**A Thesis Submitted in Partial Fulfillment of the Requirements for the**

**Award of**

**Master of Education (Language and Literacy)**

**at the Faculty of Education, Edith Cowan University**

**Date of Submission: 15.05.98**

## Abstract

Much research has shown that the hearing impaired population typically achieve only very low levels of literacy. Many researchers have examined the language and literacy deficits of the hearing impaired population in order to explain this. Nevertheless, a recent study has shown that hearing impaired children's preschool language and literacy development may occur along a similar pathway to that of their hearing peers. The present study aimed to investigate the language and literacy skills, behaviours and interactions of two severely to profoundly hearing impaired middle primary boys in the context of their mainstream school. Both qualitative and quantitative data sources were accessed, which included background records, interviews, standardised testing, sample analyses and observations in the school environment. The boys were reported as having strong visual skills. Results showed that whilst they displayed delays in receptive language and metalinguistic awareness both boys were able to read, but with different levels of achievement: one showed delays in both word recognition and comprehension; the other demonstrated particularly strong word recognition but less highly developed comprehension. There were also differences between the boys in their levels of writing and social language. Nevertheless, whilst one of them showed appropriate social language and interaction skills, they were both often excluded by their hearing peers. Various peer, teacher and environmental factors were identified within the school setting which may have interfered with the boys' social interactions and language and literacy learning. These findings are

interpreted in terms of theories of language and literacy acquisition in hearing impaired children and their integration into mainstream settings. Some implications for educational practice and further research are presented.

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## CHAPTER 1

### Introduction

In their recent introduction to *Australian Literacies*, LoBianco and Freebody (1997, p. 1) begin with these words "It is probably the case that at no previous stage in human social and economic history has the importance and complexity of literacy been greater nor at any past time has the interrelation between literacy capability and the development of Australia's full potential been closer". They also acknowledge that the knowledge and experience that children bring with them to their literacy learning varies among Australian children, some of whom may be deemed 'at risk' of encountering difficulty in literacy learning. Research has shown that children who are deaf or have a degree of hearing loss are at particular risk of demonstrating poorly developed literacy skills as well as restricted experience and knowledge (Conrad, 1979; Giorcelli, 1991; LoBianco & Freebody, 1997; Power, 1997).

The research described in the present study examines the language and literacy skills and behaviours of two severely to profoundly hearing impaired boys in their middle primary school environment. Whilst research findings have suggested that hearing impaired children do not develop language and literacy skills to the levels of their normally hearing peers, a recent study by Williams (1994) has suggested that hearing impaired children's preschool emergent literacy skills and behaviours develop in similar ways to those of hearing children. The aim of the present study is thus to extend the body of knowledge concerning the nature of language and literacy development in hearing impaired children by examining the skills, behaviours and interactions of two hearing impaired boys whose literacy skills were more developed than those of the subjects in Williams' study (1994).

Many researchers have focused on the deficits of the hearing impaired population in order to explain their relatively weaker language and literacy skills. Hence, there is a paucity of information concerning the language and literacy skills and abilities that hearing impaired children do have, which is much needed information if these children are to experience optimal educational provision and thus reach their potential. In the research literature, terms such as “deaf”, “hearing impaired”, “hard of hearing”, and “partially hearing” have been sometimes used interchangeably and sometimes to specify the degree of hearing loss. For the purpose of this study, the term *hearing impaired* has been chosen to refer to those individuals who have a degree of hearing loss, whether the hearing loss is mild, moderate, severe or profound.

Frequency and intensity are the parameters used to describe sound. Frequency, or pitch, is measured in Hertz (Hz). Normally hearing individuals can hear between 50 Hz and 25,000 Hz, with speech frequencies being between 250 Hz and 4,000 Hz (Power, 1998). Intensity, or loudness, is measured in decibels (dB). A quiet conversation would typically be 30 dB, a normal conversation would be 50-60 dB, and the noise made by a jackhammer would measure at 100 dB. Hearing impairment is classified by degree of loss in decibels, using the terms “mild”, “moderate”, “severe”, or “profound”. The population of interest in this study is that with a severe to profound (65+dB) hearing loss. This degree of hearing loss means that normal conversation is virtually impossible to hear, there may be some benefit from hearing aids, and the individual is mainly visually dependent, relying on lip reading, facial expression and gestures (Power, 1998).

The study begins with a literature review in Chapter 2 and presents theoretical models of language and literacy, with working definitions for this study, as well as a review of the literature concerning hearing impairment and its relationship to language and literacy development. Also included in this chapter are the specific aims of the study and the research



questions. In Chapter 3 the design of the study and methodological considerations are outlined. The results are presented in Chapter 4 and are discussed in relation to the literature in Chapter 5. Finally, Chapter 6 addresses general discussion points and the conclusions of the study, in addition to some limitations of the study and suggestions for educational practice and further research.

## CHAPTER 2

### Literature Review

This chapter presents an overview of some of the major research findings concerning hearing impairment and its relationship to language and literacy development. It summarises existing research and evaluates its relevance and limitations. The first part analyses definitions of language, literacy and hearing impairment. Theoretical models of language, reading and writing are then considered. Research findings concerned with language development in hearing impaired children are presented, followed by a discussion of variables that are important for reading and writing acquisition. Research findings relevant to literacy development in hearing impaired children are considered. Important home and school environmental factors are examined and methodological issues in studies of hearing impaired children are considered. Working definitions for this study are then presented. Finally, the aims of the study and research questions to be addressed are presented.

#### Definitions of language and literacy

*Language*, as Crystal (1997) points out, is a fascinating object of study, with many components such as syntax, vocabulary, discourse and pragmatics. Its importance lies in its “unique role in capturing the breadth of human thought and endeavour” and “as a means of understanding ourselves and our society” since language may “constitute a barrier as well as a means of communication” (Crystal, 1997, p. 1). The social use of language and construction of a world view through language have been examined by various authors including Hodge and Kress (1993) who see language as a social practice that occurs in society in an attempt to

make representation and meaning (Hodge & Kress, 1993). To acknowledge the development and use of language in the sociocultural context, Emmit and Pollock (1997, p. 11) define language as "a system of arbitrary signs agreed to by a community of users, transmitted for a specific purpose, in relation to the shared world of the user." This definition places emphasis on the social and dynamic nature of language. Of particular interest to language definitions for this literature review is the observation by Harris and Hodges (1995) that whilst language is usually based on "an arbitrary linking of semantic content or meaning with syntactic patterns of speech or writing" (p. 132) it may also have its basis in the linkage of visual or tactile symbols such as Braille for the visually impaired and the sign languages of the hearing impaired. As Harris and Hodges (1995) point out, language may be thought of as oral communication through speech, but may also be defined as gesture or body language. As will be seen later in this chapter, many hearing impaired individuals may well use a combination of speech and sign language.

Closely related to the concept of language, and, in many definitions overlapping it, is the concept of *literacy*. Anstey and Bull (1997) state "Language is therefore the system of signs which are used whereas literacy refers to the actual practices involved in reading, writing and talk" (p. 35). There are, according to Harris and Hodges (1995), many definitions of literacy. This may be due to a number of reasons, such as the fact that literacy, like language, is socially and culturally based (Luke, 1993) and therefore dynamic (Department of Secondary Education/Catholic Education Office of Victoria, 1994), and that literacy has many perspectives (Daniele, 1993) as determined by the various professional bodies contributing to literacy research (LoBianco & Freebody, 1997). According to LoBianco and Freebody, definitions of literacy may "range from skills-based conceptions of functional literacy through to the very broad and all-encompassing definitions which integrate social and political

empowerment" (1997, p. 28). According to the Australian Language and Literacy Policy, literacy is:

the ability to read and use information and to write appropriately in a range of contexts. It is used to develop knowledge and understanding, to achieve personal growth, and to function effectively in our society. Literacy also includes the recognition of numbers and basic mathematical signs and symbols within texts. Literacy involves the integration of speaking, listening, and critical thinking within reading and writing. (Vol 1, p. 4).

Thus, literacy encompasses both spoken and written language in both expressive and receptive modes, and involves critical thinking. In addition to the social aspect, literacy also has political connotations. As shown by Venezky (1995), during the past century literacy has been contrasted with illiteracy, and a sharp division between the two has been promoted by governments that have pledged to reduce *illiteracy*. Nevertheless, Venezky (1995) pointed out that literacy is presently understood as a continuum and he suggested that *aliteracy* (the unwillingness to use literacy even though the capability is present) is as much a concern as illiteracy. He proposed that literacy "requires autonomous engagement with print and stresses the role of the individual in generating as well as receiving and assigning individual interpretations to messages" (p. 142).

It can be seen that literacy is an extremely complex concept. Harris and Hodges (1995) listed 38 representative types of literacy which vary from reading literacy to cultural literacy to workplace literacy. Nevertheless, engagement with print is part of most definitions of literacy. Further, many definitions of literacy have included "both reading and writing, applied in a social context" (Gray, 1956; cited in Harris & Hodges 1995, p. 140).

### Language and literacy acquisition

In recent years, research in the area of literacy practices of young children has shown that learning to read and write is a continuous process that occurs simultaneously with learning spoken language, and that spoken language and written language reinforce the development of each other (Sulzby & Teale, 1991; Teale & Sulzby, 1989). Ruddell (1994) also noted that spoken and written skills are learned concurrently and reinforce each other, and showed how written language develops in spoken language activities. Further, literacy may emerge when children attempt to understand the relationship between phonemes and their graphemic representation. Another factor that Ruddell (1994) noted was that spoken language skills remain superior to written language skills until late primary school (Year 5 onwards) when the opposite is true. Gray (1995) stated that this may be due to the greater emphasis placed on written language in classrooms at higher grade levels, or to the fact that more time may be needed to develop written language skills to the level of spoken language skills.

### Language, literacy and hearing impairment

Given the close relationship between spoken language and literacy, it is to be expected that hearing impairment would have a significant impact on literacy acquisition. LoBianco and Freebody (1997) identified hearing impairment as a disability primarily in the acquisition of English literacy in so far as spoken language acquisition is significantly affected by the lack of exposure and effortless learning which is experienced by normally hearing children. As noted by Giorcelli (1991), delayed language acquisition combined with the inability to hear language effortlessly, leads to an increased widening of the literacy margin between normally hearing and hearing impaired children. Consequently, as Power (1998, p. 366) noted, hearing

impairment affects "the ability to achieve normally in school subjects which are based largely on teacher talk, reading, and writing."

### A model of language acquisition

The social interactionist model of language acquisition suggests that children develop language through their interactions with other people and the environment (Neuman & Roskos, 1993). This interactionist model was developed by Vygotsky (1978), who purported that language is acquired socially within a cultural context. This model also allows the inclusion of literacy as a social event that is 'done' (Luke, 1993) and that intellectual development depends on language, which is governed by social interaction (Garton & Pratt, 1989). Thus, according to this model, a lack of social interaction and exposure to communication would result in impaired language acquisition. This hypothesis has implications for the language acquisition of hearing impaired children and will be addressed later in this chapter.

### Models of reading and writing

#### A bottom up model

According to Nicholson (1993), Gough (1972) proposed a model of reading that focussed on decoding as being the primary role of the reader. He believed that reading was performed by making use of grapheme to phoneme correspondence rules. He suggested that in order to read, children must become decoders, making graphophonic conversions to draw meaning from print. This model proposes that only when the decoding process becomes difficult, will the reader make use of contextual clues. The use of context in this model would indicate failure of the reader to use graphophonic knowledge appropriately. However, the reliance of

this model on decoding does not account for reading errors that are not orthographic in nature or for the use of context to facilitate word recognition (Nicholson, 1993).

### A top down model

Goodman (1970) proposed that rather than decoding print, skilled readers become involved in a 'psycholinguistic guessing game' in their attempts to determine the meaning of print. This model relies on the development of language structures, concept development and experience as important variables in reading success. Goodman claimed that readers make semantic errors during reading (such as 'gold' for 'treasure') which retain the overall meaning and do not interfere with comprehension. This suggests that a skilled reader would be able to predict the meaning of the text, and that errors in decoding would not impact on this. Goodman reported that good readers make use of context whereas poor readers do not, and instead rely heavily on graphic information. A problem with this model is that it fails to account for the strong graphophonic skills of good readers and the corresponding weak graphophonic skills of poor readers (Lipson & Wixson, 1997).

Both the bottom-up and top-down models contribute valuable information in determining factors of reading success, although individually they fail to consider some important components of reading and do not address writing.

### Interactive and socio-cultural models

Two recent socio-cultural theories incorporate the important features of both bottom-up and top-down models. Freebody (1993) identified four essential sociolinguistic roles for reading and writing in the late 20th century. These roles are that of *code breaker*, *text participant*, *text user* and *text analyst*. He claims that children need to be able to decode the cipher into meaningful units, to use their background knowledge to generate meaning from

text, to identify the purposes and types of written communication, and to understand that text can be challenged and that readers can be influenced.

Lipson and Wixson (1997) have presented a model of reading and writing that they claim is a combination of socio-cultural and cognitive information processing models. This model is presented in Figure 1.

### **CONTEXT**

Settings  
Instructional Resources  
Curriculum  
Instructional Methods  
Assessment Practices

### **LEARNER**

Prior Content Knowledge  
Knowledge about reading and writing  
Attitudes and Motivation  
Correlates of skilled performance

### **SKILLED READING - WRITING PERFORMANCE**

Comprehension  
Composition  
Vocabulary Development  
Word Identification  
Rate and Fluency  
Spelling  
Grammar, usage and mechanics of writing

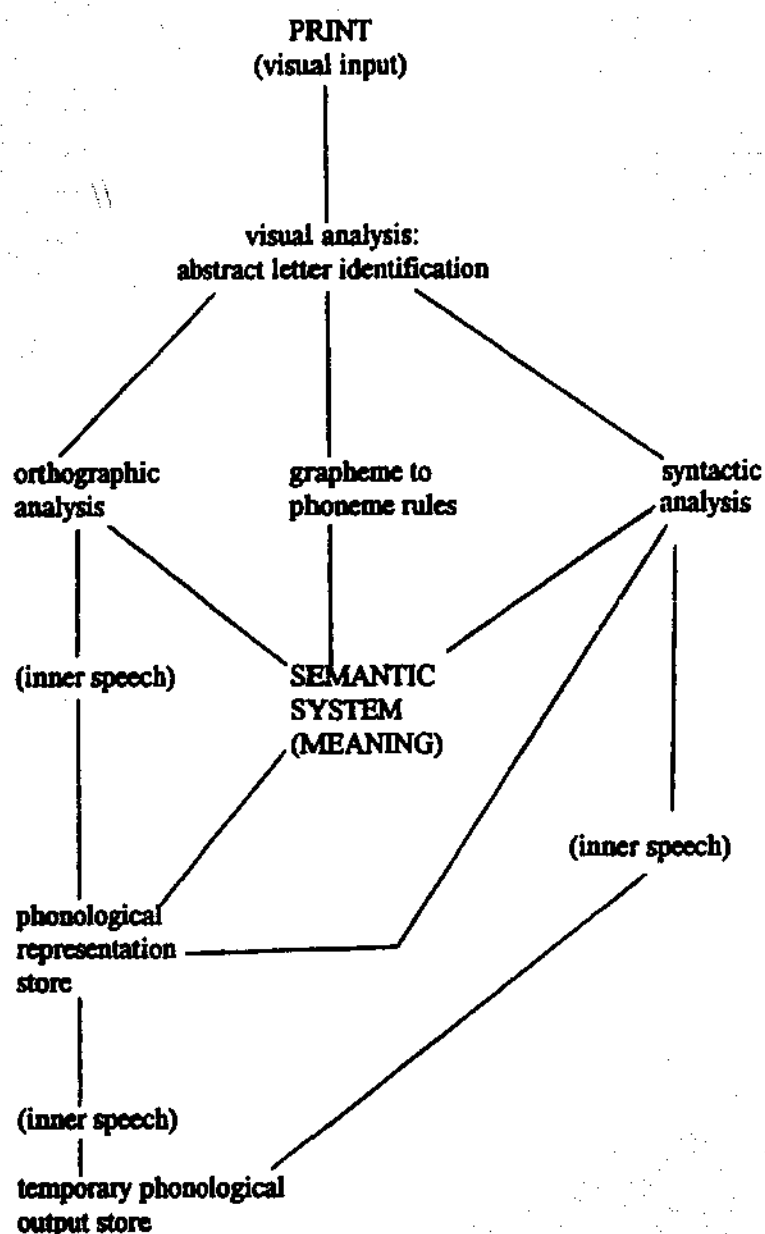
**Figure 1.** An interactive model of reading and writing (Lipson & Wixson, 1997).



In this model reading and writing are seen as a process of constructing meaning from an interaction between the reader/writer and the context of the reading/writing situation. The nature of this interaction varies as a result of many reader/writer and contextual factors.

Of particular importance to the present study of hearing impaired children is Lipson and Wixson's (1997) 'word identification' skill which involves Freebody's (1993) role of code breaker. According to Lipson and Wixson (1997), word analysis strategies include contextual analysis, morphemic analysis and graphophonic analysis. Graphophonic analysis is the use of letter-sound combinations in order to recognise words. Kay, Lesser, and Coltheart (1992) have made a detailed study of the processes involved in word identification (decoding). They claim that the first process to occur in decoding for proficient readers is abstract letter identification through visual analysis: that is, the abstract symbols on the printed page are identified as graphemes. The reader may take a direct pathway taken from print to meaning so that no further word analysis takes place. Alternatively, the reader may take an indirect pathway to meaning. In this route, recognition of the collection of letters is conducted either by orthographic analysis or phonological analysis (Goswami & Bryant, 1991; Kamhi & Catts, 1989). Orthographic analysis allows for whole word recognition and is typically used for analysis of familiar words and orthographically irregular words as it is essentially a visual process. Phonological analysis, on the other hand, involves applying letter to sound rules, and is typically used by proficient readers to analyse novel or unfamiliar words and may be used for decoding orthographically regular words and nonwords.

Following orthographic and/or phonological analysis, information then proceeds to the semantic system to be mapped with its known or assumed meaning. If the semantic system is bypassed or impaired, the word may be read accurately but without meaning (see Figure 2).



**Figure 2.** A decoding pathway (Kay et al., 1992).

The processing of information then continues to the phonological representation store through inner speech to turn the meaning into the appropriate word as known by the reader. This phonological representation is not activated for novel words. In order to recall the entire

phonological representation of a word prior to verbalisation (either aloud or using inner speech), it must be stored in immediate memory - the temporary phonological output store (Crowder & Wagner, 1992), which is frequently referred to as the *articulatory loop* (Baddeley, 1986). This theoretical description of direct and indirect pathways to word recognition explains how familiar, unfamiliar, orthographically regular, orthographically irregular, real and nonwords can be read with or without meaning. It is, however, likely that for most readers, use of these pathways is not as discrete as in this description (Goswami & Bryant, 1991). This model also indicates the importance of inner speech for the reading pathway. Some researchers (Conrad, 1979) have suggested that hearing impaired children do not possess inner speech. The implications of this suggestion will be discussed later in the chapter.

The role of word recognition in reading has been emphasised because of its significance in regard to the hearing impaired population. As the profoundly hearing impaired do not have an efficient auditory modality, they may not have access to a phonological representation store, which would in turn then have a significant impact on their ability to analyse written words phonologically. This would be expected to affect not only word recognition but also spelling skills.

### Language acquisition in the hearing impaired

#### The oral/manual debate

Whether hearing impaired children should sign or speak is a highly debated topic, and is known as the 'great communication debate' (Macdougall, 1991, p. 613). Parents of hearing impaired children face a difficult decision. This decision is whether to teach their child to speak and speech read, maximising any residual hearing, known as 'oralism', to teach them to use

sign language, or to use a combination of sign language, finger spelling and speech, known as 'total communication' (Kampfe & Turecheck, 1987). The degree of hearing impairment (mild, moderate, severe, or profound) is important in the decision making. The less severe the hearing impairment, the more likely the choice of oralism.

Oralism promotes the use of the child's hearing potential and involves training to speak. Hearing impaired children using this language mode are fitted with appropriate hearing aids to amplify sound and are taught to speech read, which involves the interpretation of gesture and facial expression as well as lip reading. This may or may not be used in conjunction with "cued speech", a phonetic system in which hand shapes and placements represent the sounds of English, which are cued as they are pronounced in order to assist the speech reading task (Venard, 1994). Oralism with cued speech support is congruent with the "auditory-verbal" philosophy, the objective of which is to follow as closely as possible the normal pattern of speech and language development, with the aim of integrating hearing impaired children into schools with hearing children (Caleffe-Schenck, 1992). (A purely auditory-verbal approach, however, would not make use of the cued speech method as cued speech involves visual assistance). Oralism, which involves being able to listen, use, and understand speech, is considered by some researchers to be the appropriate language environment for hearing impaired children (Bochner & Albertini, 1988) in order to provide them with adequate skills for achieving their potential in society and providing independence, freedom, and equal opportunity (Lynas, 1994).

On the other hand, total communication, which involves the use of manual or sign language, has much support amongst the hearing impaired community. Its philosophy suggests that all methods of communication should be made available to and utilised by the hearing impaired population (Macdougall, 1991). This philosophy supports the idea of Deaf culture,

its aim being to assist the psychological development of the hearing impaired child, as sign language is considered by its advocates to be the natural and innate language of hearing impaired people (Lynas, 1994; McNally, Rose, & Quigley, 1987). The users of sign language describe it as meeting all of their requirements. They claim that it is to be used with pride as a reflection of their culture (Lynas, 1994). This is in contrast to having their disability emphasised through integration, the wearing of hearing aids and the use of speech reading (also known as lip reading), which they believe to be unnatural and difficult. Further, the Deaf society view themselves as a small ethnic group (signified by the use of the capital D in 'Deaf') rather than as a disabled population (Aquiline & Jones, 1994), with ethnicity including the use of their own language and the development of their own culture.

#### The variable of parental communication

Parental communication is an essential factor in the development of the language and literacy of hearing impaired children (Williams, 1995) and may be affected by the oral-manual debate (Kampfe & Turecheck, 1987). The research conducted by Kampfe and Turecheck (1987) demonstrated that hearing impaired children who have hearing impaired signing parents read at a higher level than hearing impaired children of non-signing hearing parents. However, this does not suggest that it is purely the variable of manual communication that enhances literacy. Rather, it may suggest that parental hearing status may be the important factor. Having hearing parents may be a disadvantage for hearing impaired children, as they require time to learn the communication mode chosen for their child, and frequently lack proficiency in it, thus providing inadequate language role models (Conrad, 1979; Williams, 1994). It would be expected, on the other hand, that hearing impaired parents who are fluent in manual communication and use the language consistently would be more adequate language role models for hearing impaired children who are learning sign language.

Morrison (1982) investigated factors involved in the reading skills of over 80 hearing impaired high school students. This researcher suggested that there was no consistent relationship between reading and the communication mode used, but that reading development was dependent on uniformity of the communication mode, a condition lacking in the communication world of many hearing impaired children. A hearing impaired child may, for example, have a mix of linguistic environments, with one type of sign language used at home, another used at school and speech used with friends or the extended family. This piece-meal exposure may inhibit the child from becoming proficient in any one of these language modes.

Parental attitude and social/linguistic behaviour have also been identified as influencing language development in both hearing and hearing impaired children (Corson, cited in Kampfe & Turecheck, 1987; Teale, 1992). Early social and linguistic interaction is essential for language acquisition, and may be absent in the interaction between parents and hearing impaired children (Gregory & Mogford, 1981; Webster, 1986). However, it may not be the child's hearing impairment as such that inhibits interaction, but it may be that parental expectations are lower for hearing impaired children. King and Quigley (1985) suggested that parents may believe that time spent on language stimulation is not warranted with their hearing impaired child, or they may shelter their "disabled" child from normal social interaction. All of these factors may affect the amount and quality of parent-child language interaction.

#### A deficit perspective on the hearing impaired

A deficit perspective has often been used to address the skills and knowledge of hearing impaired children. This approach focuses on identifying the particular skills that the child lacks. It has been shown, by taking a deficit perspective, that certain factors thought to be prerequisites for language development in hearing children are absent or insufficient in the hearing impaired population. Dolman (1992) noted that hearing impaired children have an

inadequate knowledge base, with severe experiential and cognitive deficits. This is supported by Loera and Meichenbaum (1993) who reported that hearing impaired children have extremely poor problem solving skills. Williams (1994), in the previously cited study, explained that reduced knowledge, experience and problem solving skills seemed to be a result of the fact that hearing impaired children in the United States may have great diversity in their language world (such as being exposed to a mixture of speech, different forms of sign language, signed English, fingerspelling, and cued speech) and that this inhibits their understanding of many of the complexities of normal language use. Further, Hirsch-Pasek and Trieman (1987) claimed that this mixture of language systems prevents the development of a strong language base.

