

ATTITUDES AND KNOWLEDGE ABOUT HEARING LOSS AMONG DEAF AND
HEARING CHILDREN IN SHARED LEARNING CLASSROOMS

by

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ABSTRACT

Research concerning second language learners, specifically those learning a second spoken/written language, has been used extensively over the past two decades to support educational approaches being used with students who are deaf and hard of hearing without much direct research on its applicability or impact on the education of children who are deaf. This was an exploratory quasi experimental study in which 33 hearing children in multigrade educational settings, 18 in a regular classroom environment, the quasi control group, and 15 in a shared learning environment with deaf children, completed a survey composed of two subscales, information and attitudes at two times, November and June, during the school year. The benefits of shared learning for hearing children is apparent in the statistically significant difference in hearing children's knowledge about hearing loss, the ear and American Sign Language (ASL), as well as an increase in positive attitudes toward individuals with a hearing loss when educated alongside children who are deaf. Seven deaf children in grade two educated in a shared learning setting alongside hearing peers completed a similar version of the same survey at three times, November, February and June. The effect of shared learning on the attitudes and knowledge of children who are deaf describes a U-curve similar to that experienced by second language learners entering a new culture (Lysgaard, 1955; Oberg, 1998) or individuals undertaking a novel creative endeavor or project (Gullahorn & Gullahorn, 1963) in their attitudes toward individuals with a hearing loss when educated in a shared learning environment alongside hearing peers.

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Chapter I: Introduction

Introduction

The popularity gained by the concept of using bilingual-bicultural educational philosophies and methods in the instruction of children who are deaf and hard of hearing (D/HH) increases the importance of research addressing two-way bilingual-bicultural programs¹. Many children who are deaf walk a tightrope of language and culture, balancing between their families and neighborhoods, where they are surrounded by people who are hearing and who use a spoken language, most often English, and social interaction and involvement in Deaf² culture where they use American Sign Language (ASL). This balancing act reinforces the importance of the various perspectives and understandings that deaf children and their hearing peers have about hearing loss. The purpose of the current exploratory³ study was to investigate whether attitudes toward individuals with hearing loss and knowledge of hearing loss were facilitated in both children who are deaf and children who are hearing when they are placed in a shared learning environment.

Bilingual-Bicultural Education Education of the deaf and hard of hearing (D/HH) has had a long and arduous history. Disputes have arisen over the use of ASL,

¹ Simultaneous language acquisition, parallel form, two-way bilingual-biculturalism, and shared learning are terms which will be used interchangeably in this paper.

² For the remainder of this paper the term Deaf will refer to individuals who identify themselves as cultural members of the Deaf community, whereas deaf will denote a medical diagnosis of severe to profound hearing loss.

³ The current study is considered exploratory as it is the first study of its kind in a Canadian context. The paucity of existing research discussing students' knowledge levels in relation to hearing loss, ASL and the ear, and small sample sizes available added to the exploratory nature of the study.

appropriate expectations, teaching techniques and even the ability of D/HH students to learn ever since Pablo Bonet first described the manual alphabet in the 1500s (Nover, Christensen, & Cheng, 1998). The use of the bilingual-bicultural approach with children who are deaf emerged in 1989 through a working paper by Johnson, Liddell, and Erting. Although no empirical evidence for the efficacy of such an approach existed, approximately one dozen American programs began using a variation of the approach between 1988 and 1997.

In its simplest form, bilingual-bicultural education used with students who are hearing refers to education conducted in two languages by culturally affiliated language models in order to foster dual language mastery in a homogeneous student population (Cazabon, Lambert, & Hall, 1993; Ramirez, 1992). Bilingual-bicultural programming may further be divided into two main groups based on philosophy and presentation, that is, sequential form or parallel form. In sequential form, the first and second language are emphasized as separate, with the first language or home language (L1) forming a foundation for the establishment of the second language (L2) (Ramirez). In the parallel form, or simultaneous language acquisition, language use is intertwined, with both languages being presented and emphasized equally (Cazabon et al.). One such setting is shared learning. Shared learning places both students of L1 and L2 linguistic backgrounds in the same classroom and utilizes both languages, L1 and L2, in varying combinations and duration during the instructional day (Cazabon et al). The optimum mix is a classroom of 50% L1 and 50% L2 speakers (Cazabon et al.).

The current study differs from other studies on deaf children educated in bilingual-bicultural settings, in that it focuses on attitudes and knowledge growth of both

deaf and hearing children. Socioculturally it focuses on the attitudes and knowledge of children who are deaf and children who are hearing toward individuals who are deaf and use ASL, when they are placed in a parallel form educational setting.

The Congregated Approach and Sociocultural Theory As the term “bilingual-bicultural” suggests, language, culture, and the context in which they are presented are pivotal. There is a paucity of research on the use of bilingual-bicultural education, and very little of what research does exist, focuses on social understandings between deaf and hearing students. However, one approach which appears to lend itself well to analyzing bilingual-bicultural programs in education and the effects of bilingual-bicultural placement on attitudes and knowledge toward the alternate language group is Schumann’s (1976) theory of social distance.

Schumann (1976, 1978) believed that the social distance between two communities influenced the capacity of the members of one community to learn the language of the second community. The term “social distance” referred to a rating of perceived inferiority of the L2 cultural group by the linguistic majority, L1 group, whereas “psychological distance” referred to internal factors, such as language shock, culture shock, motivation, and self-esteem. Schumann believed that social distance was a function of eight parameters: dominance, assimilation, enclosure, cohesiveness, cultural similarity, attitudes, psychological distance and intended duration of stay. Schumann stated that if one or more of these factors were in existence, a learning situation would arise which would hinder the capacity of one linguistic group to acquire the language of the other. Conversely, when these factors were absent, there would be no social distance

between the two groups, which would lead to a positive learning situation and ease the exchange of language, culture and information. Of the parameters identified by Schumann as influencing social distance (dominance, assimilation, enclosure, cohesiveness, cultural similarity, and intended duration of stay), only four apply to children who are deaf. One of the factors, intended duration of stay, is applicable only to individuals visiting or immigrating to a new country or region.

Another theory which lends itself to the investigation of the transmission of culture via bilingual-bicultural education, the U-curve hypothesis, comes from a study done by Lysgaard (1955) on 200 Norwegian Fulbright travel grantees who had spent time in the United States. The U-curve hypothesis describes a parabolic graphical representation of changes in attitude over time. The top left-hand side of the parabola, or U, represents an initial euphoria and excitement as a new language learner enters into a new learning experience. The middle section of the parabola signifies a drop in positive feelings as the difficulty of interaction and language acquisition is realized, which then develops into a final increase in positive perceptions as the language learner develops competency. The three phases of the U-curve have been typically described as contact, conflict, and adaptation (Pedersen, 1991).

It appears, then, that although the bilingual-bicultural approach and congregated learning have been used extensively in recent years, there is some debate as to their impact on the development of attitudes and knowledge toward deaf people on the part of hearing students. Arguably equally important, the effects of bilingual-bicultural education, shared learning, and mainstreaming on deaf children's attitudes toward themselves and other individuals with hearing loss are important topics of research. An

investigation of the cultural affiliations, attitudes and knowledge of students, and the change in these over time might potentially provide information helpful in developing curriculum materials to support the use of the approach with deaf students, while at the same time promoting cultural understanding for students who are hearing and who are educated alongside children who are deaf.

A multitude of studies have explored the social outcomes of educational placements in which deaf students are educated alongside hearing peers. In a meta analysis of 33 studies, Kluwin, Stinson, and Colarossi (2002) found that these 33 studies tended to compare deaf children to hearing children rather than examine changes in the two groups over time. When studies compare the two groups of children, those who are hearing and those who are deaf, the assumption made results in a failure to include within the research the inherent differences between the two groups, and this failure renders this comparison, in some respects, contradictory. By separating the groups of students, and looking only at differences in the trend of change in attitude and knowledge of children who are deaf and children who are hearing toward individuals with hearing loss in the contact and adaptation phases, the proposed study attempts to avoid making such assumptions. There is also a trend, in previous research, toward the use of observational methods when dealing with very young children, while using teacher evaluations for middle school children and questionnaires when dealing with older children (Kluwin et al.). These differential data collection methodologies make generalizing growth and discussing student development over time invalid (Kluwin et al.). Furthermore, generalizations of the findings of previous studies are also limited by differences in samples, the variables chosen, and the manner in which these variables were measured,

analyzed and manipulated (Kluwin et al.). The current study attempts to address some of these methodological gaps through the use of a single data collection approach, for a single age range of students, those in grades one through three. The measure was developed in order to assess attitudes and information at various grade levels via a variety of versions and, therefore, trends seen in students at one level using one version of the measure may be cautiously generalized to students at other grade levels which may then be further investigated using the measure. Although the data were collected at a time when the survey was still under revision, the fact that the survey existed in five forms for varying age groups of students, as well as teachers and administrators, allows for more valid generalizations than were previously possible.

Purpose

The purpose of the current study was two-fold. The first purpose was to investigate the existence of a U-curve in the changes in attitudes of two groups of children, first, hearing and deaf children who were educated in a shared learning setting, and second, hearing children in a regular classroom. Second, the current study investigated whether a relationship existed between knowledge about hearing loss and the use of ASL and attitudes toward individuals with hearing loss.

Research Questions Two topics, attitudes and information, encompass eight research questions which guided this study:

Attitudes

1. Do the attitudes of children who are deaf toward individuals with hearing loss change over the course of a school year when the children are educated in a shared learning environment?
2. Do attitudes toward individuals with hearing loss differ between children who are hearing and educated in a shared learning environment, and children who are hearing and educated in a nonintegrated setting at time one?
3. Do the attitudes of children who are hearing toward individuals with hearing loss change over the course of a school year when the children are educated in a shared learning environment?
4. Do the attitudes of children who are hearing toward individuals with hearing loss change over the course of a school year when the children are educated in a regular classroom environment?