Nevertheless, researchers such as Andrews and Mason (1986), Braden (1993) and Martin (1993) have reported results which suggest that hearing impaired children are cognitively and perceptually at the levels of their hearing peers and that they show similar performances on non-verbal IQ tests. Erting (1992) interpreted these findings as evidence that the hearing impaired compensate for their lack of hearing through the development of a highly trained visual modality and that hearing impairment of itself, does not lead to reduced cognitive skills. Further, Williams (1994) found that the emergent literacy skills and behaviours of three profoundly hearing impaired preschool children showed developmental patterns similar to those of normally hearing children.

The degree of hearing impairment is an important factor when considering language development in hearing impaired children. The more severe the hearing loss and the earlier the onset of hearing loss, the more difficulty children will have with the acquisition of language (King & Quigley, 1985). It appears that this is a variable that needs to be taken into consideration when examining the language and literacy abilities of hearing impaired children,

although research findings in this area are not completely consistent. For example, Daneman, Nemeth, Stainton, and Huelsmann (1995) found in their study of 60 hearing impaired children that degree of hearing loss did not significantly predict reading achievement.

#### Semantic skills of hearing impaired children.

There are some undisputed features of the language skills of hearing impaired children. There is agreement amongst researchers that the spoken language of hearing children is vastly superior to that of hearing impaired children (Conrad, 1979; Erting, 1992; Loera & Meichenbaum, 1993; Williams, 1994), with the greatest areas of contrast being semantic and syntactic development. McNally et al. (1987) and Webster (1986) described the receptive vocabulary development of hearing impaired children as delayed, but with a similar progression to that of hearing children. They described the vocabularies of hearing impaired children as more restricted, with fewer lexical items. It has also been found that hearing impaired children have less knowledge of common content words than their hearing peers (Arnold & Horner, 1995; Flexer, Wray, Millen, & Leevitt, 1993). Higher level semantic skills also appear to be problematic: hearing impaired children are able to categorise, but may have difficulty making distinctions within categories. Their classification skills are less flexible and abstract than those of hearing children (McNally et al., 1987). Hearing impaired children have also been found generally to have great difficulty with figurative language such as inferencing, idioms, metaphors, and colloquialisms (Erting, 1992). These observations suggest a lower level of linguistic maturation when compared to their hearing peers.

#### Syntactic skills of hearing impaired children.

Syntax is another area of distinction between normally hearing and hearing impaired children. Like vocabulary development, syntactic development in hearing impaired children is



slow (King & Quigley, 1985; Quigley & Kretschmer, 1982) and is frequently related to the level of speech intelligibility, that is, as intelligibility improves, more complex syntactic structures are attempted (Camarata, 1995). Some researchers have described qualities peculiar to hearing impaired children's syntactic structures, known as *deafisms*, which increase with the severity of the hearing loss (Webster, 1986). These include shorter and simpler sentences, a large proportion of nouns and verbs with comparatively few articles, auxiliaries, prepositions and conjunctions. Quigley and Kretschmer (1982) claimed that hearing impaired children use few abstract words and their sentence structures are more rigid, with a typical subject-verb-object construction. Quigley (cited in Webster, 1986) also found a lack of more complex structures such as passives or embedded clauses in the language of hearing impaired children. This would indicate that the spoken language skills of hearing impaired children remain at a lower level of complexity than the skills of hearing children.

#### Discourse skills of hearing impaired children.

Discourse ability is a focal area of language and a characteristic of high language competence (Nelson & Camarata, 1996). Discourse abilities include narrative, conversation, paralinguistic pragmatics (such as prosodic features), and nonlinguistic features (such as eye contact and gesture). Griffith and Ripich (1988) and Terrell and Ripich (1989) claim that discourse competence is an important area for the differential diagnosis of language disorders. These researchers take the perspective that communicative success and appropriacy in a particular context constitute a more functional approach to assessing language skills than the more typical analysis of language structure. The context largely determines the appropriacy of the interaction, which includes partner type (friend, teacher), intent (explaining, requesting), and the physical environment (classroom, playground). Ripich (1989) found that the classroom environment provides one of the richest sources of a child's discourse. There is a dearth of

research concerning the discourse abilities of the hearing impaired population, particularly in the classroom context.

### Narrative skills of hearing impaired children.

Narrative skill is story telling skill (Weiss & Johnson, 1993). The development of narrative skills is an important area of language and literacy development (Conte, Rampelli, & Volterra, 1996; Ewoldt, 1985; Griffith & Ripich, 1988; Norris & Hoffman, 1993) as there is a high frequency of narrative discourse in daily activities (Westby, Van Dongen, & Maggart, 1989). Narrative ability involves the combined skills of cognition and language. Peterson (1990) claimed that there is a developmental progression in narrative skills in normally developing children, from the 'here-and-now', to the 'there-and-then'. Cognitive and linguistic features continue to increase in complexity throughout childhood. These include increasing complexity of syntactic structures, awareness of literate forms (such as direct speech) and depth of logico-causal relationships as well as an increasing variety of topics. Therefore, according to Peterson (1990), narrative production can provide a good indication of the cognition, syntax, semantics, world knowledge, and experience of a child.

There has been very little research conducted in the area of narrative skills in hearing impaired children. However, since normally hearing children with impaired language skills have been shown to demonstrate weakened narrative skills (Liles, 1993), and hearing impaired children have been shown to have impaired language skills (Bamford & Saunders, 1991), it could be hypothesised that narrative competence in hearing impaired children would be lower than that of normally hearing children.

Weiss and Johnson (1993) conducted a study of seven school aged, orally educated, hearing impaired children to determine whether research data would support the above mentioned hypothesis. The participants had hearing losses varying from moderate to severe,

and comparisons were made between their conversational discourse and oral narrative (movie retell) discourse. Their oral narrative discourse was considerably more "literate" (that is, having a more sophisticated syntactic structure) than their conversational discourse. An important finding of the study was that neither increasing age nor syntactic complexity were significantly related to increasing narrative complexity. This would suggest that there is a substantial heterogeneity in the moderately to severely hearing impaired population. However, the study failed to consider other factors such as reading ability and book/story awareness, which may have affected the results.

Yoshinaga-Itano and Downey (1997), in a study of the written narrative skills of normally hearing and mild to profoundly hearing impaired students, found that "the degree of hearing loss differentially affects all aspects of development, particularly the metalinguistic variables" (p. 5). That is, the milder the hearing loss, the better the narrative skill. Therefore, it may be hypothesised that profoundly hearing impaired children would have particularly weak narrative skills.

### Important variables in reading and writing acquisition

The research literature reviewed so far has suggested that certain cognitive and linguistic skills, experiential knowledge, syntactic and phonological awareness are all essential for reading and writing development. Researchers differ, however, on the relative importance placed on each of these factors and the interactions between them. Further, much of the research has focussed on reading acquisition only.

### Phonological awareness

A large body of the literature supports the claim that metalinguistic awareness, and in particular phonological awareness, plays a vital role in early literacy (Adams, 1990; Catts,

1993; Harris & Beech, 1995; Martini, DiTuro, & Tomaiuolo, 1995; Rohl & Milton, 1993; Rohl & Pratt, 1995). Phonological awareness is the knowledge that a person has of the sound system of their language (Fox & Routh, 1976) and the ability to manipulate this system (Rohl & Milton, 1993). Many researchers have supported the claim that conscious mastery of the relationship between phonology and orthography is an essential prerequisite for reading development (Lewis & Penn, 1990), that is, phonological awareness plays a causal role in reading development (Mann, 1993; Meyer & Masterson, 1994; Wagner & Torgesen, 1987). This claim has arisen from studies such as that conducted by Fox and Routh (1980) which demonstrated that children with severe reading disabilities have extreme difficulty with phonological awareness. Success at phonological awareness tasks, such as the ability to rhyme, is a reliable predictor of reading and spelling success as these tasks demonstrate access to phonological information (Hanson & Fowler, 1987; Hanson & McGarr, 1989; Rohl & Pratt, 1995). Some researchers have claimed that for children to have proficient phonological awareness, they may require explicit training (Lewis & Penn, 1990; Lundberg, Frost, & Petersen, 1988) and that specific training in phonological awareness leads to an increase in reading and spelling achievement (Nicholson, 1993).

Some researchers have, however, questioned the nature of the role of phonological awareness in reading. Some have claimed that there is a reciprocal relationship between phonological awareness and reading (Goswami & Bryant, 1991) in that awareness of onset and rime may predict later reading, but that reading itself may predict other levels of phonological awareness such as the ability to segment words into their constituent phonemes. Others have considered phonological awareness to be a facilitator of literacy development (Backman, 1983; Hodgson, 1992), as studies have shown that there is not a uniform reliance on phonological decoding skills amongst all young readers (Backman, 1983). Stanovich,

Cunningham, and Feeman (1984) conducted a study examining the intelligence, language skills, and phonological decoding skills of young readers. They found that decoding ability had the highest correlation with reading comprehension, although both intelligence and language skills were also significantly correlated with reading. The role of phonological awareness is important when considering the reading and writing of hearing impaired children. With an impoverished auditory modality, the ability to decode orthographic information into phonological representations may be impaired or absent.

In terms of stage theories of literacy acquisition such as that of Frith (1985), hearing impairment could be seen as leading to arrested development in reading and spelling. Frith posits three phases of reading and spelling development: logographic (recognising words from a symbol, such as recognising that a red hexagon with white writing says *stop*); alphabetic (implementing grapheme to phoneme rules); and orthographic (using morphemic structures to identify words). Well developed phonological awareness is posited as being necessary for making the transition from the logographic to the alphabetic stage.

### Syntactic and word awareness

Syntactic awareness has also been identified as important in beginning reading. Syntactic awareness includes an awareness of words as units of language and an understanding of the grammar of the language (Rohl & Milton, 1993). According to Tunmer (1990), syntactic awareness facilitates comprehension monitoring, and influences reading in conjunction with phonological awareness. Children who are syntactically aware are better able to predict words in connected text that are in their spoken vocabulary and so may be able to use syntactic and phonological awareness to identify correctly words not in their sight vocabulary. Bishop and Adams (1990) suggested that receptive language performance, particularly in the areas of

semantics and syntax, is an even stronger predictor of literacy than phonological awareness. This seems to indicate that well developed syntactic skills are particularly important in the acquisition of reading (Mann, Shankweiler, & Smith, 1984), although there is a dearth of published training studies in this area.

A study conducted by Gartner, Trehub, and Mackay-Soroka (1993) examined the word awareness of 54 normally hearing and 50 hearing impaired children between 4 and 14 years of age. The study found that normally hearing children performed with the highest degree of accuracy and that an increase in age led to an increase in awareness. The degree of hearing loss did not impact on the performance of orally educated hearing impaired children. However, hearing impaired children educated using total communication performed at a significantly lower level than the orally educated children. Thus, it would appear that when addressing word awareness, the important variable may be mode of communication rather than severity of hearing impairment, as orally educated children would be expected to have a greater knowledge of and experience with, spoken language structures.

### Expressive phonology

The relationship between expressive phonology (articulation patterns) and reading performance has recently been studied by Bird, Bishop, and Freeman (1995) who found that children with phonological impairments (that is, disorders of speech production) scored below their control peers on measures of phonological awareness and reading. Children with phonological impairments had particular difficulty with word segmentation and non-word construction, which suggests an impairment in analysis of the discrete phonological units. Bird et al. (1995) found that the severity of the phonological disorder and the age of the child were important variables in determining literacy difficulty (that is, the older the child and the more severe the phonological disorder, the greater the literacy difficulties). These results appear to

have important implications for the more severely hearing impaired population. Not only is their speech characterised by disordered prosody (rhythm, intonation, and pitch), but they have numerous articulatory errors (Power, 1994). This would suggest then, that hearing impaired children may be more at risk of achieving lower levels of literacy than their hearing peers.

### World knowledge

The use of context and world knowledge have also been shown to be important in reading development (Davey & King, 1990; Nicholson, 1993). If a word encountered in reading is unknown, the context of the word and the reader's previous situational experience may allow the reader to comprehend the word in question. It has also been claimed, from studies with profoundly hearing impaired children, that familiarity and orientation (knowing where the beginning and end of a story are, that stories are read from left to right, that pictures illustrate a story, etc) play a role in learning to read (Ewoldt & Hammermeister, 1986; Maxwell, 1986; Zacharias-Lewinsky, Koenig, Otis-Wilborn, & Messenheimer-Young, 1992). Paul (1996) claimed that the knowledge that text is designed to be understood and pondered (both creatively and critically), along with strong syntactic and receptive skills also has an effect upon reading comprehension. These findings have implications for hearing impaired children, as their receptive and spoken language abilities have been shown to be at a lower level than those of their hearing peers (Conrad, 1979; Erting, 1992; Loera & Meichenbaum, 1993).

### Vocabulary

Ruddell (1994) identified vocabulary as being important for reading development, particularly for reading comprehension. She proposed that children develop vocabulary as they are aurally exposed to words. They ascribe meaning to these words in the context in which they are heard. Meaning may be either instructed or inferred (Ruddell, 1994). Lipson and Wixson (1997, p. 551) comment that "...words facilitate our thinking processes. Reading and writing are thinking processes; therefore, it is not surprising that vocabulary is a prime contributor to effective reading and writing." Anderson and Freebody (1981) and Nagy (1988) found that vocabulary knowledge was a very important factor in determining how well written text could be understood. It seems that hearing impairment would restrict exposure to new vocabulary and affect consolidation of the vocabulary already learned (McNally et al., 1987; Webster, 1986).

### The importance of inner speech

From the models of reading and writing that were presented earlier, it can be seen that the use of inner (or 'internal') speech plays an important role throughout both processes, but what is the nature of its role? When reading and writing are in process, silent naming, sounding, and spelling occur at certain stages in order either to consolidate decisions or to activate memory (see Figure 2). Crowder and Wagner (1992) found that if a word is not only familiar but is regularly spelled, it is more quickly identified as being a word than is an unfamiliar word, a word that does not conform to English orthography, or a nonword such as 'ksujl'. This finding lends support to the presence and function of inner speech. Kay et al. (1992) proposed that inner speech initially occurs at the level of the phonological representation store, where correct pronunciations of words are activated. Words are then thought to be verbalised internally in



order to be stored immediately prior to output. Inner speech is important both as a prompt and as a checking mechanism in lexical access for reading and writing.

The importance of inner speech to decoding and encoding has significant implications for the reading and writing of the hearing impaired population. A severe to profound hearing impairment may be an insuperable obstacle to the development of inner speech (Banks, Gray, & Fyfe, 1990). Conrad (1979), in his pioneering study of the literacy and language of hearing impaired children, found that some of these children did not use inner speech. It would appear that this is may be due to a deficient phonological representation store or lexicon. Conrad (1979) found that the use or non-use of inner speech was the most significant factor in reading success for hearing impaired children, rather than severity of impairment or intelligence. However, lack of inner speech may not simply be due to an impoverished phonological store, but may also be attributable to delayed language development, which has been found to be a common characteristic of profoundly hearing impaired children (Williams, 1993).

It would appear from the literature reviewed above, that it is unlikely that there is one single factor in reading success. Cognitive, linguistic, experiential, and metalinguistic factors have all been shown to be important for literacy development. As has been suggested, hearing impaired children may be delayed in one or more of these areas, and so it is therefore not surprising that the literacy skills of hearing impaired children have been shown to be below those of hearing children. However, as models of literacy development are based on studies with hearing children, they may prove to be insufficient for explaining the literacy development of hearing impaired children.

### Literacy and the hearing impaired

Research has shown that hearing impairment has a significant, and negative, relationship with reading achievement (Conrad, 1979; Kampfe & Turecheck, 1987). Hearing impaired adults, with varying degrees of hearing impairment have been found to remain generally with an average of a Year 3-4 level of literacy (Akamatsu & Armour, 1987; Andrews & Mason, 1986; Dolman, 1992; Loera & Meichenbaum, 1993; Macdougall, 1991). One explanation for this is that with an impoverished auditory modality, hearing impaired children are unable to access phonological systems in order to develop efficient use of grapheme/phoneme correspondence rules. However, Dodd and Hermelin (1977) demonstrated that hearing impaired children may have access to phonological information through a highly trained visual modality. That is, hearing impaired children may use different strategies to memorise orthographic information through making efficient use of speech based codes by watching the lips of a speaker, then shifting to using an articulation pattern of their own (Schaper & Reitsma, 1993). Nevertheless, they remain susceptible to articulatory confusion (Schaper & Reitsma, 1993), which of itself may impact on literacy development (Bird et al. 1995; Bishop & Adams, 1990).

Hearing impaired children do not appear to acquire literacy to the same level as hearing children, nor do they learn at the same rate. Schaper & Reitsma (1993) reported this as being a negative factor since hearing impaired children often have barely developed spoken language before reading instruction commences. Therefore they cannot make use of grapheme-phoneme relationships to decode unfamiliar written words into their current spoken vocabulary.

Borman, Stoefen-Fisher, Taylor, Draper, and Niederklein (1988) found that irrespective of the communication mode used, hearing impaired children demonstrate low levels of metalinguistic awareness. In their study of 20 hearing impaired children, performance was

particularly weak on phonological awareness tasks. Comparisons of hearing impaired children with their hearing peers on metalinguistic awareness tasks indicated that hearing impaired children progressed along the same developmental continuum as hearing children, but with much less efficiency and speed. This research suggested that rather than their skills being disordered, hearing impaired children appear to have significantly delayed metalinguistic skills.

The writing of hearing impaired children has been found to be comparable to their spoken language (Webster, 1986). Writing is restricted in terms of complexity of structure, use of figurative language, use of function words and the use of different voices (narrative, expository, humorous, etc), with the addition of a high number of syntactic errors (King & Quigley, 1985). Whilst this research suggests that hearing impaired children may be 'at risk' of attaining only low levels of literacy, Power (1994) noted that much of the analysis of the writing of hearing impaired children has focussed on structure rather than on comprehension. He pointed out that written narrative constructions may have unconventional syntax, but may well be understood when read. This suggests that the writing of hearing impaired children may have a higher functional value than that attributed to it in the past.

There are two major theoretical perspectives on the issue of literacy acquisition in the hearing impaired population. One suggests that literacy development is subsequent to, and dependent on a mature knowledge and skilful use of language (Andrews & Mason, 1986). The other suggests that a purely functional skill in either spoken language or sign language is a sufficient foundation for the concomitant development of language and literacy skills, although the impact of the type of communication used on literacy development is still unclear (Williams, 1994).

From evidence she collected in case studies of the language and literacy development of three prelingually and profoundly hearing impaired preschoolers, Williams (1994) found that

spoken language acquisition and written language acquisition occurred simultaneously and mutually reinforced each other. She claimed that early literacy interactions are with social and environmental print and that recognition and use of these forms of print constitute the emergent literacy perspective. This perspective suggests that all children in literate societies are learning constantly about print from a very young age through their environmental interactions. They interact with their surroundings and explore literacy prior to any classroom experience. Williams proposed that there is some disruption along the continuum from emergent to conventional literacy in the hearing impaired population as the gap between hearing and hearing impaired children on literacy tasks widens as they grow older. Thus further case study research with older hearing impaired children who are being exposed to classroom literacy instruction is warranted.

#### The school context, language, literacy and hearing impairment

As was seen in the early section of this chapter, language and literacy are learned within a socio-cultural context. For very young children, this context is usually that of the home or other child care environment. As they grow older, children spend much of their days within the context of the school classroom. As it is the context of the classroom that is the setting for the present study, the focus of the research literature will now be taken to the school context and will examine two very important variables; integration of children with special needs into regular classrooms and instructional methods for language and literacy learning.

### Integration

Elkins (1998) has described the education of students with special needs in regular classrooms as 'mainstreaming' or 'integration'. Integration is based on the premise that children with disabilities or impairments should be included in 'normal' society as much as possible, which includes the social experiences and routines of the regular classroom. He claims that the philosophy of integration affirms the discrimination of segregated education and the value of children with disabilities, although the Australian constitution has not yet established integration as a right for children with disabilities. Some benefits of integration identified by Ashman and Elkins (1990) are gains in curriculum areas, social development, levels of independence, learning and problem solving. Integration, however, is not without problems (Elkins, 1998). Within individual schools there may be poor co-ordination of mainstream and specialist programmes, the sense of involvement of mainstream and specialist teachers may be reduced and students being integrated may be stigmatised. Westwood (1997) has identified certain inclusive practices which may lead to successful integration. These include whole school commitment to integration, collaborative approaches by staff, close liaison with parents and outside agencies, regular training and professional development for staff and the use of effective teaching practices.

However, for hearing impaired children the mainstream classroom may not be the most suitable environment, as it is not an optimal environment for listening (Power, 1998). This is due to the fact that children with moderate to severe hearing impairments may only be able to cope with one to one conversations which are rare in the normal classroom, and that a significant amount of background noise is usually present in classrooms. Whilst a support teacher is usually provided for hearing impaired children who are integrated into mainstream classrooms, there is as Power (1998, p. 374) noted, "still unresolved tension as to the role of a

visiting teacher of the deaf in a regular school", as this role is open to many interpretations. Elkins (1993, p. 174) described the role of a support teacher in a school as being that of "consultant, working in collaborative, mediating or expert mode". This definition shows the varied and complex duties of a support teacher, and as Elkins (1998, p. 100) noted, "While the rhetoric of integration is powerful, it may not be sufficient for successful implementation."

### Literacy instruction for hearing impaired children

Controversy surrounds the question of how hearing impaired children should receive literacy instruction. As has previously been discussed, some researchers have claimed that hearing impaired children should receive instruction in spoken language before being exposed to literacy instruction. Once they have demonstrated capabilities in spoken language, reading and writing instruction should follow. Hanson, Liberman, and Shankweiler (1984), claimed that the success of hearing impaired readers is related to their ability to represent information in a linguistic code, and thus they need an adequate language base prior to literacy instruction.

On the other hand, other researchers have taken an emergent literacy perspective and supported the claim that spoken language and writing acquisition in hearing impaired children (as in the hearing population) occur concurrently and act as reinforcements for each other (Dodd & Hermelin, 1977; Maxwell, 1986; Williams, 1994). If this is so, then hearing impaired children should follow a developmental progression akin to their hearing peers which combines spoken and written language activities from the commencement of instruction.

Not only is the timing of literacy instruction important, but the method of instruction is also a fundamental issue. Some of the research supports the use of a whole language philosophy in the teaching of hearing impaired children. In a study of profoundly hearing impaired children, Andrews and Gonzales (1991) concluded that "free" language activities that focus on the development of language experience are crucial to literacy development in hearing impaired

children and that structured literacy tasks are inappropriate. They summarised their findings by claiming that traditional formal teaching methods may actually contribute to linguistic and cognitive deficits in hearing impaired children. This view is supported by other researchers (Clarke, 1993; Davey, 1990; Dry & Earle, 1988; Ewolt, 1986). Ewolt (1986) claimed that it is a necessity for hearing impaired children to have a language experience framework. Further, in an anecdotal study of profoundly hearing impaired children, Zacharias-Lewinsky et al. (1992) concluded that environmental and language experience is the singularly most important vehicle for learning. Nevertheless, their study consisted only of observations and lacked any specific analysis.

In contrast, there is also a strong body of support for the use of formal literacy instruction with hearing impaired children. In a discussion paper, Dolman (1992) promoted the perspective that special populations such as hearing impaired children require more formal instruction and special resources rather than "regular" instruction. It has been proposed that hearing impaired children require explicit instruction to assist metacognitive development in order to foster self efficacy in literacy learning (Schaper & Reitsma, 1993). Metacognitive sophistication has been identified as important for reading development (Badenhop, 1992; Gibbs, 1989). The importance of explicit instruction in articulatory coding and phonics has also been emphasised in the literature (Dolman, 1992; Hanson & McGarr, 1989; Schaper & Reitsma, 1993). Schaper and Reitsma (1993) claimed that this explicit instruction assists the learning of grapheme-phoneme correspondences, sound coding and the development of inner speech. It promotes the development of decoding skills, visual and phonological representation stores and access to these stores. The fact that hearing impaired children have been found to have problems in these areas has serious implications for their language and literacy learning, as their instructional needs appear to be greater than those of hearing children. Thus, Schaper

and Reitsma (1993) claim a necessity for the use of specialised formal teaching methods with hearing impaired children.

### Methodology in hearing impaired studies

It can be seen from the studies mentioned in this chapter, that some researchers have focussed on group comparisons of hearing impaired and normally hearing children when investigating the abilities of hearing impaired children (Arnold & Horner, 1995; Cappelli, Daniels, Durieux-Smith, McGrath, & Neuss, 1995; Flexer, Wray, Millen, & Leevit, 1993; Gartner, Trehub, Mackay-Soroka, 1993; Griffith & Ripich, 1988; Levy-Shiff & Hoffman, 1985; Yoshinaga-Itano & Downey, 1996; Yoshinaga-Itano & Downey, 1997). Researchers have also employed study designs which describe large groups of hearing impaired children (Andrews & Gonzales, 1991; Banks, Gray, & Fyfe, 1990; Borman et al., 1988; Daneman et al., 1995; Lewis, 1996; Luetke-Stahlman et al., 1996; Rodriguez & Lana, 1996; Simpson, Harrison, & Stuart, 1992; Watson, 1994; Weiss & Johnson, 1993; Zacharias-Lewinsky et al., 1992).

There are also in the literature some single case studies or small group studies conducted with hearing impaired children (Cole, Oshima-Takane, & Yaremko, 1994; Ruiz, 1995; Williams, 1994). Williams examined "the language and literacy worlds" of three profoundly hearing impaired children, using a 'naturalistic case study methodology' to investigate the language and literacy experiences of the children in their every day contexts of preschool and home. As Williams pointed out, case studies do not necessitate the utilisation of particular research techniques. She used a qualitative approach to data collection which included observations, formal and informal interviews with parents, children and teachers, recordings of



behaviour and interactions, samples of drawing and writing, school documents and a standardised early literacy assessment.

Webster (1986) called for researchers to examine the skills and abilities of hearing impaired readers and writers, rather than take a 'deficit' model which identifies only weaknesses. Only by identifying their capacities and capabilities can higher literacy levels be targeted and achievable. As descriptive studies of the language and emergent literacy of young hearing impaired children have been conducted (Ruiz, 1995; Williams, 1994), there remains a need to examine the language and literacy skills and classroom interactions of older children who are progressing towards conventional literacy.

It has been shown that there has been a tendency among researchers to rely on investigations of the deficits of hearing impaired children and comparisons of their skills with their hearing peers. These studies are therefore of limited use in determining how best to promote literacy skills through the enhancement of residual abilities. More studies are needed of the type conducted by Williams (1994) which, whilst recognising that there are differences between hearing and hearing impaired children, focus on the specific skills of hearing impaired children. Such studies may give teachers insight into the achievements as well as the needs of these children and thus help increase the language and literacy achievements of the hearing impaired children in their classes. Further, it seems that more qualitative research is needed to give information about the daily classroom lives of children with special needs who are integrated into mainstream settings (Elkins, 1998, p. 80).

### Working definitions of language and literacy

It has been seen in this chapter that definitions of language and literacy may overlap. In order to make the topic of literacy a manageable one, some researchers (Anstey & Bull, 1996; Barton, 1994; Garton & Pratt, 1989) have, whilst acknowledging the various components of literacy, separated them into the areas of language (expressive and receptive) and literacy (reading and writing). For the purposes of this study of hearing impaired children, a similar format will be followed. The term *expressive language* will be used to refer to the verbal and nonverbal modes of oral and gestural expression within interactions, whilst *receptive language* will be used to refer to the comprehension of these modes. The term *literacy* will be used to refer to reading and writing skills and behaviours demonstrated within the social context of the school. It is recognised that these divisions may be somewhat artificial and limited, but they are necessary in order to make the concepts manageable for the present study of hearing impaired children.

### Aim of the study and research questions

The aim of the present study is to determine, within the school environment, the receptive and expressive language and literacy characteristics of two severely to profoundly hearing impaired middle primary children. The following research questions are addressed:

1. What is the nature of the receptive language skills of two middle primary severely to profoundly hearing impaired students?
2. What is the nature of the expressive language skills of two middle primary severely to profoundly hearing impaired students?

**3. What is the nature of the reading skills and behaviours of two middle primary severely to profoundly hearing impaired students?**

**4. What is the nature of the writing skills and behaviours of two middle primary severely to profoundly hearing impaired students?**

**5. What is the nature of the classroom language interactions of two middle primary severely to profoundly hearing impaired students?**

## CHAPTER 3

### Methodology

#### Design

According to Burns (1997) case study methodology has been widely used in psychological and educational research. It usually involves the observation of an individual unit, such as a student and focuses on “a bounded subject/unit that is either very representative or very atypical” (Burns, 1997, p. 364). It may contain either quantitative or qualitative data, or a combination of the two in order to allow indepth understanding, especially where the severity of a physical disability makes it especially worth documenting and analysing. In such a case, according to Burns (1997), the data sources usually include interviews, non-participant observation, documents, records and possibly testing in order to understand the disability and to inform treatment/practice. Burns’ three principles of case study data collection are: use of multiple sources to allow for triangulation; maintenance of a chain of evidence from research questions to conclusions; and careful recording of data for later analysis.

There are certain advantages in employing qualitative methodology in case study research. It is a form of inquiry that allows for indepth investigations under naturalistic conditions in order to retain the characteristics of real life events (Williams, 1994; Yin, 1989) and involves interpretations of human behaviour which by their very nature are descriptive and provide a unique perspective (Bisesi & Raphael, 1995). On the other hand, a quantitative approach to data collection may be employed in order to allow for comparisons with a wider population.

As both quantitative and qualitative data may contribute valuable information, it seems important to study language and literacy development using a combination of both perspectives, providing a powerful combination of data collection methods. A number of researchers have supported the pragmatic use of a combination of quantitative and qualitative

data collection methods to provide a practical approach to investigations and to answer research questions with the aim of improving classroom literacy practices (Cherryholmes, 1992; Howe & Eisenhart, 1990).

The present study extends that of Williams (1994), who investigated the language and literacy worlds of three profoundly hearing impaired preschool children through the use of case study methodology. She used a largely qualitative approach with the inclusion of one standardised assessment measure which she used informally to describe the children's emergent literacy behaviours, without providing any numerical scores. The preschoolers were observed in both the school and home environments. The current study differs from that of Williams in a number of ways: the participants were two middle primary severely to profoundly hearing impaired children who had been taught to speak and speech read; only the school environment was investigated as access to the home was restricted by the difficult family circumstances of both children; a greater emphasis was placed on the use of quantitative measures to provide specific and definable information thus enabling the language and literacy progress of the children to be identified. Nevertheless, qualitative methodology was applied as in the study by Williams in order to provide a comprehensive description of the children within a naturalistic context.

Thus the purpose of the present study was to explore the school language and literacy worlds of two middle primary severely to profoundly hearing impaired children taught to speak and speech read, focusing on their skills, behaviours and interactions. An embedded multiple case design (Yin, 1989) was used in order to provide a holistic profile. This included implementing various measures of analysis utilising both qualitative and quantitative data, with information obtained from various sources (class teachers, the Teacher of the Deaf and the children themselves) in a variety of contexts (classroom, playground and tutorials). This study

represents an attempt to increase the body of knowledge of the development of language and literacy in hearing impaired children by using an approach that provides a theoretically driven investigation of the children's abilities and experience with language and literacy in the classroom context through the application of both qualitative and quantitative methodologies.

In accordance with the previous mentioned principles of case study design as defined by Burns (1997) multiple data sources were accessed to allow for triangulation, the chain of evidence was maintained from the formulation of research questions on the basis of the literature review to the conclusion of the study and data were recorded in various forms for later analysis. Table 1 presents a summary of the specific data used to answer each research question.

Table 1

Data sources used to answer research questions.

Research question	Data source
1. What is the nature of the receptive language skills of two middle primary severely to profoundly hearing impaired students?	- standardised tests - background information - interviews with - support teacher - class teachers
2. What is the nature of the expressive language skills of two middle primary severely to profoundly hearing impaired students?	- standardised tests - background information - interviews with - support teacher - class teachers - students
3. What is the nature of the reading skills and behaviours of two middle primary severely to profoundly hearing impaired students?	- standardised tests - background information - interviews with - support teacher - class teachers - students
4. What is the nature of the writing skills and behaviours of two middle primary severely to profoundly hearing impaired students?	- writing sample - field notes - interviews with - support teacher - class teachers - students
5. What is the nature of the classroom language interactions of two middle primary severely to profoundly hearing impaired students?	- field notes

## Participants

The main participants in this study were the two subjects of the case studies, **Ben** and **Mitchell**, who were both severely to profoundly hearing impaired. (Pseudonyms are used for the schools and all participants). Their un-aided hearing abilities were very low: without aids they would be able to hear only loud environmental noises such as a dog barking or a lawn mower in close proximity, and would be unable to hear speech at all (A. Yong, personal communication, July 21, 1997). Both boys were fitted with hearing aids.

A Year 4 student, Ben was 9.11 years at the commencement of the study, that is, one year older than his classmates. Ben had a severe to profound bilateral sensori-neural hearing loss. It had been thought that he needed an extra year at a specialist school in order to meet the requirements for full-time integration into his mainstream school. At the time of the study, Ben was fitted with a PPCL type of aid in the left ear, set at 126 Sound Pressure Level (SPL), that is, the maximum output an aid can provide. He was not fitted with a right sided aid. With this aid fitted, Ben could be expected to hear most of one-to-one conversations, although he still would have had difficulty in distracting situations, such as the background noise of the classroom or a group conversation. He was also provided with a Calaid FM which is designed to assist the hearing impaired in large gatherings such as a classroom or church. The hearing impaired individual wears the small FM in a pocket and also wears a set of headphones. The speaker, who in the school environment is usually the teacher or sometimes a student telling news in front of the class, wears a microphone. The FM helps to clarify the speaker's voice over background noise (Power, 1998). Ben usually chose not to use the FM. It was reported by his class teacher that this was because of Ben's dislike of appearing different from the other children.

Mitchell was 11.11 years and in Year 5 when the study commenced, that is, two years older than his classmates. Mitchell had a profound bilateral sensori-neural hearing loss. Like Ben, he also had required more time at a specialist school for hearing impaired children to meet the requirements for integration into the mainstream school. Mitchell was fitted with bilateral PPCL aids at 139 SPL, which provided the maximum possible output for an aid. In conjunction with the use of a Calaid FM and a Tactaid (a device sensitive to the vibrations of noise and speech), Mitchell could be expected to hear about half of a one-to-one conversation adequately. He required cued speech (hand movements that identify particular sounds) for support. He would have had extreme difficulty hearing any conversations in the classroom or playground where there was background noise.

Neither of the children had any concomitant physical or intellectual impairment. They were selected for the research by the Principal of the specialist school for hearing impaired children in which they had begun their education. The population that was suitable for the study was very small, as many children with this level of hearing loss are taught sign language rather than oral language. However, as permission was not obtained for the research to be carried out with signing students, the two boys were chosen from the very small population of severely to profoundly hearing impaired children who used oral communication, on the basis of their similarity in age, school environment, and hearing history. Ben was referred to the researcher by the specialist school Principal as a 'strong reader', and Mitchell as a 'poor reader'.

An important role in the boys' integration into their mainstream classrooms was played by the itinerant Teacher of the Deaf, **Mr Johns** who was based at the specialist school for hearing impaired children. His role in Ben's and Mitchell's mainstream school was as a support teacher, working with both boys in individual tutorials each school day for approximately half an hour. During this time he reinforced material learned in the classroom,



focusing on the individual language and literacy needs of each boy. He also worked on individual problems such as social difficulties and he checked the function of hearing aids.

The boys' mainstream class teachers also participated in the study. Ben's Year 4 class teacher, **Mr Rowe**, had some experience working with hearing impaired students, as he had been Mitchell's class teacher the previous year. Mitchell's Year 5 class teacher, **Mr Thompson**, had no prior experience with hearing impaired children and had not participated in any professional development in regard to teaching hearing impaired students, although he had contact with Mr Johns.

Two other teachers were also involved in the study for short periods. A final year student teacher, **Miss James**, was in Ben's classroom for two weeks during the study. A relief teacher, **Mr Davidson**, who had not worked previously at the school, took a maths lesson in Mitchell's class during the time of the study.

### Background

Ben and Mitchell attended the same non-government mainstream primary school, in which there were a number of hearing impaired children enrolled. The boys' placements in the school were organised through the specialist school for hearing impaired children, where Mr Johns the Teacher of the Deaf was based and where the boys had begun their schooling. Services from this specialist school start as soon as a child is diagnosed with a hearing impairment. Liaison is then made with the Australian Hearing Services with regard to fitting hearing aids. Once the aids have been fitted, the focus is then placed on early auditory stimulation, with parental involvement in their child's learning program seen as being of paramount importance.

The specialist school runs playgroups and kindergartens for both hearing and hearing impaired children, which are staffed by teachers of the hearing impaired and preschool

teachers. Whilst they are enrolled in this specialist school, children in Years 1, 2, and 3 participate in a partial integration program at a nearby government primary school. Children are integrated full time into mainstream schools when they are successfully able to meet the language, social, and academic requirements of the integrated setting. The Principal of the specialist school liaises with Mr Johns with regard to yearly assessment and program planning for the integrated hearing impaired children. At the time of this study Ben and Mitchell were fully integrated into their mainstream Catholic primary school but were withdrawn daily for the support program with Mr Johns.

### Materials

The following standardised language and literacy measures were administered by the researcher.

Peabody Picture Vocabulary Test - Revised (Dunn & Dunn, 1981). Form M of the PPVT-R was administered to assess receptive vocabulary. For the boys' age group the PPVT-R has a reliability coefficient of .85 to .90. Standardised procedures and scoring were used.

Neale Analysis of Reading Ability - Revised (Neale, 1988). This measure was used to provide an analysis of reading comprehension and accuracy in reading aloud connected text. When administered to 1100 primary school students in two Australian states, it was shown to have high levels of stability, reliability and internal consistency (Neale, 1988). For accuracy and comprehension, parallel forms reliability coefficients of 0.98 and 0.95 were obtained.

Standardised procedures and scoring were used.

Analysis of the Language of Learning (Blodgett & Cooper, 1987). This test is frequently used by Speech Pathologists as a practical measure of the understanding of metalinguistics (Blodgett & Cooper, 1987), in order to assess knowledge of seven different areas of metalinguistic awareness. These areas are set out in Table 2.

Table 2

The Analysis of the Language of Learning

Subtest	Example
Defining concepts	What is a word?
Giving concept examples	Tell me a word
Recognising concepts	Is 'sh' a word?
Segmenting sentences	How many words are in 'eat your lunch'?
Generating words	Tell me a word that starts with 'd'
Segmenting words	How many sounds are in 'bake'?
Repairing sentences	Fix this: 'the picture drew a girl'

The Analysis of the Language of Learning has a test retest reliability of .88 and a Standard Error of Measurement of 3.28. Standardised procedures and scoring were used.

Narrative Test. A subtest of the School Aged Oral Language Assessment (Allen, Leitao, & Donovan, 1993). This is a Western Australian devised measure widely used by Speech Pathologists. In a pilot study of 30 language disordered and 30 normally developing Year 2 students, the SAOLA was found to be 'sensitive to identifying language disorders', and is used primarily as a descriptive tool. The narrative subtest is designed to describe oral procedural narrative retell skills. Liles (1993) recommended the use of oral retells as a reliable and thorough narrative assessment. Despite being designed to assess oral narratives, the SAOLA

(Allen et al., 1993) is widely used by Speech Pathologists to assess written narrative structure as it is comprehensive and detailed.

The components of the assessment are set out in Table 3.

Table 3

Components of Oral Narrative Analysis.

Story components	Linguistic features
Traditional beginning	Connectors
Character introduction	Mental/cognitive verbs
Setting	Adverbials of time
Establishing problems	Adverbials of place
Plans	Adverbials of manner
Character's reaction	Modals
Second event	Adjectives
Third event	Reference
Closing event	Tense
Concluding statement	Originality
	Literate features
	Other

Reliability data are not available for this measure.

The Language Assessment, Remediation and Screening Procedure (LARSP) (Crystal, 1982).

This is a single page profile of grammatical features and development, widely used by Speech Pathologists. The LARSP was used to plot the boys' patterns of syntactic development.

McTear's Model for Conversational Analysis (McTear, 1985). This content analysis of conversational performance was used to describe the discourse skills of the boys. This analysis categorises the frequency of a comprehensive list of conversational behaviours and is claimed to be suitable to use with very early language users through to adults. The list of conversational behaviours is as follows:

- Attention getting strategies and means for expressing them.
- Request sequences.
- Turn taking.
- Responses.
- Initiations.
- Discourse devices for establishing and linking topics.
- Appropriacy.
- Repairs

The above mentioned conversational behaviours are given ratings of 'regularly', 'occasionally', 'rarely', or 'never'.

Background information on the boys was obtained from their personal files held by Mr Johns on the school grounds. This was done with the permission of the Principal of the specialist school, the Principal of the mainstream school and the parents/guardians of the boys.

The results from three standardised tests in the case files of the students were examined. The first test was conducted by a school psychologist and the other two by Mr Johns. These background tests were as follows:

1. The Wechsler Intelligence Scale For Children - Revised (Wechsler, 1974). This widely used psychological assessment measures performance and verbal intelligence.
2. The Progressive Achievement Tests (Reid & Elley, 1986). The PAT was designed to measure performance in mathematics, reading comprehension and vocabulary, and is widely used in Western Australian schools.

3. The Word Intelligibility By Picture Identification Test (Ross & Lerman, 1971). The WIPI was designed to test hearing impaired children's auditory perception of words by the presentation of a series of pictures. It requires the child to select the "right" sounding word from a number of phonologically similar words. Children are assessed using their hearing only, and then are assessed using lip reading as a support.

### Procedure

Initial contact with the parents/guardians, concerning the boys' participation in the study, was made by Mr Johns. The parents/guardians were fully informed of the purpose and format of the study through a letter, and both gave written consent for their child to take part (see Appendix A).

Initially, the children's academic, speech, hearing, and social history, including relevant test data were obtained from Mr Johns' files. It was originally intended to conduct interviews with the parents of the children, but this was not possible because of severe family disruptions and parental shift work.

The formal standardised assessment process was conducted with each of the children for half an hour each week for four weeks (that is, one test per week). The testing took place during one of the daily pull-out support tutorials that the boys had with Mr Johns, who was present during all formal assessments. He provided cued speech support when appropriate. The assessments took place in a small quiet room on the school grounds, away from classroom activity and distraction. A Panasonic Slimline Cassette Recorder with microphone was used to audiotape the assessment sessions.

Informal, semi-structured interviews were conducted with Mr Johns in order to ascertain his perceptions of particular aspects of the students' learning in school. The content of the interviews was as follows:

- social strengths and weaknesses (for example, ability to mix with peers, conversational skills);
- academic strengths and weaknesses (for example, the subjects of high/low achievement, rate of learning);
- factors thought to encourage or impede each child's language and literacy development;
- current tutorial aims (for example, priorities and focus).

The students were then observed in classroom activities over a period of 4 weeks. Activities included writing, mathematics, science, physical education, silent reading, group reading activities, vocabulary learning and Italian lessons. The classroom setting was selected as it provides a rich source of language experience (Ripich, 1989). Lipson and Wixson (1997) also advocate classroom based assessment for its flexibility, application, and functional use. Written field notes were taken at this time, which took the form of observations of interactions with peers and adults (discourse), attitudes to literacy tasks, and approaches to language activities. A narrative writing sample was obtained at this time from both children for syntactic analysis using the LARSP profile (Crystal, 1982) and for narrative analysis using the SAOLA Narrative Analysis (Allen et al. 1993).

After the classroom observations, interviews took place with each boy's class teacher (approximately 45 minutes) which focused on the following topics:

- receptive language skills
- expressive language skills
- reading skills

- writing skills
- social skills
- literacy practices in the classroom
- home literacy practices as perceived by the teacher.

Each of the students was informally interviewed and audiotaped during a lunch break. The focus of these semi-structured interviews was:

- attitudes to reading and writing
- perceived purposes of reading and writing
- perceived reading and writing ability
- literacy practices at home.



## CHAPTER 4

### Results

#### Ben

At the time of the study Ben was aged 9. 11 years and was in Year 4, his chronological age being one year above his Year level placement.

#### Case history

##### General History

Ben was diagnosed with a severe to profound bilateral sensori-neural hearing impairment caused by a recessive gene at 11 months of age. He was immediately fitted with hearing aids, and exposed to an oral communication environment, that is, he was taught to speak and speech read. Ben had one female sibling 7 years his junior (with normal hearing), and lived in a single parent family. Family problems had interrupted much of his schooling, and at the time of the study he was living with relatives.

##### Academic History

The following information was gathered from Ben's file held at the school. The Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974) had been conducted on Ben at 4.9 years by a school psychologist. Ben's exact scores were given in his file, although permission from the Principal of the specialist school was received only to use broad categories in reporting the results of the test. It should be noted that this test was conducted five years before the study began when Ben was of pre-school age, hence the results are presented as background information only. The testing indicated "a very superior performance IQ" and "a deficient verbal IQ", with a 77 point difference between the scales. Ben's most recent school

report for Year 4, indicated “sound” performance in most academic areas. High achievement was indicated for “Oral reading”, “Spelling”, “Literature”, and “Mental Mathematics”. Low achievement was indicated for “Written Expression”. Testing by Mr Johns, the Teacher of the Deaf, using the Progressive Achievement Tests (Reid & Elley, 1986) 3 months before the study commenced, suggested that Ben was, according to Mr Johns, “functioning at a Year 3 level on the test components of Reading Comprehension, Mathematics, and Reading Vocabulary.” It is acknowledged that these results should be seen as approximate since results in the test manual (Reid & Elley, 1986) are reported in terms of percentile ranks for each Year level.

### Speech and language history

Formal and informal testing conducted by Mr Johns immediately prior to the study indicated that Ben demonstrated “thorough lip reading and auditory reception skills”. His speech intelligibility, on a scale of 1-5, was assigned a rating of 4 “usually able to be understood”. His phonological profile demonstrated difficulty with fricative production (such as “s” and “z”)<sup>1</sup> voicing (such as “g” and “d”) and general tongue position, although prosodic features such as intonation patterns and rate of speech, were appropriate. Mr Johns' notes about Ben's language recorded the features of “limited vocabulary, overuse of literal language, limited knowledge base, and written expression being significantly weaker than verbal expression”. His spoken language was assigned a rating of Stage 7 (the highest stage) on the LARSP analysis (Crystal, 1982), indicating an appropriate and mature development of syntax, that is, Ben's use of grammar was “wholly adult in character” (Crystal, 1982, p. 41).

## FORMAL TESTING FOR THE STUDY

Peabody Picture Vocabulary Test. Ben expressed difficulty with this test, frequently complaining that it was “much too hard”. It was evident that most of his selections were made by the process of elimination, as he would touch each picture in turn, shake his head, and move on to the next picture, his finger moving back and forth between two pictures until he made his selection. On this test, Ben received an age equivalent score of 6.4 years, which was 3.7 years below his chronological age.

Neale Analysis of Reading Ability. Ben’s results on this assessment are presented in Table 4.

Table 4

### Results of Neale Analysis: Ben.

Subtest	Reading age
Rate	10.9
Accuracy	11.0
Comprehension	8.4

It can be seen that Rate and Accuracy scores were about 1 year above his chronological age, and comprehension was about 1.5 years below. An analysis of Ben’s oral reading errors on the assessment is presented in Table 5.

Table 5

Neale Analysis error analysis: Ben.

Error type	% frequency
Mispronunciations	68
Substitutions	8
Additions	6
Omissions	17

The great majority of Ben's errors were mispronunciations of words. Mispronunciations were mainly characterised by medial syllable deletion ('origating' for 'originating'), and vowel errors ('meeigrate' for 'migrate', 'abods' for 'abodes'). Omissions were the next most frequent type of error. Substitutions and additions were the least frequent errors observed.

Analysis of the Language of Learning: This assessment of metalinguistic awareness produced varied results, with Ben's highest results in Generating Words (slightly below his age level), and his lowest score in Segmenting Words (well below his age level. Ben's results are presented in Table 6.

Table 6

Results of Analysis of the Language of Learning: Ben.