Information

5. Does the knowledge level of students who are deaf change over the course of a school year when the children are educated in a shared learning environment with respect to knowledge about the ear, hearing loss and ASL?
6. Does the knowledge level of students who are hearing change over the course of a school year when the students are educated in a shared learning environment with respect to knowledge about the ear, hearing loss and ASL?

7. Does the knowledge level of students who are hearing change over the course of a school year when the students are educated in a regular classroom setting with respect to knowledge about the ear, hearing loss and ASL?
8. Is the level of knowledge about the ear, hearing loss and ASL different for children who are hearing and educated in a shared learning environment as compared to children who are hearing and educated in a nonintegrated setting at time one?

Nature of the Study The research questions of the study were both formulated and investigated using a quasi-experimental design. There was no control in terms of sampling and no random assignment to any of the variables. Due to the quasi-experimental nature of the study inferential statistics were employed in order to aid in description. Due to the absence of previous research and a-priori hypotheses the current study would be best classified as exploratory.

Significance of the Study Findings from this study have the potential to be of both theoretical and applied importance. Theoretically, the findings may expand our understanding of the characteristics of shared learning programs with a new population of students, namely, those who are deaf. In terms of practical value, it is hoped that the findings provide information that may help determine efficacy of shared learning programs, for deaf and hearing students, and the impact of integrated placement. The findings of this study may also be helpful in the development of curriculum goals for

integrated classroom settings. Specifically, results of the current study may be used to develop goals which may facilitate the development of optimal social distance between deaf and hearing peers who are educated together.

Outline of the Paper Chapter 2, "A Review of the Literature," provides a critique of existing research on bilingual-bicultural education, children's attitudes and knowledge toward deafness, as well as details of the current status of the measure used in the proposed study. Chapter 3, "Method," describes the design of the study, data collection and analyses. Chapter 4, "Results," involves a presentation of research findings using inferential statistics to aid in description of the phenomenon seen in this quasi experimental study. The final chapter, "Discussion and Recommendations," Chapter 5, attempts to directly answer the research questions of the study, discuss implications of the findings, and provide recommendations for further research.

Chapter II: Review of the Literature

Introduction

The purpose of the current study is to investigate changes in the attitudes of children who are deaf and children who are hearing toward individuals with hearing loss over the course of a school year, when both groups are educated in a shared learning environment. In this chapter, the literature related to congregated learning programs (to be defined in the following section), demographics of children who are deaf, the measure used in the proposed study, and children's knowledge of, and attitudes toward, individuals with hearing loss has been reviewed and critiqued from the perspective of sociocultural theory. Sociocultural theory is discussed as it relates to second language acquisition for both children who are hearing and children who are deaf, focusing on trends of change in knowledge and attitudes over time.

Sociocultural Theory

Research is lacking on the simultaneous or sequential acquisition of two or more languages by deaf individuals. There is also a paucity of research addressing student attitudes, specifically changes in attitudes toward individuals in the target language group, in this case, English-speaking children with normal hearing, by their deaf classmates. In addition, changes in the attitudes and, therefore, the self-perceptions of children who are deaf and who use American Sign Language (ASL), toward individuals with hearing loss, when educated alongside hearing peers in a shared learning¹

¹ Shared learning will be used interchangeably with two-way bilingual-bicultural education to signify the grouping, in this instance, of both children who are hearing and children who are deaf in the same classroom in order to facilitate language learning and increase social interaction while following the standard curriculum.

environment, have been overlooked in previous studies investigating attitudes and interaction.

Shared learning is a method of teaching commonly associated with a specific type of bilingual-bicultural program, namely, two-way bilingual-bicultural education. The demographics of two-way bilingual-bicultural classrooms are designed to include two specific groups of learners in order to facilitate skill acquisition related to a specific topic for both student groups. In the current study, the target is language, both for children who are hearing and learning ASL and children who are deaf and learning English.

Several researchers had identified areas of concern for the applicability of the bilingual-bicultural approach in the education of students who are deaf. However, few of their concerns were supported via research or an extensive literature critique; rather, these concerns tend to be centered around an emotional debate presented in opinion paper format. Singleton, Supalla, Litchfield, and Schley (1998), in an opinion paper discussion of ASL/English bilingualism, made theoretical comparisons to English as a second spoken/written language and identified several problems with the traditional bilingual-bicultural approach, when applied to students who are deaf. Singleton et al. emphasized that spoken language does not adapt easily to the visual-gestural modality, and, thus, English presented "through the air" is difficult for deaf students to analyze using deductive strategies.

Due to the origins of bilingual-bicultural philosophy, it is important to consider the theories surrounding second spoken/written language acquisition. These theories form the arguments both for and against congregated learning² for children who are deaf,

² The term congregated learning will be used to signify the greater school setting in which both students who are hearing and students who are deaf attend classes.

and they fall under the heading of sociocultural theory, that is, the belief that society and culture, through their norms and values, influence learning by affecting attitudes.

One approach which lends itself well to analyzing the shared learning approach in education is Vygotsky's (1978) theory of sociocultural development. Vygotsky's theory has been extended and supported by Wertsch (1985), who believed that society and "more knowledgeable others" need to engage in interaction with students, children and second language learners in order to generate higher level psychological processes (Cole & Akamatsu, 2000). Although well supported in theory, Vygotsky's and Wertsch's ideas address language learning in English as a Second Language (ESL) students, and there is no research to date to support or refute directly the applicability of ESL models to the education of children who are deaf.

Following the ideas of Vygotsky (1976) and Wertsch (1985), and specifically addressing the factors of culture and the effects of attitudes on language acquisition and social interaction, are the theories of Schumann (1976, 1978) and Lysgaard (1955). Although these theories, like those of Vygotsky and Wertsch, focus on the acquisition of a second spoken/written language, the education of children who are deaf in congregated settings is based on existing research addressing the effects of two-way bilingual-bicultural programs for ESL students. Therefore, these theories provide an appropriate framework for the current study.

Schumann (1976, 1978) identified six cultural factors affecting a population's attitudes and, thus, acquisition of a language at the population level: enclosure, permanence, dominance, integration, cohesiveness and congruence. The main parameter affecting individuals who are deaf is enclosure. Enclosure, as defined by Schumann,

addresses a group's isolation in relation to other populations, and the nature of certain cultural groups to congregate in particular neighborhoods and establish communities such as "Chinatown" and "Little Italy." The idea of enclosure is applicable to children who are Deaf³ due to the difference in language modality and factors such as attending a segregated educational setting, rather than participating in mainstream classrooms. The effect of enclosure is also apparent when looking at certain cultural groups, such as Canada's First Nations people. Permanence refers to the length of time individuals who are new to a particular cultural or language group intend to stay within the confines of the new cultural/linguistic experience and arguably, has no effect in either the case of the Deaf community or Canada's Native people. Permanence may, however, be a factor influencing the second language acquisition of Hispanic children in the United States. Dominance is the belief by one cultural group that they are superior, or inferior, to another cultural group due to the values and norms of their society. Dominance is almost always a factor influencing minority populations. Integration describes the degree of assimilation of individuals belonging to the target or first language (L1) population and those individuals belonging to the population of second language (L2) learners in terms of living conditions, values and social norms. Cohesiveness is the degree to which members of one cultural/language group associate with others of their own cultural/language group for social interaction. Congruence is the similarity in the norms and values of the linguistic/cultural groups. Cohesiveness, congruence and integration are those factors of a culture which make it unique, and, arguably these are the factors

³ Deaf refers to those children who identify themselves as members of Deaf culture through the use of ASL and association with Deaf social groups and clubs; deaf, on the other hand, is an audiological term used to denote a severe to profound bilateral hearing loss.

driving bilingual-bicultural programs, such as shared learning, and undermining or upholding their effectiveness (Schumann). Shared learning is, thus, highly influenced by the perceptions of both learning groups on a variety of levels related to and influencing one's attitude toward the alternative language group, and in the current study this group includes those who are deaf or those who are hearing. Schumann's theories directly identify those areas in which attitudes affect learning and, thus, the theories assist in the analysis of surveys of the attitudes and information gleaned by two populations of students, those who are hearing and those who are deaf, when engaged in a shared learning classroom.

Another lens useful for focusing on changes in attitudes over time in congregated learning environments is Lysgaard's (1955) U-curve hypothesis. Lysgaard's hypothesis describes changes in an individual's attitudes and motivation over time when experiencing a novel culture, and in this way the sociocultural aspect of Lysgaard's theory involves the effects of cultural experience on a language learner's desire to socialize with the target language group. Lysgaard concluded that evidence exists to support the identification of three stages of adjustment for L2 learners. Lysgaard described the three stages of adjustment as first, a function of the amount of time spent in a new language experience, second, the ease of communication and third, the novelty of the situation. Exposure to a novel culture and language also brings with it changes in the rules of engagement for daily occurrences, such as handshakes, greetings and salutations, tipping etiquette, giving and receiving commands, purchasing procedures, accepting and declining invitations, and evaluating the validity of comments, which can cause new language learners to feel anxious in the simplest of situations (Oberg, 1998). Lysgaard's

theory forms the theoretical framework of the current study's investigation of changes in attitudes of the two groups of students, those who are hearing and those who are deaf, toward individuals with hearing loss over time.

Oberg (1998) described four phases of cultural adjustment experienced by individuals travelling abroad, very similar to those described by Lysgaard (1955). These begin with feelings of optimism and elation in a "honeymoon stage". The "honeymoon stage" may vary in duration from several days to half a year, depending on the degree of difference in cultures (Oberg). This is followed by a "crisis stage" in which the L2 learner develops hostile or stereotypical feelings toward the L1 group and, thus, fraternizes more with other L2 learners than with members of the L1 group. If L2 learners become proficient in the target language and are, thus, able to navigate in the new culture, they will enter into the "recovery stage." Finally, the language learner achieves the "adaptation stage," at which point the strain or anxiety of conducting daily activities and conversations in the target language is equivalent to that experienced when operating in one's native language and culture.