Subtest	Age Equivalent
Defining Concepts	8.4
Giving Concept Examples	6.8
Recognising Concepts	6.4
Segmenting Sentences	7.1
Generating Words	9.2
Segmenting Words	5.4
Repairing Sentences	6.11
TOTAL	7.0

The Segmenting Words subtest required Ben to identify the number of phonemes in spoken words which ranged from two to seven phonemes. Cued speech support was not used for this assessment. Many of Ben's errors were unclassifiable, although he did sometimes provide the number of graphemes or syllables rather than the number of phonemes. An error analysis of Segmenting Words and Generating Words is presented in Table 7.

Table 7

Error analysis of the Analysis of the Language of Learning: Ben

Subtest	Error Type	Example
Segmenting words	Into graphemes	eat = 3 phonemes
		bench = 2 phonemes
		camp = 2 phonemes
		bake = 2 phonemes
	Into syllables	picnic = 2 phonemes
		catalog = 3 phonemes
	Unclassifiable	message = 4 phonemes
		blanket = 4 phonemes
Generating words	Visual	word ending with b = tomb

School Aged Oral Language Assessment (SAOLA) - Narrative Subtest: (Allen et al., 1993).

For a copy of the testing material, see Appendix B. Appendix C contains a transcript of Ben's oral story retell. The retell demonstrates almost all of the required 10 story components (as documented in the Methodology chapter), with the exception of the protagonist's planning. Ben used listener perspective and reference, making it clear to which character and event he was referring. Particular linguistic features were used regularly, albeit with reduced variety (for example, connector use was restricted to 'and', 'so', and 'then'). Verb tense usage was generally consistent, with the past tense used. The story was an accurate retelling. Literate features were also added, such as self monitoring and repair, "And he... and Peter went home".

## SAMPLE ANALYSES

**Written Narrative Analysis:** Ben's written narrative sample was a story he wrote at home, for his own pleasure. It found its inspiration in the movie "Batman Forever", and with a few changes and creative ideas, was entitled "Batboy Forever". For the story in full see Appendix D. Analysis was based on the SAOLA narrative profile. Whilst the SAOLA was designed to assess oral narrative, it is widely used by speech pathologists to assess written narrative skill as it is considered a thorough and comprehensive measure. Results of the analysis follow.

### A) Story Components

The story commenced with a traditional beginning, with an introduction to the main characters and their relationship to each other. The minor characters were not introduced. The setting was explained, followed by the problem, and plans for resolution. The story was characterised by a chain of events, occasionally linked together:

"That night Bat boy and robin saw two face and riddler laughing in the dark. In the morning the bat house is on fire that riddler made with bird bombs. Later the Bat boy and robin had started to make a new house made with metal and steel."

With the problems solved, the story featured a traditional ending (villains were foiled, the hero rescued his girlfriend and they got married). At this stage in the story it appears that a second problem was introduced, somewhat inappropriately, as the story then ended without expansion or resolution of the new problem:

"Batboy and his girlfriend fell in love and when they grew up they got married. Later that night batboy's girlfriend went into a special place and she said "who is Bat man" riddler said "I am Bat man. THE END"

## B) Linguistic features

The story's linguistic features are presented in Table 8.

Table 8

### Linguistic features of written narrative: Ben.

Linguistic feature	Example/comment
Connectors	and, then
Mental/cognitive verbs	saw
Adverbials of time	long ago, one day, finally, in the morning, that night, in the middle of the night, the next morning, first, at last, suddenly, later that night
Adverbials of place	in the dark, to the south, at the bottom, back up to the top
Adverbials of manner	further, safely, in half, grew up
Modals	-
Adjectives	new, shiny, spotless, secret, special
Referencing	generally appropriate
Tense	past, usually consistent
Originality	extension of the original
Literate features	direct speech, quotation marks, elaborately written 'the end'
Other	inappropriate use of capital letters, definite articles, and auxiliary verbs. Spelling errors mirrored pronunciation, 'written' became 'ridden'

From the above mentioned examples and analysis, it can be seen that Ben demonstrated a wide vocabulary apart from connectors, mental/cognitive verbs, and modals. Syntactic errors were frequent, but nevertheless, strong skills were displayed in the areas of referencing, tense, originality, and literate features. Ben made only two spelling errors, 'ridden' for 'written' which, according to First Steps (EDWA, 1994) may be classified as a "reasonable phonic alternative", and 'traped' for 'trapped' which may be classified as an error of letter patterns.



### Conversational analysis

Field notes and transcriptions of conversations were conducted in the classroom environment and other lesson areas such as the library, sports oval, and tutorial room with Mr Johns. In the following analysis, examples are taken from all of the above mentioned situations. For a sample of Ben's conversation, see Appendix E. The itemisation of Ben's conversational strategies can be found in Appendix F.

#### A) Attention getting strategies and means for expressing them.

The majority of Ben's attention getting strategies were verbal, using a name, a greeting, locating directives ("look"), and interrogatives. The strategies of whispering, increasing volume, and initiating eye contact were effectively used.

#### B) Request sequences.

Ben used almost all possible request sequences (see Appendix E for details), indicating both flexibility in language use and a confident and inquisitive nature.

#### C) Turn taking.

Ben's turn taking skills involved regular gaps of less than one second between turns. There were occasional overlaps with the other speaker's turn due to attempts to predict the statement of his conversation partner.

Mr Johns: The correct word is felt tip pen.

Ben: Felt tip pen.

Mr Johns: Yes...

### D) Responses.

Ben occasionally offered no response or gave an inappropriate response to his conversational partner:

Student: Can I use your rubber?

Ben: [no response]

Student: [taps Ben on shoulder and points to the rubber]

Ben: [picks up rubber and hands to student]

This type of response could have been elicited by the fact that Ben did not hear the request, rather than by a lack of desire to interact. With adults, Ben regularly provided a lengthy response, sometimes appearing quite verbose, as in the following example when Mr Johns was explaining the game of croquet to Ben:

Ben: What's that? What's a mallet?

Mr Johns: It's a thing you hit *whoosh* the ball with, and you try and hit the target.

Ben: They have to go under the silver thing, they have to go under them all, and hit it.

Mr Johns: That's right.

Ben: It's white, red, white, red.

### E) Initiations.

The discourse connectors that Ben used were “and”, “because”, and “but”. No other connectors were observed. There was occasional anaphoric reference, which was used appropriately:

**Ben:** Because Mr Johns said that if I read a lot, then I can be a brain box like him.

Ellipsis was also occasionally and appropriately used:

**Mr Johns:** That's exactly right. Where have you seen it?

**Ben:** On the telly.

Misplacement prefaces, such as "by the way", were not noted at all.

#### F) Discourse devices for establishing and linking topics.

Ben occasionally used nonverbal attention getting strategies (waving, eye contact). Other regularly used strategies included words frequently supplemented by pointing. He rarely used any non-present referents (for example, "Do you remember?"). Initiation was usually a statement or question (for example "What's that?", "What did he say?"). Requests for action were occasionally used, such as when Mr Johns was constructing a diagram:

**Ben:** [watches the diagram] Put think in the middle [points].

Ben would often re-initiate and repeat when his initiation was not acknowledged, using attention getting strategies such as pointing or tapping rather than a prosodic shift or rephrasing. In the following example Ben was in the classroom during a mental arithmetic lesson:

**Ben:** What's the answer?

**Student:** [ignores Ben]

**Ben:** [taps student's arm with a pencil] What's the answer?

### G) Appropriacy.

Ben was not observed to make any nonverbal requests. His verbal requests were largely direct imperatives ("Look at", "Give me"). "Please" was used regularly and appropriately.

Embedded politeness forms (such as "would you mind if...") were not observed.

### H) Repairs.

Ben made responses to requests for repetition (for example "Pardon?"), confirmation (for example "Are you sure?"), and specification (for example "What do you mean?"). He regularly made his own requests for repetition and specification and, occasionally, for confirmation. He occasionally corrected the grammar and vocabulary of others:

Mr Johns: This one has a very fine nib.

Ben: Fine *tip*.

He frequently self-corrected his own pronunciations and grammar:

"I just run, ran up to him and kicked him back."

In summary, the formal testing indicated that Ben's strengths were in the areas of reading accuracy and rate, although comprehension was not as strong. His narrative skills, both oral and written, were well developed. Receptive vocabulary and metalinguistic awareness were delayed, with the delay ranging from slight (generating words) to severe (segmenting words). Conversation skills were appropriate, flexible, and extensive, with problems which arose apparently being directly related to his hearing loss, such as failing to respond when he most likely did not hear.

## **INTERVIEWS**

### **Interview with Mr Johns the Teacher of the Deaf**

Mr Johns felt that Ben had the potential to attain “adult” levels of language and literacy. He reported Ben’s general strengths as being social language, mathematics, the capability of processing conceptual information, and general “brightness”. Mr Johns contrasted these strengths with Ben’s “reduced experience”, which he felt also impaired Ben’s language development with regard to concept development, abstract language, and specific vocabulary: “He doesn’t have the richness of experience and have his senses bombarded like other children. It’s hard for hearing impaired kids to simply ‘pick up’ things without being overtly instructed.”

Mr Johns’ current aims for Ben’s daily tutorials were to encourage “co-operation and happiness”. This was because Ben had been having difficulties in his home environment, as he was missing his mother who was in hospital and had become violent towards some of his classmates during disagreements. Mr Johns expressed concern about Ben’s ability to reach his potential. He felt that Ben would require much more family support in conjunction with continued individual or small group work and said, “He has potential, but he won’t reach it without family support, which he doesn’t have.”

### **Interview with Mr Rowe the class teacher**

The Year 4 class teacher, Mr Rowe, said that his primary concern for Ben at the time of the study was his “poor socialisation”. This was characterised by “excessive anger” which was expressed to others verbally and physically. Mr Rowe explained that Ben had a particular and mutual dislike of another boy, which had recently necessitated a parent/teacher meeting as

**“Phillip and Ben will publicly show their feelings in a way that is distressing not only to the other child but to the other children witnessing the event.”**

**Mr Rowe, in a written report for the school principal, also stated:**

**He has done extremely well to keep this anger in check, but with ...his support teacher being away recently, his fuse seems to be getting shorter and shorter. Ben has physically pushed me as a result of not wanting to follow class instructions. Ben absolutely yearns for attention, helping out all the time (though will use this to get out of work) and loving physical contact with me - putting his arm around me.**

**Mr Rowe also expressed his concern about Ben’s “poor” social skills in terms of language use, saying, “He seems to have no idea of when to speak or what to say”. Mr Rowe stated that during recess and lunch breaks, Ben generally played only with Mitchell, the other hearing impaired boy in the study, thus emphasising his social isolation.**

**Academically, Mr Rowe reported that Ben was “very bright”, performing particularly well in mathematics. He stated that a “reduced vocabulary and knowledge base” significantly contributed to Ben’s performance on language activities:**

**He takes a lot of time to learn abstract concepts, and needs help from others, from his classmates. He performs very well when he knows the topic. He’s much faster at picking up on concrete things. Faster than a lot of the kids.**

**Using what he saw as Ben’s “weak written skills” as an example, Mr Rowe was of the opinion that Ben’s receptive language skills were significantly higher than his expressive language skills. He appeared not to be concerned about Ben’s skill in reading, but did express concern for the lack of reading done at home. Mr Rowe reported that Ben did not bring books**

from home for silent reading sessions, nor did he choose a book from the classroom selection, preferring to join in with other class members who had brought reading material. Mr Rowe felt that this behaviour was due to Ben's lack of confidence in his own ability to select something that he would enjoy.

### Interview with Ben

This interview took place one week into the classroom observations in order to ensure that Ben was by that time at ease and familiar with the researcher. Ben was keen to talk and proudly brought along a story he had written, for which he had received high praise from Mr Rowe. He reported that he enjoyed writing stories and reading books and thought he was good at both - sometimes as good as his classmates.

When asked about the reasons for and purposes behind reading and writing, Ben provided various answers:

"...Mr Johns said that if I read a lot, then I can be a brainbox ...I want to be a brainbox."

"To learn more about words"

"...find it interesting"

And, as a chastising comment after asking the researcher a question about dinosaurs which she could not answer, Ben smilingly stated "*You* should read more, so you can learn stuff".

Thus Ben's concept of reading purposes included pleasure, a knowledge source, and a tool for academic success.

Ben reported that at home he liked to read “sometimes” (after playing and watching television) and that his favourite reading materials were “Garfield” (a cartoon strip), “Magic Eyes” (a picture book of three dimensional illusions), and comics such as those in “The Weekend West Australian”. He reported that he did not read at home every day, and refused to comment at all about the frequency of his reading. When the researcher commented that he did not appear to read many books, Ben replied, “It doesn't matter. It's still interesting.”

In summary, from these interviews it seems that Mr Johns felt that Ben had the potential to achieve high levels of language and literacy, but was concerned that home circumstances might prevent this. He identified Ben's particular skills as being in the areas of mathematics and social language and his weaknesses in the areas of experience, concept development and abstract language. This was generally supported by Mr Rowe, although he felt that Ben had difficulty with social skills. Reading skills were considered good by Mr Johns and Mr Rowe, despite a reported lack of reading in the classroom and at home. Ben reported that he enjoyed reading and was aware of some purposes for reading. However, his reading material was restricted and he did not appear to read regularly.

## **CLASSROOM LANGUAGE AND LITERACY PRACTICES**

### **Background**

In Ben's Year 4 class, the children sat in groups of three or four, with Ben's group consisting of himself and three other boys. His desk was at the front of the room at right angles to the blackboard and the teacher's main desk. The teacher's second desk, which was only occasionally used, was situated next to Ben's. The classroom, with a time out room at the rear, was brightly decorated with children's work on both main walls.



### Ben's classroom language interactions

Several interactions in the classroom will be described in order to provide a picture of Ben's language interactions with his teachers and peers.

### Teacher and peer awareness of Ben's needs

When first seen in the classroom, the Year 4 class teacher Mr Rowe was giving instructions about the morning's activities. He repeated the instructions to Ben, and then asked a group member to repeat the instructions to Ben again. When the teacher next spoke, Ben's partner physically indicated (by tapping him and pointing) that Ben should look at the teacher. This indicated that the partner was aware that Ben needed assistance to attend to Mr Rowe's instructions and was willing to help.

### Ben's response to assistance

Ben demonstrated independence and a need to be accepted as 'normal'. At the conclusion of a morning's activities, the classroom was buzzing with chatter until the recess bell rang. During this time, Ben became verbally and physically aggressive (pushing and yelling, "Go away") towards a classmate who was attempting to help him clear his desk. Ben appeared to refuse assistance from the boy who attempted to help. Following this, the children in the group excluded Ben from the conversation, turning their backs to him.

### Children's reactions to Ben's behaviour

During a handwriting lesson, Ben engaged in much of what Mr Rowe considered to be unacceptable classroom behaviour. Ben refused to complete a task, sat under his desk, and hit

the desk legs repeatedly with his ruler. Mr Rowe then wrote Ben's name on the board indicating that Ben would go to the Time Out room before home time that day. Ben responded with an apparently distressed, "No, no, rub it off!" Mr Rowe then explained to Ben that he had disobeyed the rules and that his behaviour could not be ignored. Ben listened to this explanation and then nodded in acceptance. When the other children claimed that Ben had more opportunities or "chances" to behave appropriately than they did, Mr Rowe explained that he had to make sure that Ben had heard the instruction and was, in fact, misbehaving. This explanation did not appear to be well received, as the questioning students remained visibly resentful and looked angrily at Ben. This suggests that the children had difficulty in accepting and supporting Ben's specific needs in the classroom.

#### Specific difficulties related to hearing impairment faced by Ben

During an afternoon science activity which involved watching an astronomy video in the library with voice over only and no written text, Ben became very restless after the first five minutes of intense watching. He would have found it extremely difficult to concentrate on listening, and did not volunteer any answers to the questions posed.

As the day ended, he attempted to engage in a conversation with a classmate whose name was on the Time Out list, requesting an explanation:

Ben: [taps boy, then points to the board] Why is your name there?

Boy: [shrugs, and finishes putting away his pencils].

Ben appeared not to be aware of the episode of his classmate's misbehaviour as, at the time, he was concentrating on his maths questions. This was an example of the comment made by Mr

Johns that hearing impaired children 'miss out' and do not have their senses bombarded unlike normally hearing children

On another occasion Ben was in an Italian lesson with a visiting teacher. Much of the lesson involved the use of spoken language, and during this time Ben engaged in general chatter, rather than practising his Italian. He spent a large part of this lesson talking to his partner, commenting on classroom happenings and asking questions about the activity. He supplemented his expressive language with facial expression and gesture when not initially understood. This indicated Ben's knowledge of the use of nonverbal communication:

Ben: Do we have to colour this in?

Boy: Huh?

Ben: [raises eyebrows questioningly, picks up pencil and pretends to colour the picture] Do we have to colour this in?

Boy: [nods].

Another lesson in which Ben experienced difficulty was a sports activity with the physical education teacher. Ben was not observed to speak to the other children at all during this activity. At the start of the lesson, Ben moved to the front of the class, apparently to facilitate his comprehension of the instructions. Rather than mixing with his peers between each long jump turn, Ben helped the teacher by raking the sand after each jump. It would have been extremely difficult for Ben to join in conversations as the other children walked or gathered nearby, since face-to-face contact was necessary to assist his hearing.

A number of difficulties arose during a mental arithmetic lesson. This lesson was conducted by a student teacher, Miss James, who had been in the classroom for only one week. Ben did

not appear to recognise the appropriate time for questions, and asked about the afternoon's activities whilst Miss James was reading out an arithmetic problem. He appeared puzzled by Miss James' and his peers' spoken concern and frustration:

Miss J: Question number 12...

Ben: Are we doing art after lunch?

Peer 1: Sh!

Peer 2: Ben, be quiet!

Peer 3: Oh Ben!

Miss J: Keep quiet!

Ben: [looks around with a puzzled expression, then shrugs].

He fell behind when Miss James read the arithmetic answers aloud, and relied on the reluctant repetition of the other group members. Trying to keep up themselves, his peers simply gestured to him, apparently indicating an awareness of the time and effort needed to communicate verbally with Ben. He offered the same answers to questions as the other children, suggesting that he did not hear their responses:

Miss J: What's the answer to number four? [looks at student]. Yes?

Boy: Nineteen.

Miss J: No. Anyone else?

Ben: [raises hand]

Miss J: Ben?

Ben: Nineteen.

Miss J: No. We've already had that.

This demonstrated the difficulty that Ben had with tasks that did not provide contextual support, particularly in contexts where his class teacher was not present, and how easily he fell behind his classmates. It would have been necessary for Ben to pay attention constantly to the teacher and his peers in order to keep up with the activities. This would have been an almost impossible task for him.

### Ben's classroom literacy practices

Each day, unless the class had been misbehaving, Mr Rowe read a story. In this classroom story reading could then be seen as a reward. Ben generally spent story time gazing around the room and distracting others, apparently finding it hard to maintain his concentration on lip reading as the teacher read. Only on one occasion did Ben give his FM to the teacher (which would have enabled him to hear more of the story) and sat up on a desk rather than the floor with the other children, in order to help lip reading and comprehension.

During the researcher's first observation in the classroom, the children were very quiet as they listened to a story, "The Witches" by Roald Dahl, read by Miss James. Miss James was looking down at the book as she read the story so that Ben would have been unable to see her lip movements. After three minutes of intently watching Miss James' face as she read, Ben appeared to lose interest and became very distracted. It may have been that the effort of watching Miss James to gain visual cues was too difficult. He proceeded to fidget and talk to the other children, disturbing them until the end of the activity.

In contrast to story time the daily silent reading sessions, which did not involve listening to reading, saw Ben enthusiastically engaged in looking at his materials. These were a motorcycle magazine and a book of three dimensional illusions that he had previously seen the other students enjoy.

One of Ben's tutorials with Mr Johns focused on learning information about dinosaurs in preparation for a dinosaur exhibition that was soon to come to the school. Ben keenly and accurately read aloud from nonfiction picture books and junior encyclopedias, after which he asked numerous questions about the material. This suggested that he did not understand much of the content of his reading, despite his enthusiasm to read and comprehend, and reflected Ben's high reading accuracy and rate and delayed reading comprehension that were identified from testing with the Neale Analysis (Neale, 1988). During the time of the study, the only writing activities observed involved copying directly from the board. Ben's copied writing was accurate in spelling and punctuation and was completed quickly..

In summary, these classroom observations showed that Ben seemed keen to interact with his peers who often restricted their interactions with him in both frequency and content, and were at times resentful of what they considered to be the teacher's 'special' treatment of him. Ben seemed to prefer adult (teacher) company and had difficulty in group conversations and tasks requiring speed such as mental mathematics. He appeared on occasion to use his hearing impairment as an excuse for not completing work, pretending that he had not heard instructions. All of these features contributed to difficulties in classroom interactions. Ben attempted to join in when the teacher read stories, but the strain of concentrating on lip reading and trying to avoid distractions apparently was too difficult, and he often spent this time distracting his peers. He enthusiastically participated in Uninterrupted Sustained Silent Reading (USSR), but was observed to choose material such as calendars and visual illusions which contained little print and much pictorial information.

## CASE STUDY TWO

### Mitchell

At the time of the study Mitchell was aged 11.11 years and was in Year 5, his chronological age

being two years above his Year level placement.

## CASE HISTORY

### General History

Mitchell was diagnosed with a severe to profound bilateral hearing loss (cause unknown) at the age of 15 months, at which time he was fitted with hearing aids. His parents decided to expose him to an environment of oral communication and to teach him to speak and speech read. At the time of the study Mitchell's parents were separated, and Mitchell and his younger sister lived at the home of each parent for a similar amount of time each week. Mitchell's parents and his sister all had normal hearing.

### Academic history

The Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974) was conducted by a psychologist when Mitchell was 9.10 years. This assessment indicated "borderline average" full scale intellectual ability, with both performance IQ and verbal IQ rated as "average", although there was a 26 point difference between the scales, with performance IQ being 26 points higher than verbal IQ. Mitchell's most recent school report written by his class teacher indicated average achievement in most subjects. "Oral English" and "Drama" were rated as "outstanding". "Mental Mathematics", "Literature", and "Science" were given a "high" rating. "Comprehension", however, was rated as "limited". Assessment using the Progressive Achievement Tests (Reid & Elley, 1986) conducted by Mr Johns at 11.8 years rated Mitchell's

Reading Comprehension, Reading Vocabulary, and Mathematics at “a Year 4 level”, according to Mr Johns. As was noted earlier, Reid and Elley (1988) use percentile ranks based on Year levels to score the test results, so that Mr Johns’ interpretation should be seen as approximate.

### Speech and language history

Assessment by Mr Johns using the Word Intelligibility by Picture Identification (Ross & Lerman, 1971) when Mitchell was 11.6 years indicated 96% accuracy in identifying single words using both auditory and visual modalities.

Mr Johns gave Mitchell’s speech intelligibility a rating of 3 on a scale of 1-5, “difficult to understand, gist understood”. He noted that Mitchell’s speech demonstrated many phonological processes that is, consistent phonological error patterns, such as stopping (for example, “sun” -> “dun”), gliding (for example, “lip” -> “wip”), deaffrication (for example, “chip” -> “ship”), cluster reduction (for example, “drink” -> “dink”) and prosodic disturbances (speech rate and intonation patterns).

A description of Mitchell’s language features was collated by Mr Johns for the school file immediately prior to the commencement of the study. This description included “poor comprehension of verb phrases, poor use of prepositions, poor sentence structure, reduced expressive vocabulary, poor verb tense usage, omission of function words, and literal comprehension only.” Language structure was rated by Mr Johns at Stage 6 using a LARSP analysis (Crystal, 1982), which is characterised by “errors made as the child completes the earning of constructions found earlier” (p. 37) such as “runned” for “ran”, indicating that Mitchell’s syntactic skills were at an age equivalent of 3.6 to 4.6 years.



In describing Mitchell's literacy skills Mr Johns wrote that his literacy featured "good punctuation, poor spelling using a whole word approach, difficulty with phonics, poor sentence structure, oral reading characterised by glossing over the text."

### FORMAL TESTING

Peabody Picture Vocabulary Test - Revised (Dunn & Dunn, 1981). Mitchell appeared to struggle with this test, often looking puzzled and fidgeting in his seat when he did not know which picture to select. Mitchell scored an age equivalent of 5.5 years, which was 6.6 years below his chronological age.

Neale Analysis of Reading Ability - Revised (Neale, 1988). Mitchell's results are presented in Table 9.