Gullahorn and Gullahorn (1963) suggested that the U-curve hypothesis is not limited to international L2 learners or to language learners in general. Gullahorn and Gullahorn purported that the depth and duration of the U-curve, although trivial, exists for all individuals involved in novel learning experiences and creative endeavors. Individuals seriously engaged in creative endeavors or novel learning situations experience an initial euphoria similar to that of an L2 learner experiencing a new culture. Difficulties and complexities encountered during the experience may result in a

depression or decrement of output, while problem resolution may lead to satisfaction and personal growth.

Overall, then, it appears that the theoretical framework of sociocultural theory as developed for use with students learning a second spoken/written language has several features which may be generalized beyond the confines of language learning specifically. In particular, the U-curve hypothesis may prove helpful in understanding changes in the attitudes of children with normal hearing toward individuals with hearing loss, changes in the attitudes of children who are deaf toward the target language population and, in turn, understanding the self-perceptions of children who are deaf over time. Also noteworthy is the presence, to varying degrees, of the five cultural factors identified by Schumann (1976, 1978) which are relevant to the case of the current study: enclosure, dominance, integration, cohesiveness and congruence, as well as additional psychological factors affecting language acquisition and attitudes. Thus, although the models selected as a framework for the current study were originally focused on the acquisition of a second spoken/written language, they are nevertheless appropriate for the study because the two groups of students are representative of alternative cultural groups and are both struggling to acquire a new language and interact with one another.

Bilingual-Bicultural Programs for Hearing Students

With much immigration and movement in the world, many students attend programs in which their native language is not the language of instruction. In North American schools, these students are generally mainstreamed, with ESL pullout support, moving between a regular classroom setting and a resource center or specialized ESL

classroom (Cole & Akamatsu, 2000; Prinz & Strong, 1998). There is a fundamental difference between ESL teaching techniques and bilingual-bicultural programming. ESL programs are composed of students from a variety of linguistic backgrounds in the same class, whereas bilingual-bicultural programming involves homogeneous groupings of students based on L1, ethnicity, literacy level, language skills and other factors which influence language acquisition (Prinz & Strong; Singleton et al., 1998).

There are many advantages to bilingualism. Bilingual hearing individuals appear to possess qualities, such as a more sophisticated awareness of general language function and strong verbal abilities, as compared to their unilingual peers (Prinz & Strong, 1998). A higher awareness of the arbitrary nature of linguistic forms and the ability to analyze underlying conceptual characteristics also accompany bilingualism for children who are hearing, perhaps due to the efficient mental capacities developed by alternating between two sets of rules (Prinz & Strong). Many bilingual hearing individuals also excel on psycholinguistic tasks (Singleton et al.).

Two-Way Bilingual-Bicultural Programs There are three main types of teaching approaches using a bilingual-bicultural philosophy: early-exit, late-exit, and two-way educational programs. The current study focuses solely on two-way bilingual-bicultural programs because the classroom of interest is a shared learning environment of children with normal hearing and children who are deaf.

Two-way programming, or shared learning, does not phase out L1 but, rather, L1 and L2 coexist by varying the length of exposure and the subject area in which each is used, mixing students of L1 and L2 linguistic backgrounds in the same classroom

(Cazabon et al., 1993). The language of instruction may vary based on the class (e.g., L1 for science and L2 for math), the day (e.g., alternate days for each language), the time (e.g., L1 in the morning and L2 in the afternoon), or the teacher (Cazabon et al.).

Cazabon and colleagues wrote a comprehensive progress report of 250 students who entered the Cambridge Massachusetts *Amigos* program, a congregated educational setting in which half the students were from Spanish-speaking homes and half of the students were from English-speaking homes. Spanish control groups composed the smallest proportion of students in the two-year study, while the English control groups made up the majority of the subjects in the study. A wide variety of tests were conducted, including a nonverbal abstract thinking test, English language and mathematics tests, Language Assessment Scales (LAS), Spanish language tests, language dominance tests (Spanish versus English), sociometric choice preferences, personal competence measures, surveys of attitudes toward bilinguals, and surveys of parent attitudes toward multiculturalism. Cazabon and his colleagues found that in the area of English-based reading and math skills, English *Amigos* students generally scored higher than their unilingual English peers, significantly so in grade two. Spanish *Amigos* students were equivalent to the English norm group in English-based mathematics, and tended to outperform Spanish-speaking students in bilingual programs emphasizing mainstreaming and English (Cazabon et al.). Thus, the shared learning experience was academically beneficial for both the English and Spanish groups.

Socially significant was that by third grade *Amigos* students had no ethnic nor racial preference when choosing groups of friends or partners for class activities, although some ethnic and racial separation did occur in the lower grades (Cazabon et al.,

1993). All of the students' parents appeared to have positive views and reasonably low social distance⁴ (Cazabon et al.). The parents of children in grade three showed an optimal social distance, as determined by results of attitudinal surveys.

Overall, shared learning with respect to students who are hearing seems to foster peer relationships and cultural interaction between members of both groups. It is this phenomenon, the social aspect of learning, that is of current interest. The current study did not investigate the academic achievement of students educated in a shared learning environment but, rather, focused on social growth and development using attitudinal surveys and questions concerning information about individuals with a hearing loss.

Bilingual-Bicultural Programs for Deaf Students

The concept of applying ESL teaching strategies to the education of students who are deaf is not new. Certain strategies have gained popularity at various points in the history of the education of students who are deaf. Bilingual-bicultural education is currently moderately popular, but lacks the research required to guide evidence-based implementation. ESL teaching strategies in use with populations of students who are hearing have been used in a variety of programs over time, and this research has not resulted in emotional conflict. By contrast, emotional conflict can, and often does, arise when discussing the educational history of students who are deaf. Students who are deaf, although unique in their needs, language style and mode of learning, may benefit both academically and socially from ESL teaching approaches.

⁴ The term social distance refers to a rating of perceived inferiority of the L2 cultural group by the linguistic majority (Schumann, 1976).

Shared Learning Several shared learning environments composed of both students who are deaf and students who are hearing have been established and investigated over the last two decades. The vast majority of these programs and studies have been conducted in an American context. One study, however, on the topic of self-concept and motivation, drew its sample from secondary students in a newly developed congregated setting in Burnaby, British Columbia (van Gorp, 2001). Few studies have been able to achieve the optimum mix, as determined by Cazabon and his colleagues (1993), of 50% hearing students and 50% students who are deaf, without experimental manipulations. The primary goal of the majority of these shared learning programs is to promote full inclusion in the regular classroom setting, which would be composed of both children who are hearing and children who are deaf.

Demographics of Deafness Defining a child as deaf has implications specific to language access and, thus, interaction with hearing peers. Moores (2001, p.11) stated that "a deaf person is one whose hearing is disabled to an extent that precludes the understanding of speech through the ear alone, with or without the use of a hearing aid." This is an important detail, because although an individual who is hard of hearing also has disabled hearing, making it challenging to understand speech at times, this lesser degree of hearing loss does not preclude one's ability to obtain and comprehend speech using the ear alone (Moores). Thus, deaf children must rely, to at least some extent, on some form of visual communication (Moores).

The Gallaudet Research Institute (GRI) Annual Survey of Deaf and Hard-of-Hearing Children and Youth collected data on 42,361 D/HH children in the United States

in the 2002-2003 school year (Gallaudet Research Institute, 2003). The majority (92.1%) of D/HH children and youth surveyed are born to hearing parents. Of these, nearly half (49.7%) are deaf, possessing a hearing loss of greater than 71 dB and, thus, are classified as having a severe to profound hearing loss (Gallaudet Research Institute). On the basis of prior unrelated demographic research, it is predicted that approximately 90% of these children, those with a severe to profound hearing loss, will marry another deaf individual (Schein & Delk, 1974). Of those who marry another deaf individual, 95.5% will give birth to hearing children (Gallaudet Research Institute). Thus, deaf individuals are, for the most part, surrounded by hearing parents during their childhood and hearing children when they become parents.

In addition to having hearing parents, 79.4% of the deaf children surveyed did not have siblings who are D/HH (Gallaudet Research Institute, 2003). Linguistically significant is that 31.6% of the total group had a profound hearing loss of 91 dB or greater and 31.5% came from a Hispanic/Latino, Native, Asian or other multicultural background, adding an additional complexity to cultural exchange, language learning and integration (Gallaudet Research Institute). The spoken/written language used at home for 23.8% of these children was not English, and only 28.3% of them signed regularly with their families. Language use and signing skills are also mitigated by educational settings.

Almost one-third (30.5%), of the children, most likely those with a mild to moderate hearing loss, were mainstreamed for more than 26 hours per week, while 36.8% of the children were never instructed in a mainstream setting (Gallaudet Research Institute, 2003). Instruction occurred mainly in speech for 46.1% of students, although 44.9% of the students received their education in both sign and speech. (It was not stated

whether instruction using both sign and speech was in the form of Simultaneous Communication (SimCom), the act of speaking and signing in unison, or if sign and speech were presented separately.) Only 7.6% of instruction was conducted in sign alone, although it was not clear whether this was ASL or a form of manual English. The setting in which instruction took place varied. A regular classroom setting was used for 45.2% of students, whereas 31.9% attended a regular school but were segregated from the regular school population and contained in a special class. Special schools and centers were the choice for 26.6% of the children, most likely those with a severe to profound hearing loss, although the degree of hearing loss was unavailable from the statistical summary of survey data. Shared learning environments were most likely accounted for in the classifications of mainstream and regular classroom settings in which speech and sign were used. Although not delineated by the GRI survey, setting, language use and hours of mainstreaming were more than likely correlated to the severity of hearing loss and the presence of any additional disabling conditions. In a shared learning environment, we might reasonably expect to see children with a severe to profound hearing loss and no or minor additional disabling conditions, such as a learning disability.