Table 9

#### Results of Neale analysis: Mitchell.

Subtest	Reading age
Rate	10.3
Accuracy	7.10
Comprehension	7.5

Mitchell's Accuracy and Comprehension results were about 4 years below his chronological age, and Rate was about 1.5 years below. An analysis of Mitchell's reading errors is presented in Table 10.

Table 10

Neale error analysis: Mitchell.

Error type	% frequency
Mispronunciations	47
Substitutions	34
Additions	6
Omissions	12

The majority of Mitchell's errors were mispronunciations, many of which may have been due to his lack of intelligibility, followed by substitutions that were visually or semantically similar (such as 'gold' for 'jewels', 'amazing' for amazement' and 'fishing' for 'figure'). Less frequent were omissions and additions.

Analysis of the Language of Learning (Blodgett & Cooper, 1987). Mitchell's performance on this assessment measure can be seen in Table 11.

Table 11

Results of the Analysis of the Language of Learning: Mitchell.

Subtest	Age Equivalent
Defining Concepts	below basal
Giving Concept Examples	6.4
Recognising Concepts	5.11
Segmenting Sentences	6.5
Generating Words	6.2
Segmenting Words	4.5
Repairing Sentences	below basal
Total	5.4

Whilst Mitchell's highest score was on Segmenting Sentences, all scores were low for his age as compared to hearing children, with his lowest score on the subtests Defining Concepts and Repairing Sentences. Mitchell's errors on Segmenting Words were very similar to Ben's. The error analysis is presented in Table 12.

**Table 12****Error analysis of the Analysis of the Language of Learning: Mitchell**

<b>Subtest</b>	<b>Error type</b>	<b>Example</b>
<b>Segmenting words</b>	<b>into syllables</b>	<b>eat = 1 phoneme</b>
		<b>no = 1 phoneme</b>
		<b>blanket = 2 phonemes</b>
		<b>picnic = 2 phonemes</b>
	<b>onset/rime</b>	<b>bake = 2 phonemes</b>
	<b>unclassifiable</b>	<b>message = 4 phonemes</b>
		<b>camp = 3 phonemes</b>
		<b>catalog = 4 phonemes</b>
		<b>bench = 3 phonemes</b>
<b>Generating words</b>	<b>visual</b>	<b>word ending with b = comb</b>

**School Aged Oral Language Assessment - Narrative Subtest** (Allen, Leitaio, & Donovan, 1993). For a transcript of Mitchell's story in full, see Appendix G. The general flow of the oral story retell was accurate, with two components missing from the retell (introduction/orientation and the protagonist's planning). Grammatical errors in the story were the most noticeable feature, with reversed phrasal structure (for example "he got up the tree very tall"), inaccurate subject-verb agreement (for example "he think he must fall"), incorrect pronoun use (for example "him mum said"), and omission of verbs, suffixes, and auxiliaries. Verb tense production was inconsistent and moved between past and present: "The mum said

'okay, don't climb the tree again because it too big dangerous'. So the boy say 'thank you' to his mum."

## **SAMPLE ANALYSES**

### **Written Narrative Analysis**

Mitchell's written narrative sample was based on a story, "The Prodigal Son", told by the class teacher during a recent religious studies lesson. Mitchell entitled his story "The Lost Son". As Mitchell refused to allow the story to be taken to be photocopied (quickly clasping the story to his chest and shaking his head), a handwritten copy was made by the researcher. See Appendix H for a copy of the story in full.

#### **A) Story components**

The story commenced with a traditional beginning although it was grammatically incorrect, ("Once a time") and a brief introduction to the characters. No setting was provided, giving an air of confusion to the story. A problem was introduced, with a plan for resolution "...but Jesus had no food so he call his father..." The story omitted much content from the original and became very disjointed with weak links between the events, "Then he knock the door Jesus's father open the door Father was happy to Jesus other son was dead at the killing cafe." There was little orientation, but the problem was resolved, with a happy ending and closing statement. The moral of the original story was not included in Mitchell's ending, "So he's father said, Okey I will buy some closezes today. Jesus love he's father very much."

#### **B) Linguistic features**

The linguistic features of this assessment are presented in Table 13.

Table 13

Linguistic features of written narrative: Mitchell.

<u>Linguistic feature</u>	<u>Example/comment</u>
Connectors	so, but, then
Mental/ cognitive verbs	love
Adverbials of time	once, for years
Adverbials of place	[on] the door
Adverbials of manner	very much
Modals	-
Adjectives	-
Reference	inaccurate pronoun use
Tense	past and present
Originality	partial retelling
Literate features	direct speech, ellipsis, parenthesis
Other	omission of capital letters, full stops, prepositions, verbs, and articles

Mitchell made only a few misspellings which were easily understood. These errors were classified using First Steps spelling error analysis chart (EDWA, 1994; p 87):

'say' for 'stay' (inability to hear sounds in sequence)

'he's' for 'his' (errors associated with the meaning system)

'alivee' for 'alive' (error with sequential letter pattern)

'okey' for 'okay' (inability to hear sounds correctly)

'cloasezs' and 'closezes' for 'clothes' (unclassified error)

A proportion of Mitchell's spelling could be seen as a result of his hearing impairment: that is, Mitchell did not seem to be able to hear sounds in sequence or identify the necessary graphemes to spell the word. Mitchell may have been attempting to use a whole word approach using his visual memory because of an inability to hear the sounds in sequence.

### Conversational analysis

Mitchell was observed in the classroom interacting with his peers and teachers over a period of 4 weeks. Appendix I contains a transcript of a sample of conversation. Appendix J contains the conversational analysis in full.

#### A) Attention getting strategies and means for expressing them.

After tallying the total number of Mitchell's attention getting strategies in the classroom (with peers), it was found that 80% were nonverbal, and usually involved tapping the partner's arm, waving his hand in their field of vision, or placing the object of the conversation in the partner's field of vision. These strategies were often implemented inappropriately by invading the space of the partner, such as waving his ruler just centimetres in front of his peer's nose, resulting in the partner rejecting Mitchell's attempts by stepping away or ignoring him. Mitchell would then often persist for one or two more attempts before abandoning the task, and moving on to something else. With adults there was, appropriately in the school setting, no physical contact. Mitchell initiated interactions by using eye-contact, a greeting, or naming the individual. He occasionally put objects within the person's visual field, but mostly relied on the previously mentioned strategies.

Thus, Mitchell's attention getting strategies were more appropriate and successful with adults than with his peers. This could have been because the class teacher discouraged

physical contact. He was heard to say to Mitchell, "No touching, only speaking". Further, Mitchell's peers also tended to gain his attention by physical prompts, and Mitchell may have taken his cues from them. It was noted in the classroom that the child sitting next to Mitchell often interacted with the other children by turning to face them, leaving his back facing Mitchell. This child offered few physical or verbal responses to Mitchell's attempts to interact.

#### B) Request sequences.

There was rarely a time when Mitchell gave no response to his conversation partners in the classroom. This was largely due to the fact that the attention getting strategies of the partners were very physical as they involved waving hands and persistently tapping Mitchell's arm until he responded. Mitchell made many inappropriate responses, possibly owing to his inaccurate guesswork at listening:

Teacher:      Okay everybody, stand up behind your chairs.

Mitchell:     [stands up quickly and puts his chair on his desk]

Mitchell would occasionally give a minimal nonverbal response, depending on the type of initiation of his conversational partner. For example, if a classmate gestured to borrow his eraser, he would merely nod. At other times he would engage in a lengthier response but this seemed to occur only in an interaction with an adult. It could well be that adults were more patient than Mitchell's peers, or more willing to communicate with him.



### C) Initiations.

Mitchell regularly used common discourse connectors (for example, “then”, “but”, “so”) apart from “and” which was rarely used. No other connectors were noted, indicating little variability in his vocabulary. Anaphoric reference was frequently noted, such as “I got ‘Goosebumps’ at home ...I don’t want to bring because they’re brand new. “Mitchell was not observed to use any misplacement prefaces such as “As I was saying” or “By the way”.

### D) Discourse devices for establishing and linking topics.

As has been shown, the majority of Mitchell’s attention getting strategies were nonverbal, with particular use of touching (arm tapping), and approaching within personal space and establishing eye contact. The predominant verbal expression to establish attention was “Hey”. He used the attention directing present referent of pointing, but only after physically gaining attention. No absent referents were observed, such as talking about a television program watched the previous night, indicating Mitchell’s reliance of the context of the here-and-now. Re-initiation was rare, and occurred in the form of attention getting, direction, or rephrasing. Rephrasing was characterised by the use of the main content word with nonverbal (mime) support:

Mitchell:     Read book?

Student:     [stares].

Mitchell:     “Book” [points and mimes page turning].

### E) Appropriacy.

Mitchell’s nonverbal requests were frequent and correct but not always appropriate, as some situations may have better suited verbal requests. For example, when Mitchell missed a

maths answer called out by the teacher, rather than ask his partner, he tapped his partner's arm and pointed to the maths problem in question. This made his partner lose track of the following answers and appear very annoyed.

Mitchell's verbal requests will be discussed in the section "Repairs". He used politeness markers appropriately, although their frequency was often prompted:

Mitchell: [gestures to computer] I can go?

Teacher: What do you say?

Mitchell: Please use the computer?

#### F) Repairs.

Mitchell's main repairs were requests for specification (for example "What do you mean?") and repetition ("What?"). He appropriately responded to requests for repetition and specification, usually with nonverbal support and occasionally with associated noises, all of which were easily understood:

Mitchell: Then went [unintelligible].

Mr Johns: Pardon?

Mitchell: [mimes using a steering wheel] Went in the brrmm car.

He was not observed to make repairs to the language of others, nor spontaneous self repairs.

In summary, the formal testing indicated that Mitchell showed delays in language and literacy development. He had particular difficulty in the areas of listening vocabulary and metalinguistic awareness. Rate was his strongest measured reading skill, with accuracy and comprehension well below the levels of his classroom peers. His oral and written narratives were characterised by unconventional syntax and story structure, although the 'gist' of the narratives could be understood. Mitchell's nonverbal conversation skills were strong, and he

often fell back on this skill when his verbal communication attempts failed. His classmates frequently avoided interaction, or used brief gestures in their communication attempts with Mitchell.

## INTERVIEWS

### Interview with Mr Johns the Teacher of the Deaf

Mr Johns felt that Mitchell's main strengths were "his personality, visual memory skills, and spatial awareness". The single main area of weakness was his "communication". Mr Johns felt that Mitchell's potential for developing mature language and literacy skills was "weak", owing to his profound hearing loss. He believed that Mitchell's limited language hindered the development of reading and writing, and that Mitchell missed out on essential reading experience as he took extra time on other tasks. Mr Johns believed that Mitchell had no "inner voice", and thought in visual symbols as Mitchell had reported his bed-time dreams in terms of visual activity, with no thoughts or words. Mr Johns also saw Mitchell as being severely restricted in his phonemic inventory (the number of sounds he could produce, for example "s") and phonological inventory (the sounds he could produce correctly in words, for example "s" in 'sunshine'). The stated aims for the current tutorial sessions were to, "Improve syntax, vocabulary, provide background to class activities, improve speech intelligibility, and to develop strategies to search for and identify relevant information on both oral and written tasks."

### Interview with Mr Thompson the class teacher

Mitchell's Year 5 class teacher, Mr Thompson, was generally positive when discussing Mitchell's performance and potential. He stated that Mitchell's potential was "related to his

attitude". Mitchell was reported to be confident, self assured, and very happy in his home environment. Socially, Mr Thompson reported that Mitchell was "theatrical, confident, and independent", although popularity was affected by his "stubbornness". This was said to be evident in group activities and games, when Mitchell liked to be in charge and make the rules.

With regard to language, Mr Thompson stated that Mitchell's expressive language skills were "better than his written skills", his strongest language area being "syntax". His language skills were reported to be affected by a "lack of experience and context". Mitchell was reported to put a lot of effort into class work, even though much was misdirected, "He puts heaps of effort into finding the shortest and easiest way to do things ...he tries to find short cuts and glosses over things." Mr Thompson felt that Mitchell interacted appropriately with his peers and teachers stating, "Social skills aren't a problem." He did, however, express concern about Mitchell's reading practices both at home and at school saying, "I don't think he reads at home at all. He never brings a book for silent reading. Every day he picks a different one at random, even if he didn't finish the one he picked the day before. "Mr Thompson reported that he was generally pleased with Mitchell's academic performance, despite feeling that he was "falling short of his potential".

### Interview with Mitchell

Mitchell was very co-operative in the interview, his feeling of self importance quite visible in his demeanour (putting his chair under his desk with a flourish and grandly waving good-bye to his classmates as he left the room). He reported that he liked reading, and when probed (by the researcher 'R'), he claimed enjoyment to be his reason for reading:

R:           Why do you read?

M:           Because I like to read myself.

When queried about why he never brought a book for silent reading, Mitchell stated that he had many books at home, mainly 'Goosebumps' (horror stories for middle to upper primary school children), but was reluctant to bring them to school:

- M: I don't want to bring my um ...my 'Goosebumps'. I got 'Goosebumps' at home. I don't want to bring because they're brand new.
- R: Fair enough.
- M: Belong to me. Because everyone like 'Goosebumps'.
- R: They might take them?
- M: That's right.

He then commented that all of his books at home were stored in bookshelves and arranged according to size. He stated that he liked to read at night before bed and his favourite reading material was "What's Up Doc?" comics. He refused to comment on the frequency of his reading at home, changing the topic each time the question was asked.

Mitchell felt that his reading and writing skills were similar to those of his classmates:

- R: Do you think you're a good reader?
- M: Yeah. Good like everyone.

He disliked reading at school because the distractions of the other children minimised his enjoyment, "Some people talking [waves hands in the air], everyone run around."

In summary, from the interviews it seems that Mr Johns felt that Mitchell's strengths were his visual skills and his personality, with communication skills, particularly syntax and

vocabulary, his most significant weakness. Mr Thompson, on the other hand, reported that Mitchell demonstrated strong expressive language skills, particularly in the areas of syntax and social skills. He reported that there were difficulties with experience and context. He felt that Mitchell's reading skills were developing well, although more reading at home was needed. Mitchell reported that reading was enjoyable, and that this was the purpose for reading. He prized his book collection, which was the reason for not bringing his own reading material to school. Mitchell felt that his reading skills were similar to those of his classmates.

### Classroom language and literacy practices

#### Background

In the classroom, the children sat in rows with their desks joined together in pairs. Mitchell was seated next to another boy, almost in the centre of the front row. Mr Thompson's chair was positioned directly in front of Mitchell. Much children's work adorned the walls, along with maps and newspaper articles. Two full bookshelves were located at the classroom entrance.

### Classroom language interactions

#### Teacher and peer awareness of Mitchell's needs

During the first morning of observation, the class was involved in a spelling activity which involved practising words from their spelling journals. Mitchell's only interactions during this activity were requests for clarification from the teacher with regard to task instructions. The need for clarification could have been due to the fact that when addressing the class, the teacher stood directly in front of Mitchell's desk, but so close that Mitchell was unable to see the teacher's face or his gestures.

A new task was introduced by Mr Thompson and when he ignored Mitchell's request for repetition, Mitchell did not retry, but sat with his head in his hands staring at his desk. As he gave instructions, Mr Thompson sat in front of Mitchell's desk, tapping on the desk to get his attention. After Mr Thompson had given the general class instructions, he repeated them in simple sentences for Mitchell.

The next lesson was a maths lesson with the children in ability groups, which meant that Mitchell moved to another classroom. This class was taken by a relief teacher, Mr Davidson. Mr Davidson explained a new multiplication concept and selected Mitchell to answer a question. Another boy interrupted and was rebuffed by Mitchell:

Boy:           He can't hear you.

Mr Davidson: Um, well, you can tell him.

Mitchell:     I know what he's saying.

Mr Davidson then only communicated with Mitchell through broad gestures and did not pause for Mitchell's answers, but focused on the rest of the class.

A lesson with Mr Johns took place in a side room and focused on prepositions and sentence construction using the verb phrases "am able to" and "are able to".

Mitchell used gesture, eye contact, facial expression, and posture appropriately to help Mr Johns comprehend his conversation. This practice was encouraged by Mr Johns, who explained that the responsibility of the speaker was to make sure that the listener was able to understand what was being said.

### Peer interaction

During a spelling lesson, there was no interaction between Mitchell and his partner (the boy sitting next to him), as the boy turned his back to Mitchell in order to talk to the student behind him. Mitchell watched his partner at the beginning of a task for physical cues on what to do. At the conclusion of the spelling task, Mitchell passed his work to his partner with no eye contact or verbal interaction. After the work was marked, Mitchell initiated an interaction with his partner, who did not make eye contact, and mumbled a minimal response, quickly turning to the boy seated behind:

Mitchell:      Look at new pencils.

Boy:            Mmm [looks away].

After this interaction failed, Mitchell continued an unfinished drawing activity from the previous day, seemingly oblivious to the classroom conversations.

On more than one occasion Mitchell apparently noticed his exclusion from conversations and made an effort to include himself by answering questions that his partner had asked of someone else and tapping his partner on the shoulder to show him something. The partner would smile and quickly turn away. This seemed to indicate a desire rather than a direct need to communicate on Mitchell's behalf (as no initiation had been made with him and he was not initiating himself), and a reluctance of his peers to communicate with him.

### Specific difficulties related to hearing impairment faced by Mitchell

Another lesson was a language activity, which took place in small groups. The activity required the group to provide five adjectives for an object that Mr Thompson placed in the centre of the group. Each group member was asked to provide one adjective. For each object,



Mitchell consistently picked another noun (for example, for “tree” he suggested “wood”, and for “winter” he suggested “cloud”). He appeared to be unsure, looking at other group members for clues and did not volunteer his answers.

### Classroom literacy practices

Mitchell did not appear to engage in any voluntary literacy practices during the times he was observed. During daily silent reading he required a prompt from Mr Thompson to go and get a book, and always selected a picture book from the classroom library which he quickly browsed through, turning the pages rapidly. His choice appeared random and he selected a different book each day.

During his lessons with Mr Johns, Mitchell was frequently prompted to read for information:

Mr Johns:     What does it (a dinosaur) eat?

Mitchell:     Plants.

Mr Johns:     What else? Look at the words.

Reading material for these lessons included narrative picture books, children's encyclopedias, non-fiction picture books, and ESL readers.

Mitchell's weekly spelling tests were different from those given to the rest of the class, in that they were much simpler. Mr Thompson would, when calling out the words, say one word for the class and then a different one for Mitchell. Writing activities in the class during the observed period did not focus on creative writing, rather attention was placed on information-based scientific report writing, usually copied from the blackboard. Mitchell had little difficulty with tasks requiring copying.

It can be seen that the physical layout of the classroom structure was not ideal for Mitchell, who had difficulty seeing the teacher's face and so would have found speech reading very difficult. Mitchell was often given different instructions and different tasks from his peers. He tried to include himself in conversations and interactions, but was frequently ignored or avoided by his peers. His nonverbal interactions appeared to be the most successful in the classroom environment. He required prompts to participate in reading activities but displayed good copying (visual) skills on report writing tasks.

### Summary

From the background information, it can be seen that Ben who was in Year 4, had been assessed at pre-school as demonstrating a high level of intelligence, although verbal ability was much lower than his performance ability. Ben's school report indicated low achievement for written expression only, with all other subjects given a 'sound' or 'high' rating. It was also reported that Ben was performing at a level of about one year below his grade placement on the reading subtests of the Progressive Achievement Test. It was reported that Ben's speech was usually able to be understood. Standardised testing demonstrated an extreme delay in receptive vocabulary and metalinguistic awareness. Reading accuracy and rate were above his chronological age level and stronger than reading comprehension which was below. Oral and written narrative samples indicated well developed story telling abilities, despite punctuation errors in his writing. Ben's conversation skills were assessed as being appropriate, flexible and extensive, despite his peers' reluctance to communicate with him. The class teacher felt that Ben's strength was his intellect, with difficulties in vocabulary, abstract knowledge, social skills, and writing. However, the Teacher of the Deaf felt that social skills were Ben's strength as was his "brightness". He felt that Ben had difficulties in the areas of concept development, abstract language and vocabulary. Ben felt that his reading and writing abilities were good. In

the classroom Ben was seen to be keen to communicate with the teacher and his peers, although his peers frequently responded to him in a negative manner.

The background information indicated that Mitchell, in Year 5, was assessed as being of overall 'borderline average' intelligence, with performance IQ higher than his verbal IQ. On his school report, comprehension was the only area given a low ('limited') rating, with all others rated as 'high' or 'sound'. The Progressive Achievement Tests (reading) were reported as demonstrating a Year 4 level of performance. Mitchell's speech was reported as being difficult to understand, with many speech error patterns. His syntactic skills were given an age equivalency of 3.6 to 4.6 years. Formal testing indicated extreme delay in the areas of receptive vocabulary and metalinguistic awareness. Mitchell's score for reading rate was better than that for reading accuracy and comprehension. Both oral and written narrative retell samples were characterised by many grammatical errors, omission of story elements, and a lack of cohesion. The main points of the stories remained intact. Mitchell's communication with others was usually nonverbal and he was often avoided by the other children. In his pull-out tutorials, he was able to carry out meaningful and appropriate conversation with Mr Johns, the Teacher of the Deaf. His class teacher felt that his expressive language, syntax and social skills were strong, with lack of experience and difficulties in the areas of reading. The Teacher of the Deaf reported that Mitchell had strong visual skills, with communication, particularly syntax and vocabulary, being his weakest areas. Mitchell reported that he enjoyed reading, and felt that his skills were the same as his classmates. Mitchell encountered many difficulties in the classroom, as he had problems hearing instructions and was often excluded by his peers in both social and class activities. Despite this, he remained good humoured and persisted in his attempts to interact.

## CHAPTER 5

### Discussion

This chapter begins by presenting answers to the five research questions which address the receptive and expressive language skills, reading skills and behaviours, writing skills and behaviours, and language interactions of two middle primary hearing impaired students. The answers to the research questions will focus on background information, formal testing, observations and interviews for the two boys, Ben and Mitchell. These findings are then examined in relation to other research studies.

#### Research Question 1: What is the nature of the receptive language skills of two severely to profoundly hearing impaired middle primary students?

The data analysis used to answer this research question includes background information which goes beyond what is strictly regarded as “receptive language”, but is presented here to set the context for this and the following research questions. In terms of background information, Ben's performance on the WISC-R (Wechsler, 1974), as tested by a school psychologist at pre-school, showed inconsistent results. His performance IQ was classified as ‘very superior’. In other words, he demonstrated exceptionally high skill. Ben's verbal IQ, in contrast, was described as ‘deficient’. There was an unusually high 77 point difference between the scales. Mitchell, on the other hand, was reported as demonstrating an overall ‘borderline average’ skill on WISC-R testing two years before the study began. Nevertheless, like Ben, his performance IQ was given a higher rating than his verbal IQ, but the difference

between the scores was less marked, with performance IQ being 26 points higher than verbal IQ. Ben's 'very superior' performance IQ meant that his performance skills were not merely average or matched to his peers, but surpassed those of many. This finding is in contrast to many previous studies reported in the literature. In the studies by Andrews and Mason (1986) and Martin (1993) it was found that hearing impaired students showed similar but not higher, results on performance IQ testing to their age matched hearing peers. This would indicate that Ben was a child of exceptional ability, although it must be born in mind that his IQ results were recorded when he was much younger and at pre-school. Andrews and Mason (1986) and Martin (1993) also found that verbal IQ scores for hearing impaired children were significantly lower than their peers and their own performance IQ score. This finding is supported by the WISC-R testing of both Ben and Mitchell.

Mitchell's overall intelligence was at the lowest end of the average scales. It is possible that the extreme severity of his hearing loss affected not only verbal development, but also cognitive development and experiential learning. This would lend support to the study by Loera and Meichenbaum (1993) who found that hearing impaired children had poor problem solving skills and Dolman (1992) who found that hearing impaired children tended to have an inadequate knowledge base characterised by experiential and cognitive deficits. However, the question remains as to whether Mitchell's 'borderline average' IQ was a product of his hearing impairment, or was concomitant. On this issue, Cole et al. (1994) in their case studies of two hearing impaired children, concluded that differences in the hearing impaired children's abilities on language tasks were probably the result of minimal auditory and linguistic experience rather than the reorganisation of cognitive processing abilities as a result of hearing impairment. It is possible that Mitchell's overall IQ score of 'borderline average' was not a direct result of his hearing impairment as his performance IQ was also at an average level (which would tend to

be unaffected by hearing impairment). In Ben's case, the extreme 77 point difference in scores could well be attributed to his hearing impairment directly affecting his verbal development, with his performance IQ being unaffected. Thus, the results for the two boys would suggest that the IQ scores of hearing impaired individuals are variable like those of the hearing population, but that verbal IQ would be lower than performance IQ.