Student backgrounds are an essential component of the formation of bilingual-bicultural classrooms. The program models in use with students who are hearing are based on the premise of some degree of homogeneity. The premise of homogeneity is frequently lacking in the population of students who are deaf with respect to language use, ethnicity, cultural identification, family demographics, and perhaps even acceptance of one's hearing loss. The nature of life as a deaf individual is such that one often becomes an island in a sea of individuals who are hearing. Although archipelagos of

Deaf individuals may form, the need for a functional and fluent understanding of English, both the spoken and written form and a comfort with and understanding of the cultural norms and niceties specific to those who are hearing, are essential for successful navigation through business interactions and daily activities. These criteria, namely, the need for a functional understanding of English and the cultural norms associated with it, will thus influence the broad goals of education and communication methods used in instruction. On a child-to-child basis, language use and the extent of interaction and integration with hearing peers in the shared learning setting of the current study are also affected.

Attitudes and Language Acquisition The parameters described by Vygotsky as determining social distance can be surmised into a study of attitudes. Positive attitudes toward an alternative linguistic/cultural group result in low social distance. It is important to investigate the attitudes of children who are partaking in bilingual-bicultural programs because the net goal is not simply language acquisition, but also an understanding of the cultural norms and values associated with that language. In the case of students who are deaf, the effect of shared learning on their attitudes toward individuals with hearing loss, thus, may be considered representative of their self perceptions, looking at the affective component of shared learning. Student attitudes manifest in a number of ways and, thus, can be measured through observations of the number of times and manner in which students interact with one another or through an investigation of student responses to survey questions.

Kirchner (1996) conducted a study of student attitudes in the Tripod Montessori Pre-School/Kindergarten Program in which hearing children who have deaf siblings and

hearing children born of deaf adults (CODAs) shared a classroom and learned to sign alongside children who are deaf. Instruction was conducted with both a regular classroom teacher and a teacher of the D/HH in each classroom. Students were found to have developed friendships in hearing-deaf pairs that lasted outside of the classroom environment (Kirchner). Teachers reported that deaf and hearing students could communicate comfortably with one another and commented positively on student relationships with peers. However, all students involved in the Tripod Montessori program possessed first-hand knowledge of the abilities and lifestyles of individuals with hearing loss, as well as being familiar with Deaf culture; therefore, this study failed to address whether such friendship pairs would develop in the absence of common cultural experience and understanding.

Luckner (1999) conducted a year-long study of shared learning classrooms composed of deaf and hearing students in Colorado, and noted that visitors could not distinguish between students who were deaf and students who were hearing in terms of signing ability. However, the nature of visitors' knowledge of hearing loss was not discussed, nor was it mentioned whether this was viewed as a positive characteristic. Although not directly addressing the issue of student attitudes, the appearance of a classroom composed of two distinctive populations melding into a single group seems to speak volumes about the attitudes of both teachers and students toward individuals with hearing loss, implying that assimilation, in this case, was equal to integration and that no social distance existed between deaf and hearing student groups. The study by Luckner fails, however, to address whether this phenomena extended outside of the classroom.

Kreimeyer, Crooke, Drye, Egbert, and Klein (2000) conducted a study of seven D/HH children in a program in Tucson, Arizona, in a multiage classroom setting in which students remained with the same teacher for three years. Seven children who were D/HH and variable numbers of hearing children were followed for three years, during which time three strategies for student sign development were implemented in order to facilitate peer interaction within the program. Students were monitored for twenty-minute intervals in both the classroom and the lunchroom when sufficient groups were present (Kreimeyer et al.). There was an increase in interaction in the classroom over the course of 29 observations; however, the increase could have been due to grouping strategies, seating arrangements or other classroom management techniques, and not solely related to the development of positive student attitudes. There appeared to be a great deal of fluctuation in the quantity of interaction between students outside of the classroom. The nature of the interactions were not described, and whether both positive and negative interactions were generalized, recorded and reported was not mentioned. Interaction events may not necessarily have been positive; student arguments, fights, bullying and name calling may technically qualify as interaction events. An overall increase in interaction between the deaf and hearing students was seen, although it could simply be that observations were conducted on a day when there was a great deal of interaction due to a school event or some other phenomenon. Overall, although a more thorough understanding of the interactions occurring is required, it appears that integration led to a mild and inconsistent, though significant, increase in interaction between peers, specifically in deaf-hearing pairs. Therefore, setting alone may be insufficient in

increasing positive attitudes toward an alternate language group, specifically children who are deaf and use ASL or children who are hearing and use spoken English.

Concerns arose in the Tucson program with respect to the inherent difficulty in creating compatible teaching partnerships based on philosophy, personality and vision (Kreimeyer et al., 2000). A rift grew between teachers involved in the team teaching of students who are D/HH and regular classroom teachers working at the same location, due to perceptions in work inequality (Kreimeyer et al.). The lack of social understandings between teachers involved in a new model of program delivery and the projection of teacher attitudes onto students may have affected student perceptions and, thus, student attitudes. Issues also arose due to the program's lack of deaf role models.

The findings from the Kreimeyer et al. (2000) study also seem to suggest that the presence of additional disabling conditions may negatively affect interaction between students who are D/HH and students who are hearing. For example, one student experienced a slower rate of involvement in interaction with hearing peers than that experienced by the remainder of the D/HH student population. The researchers speculated, without any conclusive evidence, that this phenomenon was due to the presence of an additional disabling condition, although the nature of the additional disabling condition was not mentioned.

In a study of shared learning, Gaustad (1999) used the measure employed in the current study and found that one-third of the D/HH students in her study reported that shared learning was a negative experience. These same students expressed fear at the idea of future shared learning experiences (Gaustad). The study involved 118 students who were hearing and 20 students who were D/HH, and the congregated experiences varied in

duration from 2 to 14 classes. The degree of hearing loss seemed to affect student responses to the statement "Hearing students are just like me," with students who are hard of hearing responding affirmatively more often than students who are deaf, although this was highly variable. No conclusions can be drawn concerning whether shared learning facilitated change in children's attitudes because the measure was administered only once and group means were not analysed. Thus, there is no information on the change in student attitudes over time. The high variability of exposure, lesson styles and subject areas, although effective in increasing the generalizability of findings, fails to hone in on specific effects of the shared learning experience for children who are D/HH.

The specific effects of congregated learning on the self-concept of students who are deaf was addressed in a study of 90 students from four school settings, segregated, congregated, integrated and resource classrooms, using the Self-Description Questionnaire-1 (SDQ-1) (van Gorp, 2001). van Gorp found that students in the resource room setting scored significantly higher in the areas of general school self-concept than students in the congregated setting. Students in the congregated setting, like those in the current study, had just begun attending classes at a congregated site in Burnaby, British Columbia. However, unlike the current study, van Gorp focused on secondary students rather than the primary students addressed in the current study. Although self-concept as defined by van Gorp is not the same as "attitude," the two concepts share several common dimensions. Social comparison, affecting self-esteem, as well as the concept of an external frame of reference through which students compare their perceived academic abilities with the perceptions they hold of their classmates' skill levels, echo sociocultural theory. This is reiterated by van Gorp, who stated that the development of self-concept

is dependant on interaction with “more knowledgeable others,” an important component of the theories of Vygotsky (1976, 1978) and Wertsch (1985).

In a meta analysis of 33 quantitative studies published after 1980 on the social processes and outcomes of deaf students’ integration, to varying degrees, with hearing peers, including several of the studies discussed herein, Kluwin, Stinson, and Colarossi (2002) identified four categories of research focus. The categories of research identified were: social skills, interaction and participation, sociometric status and acceptance, and affective functioning. Kluwin and his colleagues (2002) stressed the importance of the communication barriers which arise between students who are deaf and use ASL and students who are hearing and communicate verbally. The question remains as to whether the communication skills used in the classroom are employed on the playground or in the lunchroom and other areas, both in school and out, where social interaction is not facilitated by the teacher. As past research in the area of social skills has relied on observations of age-appropriate behaviour in order to determine social maturity, specifics of language use are not addressed by the current study. However, the realms of social interaction and participation, affective functioning and, to a lesser degree, sociometric status and acceptance are addressed in the current study.

The measures used to collect data on sociometric status and acceptance in previous studies reviewed by Kluwin and his colleagues (2002) have relied heavily on either peer ratings or measures of perceived social acceptance by students who are D/HH. This relates back to the fact that self-concept measures, peer ratings and perceived social acceptance, come from two different frames of reference, one internal and one external, both of which affect one’s academic self-concept (van Gurp, 2001). An external frame of

reference which involves social comparison to others also plays a role in the current study. If social comparison of deaf students with hearing students results in students having a negative self-concept, these same students would likely also have lower scores on the attitudinal subscale of the current measure.

Twelve observational studies and seven studies using student self-ratings addressing social interaction and participation between students who are D/HH and students who are hearing were found (Kluwin et al., 2002). The vast majority of the 12 observational studies were conducted at the University of Texas at Dallas in the Callier Center for Communication Disorders, a center providing early intervention and preschool programs, as well as psychology, hearing and speech services. The average age of subjects was four years old. Observational studies used either observational coding or video segment coding. All studies, using either form of data collection, self-perception or observation, found that students preferred to interact with students of the same hearing status (Kluwin et al.). Also interesting is that deaf-deaf pairs seemed to become involved in a more complex level of play, as well as increased turn taking and duration of play period, as compared to deaf-hearing pairs (Kluwin et al.). Vandell and George (1981) found that, likely related to the quantity of play, children in hearing-deaf play pairs were more likely to experience inappropriate cues for the initiation of play or turn taking (for example, a hearing child speaking while his or her deaf partner was looking away). This finding suggests that intervention strategies such as teaching social norms and niceties may be required to facilitate play interaction and increase communication success in shared learning environments where students who are hearing and students who are deaf are educated together. Vandell and George also found that children preferred playmates

who were not only of the same hearing status but also of the same sex, age and race. Cognitive development in preschool years, experiential background, and role play games or toy preferences may have been factors influencing these choices; it would be beneficial to investigate if playmate selection preferences are continuous across age groups for children who are D/HH.