With regard to Ben's most recent school report, the single receptive 'strength' was Mental Mathematics, which was given a rating of 'high achievement'. This was supported during the interview with the class teacher, Mr Rowe, who commented that mathematics was Ben's 'strong' area of conceptual development, although general receptive skills were reported as being stronger than expressive skills. This supports the results of the testing conducted before the study began. Mitchell's school report identified that his comprehension skills were 'limited'. However, like Ben, other associated skills involving comprehension, such as Mental Mathematics and Science were given a 'high' rating.

The discussion now turns to the results of formal testing conducted by the researcher. Supporting the description of a 'deficient' verbal IQ, and in contrast to his 'very superior' performance IQ, Ben achieved an age equivalent of 6.4 years on the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981), which indicated extremely delayed receptive vocabulary. Mitchell achieved an age equivalent of 5.5 years on the PPVT. Given the severity of their hearing loss, these delays in vocabulary are not surprising and are in agreement with a study by Flexer et al. (1993) which found that a sample of mainstreamed hearing impaired students scored significantly lower on the PPVT than their hearing peers. The results here are also consistent with the findings of McNally et al. (1987), Arnold and Horner (1995) and Webster (1986), which were that the general receptive vocabulary skills of hearing impaired

children were delayed when compared to normally hearing children. As vocabulary development has been identified as important in the development of reading, it would be expected that both boys would have reading abilities well below their chronological ages.

On the Analysis of the Language of Learning (ALL) metalinguistic awareness assessment (Blodgett & Cooper, 1987), Ben scored an age equivalent of 7.0 years, with Mitchell scoring an age equivalent of 5.4 years. Ben's performance on the individual subtests was variable. His strongest subtest performance was in the area of 'generating words' (for example, "tell me a word that starts with p"), with an age equivalent of 9.2 years. Cued speech, which may have provided cues as to the identities of initial phonemes was not used in the ALL. This demonstrated that Ben had sufficient cues, whether auditory or visual, to be able to identify single phoneme onsets in order to complete this task, so he could be said to have some level of phonological awareness. The lowest score was on the 'segmenting words' subtest, scoring 2/10 (an age equivalent of 5.4 years). This subtest required the child to count the number of phonemes in words spoken aloud by the researcher, with targets ranging from 2 phonemes (for example 'no' and 'eat') to 7 phonemes (for example 'blanket' and 'catalog'). Mitchell also demonstrated difficulty with the 'segmenting words' subtest, with a raw score of 1/10. Many of the errors that the boys made were similar, such as counting syllables rather than phonemes, and other assorted errors such as each stating that 'message' had four phonemes. This would indicate that the two boys shared a similar approach to this phonological awareness task and were not able to segment words accurately into their constituent phonemes.

Mitchell had very low scores on all subtests, with his greatest areas of difficulty being 'defining concepts' and 'repairing sentences', with scores below basal levels on both subtests. These tasks appeared to be the most abstract of the test. Some research has shown that hearing impaired children experience difficulties with the development and understanding of

abstract concepts (Erting, 1992; McNally et al., 1987). Mitchell's highest scores were on the subtests of 'segmenting sentences' (6.5 years) and 'giving concept examples' (6.4 years) (see Chapter 3 for subtest examples). Although the boys showed differing areas of strength and weakness, these results support the research that has consistently found that hearing impaired children with severe to profound hearing losses have extreme difficulty in developing phonological awareness (Borman et al., 1988; Dolman, 1992; Hanson & McGarr, 1989; Maxwell, 1986; Schaper & Reitsma, 1993), although for these two boys whilst the ability was not highly developed, it was not entirely absent, with Ben in particular showing the ability to segment fairly consistently at the onset level. This demonstrates their very slow development of metalinguistic awareness which plays a most important role in literacy development (Adams, 1990; Catts, 1993; Hanson & Fowler, 1987; Hanson & McGarr, 1989; Rohl & Pratt, 1995). This topic will be discussed further in this chapter when reading skills are addressed.

Further data about the boys were obtained from interviews. Mr Rowe reported that Ben's receptive difficulties were in the areas of learning abstract concepts and having a reduced knowledge base. The Year 5 class teacher, Mr Thompson, was of the opinion that Mitchell's receptive skills were affected by lack of experience and concept development. This is a phenomenon also found by McNally et al. (1987), Webster (1986), and Erting (1992) in their studies of the cognitive skills of severely to profoundly hearing impaired primary school students and supports the research by Dolman (1992) who found that the hearing impaired children sampled had an inadequate knowledge base with severe experiential deficits.

The opinions of Ben's class teacher were affirmed by Mr Johns, the Teacher of the Deaf. Mr Johns also felt that Ben had strong receptive skills, particularly in the area of mathematics and the ability to process conceptual information. Mr Johns appeared to have many concerns



about Mitchell's receptive skills, including his limited 'potential' and his educational needs. Mr Johns felt that Mitchell had very little potential to develop 'normal' receptive skills, as he felt that Mitchell did not possess 'inner speech'. This conclusion was drawn from Mr Johns noting that Mitchell had a severely restricted phonemic inventory (that is, he did not know or use a large variety of sounds) and that he reported events through visual activity with no records of thoughts or language. Conrad (1979) noted both the importance of inner speech for language and literacy development and the absence of inner speech in a proportion of the hearing impaired population. Mr Johns isolated the particular areas of difficulty for Mitchell as being comprehension of verb phrases and comprehension of abstract language, which is a common observation in the literature on hearing impaired children (Erting, 1992; Webster, 1986). Mr Johns also stated that Mitchell required direct teaching of comprehension strategies, in particular developing background information, searching for information and identifying relevant information. Banks et al. (1990), Erickson (1987), Lewis (1996), Nelson and Camarata (1996), and Paul (1996) support the overt teaching of comprehension strategies to hearing impaired children to facilitate language and literacy development.

From the various data sources examined in this study it can be seen that Mitchell had delays/difficulties in all receptive areas investigated and presented with many of the 'typical' receptive abilities of hearing impaired children as reported in the literature. On the other hand, despite certain areas of weakness (verbal IQ, receptive vocabulary and metalinguistic awareness) Ben showed exceptional strength in his performance IQ and scored more highly than Mitchell on all testing, indicating 'atypical' receptive skill for a child with his degree of hearing loss. The class teachers and Teacher of the Deaf reported similar concerns for the receptive development of both boys such as concept development and world knowledge, although there was a greater degree of concern for Mitchell. The results here suggest that the

boys did not possess many of the skills seen as important by many researchers in the successful acquisition of reading.

Research Question 2: What is the nature of the expressive skills of two severely to profoundly hearing impaired middle primary students?

Ben's most recent school report recorded his expressive language areas as 'sound'. This positive comment was interesting as some studies have found the expressive language skills of hearing impaired children to be weaker than those of hearing children of the same age (Conrad, 1979; Erting, 1992; Loera & Meichenbaum, 1993; Williams, 1994). Also positive was the highest rating of Stage 7 given to Ben's syntactic skills in a LARSP assessment (Crystal, 1982) by Mr Johns. Such a rating refutes studies by King and Quigley (1985), Quigley and Kretschmer (1982), and Webster (1986) which found that the syntactic development of hearing impaired children was slow and characterised by a lack of complexity and variety of structures. Ben also did not appear to display any of the typical hearing impaired syntactic errors or 'deafisms' reported in the literature (Quigley & Kretschmer, 1982; Webster, 1986), such as overuse of nouns and verbs, few articles, prepositions, and conjunctions. These reports of Ben's well developed expressive skills are of note, particularly when compared to his 'deficient' verbal IQ rating and may have been partly a result of the intensive training Ben had received from Mr Johns which focussed heavily on syntactic development.

Mitchell's latest school report rated his Oral English as 'outstanding' whilst a LARSP profile (Crystal, 1982) conducted by Mr Johns rated Mitchell's syntactic development at Stage 6 (usually reached by children between the ages of 3.6 and 4.6 years) which is characterised by many developmental errors such as the omission of auxiliaries and prepositions. His speech intelligibility was rated by Mr Johns as '3', that is 'difficult to understand, gist understood'. Articulatory difficulties have also been associated with reading difficulties (Bird et al., 1995).

Thus there were inconsistencies between the reports of the classroom teacher and the Teacher of the Deaf.

Ben's social language use in the classroom was investigated by the researcher using McTear's Conversational Analysis (McTear, 1985), and it was found to be a strong skill. His only area of difficulty was in giving responses to his conversation partner. Ben would sometimes either not respond at all or offer an inappropriate response. This lack of success in the classroom could be seen as largely attributable to his hearing impairment, in that he did not hear or heard incorrectly, what his conversation partner said, rather than not being aware of the requirements of a conversation.

An analysis of Mitchell's conversation skills using McTear's Conversational Analysis (McTear, 1985) revealed a variety of skill and success. Much of Mitchell's conversation was nonverbal, involving the use of gesture, mime, and pointing. With adults however, interactions were more likely to be verbal. This may have been due to adults displaying more patience and offering more time to encourage Mitchell to attempt verbal communication. In conversation with Mitchell, his peers frequently initiated and responded using gesture. This could indicate a lack of knowledge on their part about Mitchell's ability to communicate, or a realisation of the extra effort it took to communicate with him. Because of his hearing impairment Mitchell often missed out on classroom happenings (such as short verbal interactions). To overcome this, his peers would have needed to brief him first before engaging in a conversation and be prepared to repeat what they said, as well as listen intently to Mitchell's speech.

Because of his hearing impairment and inaccurate interpretations of speech, Mitchell's responses were often inappropriate. His responses to adults were more lengthy than his responses to his peers. This could be attributed to adults (that is, teachers) possibly being more willing to communicate with Mitchell than were his peers. His discourse was restricted, with

little variety in vocabulary and he often relied heavily on nonverbal communication to meet all of his conversation needs. With the little practice he was getting in the classroom, Mitchell's verbal language was not likely to improve greatly, and he may in the future come to rely even more on nonverbal methods of communication. It can be seen then, that despite their differences in conversational ability, both boys rarely experienced success in their attempts to interact with their classmates.

Ben's oral narrative retell demonstrated mature and appropriate skill. Griffith and Ripich (1988) in their study of story structure recall in hearing impaired children, concluded that retelling abilities were linked not just to age, but also to linguistic abilities. Ben was able to meet the requirements of a narrative text, including features such as listener orientation, self monitoring and literate features (such as opening/ending). He demonstrated all the linguistic features, albeit with reduced variety in the use of such as modals and connectors. On the oral narrative retell task, Mitchell maintained a generally accurate flow of the original story. The most noticeable feature of his story was the plethora of grammatical errors which, in conjunction with the omission of important components of the story, significantly affected the listener's comprehension. These results support the premise of Nelson and Camarata (1996) that narrative performance is an important characteristic of language competence. Mitchell's performance on this test was consistent with the reports of Mr Johns.

Mitchell's syntactic skills and intelligibility appeared to be his most significant expressive language difficulties. In a study of young hearing impaired students, Camarata (1995) found that speech intelligibility skills were frequently associated with syntactic skills and that improvements in speech intelligibility led to improved syntactic skills. It may then be assumed that a hearing impaired individual may restrict the complexity of an utterance in order to

ensure that it is understood, that is compensating for their low intelligibility levels. Therefore, Mitchell's low intelligibility levels may have impacted on his syntactic abilities, as both areas were particularly weak.

Mr Rowe's main areas of concern about Ben's expressive language were his inappropriate social language and his reduced vocabulary. Vocabulary difficulties have been identified by researchers as a significant problem for hearing impaired children (Erting, 1992; McNally et al, 1987; Webster, 1986). This was reflected in Ben's results on the PPVT and WISC-R. Mr Johns also reported concerns about Ben's vocabulary development, and in particular, a lack of flexibility, abstract language, and specific vocabulary. However, unlike Mr Rowe, Mr Johns reported social language to be a strength. It is possible that these discrepancies in reports may be attributable to the different contexts in which the teachers observed Ben. Mr Rowe's opinion of Ben's social language may also have been based on his perceptions of Ben's behaviour in the classroom which was reported by Mr Rowe and observed by the researcher as being inappropriate and violent. Further, it has been shown by Power (1997) that the mainstream classroom environment is far from ideal for hearing impaired students. On the other hand, Mr Johns saw him in a one to one tutorial situation where instruction and interactions were tailored to his specific needs.

Mr Thompson, Mitchell's class teacher, felt that Mitchell's expressive language skills were stronger than his written language skills. He felt that Mitchell had strong social language skills, with his best expressive language area being syntax. Mr Johns, on the other hand, reported that syntax was one of his main areas of concern about Mitchell's expressive language, which was characterised by difficulties in sentence structure, use of prepositions, verb tense usage, and use of function words. The results of standardised and informal testing confirmed Mr Johns' reports. Mr Johns' description of Mitchell's expressive skills is typical of the

description of the skills of hearing impaired children reported in the literature ('deafisms') (King & Quigley, 1985; Quigley & Kretschmer, 1982; Webster, 1986). Mitchell's reduced vocabulary was the other concern of Mr Johns.

it can be seen that the reports of Mr Thompson, the class teacher, and Mr Johns, the Teacher of the Deaf, regarding Mitchell's expressive skills were not compatible. The differences in teacher statements could partially be attributed to differing expectations for and knowledge about hearing impaired children. A class teacher with little experience of hearing impaired children may make few demands, and feel that the student is performing 'as well as can be expected'. A study conducted by Hyde and Power (1996) on teacher ratings of the performance of hearing impaired students who communicated using sign language found that there were numerous discrepancies between test results and teacher reports, with teachers frequently underestimating the students' abilities. Hyde and Power (1996) suggest that the teachers may have expected certain skills to be particularly low, and if students performed better than expected, they were given an inflated rating. They further suggest that teachers may also have considered the students' struggle and efforts when rating them. The results from the study by Hyde and Power and the present study may indicate the need for education and training of teachers who have hearing impaired students (using either sign language or verbal language) integrated into their mainstream classrooms, with particular emphasis on the assessment of oral language. It is also highly likely that a Teacher of the Deaf who interacts with students in a one to one tutorial situation has far more opportunities to observe individual children's language, than a class teacher with 30 or more children with whom to interact.

**Research question 3: What is the nature of the reading skills of two severely to profoundly hearing impaired middle primary students?**

The background information gathered from Ben's school suggested that he was able to cope with many of the literacy demands of his classroom. Indeed, on his most recent school report Ben's reading was given a rating of 'high achievement'. However, his Reading Vocabulary and Reading Comprehension skills tested by Mr Johns using the PAT (Reid & Elley, 1986) were interpreted as being approximately one year behind his current grade placement, suggesting a somewhat lower level of achievement. Similarly, on Mitchell's most recent school report, his reading was rated not quite as highly as Ben's, but still positively as 'sound achievement'. Testing on the PAT (Reid & Elley, 1986) also indicated a one year delay on Reading Vocabulary and Reading Comprehension in comparison to his class peers according to Mr Johns. Given that Ben was one year older than his classmates and Mitchell was two years older than his class peers, the PAT assessments by Mr Johns for both boys would indicate significant delays in reading comprehension and vocabulary for their chronological ages.

In terms of formal testing by the researcher, Ben's results on the Neale Analysis of Reading Ability (Neale, 1988) at 9.11 years of age suggest that his best developed skills were accuracy (Reading age = 11.0), and rate (Reading age = 10.9), both above his chronological age. Comprehension was, however, lower (Reading age = 8.4). His comprehension results on this analysis appeared to be compatible with the PAT results reported by Mr Johns in that both sets of results were somewhat below grade and age level. The Neale Analysis of Reading Ability identified Mitchell's reading strength as rate (Reading age = 10.3 years), somewhat below his chronological age, with accuracy (Reading age = 7.10), and comprehension (Reading age = 7.5), both well below his chronological age of 11.11 years. It can be seen that Mitchell's reading skills on this measure were more delayed than assessments given in his school reports and Mr Johns' assessments. It should be stated that the comprehension score given on the

Neale Analysis of Reading Ability - Revised may produce an inflated score, as the questions used are predominantly literal in nature, and that corrections for reading accuracy provided by the examiner may assist the child in answering the comprehension questions.

It would seem that both boys scored much more highly on the reading vocabulary subtest of the PAT than on the receptive vocabulary assessment of the PPVT. It is acknowledged that the PAT testing was carried out by Mr Johns, so that the results are not those of the researcher and that his interpretations of this measure must be seen as approximations. However, those discrepancies observed in scores may also be due to the fact that the PAT provides visual cueing in that it uses *written* words to assess vocabulary. In contrast, the PPVT assesses *listening* vocabulary, which would obviously place greater demands on severely to profoundly hearing impaired children, with fewer cues available for them than for the normally hearing population, even with the use of cued speech.

A large proportion of Ben's and Mitchell's accuracy errors in the Neale Analysis of Reading Ability - Revised were mispronunciations characterised by medial syllable deletion, shortening of long vowels and assimilation (repeating a phoneme such as 'motitates' for 'motivates'). This suggests the use of visual strategies in reading for both boys, rather than phonological/alphabetic decoding strategies. Supporting the suggestion of his use of a visual strategy was Mitchell's large proportion of substitutions, some of which were semantically similar to the target, with the majority being visually similar. According to Frith (1985) this would suggest that Mitchell's reading development was arrested at the logographic phase of reading development where written words are perceived as visual wholes. Ben's oral reading was fluent, with the majority of errors being substitutions of single phonemes, suggesting an alphabetic strategy, which Frith (1985) suggests is dependent on well developed phonological



awareness skills. However, it has been shown that Ben's phonological awareness skills did not appear to extend to phonemic segmentation, which has been seen by many including Tunmer, Herriman, and Nesdale (1988) as essential for the successful acquisition of decoding.

When interviewed, Mr Rowe confirmed his assessment of Ben's reading made in the school report. He felt that Ben had no problems with reading, although he did express concern about Ben's lack of reading at home and involvement in the daily classroom sessions of Uninterrupted Sustained Silent Reading (USSR). Mr Johns made positive comments about Ben's reading, saying that he felt Ben had the potential to become a skilled reader. Ben himself reported that he enjoyed reading, felt that he was a good reader and had knowledge of the purposes of books and reading (a tool for academic success, pleasure, and a knowledge source). He reported that his favourite reading materials were comics and magazines as he thought they were enjoyable.

Mitchell's class teacher was not concerned about Mitchell's reading but voiced his concerns about the lack of reading done at home and the lack of involvement in USSR. Mr Johns, on the other hand, was very concerned about Mitchell's reading development. He reported that Mitchell experienced difficulty with phonics, with his reading behaviour being characterised by 'glossing over text'. Mr Johns stated that Mitchell needed to learn comprehension strategies and missed out on essential reading experience as he spent much of his time on tasks which required little or no reading (such as taking much longer than his peers to complete an activity, or spending time colouring in pictures on daily worksheets).

Mitchell apparently treasured the books he owned, putting effort into keeping them in good condition and keeping them organised on shelves in his bedroom, rather than bringing them to school to read. He thought of himself as a 'good reader' and reported 'enjoyment' as being the reason for reading. He stated his reading habits as reading mainly at night before he went to

bed, during which time he usually read comics. He stated that he disliked reading at school as all of the classroom distractions, such as children moving around the room to change books, made it difficult. He also stated that he did not bring books to school for USSR because he was worried about his 'Goosebumps' books getting damaged or stolen, as they were very popular with his peers. It was interesting that he reported enjoying the 'Goosebumps' series, as his reading skills did not appear sufficiently developed to read meaningfully these horror stories for middle/upper primary children. It could be that his classmates' enthusiasm for these books was contagious, or that Mitchell was attempting to have something in common with his peers, in terms of owning the same books, talking to others about them and comprehending the 'Goosebumps' conversations of others. This is in agreement with the findings of Luetke-Stahlman et al. (1996) who noted that social experiences may be based on shared reading experiences.

Ben was observed in the classroom during reading activities. During the USSR sessions, his reading material consisted of sports magazines, calendars, and a picture book of three dimensional illusions, all of which he had brought from home and all of which contained little or no text. He tried very hard to become involved in the story books read by the teachers. He made sure that he was sitting on a desk rather than the floor with the other children so that he could gain visual lip reading cues from the teacher, and even gave his FM to the teacher to improve the quality of the teacher's speech in order to enhance his comprehension. Despite these keen efforts, the strain of the day to day classroom tasks took its toll and Ben was unable to maintain his concentration for long. On the other hand, in reading activities with Mr Johns when he was using non-fiction picture books and junior encyclopedias, Ben displayed enthusiasm to read, and asked many questions about the reading material. This interest may well reflect Ben's lack of world knowledge and desire to build up a knowledge store. The one

to one situation with Mr Johns, tailored to Ben's specific needs, could also have encouraged his interest and enthusiasm.

It can be seen that both boys reluctantly participated in USSR. Mitchell's reason for disliking classroom reading (there were too many distractions) could well have applied to Ben, as given their levels of reading comprehension, reading required great concentration for them both and would have been affected by the activity and distractions of the classroom. Another factor for both boys was that they had particularly difficult home circumstances where the encouragement of regular reading would not have been a priority.

Whilst there were some areas of concern in Ben's reading, in view of his hearing impairment he was making good progress, with his very well developed oral reading accuracy. An area of concern appeared to be his reading behaviours: lack of practice and his choice of non-challenging reading material in the classroom. In their study of the literacy needs of hearing impaired children, Luetke-Stahlman et al. (1996) found that hearing impaired children are often not read to and thus are deprived of adult-guided text exposure with the result that they fail to develop familiarity with text and miss social opportunities of sharing a written text in a social environment.

When considering the research literature concerning the reading skills of hearing impaired children, the severity of Ben's hearing impairment and his weak phonemic segmentation, his reading skills were remarkable. This may have been attributable to factors such as his reported high intelligence, his desire to learn and his knowledge of the purposes and functions of reading, which are all factors associated with literacy development.

During classroom observations of USSR, it was seen that Mitchell regularly required prompting to take a book from the classroom bookshelves as he did not bring his own reading

material. He chose a different book each day, usually a picture book which he flicked through. In his daily tutorials with Mr Johns, Mitchell required prompting to read for information, preferring to state "Don't know" rather than to refer to the page and search for the answer in the text. His reading was rapid, ignoring unknown words and skimming over lengthy sentences. Much of his speech when reading was unintelligible, largely due to the speed with which he read. A factor contributing to his fast rate of reading may have been his neglect of punctuation (commas and full stops) rather than fluency of reading.

From the above information it can be seen that Mitchell's reading skills were very underdeveloped for his age and grade placement, particularly in the areas of decoding and comprehension. Logically, it would appear that good decoding skills are dependent on an intact auditory system (Schaper & Reitsma, 1993) and are highly related to reading comprehension (Rohl & Pratt, 1995). Further, Paul (1996) reported that reading comprehension depends on an awareness that text is designed to be understood and thought about, as well as the ability to understand word relationships. This finding was supported by Banks et al. (1990) who studied the reading abilities of severely hearing impaired children. They found that the children became so entrammelled in their difficulties with word recognition and syntax that text meaning was lost. Mitchell appeared to have great difficulty with both word recognition and syntax. Ben's word recognition and syntactic skills were stronger than Mitchell's and most likely would have contributed to his higher level of reading comprehension.

In Chapter 2 important factors for literacy development were presented. These included inner speech (Conrad, 1979), phonological awareness (Adams, 1990), syntactic awareness (Tunmer, 1990), expressive phonology (Bird et al., 1995), receptive language (Bishop & Adams, 1990), world knowledge (Nicholson, 1993), expressive language (Schaper & Reitsma,

1993) and narrative orientation and knowledge (Zacharias-Lewinsky et al., 1992). It has been seen that Mitchell demonstrated delays/difficulties in all of these areas. He also appeared to demonstrate some 'typical' skills and behaviours of hearing impaired readers, such as delayed skills (MacDougall, 1991) and extreme difficulty with decoding (Borman et al, 1988).

Despite all of the above mentioned difficulties, it must be remembered that Mitchell, with unaided hearing, was only able to identify loud environmental noises, and that with maximum use from hearing aids, his ability to hear one-to-one conversations accurately was still weak. It can be seen then, that a reading age of 7.10 years (on the Neale Analysis of Reading Ability) for accuracy was a significant achievement for him, particularly as it appeared that some errors classified as mispronunciations could have been due to his inability to pronounce certain sounds. As has been discussed, Mitchell may have compensated for his hearing impairment by making use of his visual skills, such as visual memory for written words, or visual encoding for articulatory patterns (Dodd & Hermelin, 1977). Indeed, Mr Johns reported that Mitchell had well developed visual skills and was excellent at copying and visual recall.

Williams (1994) reported that in her 3 case studies, the hearing impaired preschoolers demonstrated emergent language and literacy skills in a similar way to hearing children. It may be that for Mitchell, the necessary and facilitating factors for more advanced literacy skills as outlined in Chapter 2 were delayed and that the combination of difficulties/delays in all of these areas impeded further development. Nevertheless, as normally hearing children vary in their reading skill, so do hearing impaired children. Lewis and Gallaway (1995) studied the abilities of a number of hearing impaired children, and concluded that there was very little knowledge about how far individual variations in language acquisition and features of the linguistic environment contributed to the outcomes. The two boys in the present study had much in common with each other, such as delayed receptive language skills, delayed

metalinguistic awareness, little reading practice and similar error patterns, yet their reading skills were markedly different, with Ben showing very strong word recognition. It is suggested that these differences might be partly explained in terms of Ben's higher IQ, his slightly better hearing and Mitchell's apparent lack of inner speech. Each of these factors, combined or singularly, might account for some of the differences in the boys' reading ability.

It is of no surprise that Mitchell demonstrated delayed reading development, as his language skills were also impaired. Many researchers have suggested that impaired language skills impact negatively on reading development (Banks et al, 1990; Lewis, 1996; Luetke-Stahlman et al., 1996; Nelson & Camarata, 1996; Simpson et al., 1992). However, Ben also displayed relatively low levels of metalinguistic awareness, particularly in the area of phonemic segmentation and extremely delayed receptive vocabulary skills, yet his reading rate and accuracy levels were one year *above* his chronological age when tested. The implications of this unexpected result will be discussed in detail in the following chapter.

**Research Question 4: What is the nature of the writing skills of two severely to profoundly hearing impaired middle primary students?**

Ben's most recent school report indicated 'high achievement' for spelling and 'low achievement' for written expression. Mitchell's latest school report indicated a 'sound' performance in written expression. No other background information was available. From these school reports it would appear that writing was a strength of Mitchell's, but proved a difficulty for Ben.

Ben's writing sample that was analysed was an elaboration of a movie that he had recently watched at home. The story contained all the necessary components of a narrative (Allen et

al., 1993), although Ben attempted to lengthen and continue the story by adding an additional problem just prior to the conclusion. The story was characterised by a chain of events. Ben's written vocabulary showed little variability, apart from a wide range of adverbs and adjectives. King and Quigley (1985) also identified restricted vocabulary as being a feature of the writing of hearing impaired students which mirrored their verbal expression.

Ben's story possessed literate features and had a generally consistent past tense. He demonstrated a number of punctuation errors and an overuse of pronouns. King and Quigley (1985) also found that writing samples of hearing impaired students were characterised by frequent syntactic and punctuation errors. There were few spelling errors, the targets of which were recognised (for example 'ridden' for 'written'). Despite the errors, his story remained entertaining and easily understood. This is noteworthy as Power (1994) stated that reader comprehension of written material was as important in assessment as structural analysis.

It was found that Ben's written narrative sample contained similar qualities to that of his oral narrative. Williams (1994), in her case studies of three hearing impaired preschoolers, found that verbal and written language developed simultaneously and reinforced each other in similar ways to development in hearing children (Teale & Sulzby, 1989). It is to be expected that this reciprocal learning process would be increasingly affected by hearing loss, which reduces language input and experience, thus affecting the development of literacy.

Written narrative skill has also been found to have a relationship with reading comprehension (Yoshinga-Itana & Downey, 1992), with Ben showing strong development for a hearing impaired child in both of these areas. Many researchers (Conte, Rampelli, & Volterra, 1996; Ewoldt, 1985; Norris & Hoffman, 1993) have found that narrative skill is significant in supporting literacy development in hearing impaired children. This would suggest the importance of promoting the development of narrative skills in hearing impaired children

as a means of furthering literacy development. This will be discussed further in the following chapter.

Mitchell refused to allow a written narrative of his to be taken to be photocopied, perhaps demonstrating how important a completed story was to him and that he wanted to retain ownership, in a similar way to that in which he guarded his library of books. The story was characterised by reduced linguistic features and frequent syntactic errors, and was disjointed, with weak links between the events, which significantly affected comprehension. The story had little orientation and omitted the moral of the Bible story on which it was based. The story problem was nevertheless resolved, featuring a happy ending and conclusion. Target words were easily identified from Mitchell's few spelling errors. According to the literature, these results are not extraordinary. Narrative skill has been found to be a characteristic of high language competence (Griffith & Ripich, 1988; Nelson & Camarata, 1996). Thus, narrative ability is linked to linguistic ability. So it could be expected that Mitchell would not perform as well as Ben on a narrative production task, as his language skills were not as well developed as Ben's. Written narrative ability was related to the expressive language skills of both boys. Ben, with stronger language skills produced the more literate and mature written narrative. Mitchell's written narrative was characterised by many of the errors and features of his expressive language. It retained the characters and some of the storyline, the quality of which may have been affected by Mitchell not being able to hear all the story as it was told to the class.

Both Mr Johns and Mr Rowe commented that Ben's writing was significantly weaker than his expressive language. This is in contrast to the findings of Webster (1986) who found that the writing skills of hearing impaired students were similar to those of their verbal expression. It should be pointed out that there were apparently few opportunities in the boys' classrooms



for creative writing and that a lack of practice in written narrative may have helped to account for such discrepancies. Ben reported that he enjoyed writing stories, and in fact the writing sample that was analysed was written at home for Ben's own pleasure. Like Ben's teacher, Mr Thompson commented that Mitchell's written expression was "not as good as his oral expression".

Mr Johns described Mitchell's written skills as being characterised by poor sentence structure and poor spelling using a whole word approach, and were affected by his weak language skills. This supports the findings of Williams (1994) who found that social, cognitive, and linguistic factors contributed to literacy development, and of Teale and Sulzby (1989) who found a mutual interaction between expressive language and literacy skills. Difficulties in language development would then be expected to lead to difficulties in literacy development, as found by Luetke-Stahlman et al (1996). Scholes (1997) also noted that there appeared to be a cyclical relationship between writing and spoken language, that is, as one matures so does the other.

In their study of the educational development of a group of profoundly hearing impaired children, Lewis and Gallaway (1995) found that when hearing impaired children commence schooling, they may be still in the early stages of language acquisition. It would be expected that this language delay would then affect the rate and proficiency of literacy development. Paul (1996) stated that reciprocity between language and print should lead to the development of higher level skills in language and literacy. It has been suggested that literacy skills be taught to hearing impaired students as a means of improving spoken language (Nelson & Camarata, 1996).

Therefore, from the literature discussed and from Mitchell's results, it may be suggested that his hearing impairment impeded further language development, which prevented further

literacy development. This in turn, did not provide the necessary support for more advanced language growth. Ben, however, was severely to profoundly hearing impaired, that is, his hearing was slightly better than Mitchell's. This may in part account for his stronger performance.

No free writing activities were observed in the boys' classrooms during the weeks of observation. The researcher attended on the same days each week and so may have missed such activities. When observations took place in Mitchell's classroom, it was noted that his spelling lists and tests contained different and more simple words (4 letters in length) than those of his peers. Classroom writing activities consisted only of report writing such as science reports which were copied directly from the blackboard. Mitchell was observed to perform well on these tasks in terms of accuracy. This supports Mr Johns' comment that one of Mitchell's strengths was his visuospatial skill. This skill in copying may have led to Mitchell's reliance on using a whole word strategy for spelling rather than attempting to use a phoneme-to-grapheme strategy, which would have been much more difficult for him. It has been reported in the literature that hearing impaired children have well developed visual skills and may use these to support and compensate for poorly developed phonological analysis skills (Dodd & Hermelin, 1977).

**Research Question 5: What is the nature of the social language interactions of two severely to profoundly hearing impaired middle primary students?**

Both boys experienced some difficulties in interacting with their peers, both within and outside the classroom. When observed in the classroom, Ben's behaviour was found at times to be violent, disruptive and aggressive. Mr Rowe felt that this was a result of unhappiness at home and frustration with his hearing impairment (such as problems with communication and being different from the other children). Observations suggested that Ben appeared to be

disliked by his peers for this inappropriate behaviour as well as being disliked for the 'special' treatment they felt he received.

Ben received little encouragement when attempting to communicate with his classmates. They offered minimal verbal responses, gestured, or excluded him from conversations. As Ben's conversational analysis demonstrated, he had well developed discourse skills, so it is unlikely then that his classmates would be unwilling to communicate with him due to inappropriacy or difficulty. This lack of acceptance could have been due to his, at times, inappropriate classroom behaviour.

Ben was seen to miss out on important information in classroom instructions, which caused confusion for him and frustration for his peers (as he interrupted them). His peers frequently gestured to him rather than spoke to him, possibly indicating an awareness of the extra time and effort it took to communicate verbally with him. He seemed to prefer to stay in the vicinity of the teacher during less structured activities. These activities were characterised by the children mixing in small groups, conducting their own conversations. Ben would have found it very difficult to participate in group conversations due to factors such as having to lip read many people at once, partners not all facing him and watching the gestures of more than one person. There would also be overlaps in conversation and distractions from other groups of children talking. Ben was not able to engage in another task whilst conversing, thus limiting his opportunities for interaction. This difficulty in participating in groups may have been a contributing factor to Ben's playing only with Mitchell at lunch and recess times. Thus, whilst he was able to display appropriate levels of social language, this was not sufficient for him to interact appropriately with his classmates.

Observations of Ben's and Mitchell's difficulties in social situations has some support in the literature. In a study of the social skills of hearing impaired and normally hearing preschool

children, Levy-Shiff and Hoffman (1985) found that hearing impaired children who were integrated into mainstream classrooms were not well accepted by their normally hearing peers and were often excluded or rejected. Similar results were found by Cappelli et al. (1995) in a study of primary aged children.

Mitchell rarely interacted with his peers. The majority of his attempts to interact were met with rejection, or he received a minimal verbal or gestural response. This would have been completely unsatisfactory in meeting Mitchell's social needs. Possibly as a result of this rejection, Mitchell also chose not to interact when the opportunities arose, preferring to finish some class work or daydream. Interactions in the classroom were mostly with the class teacher.

Mitchell's communication skills were limited, and he may, as Rodriguez and Lana (1996) suggested, have recognised the deficiencies in his verbal communication and relied on gesture which was usually understood or chose not to communicate at all. The majority of his verbal communication attempts were with Mr Johns, a familiar adult who encouraged verbal communication, had time to listen and could decipher Mitchell's speech. That is, Mr Johns was a willing and familiar conversation partner, which has been shown to be important in the frequency of interactions of hearing impaired children (Rodriguez & Lana, 1996).

## CHAPTER 6

### General Discussion

#### Issues concerning the integration of hearing impaired children into mainstream classrooms

As shown in Chapter 2, there has been much discussion about methods of educating students with impairments or disabilities in recent years. In a study of integrated high school students with disabilities, Zetlin (1987) concluded that behaviour, not IQ, affected the ease of assimilation into mainstream classrooms: that is, conforming behaviour led to peer acceptance in the classroom setting. This conclusion is important when considering Ben's interactions with his peers. In spite of his well developed social language skills, Ben was observed and reported as being verbally and physically aggressive to his classmates, which appeared to lead to his exclusion from conversations and activities. Mitchell, whose social language skills were not as developed as those of Ben, was described as being 'stubborn' and 'theatrical' by his teacher and was observed on many occasions not to conform to classroom routines and instructions, behaviour which may have been interpreted negatively by his peers. By the very nature of their impairment, hearing impaired children are not able to interact with the effortlessness of normally hearing children, making conforming to 'normal' classroom behaviour difficult.

Elkins (1997, p. 73), in his discussion of mainstreaming practices, identified that "if children are to be mainstreamed successfully, then much effort may need to be expended on preparing other children, teachers and the wider community to understand and accept the philosophy." From the observations in the boys' classrooms, it may be concluded that the teachers and children at their school would benefit from further education on the principles of mainstreaming and the needs of hearing impaired children. Ben appeared to be excluded by his

peers. This could have been due to his aggressive behaviour as well as his peers' lack of awareness of the difficulties Ben faced in day to day interactions. This was seen in the children's lack of acceptance of the classroom teacher's explanation of why he appeared to treat Ben differently from the other children.

Observations of the class teachers, student teacher and relief teacher suggested that they rarely used strategies that facilitated the inclusion of the boys in the classroom activities. These strategies include attention getting prior to speaking, encouraging the boys to sit in a position optimal for speech reading in the classroom, being at an appropriate distance and position in relation to the boys when speaking, and in the case of the relief teacher, simply making the effort to communicate. The boys' peers also required education in the above areas, as well as an understanding of the nature of hearing impairment and the need for them to be patient, positive, and encouraging. Such knowledge, if introduced appropriately and reinforced by teachers, could help the boys' peers develop a degree of empathy and significantly impact on the nature of their interactions with the boys.

For both boys, some teacher ratings of abilities (from school reports and interviews) differed from the boys' performances on standardised tests, the analysis of the classroom observations, and the ratings of the Teacher of the Deaf. For example, one of Ben's weaknesses was reported by his classroom teacher as being his social language. When his social language was assessed, it was found to be well developed and used appropriately, and was in fact a strength in comparison to many of the other language and literacy skills assessed. Mitchell, on the other hand, was described by his teacher as having 'strong' social and expressive language skills, yet his performance was particularly weak on these tasks when tested by the researcher. Ratings by Mr Johns were similar to these test results. Hyde and Power (1996), also found discrepancies in teacher ratings of hearing impaired children, albeit

those who used sign language. The teachers in Hyde and Power's study (1996) and also the teachers in this study, may have expected certain skills of the hearing impaired children to be particularly low, and when the student performed better than this expectation, they were given an inflated rating. They may also have considered the students' efforts when rating them.

The class teachers in this study stated that they had not participated in any formal training programs or professional development activities concerning teaching hearing impaired children, relying solely on information they received from the Teacher of the Deaf. Whilst Ben's teacher had taught Mitchell the previous year and so had some experience of teaching the hearing impaired, Mitchell's teacher had no other experience with hearing impaired children. There is therefore a strong need for teacher education for those involved in the integration programs of hearing impaired children. Areas of particular need appear to be the nature of hearing impairment (what hearing impaired children can and can't hear), uses and limitations of hearing aids, teaching strategies (ways to facilitate comprehension and maximise abilities), expectations, and education of the normally hearing classmates. Instruction could be carried out by the Teacher of the Deaf, an important resource person in the school.

Nevertheless, in this particular school setting, the role of the Teacher of the Deaf seemed to be that of private tutor in the resource room setting rather than that of a specialist teacher in the school who could help inclusion of the boys into these mainstream environments. As pointed out by Power (1998, p. 374) "there is still unresolved tension as to the role of a visiting teacher of the deaf in a regular school". In order for the Teacher of the Deaf to be used most effectively, it would be necessary for changes to be made at the school level in order to give him and the classroom teachers regular times to discuss the curriculum and the specific needs of the hearing impaired children at the school.

### The importance of vocabulary knowledge

Both Mitchell and Ben demonstrated delayed receptive vocabulary skills, achieving an age equivalent of 5.5 years and 6.4 years respectively on the PPVT and also a delay on the reading vocabulary subtest of the PAT. Vocabulary has been identified as an important contributor to effective reading and writing (Lipson & Wixson, 1997), particularly in the area of reading comprehension (Ruddell, 1994), which was identified as the greatest area of weakness on the Neale Analysis of Reading Ability for the boys. Ben's age equivalent for reading comprehension was 8.4 years, approximately one year below his Year level placement, with Mitchell's being 7.5 years, approximately three years below his Year level placement. Nevertheless, when looking at their very delayed receptive vocabulary scores, the reading comprehension scores for both boys were a significant achievement.

As vocabulary is thought to develop through hearing words and ascribing meaning, whether inferred or instructed (Ruddell, 1994), it is not surprising that the receptive vocabulary skills of the boys were so delayed, as their hearing impairments would have restricted the number of words they were exposed to. As it has been found that hearing impaired children have difficulties with semantic skills (McNally et al., 1987; Webster, 1986), it may be that, as well as lacking in experience and exposure to words, hearing impaired children may also have a lowered ability to determine meaning from words in context, such as inferring that petunias must be a type of flower from the phrase 'the petunias are blooming'.

Thus it seems that there is a need for intensive vocabulary instruction in the education of hearing impaired children. Lipson and Wixson (1997) describe two main methods of vocabulary instruction: direct formal instruction and incidental/contextual learning, although Ruddell (1994), in an overview of the literature, concluded that improvements in vocabulary occur regardless of instructional methods. However, there may be preferred methods for



vocabulary instruction for hearing impaired children. As hearing impaired children have less experience of language than normally hearing children, direct teaching may be necessary to guide their learning of vocabulary and instruction in metacognitive strategies for determining the meaning of words from the immediate context. The boys in this study also appeared to read very little, so that incidental learning of vocabulary through reading would have been limited. Extended general knowledge and concept development would encourage the use of new vocabulary in context. As Ben and Mitchell both chose mainly pictorial or wordless material for silent reading, the class teachers may need to guide the boys' choice of reading material to aid vocabulary development.

### The role of phonological awareness in reading

Both Ben and Mitchell demonstrated extreme difficulty with certain literacy tasks which required phonological awareness. This is a frequent finding in studies of the hearing impaired population whose levels of reading achievement are typically below those of their hearing peers (Dolman, 1992; Schaper & Reitsma, 1993). The importance of phonological awareness for literacy development is strongly supported in the literature. Indeed, it has been seen as a necessary (but not sufficient) condition for literacy learning (Adams, 1990; Catts, 1993; Rohl & Pratt, 1995). Whilst Ben and Mitchell displayed some skill in phonological awareness, it was very limited. Mitchell's reading accuracy was measured at a reading age of 7.10 years, and Ben's reading age for accuracy was 11.0 years. Mitchell, with much weaker reading accuracy, had limited phonological awareness skills in all areas. Ben, on the other hand, with highly developed oral reading skills, showed an 'inconsistent' pattern of phonological awareness. He demonstrated very poor phonemic segmentation skills, but was able to generate words beginning with the same single phoneme, that is, onset. Goswami (1991) has explained

that syllables may be segmented into two main subunits, namely the onset and the rime. For a single syllable word like 'trip' the onset would be /tr/ and the rime would be /ip/. In some cases, as in the Generating Words subtest of the Analysis of the Language of Learning (Blodgett & Cooper, 1987) the onset may be comprised of only one phoneme, for example in the word 'tip' the onset is the single phoneme /t/. Goswami (1991) suggests that the ability to segment at the onset/rime level before reading has begun predicts later reading development and that the ability is important in the reading process as it allows analogies to be made between unknown and known words, thus allowing unknown words to be read or spelt correctly. Since Ben was able to identify onsets, it is likely that he was able to use this strategy to partially segment words and make analogies. It should be noted that Ben was asked to identify onsets only and was not required to identify rimes. However, research findings presented by Goswami (1991) suggest that identification of onsets is also important in making analogies between words.

Ben did not show the ability to segment at the level of individual phonemes which would have involved identifying that the word 'trip' was made up of four phonemes, an ability which evidence from scatterplots (Rohl & Pratt, 1995) and training studies (Ball & Blackman, 1988) suggests is necessary but not sufficient for literacy acquisition. Further, recent research by Muter, Hulme, Snowling, and Taylor (1997) suggests that it is phonemic segmentation rather than the ability to identify onset and rime that predicts early reading. It seems then, that there is evidence from Ben's high performance on the Neale Analysis of Reading Ability (Neale, 1988) accuracy subtest and from his low performance on the Segmenting Words subtest of the Analysis of the Learning of Language (1987) to suggest that for him, a developed ability to segment words into individual phonemes was neither necessary nor sufficient for learning to read. On the other hand, he was able to generate single phoneme onsets, which would be

compatible with Goswami's (1991) theory about the importance of onset and rime in reading acquisition.

### The importance of inner speech

Ben displayed stronger expressive language, reading, and writing skills than Mitchell. He also had a higher intelligence quotient, which is a factor highly correlated with language and literacy development. Another important factor in reading and writing development in the hearing impaired is inner speech. This is thought to be activated at the phonological representation store (see Figure 2, Chapter 2). Verbalising a decoded word internally through inner speech allows it to be stored immediately prior to output. This process therefore both activates the target word and checks the accuracy of its pronunciation.

Mr Johns, the Teacher of the Deaf believed for a number of reasons that Mitchell lacked inner speech. He reported that Mitchell had a severely restricted phonemic inventory, that is, it appeared that he did not have enough phonemes to represent all graphemes. This would have made the use of inner speech extremely difficult. Mitchell also was said to report events in terms of visual activity rather than in thoughts or words, suggesting a lack of reliance on internal speech. Conrad (1979) found that hearing impaired children frequently lacked inner speech. This factor may have significantly contributed to Mitchell's slow development of language and literacy. Banks, Gray, and Fyfe (1990) found that the use of auditory coding skill may be necessary if long sequences of words are to be held in memory in order to derive linguistic information. In turn, slow development of literacy skills may impact on developing language skills, as the two experience a cyclical relationship (Nelson & Camarata, 1996; Paul, 1996; Ruddell, 1994; Scholes, 1997). Verbal working memory which involves the storage and manipulation of phonological information, has been demonstrated to be a contributing factor

to the literacy skills of both hearing and hearing impaired children (Cornwall, 1992; Daneman et al., 1995; Kelly, 1995). It therefore may be argued that a hearing impaired child who did not possess inner speech could not be expected to have an intact verbal working memory system, which would have implications for their literacy development. On the other hand, Power (1998, p. 373) in quoting the work of Furth, suggests that hearing impairment of itself does not appear to affect "reasoning, memory, and other cognitive variables." Nevertheless, in view of the research which shows the strong relationship of verbal working memory and other phonological processing variables (Rohl & Pratt, 1995), it is difficult to see how verbal working memory could be unaffected by hearing impairment, although it would not be expected that visuo-spatial memory would be impaired.

### Home environment

Ben had many difficulties in his home environment, the most significant difficulty at the time of the study being long term separation from his mother, his only parent, and his placement with relatives. This situation was very stressful for Ben and may have manifested itself in his inappropriate behaviour in the classroom and in the school yard. With a dearth of positive conversation partners and with some delayed language skills, Ben would have found it extremely difficult to cope emotionally in this environment.

The home environments of neither of the boys seemed to encourage language and literacy growth. They appeared to spend a large amount of time on their own at home, with both reporting that they mainly watched television. Neither wished to comment about the amount of reading they did. The material they read was apparently mainly comics, magazines and picture books, all of which would have made few demands on the reader. It did appear, however, that Mitchell's parents encouraged his interest in the books popular with his classmates as Mitchell reported owning a large collection of the series.

As they seemed to spend much time on their own, Ben and Mitchell may have had little experience of social interactions and language experience. Similar situations have also been reported in the literature by Gregory and Mogford (1981), King and Quigley (1985), and Webster (1986) all of whom found that parents of hearing impaired children did not seem to interact with them frequently. This may have been due to the parents having lower expectations of their hearing impaired child, feeling that focusing on talking was unnecessary, or a desire to protect their children from failure. It may also be that parents found extended conversations difficult in that they may have had to modify their communication (rate of speech, syntactic complexity and vocabulary etc) in order for the hearing impaired child to comprehend them, and that the child's speech in response was difficult to understand. The results of the present study, and those reported in the literature would suggest that there is a need for ongoing education and training for parents and carers of hearing impaired children.

When a child is diagnosed with a hearing impairment, the parents are required to make a decision (usually quickly) about the mode of communication they wish their child to use. Parents/carers may have little knowledge about hearing impairment and may not understand the ramifications of their decision. For parents who choose oral communication, the ramifications include responsibility for learning about language and literacy development in hearing impaired children, learning how to use hearing aids, providing constant language stimulation at home, ensuring the development of the child's social skills, endeavouring to ensure their social needs are met, providing them with emotional support for integration into mainstream settings and teaching them to educate others about their hearing impairment. These are large responsibilities and commitments that would be very difficult for many parents to meet even under optimal circumstances. In Ben's and Mitchell's cases, where both boys

came from difficult home circumstances, such commitments would have been impossible for the parents/carers.