In a longitudinal study of 48 secondary students who are D/HH, Ladd, Munson and Miller (1984) found an increase in interaction in the second year of mainstreaming. A ceiling effect was observed; D/HH students who had a high rate of interaction with hearing peers in the first year of mainstreaming did not increase their level of interaction in the second year. Not investigated was whether the quality of interaction increased or whether true friendships formed between deaf-hearing pairs. In the current study, it is reasonable to expect that scores on the attitudinal subscale may also reach a ceiling, as students entering the program with positive attitudes toward the alternative language group may experience either a decrease in positive attitudes or may maintain a consistent positive attitude. It could also be anticipated that students may enter the program with varying perceptions and attitudes but would develop similar scores on the attitudinal subscale of the current measure over time.

Several studies by Antia and colleagues (Antia 1982; Antia & Kreimeyer, 1988, 1997; Antia, Kreimeyer & Eldredge, 1994; Levine & Antia, 1997) were included in the meta analysis of Kluwin and his colleagues (2002). Overall, Antia and her colleagues found that intervention strategies, such as social skills training and teacher intervention, could successfully increase interaction between students who are D/HH and students who are hearing. However, when intervention was removed, interaction decreased. In

addition, in both studies of perceived social interaction and studies using coded observation, the level of interaction is, at least in some respect, related to the opportunity for interaction; students who were mainstreamed for a greater number of classes were observed to interact more with hearing peers. Overall, then, interaction between deaf-hearing pairs seems to increase with frequency of exposure and duration of integration, as well as with the inclusion of intervention strategies, although if left alone, even in inclusive educational settings, students who are D/HH will naturally interact with individuals with a similar hearing status more often than with students who are hearing.

Previous research shows that as long as intervention strategies remain in place, they tend to be effective. Research also shows that, although children interact more with like peers, increased cultural familiarity, as in the case of CODAs, leads to an increase in interaction. This increase in familiarity may be facilitated by increased exposure via learning situations such as those found in a shared-learning environment.

Affective functioning is a thread woven through the framework of the current study, encompassing self-concept, motivation, perception, and locus of control, all addressed from an internal frame of reference. Although the current measure does not pertain solely to self-perceptions, it is hoped that by asking questions about the general population of individuals with hearing loss and some questions directly concerning the children themselves, the egocentric nature of primary students will allow for generalizations to be made about their self-perceptions and, thus, their affective functioning. Of the 33 studies reviewed, classified by area of focus and broken down by data collection methods, self-reports were used as a data collection method for every area

of focus, and, therefore, the current study is comparable to similar studies using like measures and self-ratings.

Information and Attitudes No studies currently exist which address the effect of information about hearing loss on the attitudes of children who are hearing toward their deaf classmates. Most of the current research on shared learning focuses on the academic performance of students. However, it may be argued that academic performance is influenced by one's attitude toward learning, one's environment, one's peers and, thus, one's knowledge about his or her peers. This research is yet to be conducted and could be of immense value in evaluating the effectiveness of different learning environments and intervention strategies.

Conclusion

Current studies appear to evaluate social interaction and attitudes among deaf and hearing students who are educated together as an afterthought and have methodological inconsistencies which remain largely unacknowledged by researchers. These issues preclude generalizations and comparisons to a broader population. Many questions have yet to be asked and answered with respect to bilingual-bicultural programs in use with students who are D/HH.

Research Questions

The eight research questions of the current study are:

1. Do the attitudes of children who are deaf who are educated in a shared learning environment change over the course of a school year in respect to individuals with hearing loss?
2. Do the attitudes of hearing children who are educated in a shared learning environment differ from those of children who are hearing who are educated in a nonintegrated setting in respect to their perceptions of individuals with hearing loss at time one?
3. Do the attitudes of hearing children who are educated in a shared learning environment change over the course of a school year in respect to their perceptions of individuals with hearing loss?
4. Do the attitudes of hearing children who are educated in a nonintegrated setting change over the course of a school year in respect to their perceptions of individuals with hearing loss?
5. Does the knowledge level of students who are deaf and educated in a shared learning environment change over the course of a school year in respect to knowledge about the ear, hearing loss and ASL?
6. Does the knowledge level of students who are hearing and educated in a shared learning environment change over the course of a school year in respect to knowledge about the ear, hearing loss and ASL?
7. Does the knowledge level of students who are hearing and educated in a nonintegrated setting change over the course of a school year in respect to knowledge about the ear, hearing loss and ASL?

8. Does the level of knowledge about the ear, hearing loss and ASL of children who are hearing and educated in a shared learning environment differ from that of children who are hearing and educated in a nonintegrated setting at time one?

The nature of social interaction and changes in attitude are important in order to determine if shared learning and/or an increase in knowledge can facilitate cultural understanding. In the end, what is desired is a detailed representation of the changes in attitudes and information over time. This detailed representation is desired for each of the three groups of students, namely, students who are deaf and students who are hearing and educated in a shared learning setting, and students who are hearing and educated in a regular classroom. It is hoped that these data may be used to facilitate future research on program efficacy.

In terms of attitudes, it is hypothesized that there will be a U-curve in the attitudes of children who are hearing with respect to individuals with hearing loss, based on the amount of time spent in a congregated learning setting, while no change is predicted in the attitudes of children who are hearing and educated in a mainstream setting toward individuals with hearing loss, as determined by the current measure. It is hypothesized that a U-curve will exist in relation to the attitudes of children who are deaf and educated in a shared learning environment due to the effects of self-comparison and the new external frame of reference, provided by the combination of hearing peers and a new educational setting, which will facilitate the development of such external comparisons.

In terms of information, it is hypothesized that there will be an increase in the knowledge level of students who are deaf with respect to knowledge about the ear,

hearing loss and ASL, when educated in a shared learning setting. It is also hypothesized that the knowledge level of students who are hearing and educated in a shared learning environment will increase with respect to their understanding of the anatomy of the ear, hearing loss and ASL. A significant difference is predicted between the two groups of hearing students, those who are educated in a two-way bilingual-bicultural setting and those educated in a mainstream setting, in their knowledge of the ear, hearing loss and ASL, with the children in the mainstream setting scoring lower.

Chapter III: Methodology

Introduction

The purpose of this study was to identify the effect of shared learning on student attitudes and knowledge with respect to hearing loss. This study employed quantitative methodologies to investigate whether a U-curve exists in the attitudes of children who are deaf toward hearing loss over the course of a single school year, and whether shared learning has an effect on the knowledge and attitudes of children who are hearing toward individuals with hearing loss. Survey questions focused on attitudes and knowledge, and analyses were guided by sociocultural theory.

Participants

Forty-eight participants from two educational settings in Burnaby, British Columbia, participated in the study. One student in the regular education setting has a brother who is deaf and, thus, the data for this student were excluded from the study. Accordingly, all further discussions address only the 47 participants for which data are reported. There is no random assignment to any of the variables. The variables involved are hearing status (hearing or deaf), educational setting (shared learning or a regular classroom), and pre-test/post-test scores. As in most studies involving both students who are deaf and students who are hearing, there was a vast difference in the sample sizes of the two populations, with more hearing than deaf students.

All groups were from multiage classrooms, with the shared learning class being composed of both grade one and grade two students, while the regular education students were from a mixed class of grade one, two and three students. The split nature of both

the shared learning classroom and the regular classroom setting composed solely of hearing students ensured that changes in the trends of attitudes were not simply due to the educational effects of multiage level classrooms or maturation factors. The data were collected in the fall of 1994 and the spring of 1995.

Of the 47 participants selected for the proposed study, 7 are deaf, 25 are male, 22 are female, and 26 were educated in a shared learning setting. (The number of participants in each group, according to grade level and hearing status, are shown in Table 1.) Participants selected from the shared learning setting were in their first year of the program. The students who are deaf had just moved from an exclusively Deaf environment to a site for students in kindergarten through grade 6, housing both community children and children who are deaf. The students who are hearing in the shared learning environment were experiencing their first exposure to peers with hearing loss on a day-to-day basis during the school year in which the data were collected. This was the first exposure to a shared learning situation for both teachers and students. The teachers at the site of the shared learning classroom were working as a team to implement and teach curriculum and undertake the development of a two-way bilingual-bicultural program. This was not a research construct.

Students for the quasi control group were from a school within the same neighborhood as the location of the shared learning classroom and, therefore, possessed the same socioeconomic status. The students from the quasi control group were from a single classroom, which is also a multigrade primary class. Permission letters (Appendix A) had been sent home to parents of students in classes for which teachers had agreed to participate in the study.

Questionnaire and Limitations

This investigation used a questionnaire in two versions, one for students who are hearing (Appendix B), and one for students who are deaf (Appendix C). The survey is composed of 25 questions on three pages, and consists of forced-choice questions, which served to increase the validity of the survey. The measure is a synthesis of questions addressing information and attitudes, and it had been piloted on both children who are hearing and children who are deaf (Gaustad, 1995). This is the first study conducted in a Canadian context that used this particular measure.

The measure was developed as part of the state of Ohio pilot project to facilitate the transfer of information about deafness and individuals with hearing loss into public school classrooms having mainstreamed deaf students (Gaustad, 1995). None of the four districts from which the pilot sample was chosen provides a situation comparable to Burnaby or the program in question (Gaustad). All districts in the pilot sample are American, and none of them included shared learning classrooms (Gaustad). Although samples for the pilot sample were taken from small cities, the cities involved in the pilot sample were not components of large metropolitan centers, as Burnaby is in relation to the Greater Vancouver area of British Columbia (Gaustad). Socioeconomic background is also not a recognized or controlled factor in the piloting of the measure (Gaustad).

The measure has high reliability for the attitude subscale (0.760) and a lower reliability for the information subscale (0.470) (Gaustad, 1995). The reliability for the measure during the development process was ensured through consultation with both hearing and Deaf and hard of hearing (D/HH) professionals working in the field of

education of the D/HH (Gaustad). The professionals provided advice concerning the measure itself, design, administration and measurement of similar instruments (Gaustad).

Research questions one, two, three and four of this study are addressed by the attitude subscale of the survey. Questions 2, 9, 10, 11, 12, 16, 17, 19, 21, 22, 23, 24, and 25 address the attitudinal subscale. The relevant factors relating to attitudes are sympathy for the disabled, empathy, perceived negative self-image, intelligence ratings, effort to communicate, value of sign, desire to communicate, needs of deaf children, desire to learn about individuals with hearing loss, perceived friendliness, desire to interact on a variety of levels, and perceived similarity. The score for each subject was derived from the average of each of the subscales. The number used for calculating the average is the number of questions answered by the subject on the particular subscale. This process compensates for missing data and surveys that were incomplete.

For the students who are deaf, data were collected at three points in time, namely November, February and June; data were collected on hearing students only in November and June. The three administrations of the measure served to establish the presence or absence of a U-curve with respect to attitudes over time. Research question one was answered by comparing the November, February and June scores of students who are deaf. Research question two was answered by comparing the post-test scores on the attitudinal subscale of the two groups of hearing students, those educated in a regular classroom setting and those educated in a shared learning classroom. A comparison of the pre-test and post-test scores for the 19 hearing children who were educated in the shared learning setting served to answer research question number three.

Research questions five, six, seven and eight of this study were addressed by the information subscale of the survey. Questions 1, 3, 4, 5, 6, 7, 8, 13, 14, 15, 18, and 20 addressed the information subscale. The relevant factors identified that relate to knowledge of hearing loss are: the anatomy of the ear, manners, need for maintaining attention, parental hearing status, the use of residual hearing, the use of sign, speech reading, the use of communication devices and the capabilities of individuals with hearing loss. The specific abilities of individuals with hearing loss that were addressed in the information subscale of the measure are: speech, employment, and transportation. Research question five was answered by comparing the November, February and June scores of students who are deaf on the information subscale of the measure. A comparison of the pre-test and post-test scores on the information subscale of those hearing children who were educated in the shared learning setting served to answer research question number six. November and June (pre-test and post-test, respectively) scores of hearing children who were educated in a regular education setting for the information subscale answered research question seven. Research question eight was answered by comparing the post-test scores of the two groups of hearing students, those who were educated in a regular classroom setting and those who were educated in a shared learning classroom, on the information subscale.

One limitation of the study is the small sample size available. Due to the exploratory nature of this study, the risks of a small sample set and self-reporting method are outweighed by the advantage of the knowledge gained for future research projects and comparisons which may be made to existing information and research conducted on programs in use with students who are D/HH in the United States, as well as data

previously reported by van Gorp (2001), which addressed a recently relocated group of secondary students in Burnaby.

A second limitation of this study is inherent in its exploratory nature and the nature of data collection. Differential data collection techniques, that is, having surveyed children who are deaf at three points in time, November, February and June, while only having surveyed children who are hearing twice, November and June, limit the findings and interpretation. Although not affecting analysis, the different number of administrations per group does affect the interpretation of results.

Students who are hard of hearing and students with cochlear implants are two other unique groups of students who happen to fall under the umbrella of education of the D/HH. The distinct needs of these students place challenging demands on education, educators and research. Caution must be taken not to overlook or generalize these students into the classification of students who are deaf. The generalizability of findings obtained from this survey is limited to students with severe to profound hearing loss. There may also be several defining characteristics of the population of deaf students used in this study, beyond hearing status, which may further limit generalizability.

A final limitation of the survey is the classroom time required for data collection. Therefore, by way of thanking teachers for their time and cooperation, participating teachers were offered a brief student in-service on hearing loss presented in concert with the final administration of the measure. The provision of this brief in-service, thus, does not affect the results of the survey.

Data Collection

This study used a pre-test/post-test design for all participants, with an initial administration of the measure in November and a final administration in June. All characteristics of survey administration for the current study were consistent with those used in the initial piloting of the measure (Gaustad, 1995). The researcher who administered the measure was an experienced teacher of the D/HH and was fluent in American Sign Language (ASL). The survey was administered to the small groups of students, two to four students at a time, by the same researcher for all locations for all deaf and hearing students. The researcher read each question aloud (in the case of hearing students) and signed in ASL (when the measure is administered to students who are deaf). The items were read one at a time, followed by a wait time in order to allow students sufficient time to read the item themselves and respond to it. Once an item was completed, the researcher requested that the students point to the next question on the response sheet. By working with children at a small table as the survey was administered, the researcher monitored children throughout the survey and ensured that students were at the right place in the survey.

The survey administration was preceded by a brief explanation, directions and affirmation, read to students from the cover of the survey (Appendices B and C), which was consistent across all groups. Students were requested to place their names on the survey, although names are not used or identified in any way in data reporting, either oral or written. They are necessary, however, for sorting and organizing data for computer entry.

In order to ensure that the students understood survey items and that a negative response was representative of a lack of knowledge rather than confusion over the wording of an item supports, such as fingerspelling and signs, providing or explaining unfamiliar vocabulary, and/or providing word alternatives and synonyms were employed. In the case of an item with unfamiliar vocabulary in which a definition supplied the respondent with the correct answer, a synonym or alternate word was supplied instead.

Data Analysis and Reporting

Comparisons of data collected from students who are hearing use a series of t-tests. The data analysis required to answer each of the research questions was taken separately and the necessary data analysis was performed.

An ANOVA analysis was conducted on the data collected from the seven deaf students for three administrations of the measure, November, February and June. A quadratic contrast was conducted on the scores of children who are deaf on the attitude subscale. This was conducted in order to identify whether a U-curve existed in the attitudes of children who are D/HH as the year progressed.

Chapter IV: Results

Introduction

This study was an exploratory, quasi experimental investigation into the effect of shared learning on students' attitudes and knowledge toward hearing loss using quantitative methods to investigate whether a U-curve exists in the attitudes of children who are deaf toward hearing loss over the course of a school year. Because the design is quasi-experimental the use of inferential statistics was primarily to aid description. Analysis was further extended to investigate whether shared learning has an effect on the knowledge and attitudes of children who are hearing toward individuals with hearing loss. Within-group analysis was conducted on all groups, while a between-groups comparison of the two groups of hearing students (those educated in a shared learning environment and those in a regular classroom) ensured that changes, if present and significant, were due to exposure to deaf peers, rather than to curricular components on sound, the ear and hearing or some other factor.

The Participants

The study had an attrition rate of seven participants. All those lost from the study were hearing. From the shared learning setting, four females, two in grade one and two in grade two, left the study prior to completing the June survey. From the regular education setting, a male in grade two, as well as a female, and a male in grade three, did not complete the June survey because they changed schools part way through the academic year. The data collected from these seven students at time one, November, was not included in the analysis or discussion. (The number of participants in each group in

the data analysis, divided according to grade level and hearing status, is shown in Table 1.)

There was also an influx of two new students who enrolled in the school and who were thus placed in the class partway through the academic year. The data for the students who joined the study after the initial survey administration in November have not been included in the study. (These students are not accounted for in Table 1.)

Table 1

Description of Deaf and Hearing Participants by Setting, Gender, Grade and Hearing Status

Setting		Regular						Congregated				
		18						22				
Sex	Male			Female			Male			Female		
	10			8			13			9		
Grade	Gr.1	Gr.2	Gr.3	Gr.1	Gr.2	Gr.3	Gr.1	Gr.2	Gr.3	Gr.1	Gr.2	Gr.3
Hearing	5	3	2	3	3	2	6	3	0	3	3	0
Deaf	0	0	0	0	0	0	0	4	0	0	3	0

Examination of the Data from the Attitude Subscale

Students who are Hearing Whether the attitudes of hearing children who are educated in a shared learning environment change over the course of a school year with respect to individuals with hearing loss was investigated by comparing the scores of hearing children in the shared learning environment on the attitude subscale at time one, November, and time two, June. A two-tailed paired samples t-test ($t_{(16)} = -0.74, p < 0.05$) revealed a statistically significant difference in children's scores on the attitude subscale of the measure after completing a grade alongside deaf peers in a shared learning environment. The increase in the scores on the attitude subscale between time one, November ($M = 2.38, SD = 0.29$), and time three, June ($M = 2.44, SD = 0.33$), for the 17 hearing students in the shared learning classroom who completed the survey at both time one and time three (9 males and 8 females), suggests that the increased exposure to individuals with a hearing loss through shared learning is beneficial in developing positive attitudes (Kerlinger & Lee 2000).

A two-tailed independent samples t-test ($t_{(33)} = -1.37, p < 0.05$) revealed a statistically significant difference in the attitudes of children who were educated in a shared learning environment ($N = 17, M = 2.44, SD = 0.33, SE = 0.08$) and those children who were educated in a regular classroom setting ($N = 18, M = 2.28, SD = 0.36, SE = 0.09$) in their attitudes toward individuals with a hearing loss. Levene's Test for Equality of Variances ($F_{(2, 34)} = 0.19, p = 0.67$) showed that the comparison of the two groups of students did not violate the assumption of homogeneity of variance (Kerlinger & Lee 2000).

There was not a significant difference ($t_{(17)} = -0.12, p = 0.90$) in the attitudes of hearing children who are educated in a nonintegrated setting between the initial administration on the measure in November ($M = 2.29, SD = 0.32$) and the final administration in June ($M = 2.28, SD = 0.36$).

Students who are Deaf A significant quadratic relationship was found in the changes children who are deaf experienced in terms of attitude toward individuals with hearing loss over the course of a school year, when educated alongside hearing peers in a shared learning environment (Kerlinger & Lee 2000). An initial mean attitude of 2.367 ($SD = 0.538$) was found in November, then dropped to 2.345 ($SD = 0.243$) in February, and increased again in June to 2.41 ($SD = 0.250$). (A graphical representation of change in attitude is shown in Figure 1. The y axis is mean score on the attitude subscale, while the x axis is survey administrations, 1 being time 1, November; 2 being time two, February; and 3 being time three, June).