### The importance of a positive communication partner

As shown in the results of the conversational analysis and the classroom language interactions of the boys, communication was often unsuccessful or not attempted. Peers often did not initiate conversation or respond to the boys' conversation openers, and when they did communicate, it frequently was by using minimal verbal responses (single words only) or gestures. The boys were therefore deprived of important social interactions as well as experience and development of their language skills.

Rodriguez and Lana (1996) investigated the dyadic interactions between hearing impaired primary school children and their conversation partners. They found that communication was affected by the type of conversation partner. Linguistic status (hearing/hearing impaired), familiarity, and age (adult/child) were all significant factors: that is, conversation was more likely to occur and to be successful with another hearing impaired individual, someone close, or an adult. Rodriguez and Lana (1996) suggested that hearing children should receive training in adapting to their hearing impaired peers and adjusting their interactions accordingly. Considering the boys' desire to interact and their peers' unwillingness to communicate with them, this suggestion would be appropriate. Failed attempts at communication appeared to lead to fewer attempts to communicate, reducing communication experience and removing opportunity for improvement. The suggestion for social skills training for hearing impaired children (Clark & Fullwood, 1994) as well as for their hearing peers (Cappelli et al., 1995) would be particularly appropriate in the boys' classrooms.

As social interaction has been found to be important for language development (Ruddell, 1994), and language skills are important for literacy development (Nelson & Camarata, 1996),

social interaction should be encouraged and fostered positively for hearing impaired children to develop skills in these areas. This too, would suggest the need for educating teachers and children on the topic of interacting successfully with hearing impaired children in the classroom. This education could, in fact, be conducted by the Teacher of the Deaf, who would be familiar with the class teachers and some of the children, as well as having much experience with hearing impaired children.

#### Issues connected with Williams' (1994) study

In Williams' three case studies (1994) of hearing impaired children she showed that they demonstrated normal patterns of emergent literacy, with language and literacy skills developing simultaneously and mutually reinforcing each other. Literacy use at the preschool stage is in the forms of recognition and use of social and environmental print and imitation of models of literate adults (such as pretending to take a telephone message). These behaviours do not require highly developed language skills. Rather than taking a deficit perspective and focusing on what the children were not able to do when compared to their peers, Williams concentrated on the skills and abilities that the three hearing impaired children did have. As Williams' subjects were developing literacy skills in a similar way to hearing children, Williams questioned why this pattern did not continue in the long term development of hearing impaired children, as hearing impaired adults typically demonstrate very weak reading and writing skills (Conrad, 1979).

From the two boys studied here, it would appear that many language skills, in particular vocabulary and metalinguistic awareness (particularly higher levels of phonological awareness) did not develop sufficiently to support literacy growth in most areas to the levels of their peers. This slow development, in turn, could have failed to reinforce and promote further

language development. This demonstrates a need for classroom education to focus on language growth and explicit instruction in the areas of vocabulary and metalinguistic awareness. Hearing impaired children follow a similar developmental continuum (although delayed) to normally hearing children. As they are deprived of much needed language and literacy experience, as seen in the case studies of Ben and Mitchell, they require educational support in these areas of language development that most hearing children receive effortlessly.

In this study, the literacy skills, behaviours and interactions of the two boys have been studied and the relative strengths and weaknesses identified. Whilst an attempt has been made to avoid a deficit perspective, it is important to identify specific areas of delay in order to provide an accurate picture of the boys' language and literacy skills, behaviours and interactions. As Westwood (1997) points out, if a teacher is aware of areas of difficulty then he/she can take account of them in the planning of appropriate programmes for individual students.

### Limitations of the study

There are a number of factors that could be seen as limitations of this study. The subjects were two middle primary hearing impaired children who used oral communication with hearing impairments ranging from severe to profound, whilst in Western Australia children with this degree of hearing impairment are usually introduced to manual communication, which means that Ben and Mitchell were atypical within the small severely to profoundly hearing impaired population of middle primary school students. However, permission was not granted to work with signing children in school. It is possible that different results might have been obtained with signing children. Nevertheless, this study of Ben and Mitchell has provided information on the language and literacy skills and behaviours of two middle primary severely to profoundly hearing impaired children who rely on oral communication. Whilst the findings



of this study cannot be generalised to the larger population, they do give particular and specific insights into the two children studied and have allowed exploration of theories of language and literacy acquisition. Methodological features such as the inclusion of parent/guardian interviews and observations of the children in their home environment would have contributed much richness of information in creating a holistic picture of the language and literacy worlds of the boys. However, due to family circumstances, this was not possible. A longer period of observation in the classroom might have provided richer literacy practices from which to draw information. In particular, this may have enabled the analysis of more than one free writing sample which would have increased the reliability of the measure. Further, the testing material for metalinguistic awareness was brief and more of a 'screen' than a detailed assessment so that phonological awareness skills were not able to be thoroughly assessed. Rather than using the PPVT as a measure of receptive vocabulary, a measure which required visual, not auditory, presentation of stimuli may have produced different results which were more representative of the receptive vocabulary skills of the boys. Assessments of expressive vocabulary, spelling tests and drafts of written expression would have provided further richness of information.

### Suggestions for educational practice

It can be seen from the present study that there is a need for improving educational practice for hearing impaired children. Improved communication between the class teachers and specialist teachers is of paramount importance. These teachers require time to collaborate regarding programming for the children, although the current restrictions on their time would make this very difficult. The timetables of teachers who have children with hearing impairments integrated into their classrooms need to include time to confer with colleagues. It can also be seen that teachers need professional development in strategies to assist classroom

learning and interaction of hearing impaired children, particularly in the area of language and literacy to compensate for the fact that hearing impaired children's learning is not effortless like most of their hearing peers. This knowledge would provide them with the flexibility to modify programmes where necessary to accommodate the specific needs and best provide for these children. Finally, the system, schools, class teachers, specialist teachers and children all need to be made aware of those factors which facilitate inclusion. For example, as Ben and Mitchell's school regularly accepts hearing impaired children into their mainstream classrooms, a school policy on inclusion should be formulated and actively practised by the whole school community. In the same way, the system of which the school is a part, needs to examine their commitment to resources and provision for all children, including the hearing impaired children who are enrolled in their schools.

#### Suggestions for further research

As well as attending to the limitations mentioned earlier, the body of knowledge would benefit from the increased use of case study design in studies of hearing impaired children. As was mentioned in Chapter 2, many researchers tend to favour the comparison of large groups of hearing impaired and normally hearing children, determining differences between the groups. Research in this area should also be directed towards hearing impaired children who use different modes of communication. Also, observing children in a variety of settings would contribute to a wider picture of their abilities. Comparisons of the language and literacy behaviours and attitudes between signing and oral hearing impaired children would be valuable. Investigations have also been impairment based, that is, a deficit model has been used when investigating the abilities of hearing impaired children. Their disabilities are highlighted in relation to the abilities of their hearing peers as a measure of what they *cannot* do. It is essential that research practices do not remain impairment based. Researchers need to develop their research designs to determine the skills of this population as well as their difficulties. This

is necessary in order to promote the abilities of hearing impaired students and enhance their skills through the appropriate design of better educational practices and therapeutic methods.

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**APPENDIX A**  
**Letter of consent**

Renee Kinsman  
245 Belgravia St  
Belmont 6104.  
21st May, 1995

Dear Parents,

I am a speech pathologist currently studying for my Master of Education degree at Edith Cowan University. I am interested in researching the language and literacy skills of hearing impaired children. The purpose of this study will be to determine the skills and strengths of the children in order to focus attention on these skills in education programmes.

The language and literacy skills of the children will be assessed, which will take 2 hours per week for 3 weeks. This will be conducted at times convenient to both the class teacher and the children. These sessions will be audiotaped and will be conducted in a quiet room on the school premises. The children will then be observed in their classroom interactions at times suitable to the class teacher. Discussion with the class teacher (approximately 20 minutes) will provide further information regarding the abilities of the children on language and literacy tasks. Access to the children's academic history file will also be required to gain a clearer picture of their abilities and academic history. Parent interviews will also be requested (approximately 30 minutes), with the focus being on the children's early language and literacy development, and the types of reading and writing they engage in at home.

There will be no physical, emotional, or academic harm to the children. During the study and in the documentation complete confidentiality will be observed. No identifiable information will be divulged during the report writing and pseudonyms will be used. The audio recordings will be listened to only by myself for the purposes of this study, and will be erased at the conclusion of the study. You will be free to withdraw your child from the study at any time. If you consent to your child participating in the study, please fill out the attached form and return it to \_\_\_\_\_. If there is any more information you would like, I may be contacted on 478 1635, or my supervisor Dr Mary Rohl may be contacted on 383 8366.

Yours sincerely,

Renee KINSMAN

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I \_\_\_\_\_, give permission for my child \_\_\_\_\_ to participate in the study conducted by Renee Kinsman entitled 'Language and literacy skills of middle primary hearing impaired children.' I am aware of the procedures and that I may withdraw my child at any time. I agree that the data gathered for this study may be published provided that my child is not identifiable.

Signed \_\_\_\_\_

Date \_\_\_\_\_

Researcher \_\_\_\_\_

Date \_\_\_\_\_



## **APPENDIX B**

### **S.A.O.L.A (Allen et al., 1993) Oral Narrative Retell**

Once there was a boy called Peter who loved animals. One day, when Peter was walking home after school, he heard a cat go miaow. At first Peter didn't know where the cat was. He looked behind him but he couldn't see it. Then the cat miaowed again, louder this time, and Peter saw it stuck up a tree. Being a kind boy, Peter decided to climb up the tree to rescue the cat. When he got to the top though, Peter was very frightened. It was a tall tree and Peter was afraid that he would fall. He sat on a high branch with the cat, hanging on very tight so he wouldn't lose his balance. Peter wondered what to do. Maybe if I call out loudly, someone will come and rescue me he thought. So Peter yelled as loudly as he could. He yelled again and again but no-one heard him. Finally, after a long time, and when Peter was nearly exhausted, a man, watering his garden down the street, heard him. When he saw that Peter was stuck up the pine tree, the man quickly got a ladder and helped Peter and the cat to get down. Still shaking with fright, Peter thanked the man and went home. When Peter got home his mother growled at him because he was very late. Peter explained what had happened and ask her if he could keep the cat. His mum said, "OK, but climbing tall trees is dangerous. Next time get an adult to help you."

## APPENDIX C

### Ben's oral narrative retell

Peter and the cat.

One day, Peter was at home cuddling to all his pets, but his favourite pet was a cat. One day when Peter was coming home from school, he heard a miaw, miaw. He looked around and then he took a few more steps, then he heard a miaw, miaw again. Then he looked up a tree and saw a black cat. So he climbed up the tree where the cat is. Peter got very scared. He was too afraid he would fall off and hurt himself. So he said 'help, help, help'. And in half an hour, a man heard a boy say 'help, help', and the man quickly ran into the shed and got the ladder as fast as he could, and he went to the tree where the boy and the cat is. Then the man rescued the boy and the cat. The boy said 'Thankyou. Thankyou man'. The man said 'That's okay'. And he... and Peter went home. So when Peter came home, his mum said 'You are a naughty boy because you came home late'. The Peter said 'I know that I came late. I'll explain it to you'. Then, then Peter said 'Can I please keep this cat?' and Peter's mum said 'Okay, but if you climb on a tree again, you'll never get [no, no, no]... if you climb a tree again, you'll hurt yourself, and it's too dangerous'.

# Bat boy Forever

Long ago there was a boy called Bat boy and his mate was called Robin. One day they went out in Bat and Robin mobile. That night Bat boy and Robin saw two face and Riddler laughing in the dark. In the morning the bat house is on fire that Riddler made with bird bombs. Later the Bat boy and Robin had started to make a new house made with metal and steel. That night the bat house was finally finished and inside the bat house was all shiny and spotless. In the middle of the night Bat boy and Robin went to their secret cave to fix their own mobile. The next morning Bat boy and Robin drove in their bat and Robin mobile to south where two face and Robin's plane got shot.

from riddler and two face was playing  
trick on bat boy and robin. When  
they reached the side of two face and  
bat boy and robin had climbed up further than  
bat boy. Then the part of the rock hill  
came down and it landed up. Bat boy  
was on the side of the rock hill  
and he was with a door that  
leads to the two face and riddler  
place. Finally bat boy had reached the place  
of riddler and two face. Then bat boy had  
seen robin and bat boy's girl friend was trapped.  
Then bat boy threw a bomb to riddler and two  
face. Two face had fallen into the secret  
trap and he got killed. Then riddler pushed  
a button and the bomb exploded.

into the secret trap. Then, bat boy jam  
in the secret trap. First bat boy saved his  
girl friend then he tried to save robin.  
At last bat boy saved robin and they  
all went back up to the top. Suddenly the bat  
came out of bat boy's brain and went into  
robin's brain. They went back home safely. Bat boy  
and his girl friend fell in love and when  
they grew up they got married. Later  
that night bat boy's girl friend went into a  
special place and she said "Who is  
the name riddler said - I am Batman."

THE

END



## APPENDIX E

### Ben's conversation sample

Ben (B), Mr Johns (J).

J: Underneath your thinking there's something there, and that thing is, um...  
I'll write that word, it's a big word, *aggression*.

B: Aggression.

J: Aggression. Do you know what that means?

B: No. I've never heard of that word.

J: Aggression. It means, um, when your response is physical...

B: Physical?

J: Not nice. Physical... you use your body to respond.

B: Oh, aggression's bad, bad response.

J: Well, it's usually a bad response, generally it's a bad response, and that's a kind of thinking that's in everybody. But what do you think about aggression? That's what you really have to understand.  
[draws diagram to represent types of feelings].

B: Only one part aggression.

J: Okay, we'll put that up in that spot. What is your real thinking about aggression? What do you think about it, can you tell me?

B: No.

J: Do you think it's good to kick people?

B: No. It's bad to hurt other people's feelings.

J: Yes, that's exactly right. But how come sometimes you do it? Can you think about that?

B: Because I didn't take time thinking.

J: Yeah. Inside of you is aggression, and it's inside everybody. It's inside me and I bet it's inside Renee.

B: Is it?

R: Yes. It's inside everybody.

J: A long time ago when I was a little boy, I used to play croquet...

B: What's that?

J: It's a game you play with a ball and mallet.

B: What's that? What's a mallet?

J: It's a thing you hit, *whoosh*, the ball with, and you try and hit the target, or go through the target.

B: They have to go under the silver thing, they have to go under them all and hit it.

J: That's right.

B: It's white, red, white, red.

J: That's exactly right, where have you seen it?

B: On the telly.

J: Very good. Well one day, my brother was the winner...

B: How many shots did he have?

J: Don't know.

1. Attention-getting strategies and means for expressing them.

Nonverbal

Verbal

Strategy I

- 1 Pointing
- 2 Looking at object

- 1 Name
- 2 Deictic pronoun or adverb
- 3 Expressive particle
- ④ Greeting term

Strategy II

- 1 Touching hearer:
  - a) Pulling
  - b) Tugging
  - c) Tapping
- 2 Showing X to hearer, holding up X
- 3 Giving X to hearer
- ④ Initiating eye contact
- 5 Movement towards hearer

- 1 Vocative
- ② Locating directives, e.g. Look at X, see X
- ③ Interrogatives
- 4 Prosodic devices:
  - a) Whining
  - b) Screaming
  - ③ Increasing pitch or amplitude
  - ④ Whispering

2. Request sequences: possible structures

Speaker A	Speaker B	Speaker A	Speaker B	
request action	action (+ acknowledge)	(acknowledge action)		✓
request action	refuse	withdraw: change topic		-
request action	refuse + justification	accept justification		✓
request action	refuse + justification	reject justification	reject rejection of justification	✓
request action + justification	reject justification + alternative suggestion	reject alternative suggestion + rephrase request	refuse	
rephrase request	request clarification	clarification	comply	✓

SPEECH AND HEARING SCIENCE



### 3. Turn-taking

	Regularly	Occasionally	Rarely	Never
Takes turns in conversation				
Gaps between turns:				
more than 5 seconds				
more than 1 second but				
less than 5 seconds	✓			
less than 1 second				
Overlaps due to attempts to predict possible completion points		✓		
Repairs of overlaps		✓		

### 4. Responses:

	Regularly	Occasionally	Rarely	Never
<u>Initiation Type</u>	✓			
Question		✓		
Request for Action		✓		
Statement		✓		
<u>Response</u>				
No response		✓		
Inappropriate or irrelevant response		✓		
Minimal predicted response				
Response plus additional content	✓			
Other appropriate response.				

## 5. Initiations

	Regularly	Occasionally	Rarely	Never
<u>Discourse connectors</u>				
And	✓			
But	✓	✓		
Because/so				
Well			✓	
Others				
Ellipsis		✓		
Anaphoric reference	✓			
Misplacement prefaces (e.g. by the way, to change the topic)				✓

## 6. Discourse devices for establishing and linking topics

Attention-getting				
Use of non-verbal devices:				
eye-contact				
physical (approach, touch, etc.),		✓		
pointing, showing				
Use of verbal devices:				✓
vocatives				
words (e.g. Hy, look, see)	✓			
prosodic			✓	
Attention-Directing				
Present referents:				
pointing	✓			
looking				
Non-present referents:			✓	
Locating devices (e.g. do you know/remember)				
Relative clauses				
Appropriate use of articles	✓			
Types of initiation				
Question		✓		
Request for action		✓		
Statement	✓			
Reinitiations	✓			
Repeats				
Repeats with prosodic shift			✓	
Repeats with attention-getting/direction	✓			
Rephrasing				✓

## 7. Appropriacy (requests for action)

	Regularly	Occasionally	Rarely	Never
Non-Verbal requests				✓
Pointing				✓
Pointing with vocalization				✓
Verbal requests:	✓			
Direct imperatives			✓	
Embedded imperatives			✓	
Question-directives			✓	✓
Need statements			✓	
Hints			✓	
Politeness markers:				
Please	✓		✓	
Embedded forms			✓	
Appropriacy of polite forms	✓			

## 8. Repairs

	Regularly	Occasionally	Rarely	Never
Requests for clarification:				
Responses to -				
Requests for repetition	✓			
Requests for confirmation	✓			
Requests for specification	✓			
Production of -				
Requests for repetition	✓	✓		
Requests for confirmation	✓			
Requests for specification	✓			
Other-corrections of:				
Pronunciation	✓			
Grammar	✓			
Lexis		✓		
Pragmatics			✓	
Self-repairs to:				
Pronunciation	✓			
Grammar	✓			
Lexis		✓		
Pragmatics			✓	

## APPENDIX G

### Mitchell's oral narrative retell

Peter loved the animals. He loved and loved them all the time. When he went to school, then after school, the boy walked to home. Suddenly Peter heard a cat, sound like 'miaw'. He kept looking around and he thinks he's behind him but the at he couldn't see. So he looked up the tree and he saw a cat. So the cat 'miaw, miaw'. So the boy climbed up the tree... when he got up the tree very tall, and he... he tried to take the cat down but he can't. He think he must fall down the tree so he yelled 'help, help, help' and no-one could hear him. But he want people to rescue him. Then the man went out the house to do some garden and he heard 'help'. So he walk to the tree and he bring the ladder and the boy, Peter bring the cat down the ladder. Peter said thankyou to the man. So the cat was very happy. So he walk to home. Him mum said 'Where have you been, you've been so late?' So Peter said 'Please can I keep the cat?' The mum said 'Okay. Don't climb the tree again because it too big, dangerous.' So the boy say thankyou to his mum.

## APPENDIX H

### Mitchell's written narrative

The lost son.

Once a time there was a father who has two sons. So Jesus look after a pig who ate some hays but Jesus had no food so he call his father, Father your son. make me some food at your house farm. So Jesus ran away but he is alivee he is not dead. Then he knock the door Father was happy to Jesus other son was dead at the killing cafe. He's father said you will say with me for years. So Jesus said please give me some cloasezs. o he's father said, Okey I will buy some closezes today. Jesus love he's father very much.

## APPENDIX I

### Mitchell's conversation sample

Mitchell (M), Mr Johns (J).

M: You been away. Where you been? Had to do Italian. Mr Thompson not tell me.

J: Yes, I know and I'm very sorry. But something bad happened to me last Friday.

M: What?

J: It was very sad. My mum died. She was very sick.

M: My grandma died before I born. She burned. They put the body in the jar. The jar the put. So she said 'Don't let me go in the house.' Then went [unintelligible].

J: Pardon?

M: [mimes using a steering wheel] Went in the *brrmm* car. Put in the car and drove to the ocean and they put her *pfft* on the water.

J: Yes, not everyone gets buried in the cemetery. If they really liked somewhere special, sometimes their ashes can be sprinkled in that spot. Like the ocean.

1. Attention-getting strategies and means for expressing them.

Nonverbal

Verbal

Strategy I

- 1 Pointing
- 2 Looking at object

- ① Name
- 2 Deictic pronoun or adverb
- 3 Expressive particle
- ④ Greeting term

Strategy II

- 1 Touching hearer:
  - a) Pulling
  - b) Tugging
  - c) Tapping
- 2 Showing X to hearer, holding up X
- 3 Giving X to hearer
- ④ Initiating eye contact
- 5 Movement towards hearer

- 1 Vocative
- 2 Locating directives, e.g. Look at X, see X
- ③ Interrogatives
- 4 Prosodic devices:
  - a) Whining
  - b) Screaming
  - c) Increasing pitch or amplitude
  - d) Whispering

2. Request sequences: possible structures

Speaker A	Speaker B	Speaker A	Speaker B
request action	action (+ acknowledge)	(acknowledge action)	✓
request action	refuse	withdraw: change topic	
request action	refuse + justification	accept justification	✓
request action	refuse + justification	reject justification	reject rejection of justification
request action + justification	reject justification + alternative suggestion	reject alternative suggestion + rephrase request	refuse
rephrase request	request clarification	clarification	comply ✓

SPEECH AND HEARING SCIENCE

### 3. Turn-taking

	Regularly	Occasionally	Rarely	Never
Takes turns in conversation				
Gaps between turns:				
more than 5 seconds				
more than 1 second but				
less than 5 seconds	✓			
less than 1 second				
Overlaps due to attempts to predict possible completion points	✓			
Repairs of overlaps			✓	

### 4. Responses:

	Regularly	Occasionally	Rarely	Never
<u>Initiation Type</u>	✓			
Question			✓	
Request for Action				
Statement	✓			
<u>Response</u>				
No response			✓	
Inappropriate or irrelevant response	✓			
Minimal predicted response		✓		
Response plus additional content		✓		
Other appropriate response.				



## 5. Initiations

	Regularly	Occasionally	Rarely	Never
<u>Discourse connectors</u>				
And	✓			
But	✓			
Because/so	✓			
Well				✓
Others				✓
Ellipsis				
Anaphoric reference	✓			
Misplacement prefaces (e.g. by the way, to change the topic)				✓

## 6. Discourse devices for establishing and linking topics

### Attention-getting

#### Use of non-verbal devices:

eye-contact  
physical (approach, touch, etc.),  
pointing, showing

#### Use of verbal devices:

vocatives  
words (e.g. Hy, look, see)  
prosodic

### Attention-Directing

#### Present referents:

pointing  
looking

#### Non-present referents:

Locating devices (e.g.  
do you know/remember)  
Relative clauses  
Appropriate use of articles

### Types of initiation

#### Question

#### Request for action

#### Statement

### Reinitiations

#### Repeats

#### Repeats with prosodic shift

#### Repeats with attention-getting/direction

#### Rephrasing

## 7. Appropriacy (requests for action)

	Regularly	Occasionally	Rarely	Never
Non-Verbal requests				
Pointing				
Pointing with vocalization				
Verbal requests:				
Direct imperatives				
Embedded imperatives				
Question directives				
Need statements				
Hints				
Politeness markers:				
Please				
Embedded forms				
Appropriacy of polite forms				

## 8. Repairs

	Regularly	Occasionally	Rarely	Never
Requests for clarification:				
Responses to -		✓		
Requests for repetition				
Requests for confirmation	✓			
Requests for specification	✓			
Production of -		✓		
Requests for repetition				
Requests for confirmation	✓			
Requests for specification			✓	
Other-corrections of:				
Pronunciation			✓	
Grammar			✓	
Lexis			✓	
Pragmatics			✓	
Self-repairs to:				
Pronunciation			✓	
Grammar			✓	
Lexis			✓	
Pragmatics			✓	