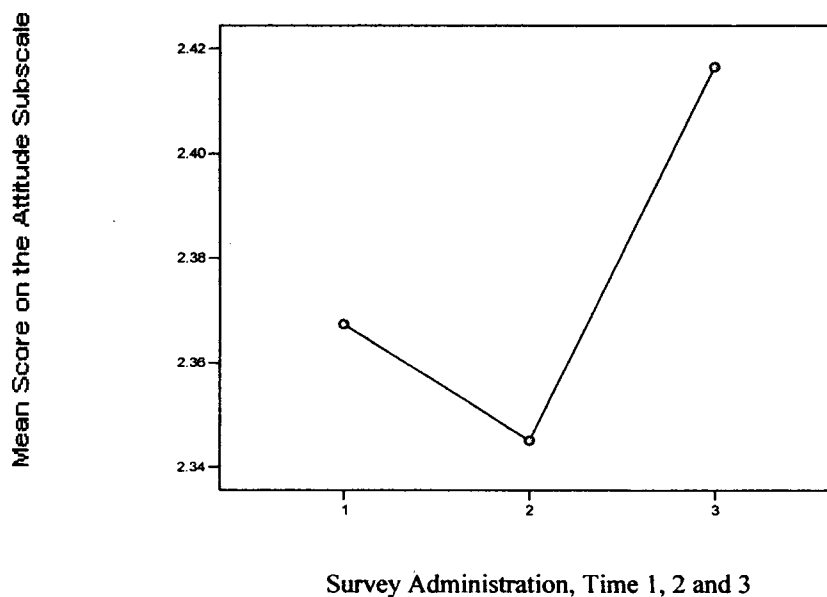


Figure 1. Change in attitude of Deaf Children on the Attitude Subscale of the Measure

Table 2 details the results of the analysis of the data from the attitude subscale for the three administrations of the measure of the students who are deaf. Because the quadratic, U-curve theory held in the analysis phase, a posthoc analysis by sex was performed. Figure 2 illustrates the difference in the response of females and males to the three administrations of the measure. (The y axis represents mean score on the attitude subscale, while the x axis is survey administrations, 1 being time 1, November; 2 being time two, February; and 3 being time three, June.) Four deaf males ($M = 2.38$, $SE = 0.10$) and three deaf females ($M = 2.37$, $SE = 0.12$) completed all three survey administrations.

Table 2

Changes in Scores on the Attitude Subscale of the Measure by Students who are Deaf

Source	Attitude	Sums of Squares	df	Mean Square	F	Significance	Observed Power
Attitude	Linear	0.01	1	0.01	0.03	0.87	0.05*
	Quadratic	0.01	1	0.01	0.28	0.62	0.07*
Error	Linear	1.63	6	2.72			
	Quadratic	0.22	6	0.37			

* $p = 0.05$.

Initially in November, the males ($M = 2.50$, $SD = 0.61$) scored higher on the attitude subscale than the females ($M = 2.19$, $SD = 0.48$). However, by time 2, February, the attitudes of the deaf males ($M = 2.29$, $SD = 0.31$) in the shared learning class had dropped, while the attitudes of the females had risen ($M = 2.42$, $SD = 0.14$). Both males ($M = 2.35$, $SD = 0.24$) and females ($M = 2.50$, $SD = 0.29$) showed an increase in positive attitudes as determined by their scores on the attitude subscale of the questionnaire, with the females' attitude at time three, June, being equal to the attitude scores of the males at time one, November.

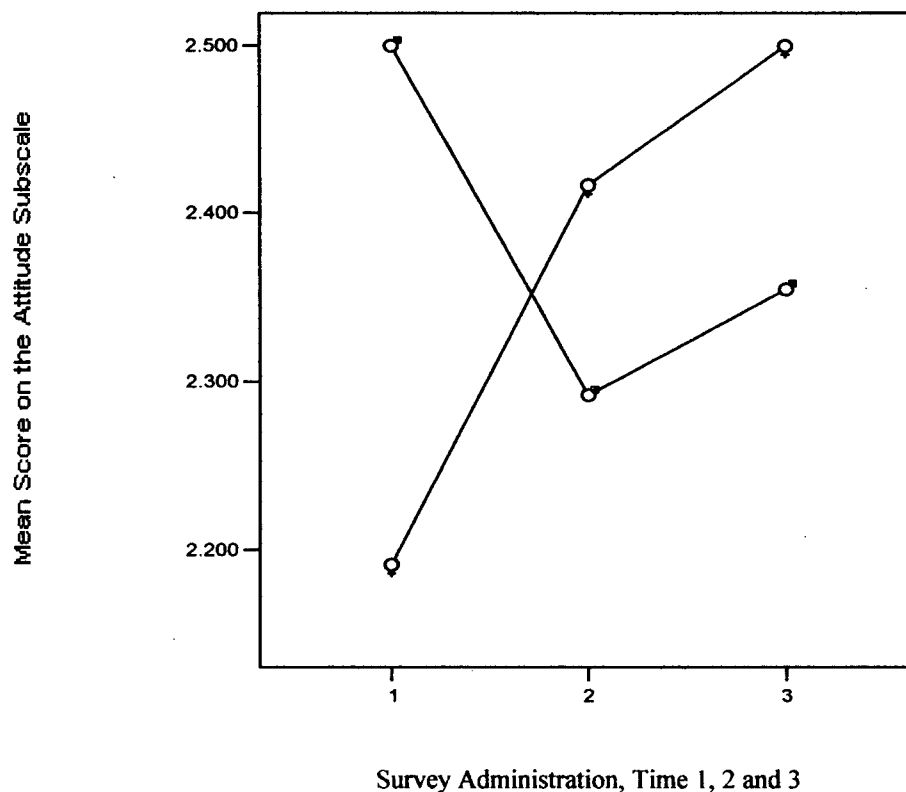


Figure 2. Scores of Deaf Males (♂) and Deaf Females (♀) on the Attitude Subscale

Examination of the Data from the Information Subscale

Students who are Deaf There are four research questions which focus on data from the information subscale of the measure. The first of these questions, whether the knowledge level of students who are deaf changes over the course of a school year in terms of knowledge of the ear, hearing loss and American Sign Language (ASL), was investigated through analysis of the mean score of children who are deaf on the information subscale. Although an increase was observed, there was not a statistically significant difference between any combination of survey administrations. (Figure 3 delineates the increase, though not statistically significant, in the information subscale scores of deaf children, over three administrations of the measure. (The y axis represents mean score on the information subscale, while the x axis represents survey administrations, 1 being time 1, November; 2 being time two, February; and 3 being time three, June.) The lack of a statistically significant difference could be due to the small sample size of only seven deaf students, and, thus, the lack of power (Kerlinger & Lee 2000).

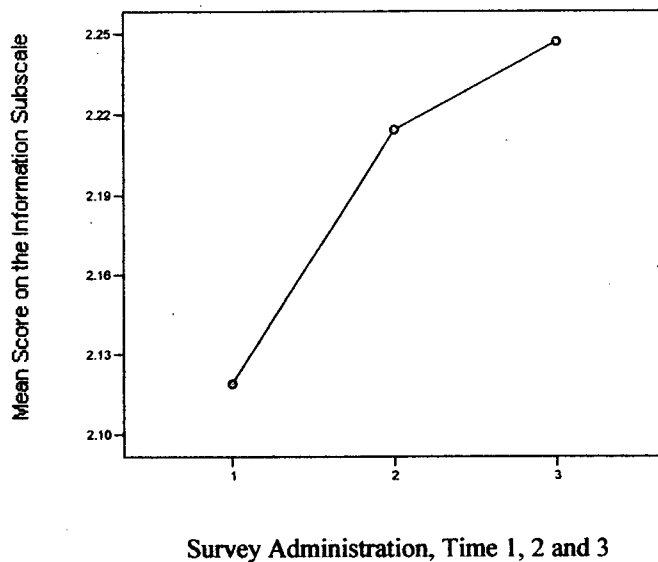


Figure 3. Changes in the scores of Deaf Children on the Information Subscale of the Measure

Students who are Hearing A t-test ($t_{(16)} = -2.29$, $p = 0.04$) of hearing children educated in a shared learning environment comparing the mean scores on the November ($M = 2.06$, $SD = 0.26$) administration of the measure with the mean score on the June ($M = 2.23$, $SD = 0.33$) administration was conducted. This analysis was conducted in order to answer the question of whether there is a change in hearing children's knowledge respect to the ear, ASL and hearing loss when they are educated alongside deaf peers.

There was no significant difference ($t_{(17)} = 0.18$, $p = 0.86$) found in the level of knowledge possessed by hearing students in a regular classroom setting in terms of knowledge about the ear, hearing loss and ASL between the November ($M = 1.92$, $SD = 0.06$) and June ($M = 1.91$, $SD = 0.05$) administrations of the measure. A significant

difference in the knowledge levels of hearing children educated in a shared learning setting and those educated in a regular classroom in relation to their understanding of the ear, hearing loss and ASL was found ($F_{(1, 33)} = 10.96, p = 0.002$). (Table 3, an ANOVA table, details the results of the analysis of the data from the information subscale for the two administrations of the measure to the hearing students who were educated in a shared learning classroom.)

Table 3

ANOVA Results of the Information Subscale for the Hearing Students who were Educated in a Shared Learning Classroom

Variable	Source	Sum of Squares	df	Mean Square	F	Significance
Information	Between groups	0.18	1	0.18	2.30	0.10
Time 1	Within Groups	2.00	33	0.06		
	Total	2.18	34			
Information	Between Groups	0.84	1	0.84	10.96	0.002*
Time 2	Within Groups	2.54	33	0.08		
	Total	3.38	34			

Anecdotal Data

Interestingly, comments were written on student surveys during survey administrations. The greatest number of comments during administration was obtained from the students who are deaf. At time one, three of the seven deaf students added additional comments, for a total of five comments. During the second survey

administration, the deaf students increased their comments to a total of 31, with every student supplementing his or her survey answers with additional statements during survey administration. This sharing of thoughts and comments decreased to 19, with only six out of seven students adding comments in June during the final survey administration.

Question 13, "Deaf students can use the telephone," elicited the most comments ($N = 12$). All except one of these comments were that a teletypewriter is used in place of a phone, and the remaining comment was "no because can't hear." Statement six, "Deaf people can't hear anything," elicited nine comments, which the majority of students clarified by saying that they can hear "some" things. Statement nineteen, "Sign language is as good as talking" was very interesting in the variety of responses it elicited. The statement drew quite a few comments very indicative of attitudes held by deaf students and was at its peak when attitude subscale scores were their lowest, during the February administration of the measure. Eight comments were made; one student during time three expressed the feeling that speech was better than ASL, one individual at time two felt that sign and speech were "equal," while the remainder, one student at time one and four students at time two, stated that sign language was better than hearing. Statement 10, "Deaf people are as smart as other people," and item 16, "Hearing students are more like you than different," both drew seven comments each. Both of these statements were supported by comments reflective of student scores on the attitude subscales. Statement 16 elicited seven responses indicating that deaf students were not similar to hearing students. All seven of these statements were made during the February administration of the measure and only one of the statements described hearing students as "mostly same" as deaf students. During the February administration of the measure, three deaf students

expressed the feeling that hearing students were smarter than deaf students, and one deaf student stated that deaf students were smarter than hearing students. At time one, November, one student expressed the belief that both deaf and hearing students are equally intelligent. The roles were reversed in students' reactions to statement 10 at time three, June, as three students responded saying that deaf children are smarter than hearing children and one child commented the reverse, that hearing children are smarter than deaf children. Three statements were made during the second administration of the measure, all reflecting positive attitudes about the fact that deaf people can drive cars, by adding the statements "can" and "some." Interestingly, one deaf student expressed the belief that although deaf people can be actors and football players deaf people could not be doctors. In response to the same question, another student simply said that deaf people can't hear and answered "no" to statement 5, while one student during the final administration of the measure commented that deaf people can only become teachers. Comments were also drawn by statements 8, 11, 12, 17 and 18, which received one comment each. Two comments were drawn by items 9, 14, 21 and 24, and the statement "Deaf students can learn to speak" received four comments, all of which were "some."

None of the hearing students from the regular classroom setting extended their answers during survey administration. Two hearing students in the shared learning program did, however; one in February commented on items 21, "You would like to learn more sign language," and 24, "You like having deaf students in your class," while one student in June expanded upon statement 25, "Deaf students are friendly." The child who commented during the initial survey administration expressed interest in learning sign language, stating that it was necessary "because I want to talk to deaf kids" (student

spelling errors have been corrected) and that “maybe” it would be nice to share a classroom with deaf students. The student who commented during the June administration of the survey qualified the statement that deaf children are friendly by adding the word “some.” One other hearing student in the shared learning environment added written comments to his or her survey; however, that student was simply reiterating the responses that he or she had circled.

Chapter V: Discussion and Recommendations

Introduction

This exploratory quasi-experimental study investigated whether a relationship exists between shared learning and students' attitudes and knowledge toward hearing loss. Specifically, the study set out to discover whether a U-curve exists in the attitudes of children who are deaf toward hearing loss over the course of a school year and whether a change in knowledge accompanies a change in attitude. Inferential statistics are used mostly to aid in description due to the quasi experimental nature of the study. The investigation of changes in attitudes and information and the relationship of shared learning on attitudes and information may be a guiding principle in the development of future trends in education of deaf and hard of hearing, students.

Discussion of the Results of the Attitude Subscale

Students who are Hearing Seventeen hearing students in the shared learning classroom, nine males and eight females, completed the survey at both time one and time three. A statistically significant difference existed in hearing children's scores on the attitude subscale of the measure after completing a grade alongside deaf peers in a shared learning environment. This suggests that the increased exposure to individuals with a hearing loss through shared learning is beneficial in developing positive attitudes. The presence of a correlation between hearing students' scores on the measure at time one and time three suggests that although students all experienced some form of increase in positive feelings toward their deaf peers, as determined by the attitude subscale of the measure, the degree of increase in attitude was related to students' initial attitude upon

entering the program. The data suggest that shared learning facilitates the development of positive attitudes toward individuals with hearing loss among students who are hearing when educated alongside deaf peers. This is consistent with previous research findings that when hearing children are educated in a shared learning environment with another cultural group, all of whom are learning a second spoken/written language, both groups exhibit a low social distance, which may be equated to positive attitudes toward the other language group (Cazabon et al., 1993). However, in terms of the development of attitudes toward individuals with hearing loss, this is a novel finding lacking previous exploration. The presence of four outliers suggests that students may progress through the U-curve at different rates, which would be consistent with educational practices which acknowledge that students master tasks at different rates. Task mastery would be representative of the final stage of the U-curve and an increase in positive attitudes.

As in the case of the information subscale, there was not a statistically significant difference in the scores of the hearing children educated in a regular classroom setting on the attitude subscale of the measure for the two administrations of the survey. This suggests that attitudes do not develop in isolation; they require reciprocity. Thus, without exposure to deaf peers, hearing children's attitudes toward individuals with hearing loss will not change and grow. This is further supported by comparing the two groups of hearing students, those educated in a shared learning environment and those educated in a regular classroom setting. A statistically significant difference was found between the attitudes of children who were educated in a shared learning environment and hearing children who were educated in a regular classroom setting with respect to their attitudes toward individuals with a hearing loss. This is also consistent with previous research

conducted on hearing children in shared learning situations; however, this is the first study to directly address the impact of shared learning between deaf and hearing peers on hearing children's attitudes toward individuals with a hearing loss.

Students who are Deaf The presence of a statistically significant quadratic relationship in the attitudes of children who are deaf toward individuals with hearing loss over the course of a school year, when educated alongside hearing peers in a shared learning environment, although consistent with the U-curve hypothesis and, thus, likely reflective of the stages described by Oberg (1998), Lysgaard (1955) and Gullahorn and Gullahorn (1963), suggests something else as well. The U-curve hypothesis focused on attitudes of second language learners toward the target language group. The measure and study looked at changes in deaf children's attitudes about hearing loss, which was their own group. Rather than focusing solely on the external frame of reference, namely hearing children and their experiences in acquiring a second language, these results suggest that deaf children, when placed in an environment where they are not only comparing themselves to deaf peers but also to hearing peers, may experience a change in self-image that may be affected in a manner reflective of the struggles of skill acquisition described by Gullahorn and Gullahorn (1963). These researchers reported an initial confidence and excitement, followed by discouragement reflected in negative attitudes about self, with a final increase in proficiency and comfort as children become accustomed to working and playing together.

The post-hoc analysis by sex revealed that, although initially males scored higher on the attitude subscale than the females, by time 2, February, the attitudes of the deaf

females surpassed the scores of the males. This is consistent with findings from the pilot sample in which females had significantly higher scores on the attitude subscale than did males (Gaustad, 1995).

Conclusions Concerning the Attitude Subscale As previously stated, attitudes do not develop in isolation, but, rather, they require reciprocity. In addition, attitudes toward oneself are affected by exposure to others, and the reciprocity received affects one's self perceptions and attitudes to his or her own cultural group. It appears that being educated in integrated settings has a beneficial effect on promoting positive attitudes about other cultural groups, in this case, students with hearing loss. Further research into the changes in attitudes of deaf children who are mainstreamed and lack deaf peers versus deaf children educated in settings alongside deaf peers would be interesting.

Discussion of the Results of the Information Subscale

Students who are Deaf There was not a statistically significant increase in the information subscale scores of deaf children over the three administrations of the measure. The lack of a statistically significant difference may be due to the small sample size of only seven deaf students, and thus the lack of power as a general trend of increasing information can be seen in Figure 2, Chapter 4. The graphical increase suggests that a larger sample size may have shown a statistically significant increase. The challenge in obtaining a larger sample size is that not only is the current population of signing deaf students in congregated settings in Canadian schools small, but also that number is continuously decreasing and the characteristics of students whom we see

entering into day and residential programs are changing. The advent and success of cochlear implants are changing the needs and educational approaches used with students who would have been prime candidates for signing programs and day or residential schools; thus, these students are being replaced by an influx of deaf students with a wider range of needs and abilities. This is affecting the availability of populations of deaf students without additional disabling conditions who have high signing proficiency and attend day or residential programs specifically designed for children who are deaf and hard of hearing (Gallaudet Research Institute, 1990, 1995, 2000, 2003).

Another possibility for the lack of a statistically significant change in the knowledge level of deaf children concerning the ear, hearing loss and American Sign Language is that the deaf children in this study were not new to deafness; they had been growing and developing as children with deafness as a component of themselves. Thus, no major changes in the amount of exposure to deafness occurred for these students in the shared learning classroom. These children had also previously been educated alongside deaf peers and, thus, may have already possessed a sizable knowledge of the diversity of families and careers with deaf members. There is no previously existing research in this area and this study represents a contribution to existing research and data for future exploration.

Overall, it appears that shared learning does not affect the knowledge deaf children possess about the ear, hearing loss and ASL. Further research using the same measure with a larger population of deaf students educated alongside hearing peers may be beneficial in determining whether a change in knowledge concerning the ear, hearing loss, and ASL is experienced by deaf children when they communicate and experience

the similarities and differences between themselves and their hearing peers on a regular and consistent basis in a classroom setting. It would also be interesting to investigate whether day or residential program students who are exposed to deaf peers from a variety of backgrounds differ in their knowledge of the ear, hearing loss and ASL as compared to deaf students educated in a mainstream setting in the absence of deaf peers.

Students who are Hearing Thirty-three hearing students completed both the November and June administrations of the measure. The absence of statistically significant differences between the two groups of hearing children, those in a shared learning environment and those in a regular classroom setting, at time one, November, suggests that both student populations were equivalent and, therefore, the changes observed between time one and time three may be discussed in terms of the general population of Canadian primary school hearing children, given the controlled factors of socioeconomic status (SES). Having chosen a regular multigrade level classroom in a school in the same neighbourhood as the Provincial School for the Deaf ensured that hearing students were from homes with similar backgrounds, SES, and, thus, likely similar background experience as the deaf students. Therefore, we can be confident that the two groups, although not matched by random assignment nor matched pairs, and varying slightly, may be considered comparable with respect to the factors influential to study outcomes.

Looking at the two groups separately, there was also no statistically significant difference in the knowledge of children educated in a regular classroom setting, the quasi control group. Therefore, we can assume that any changes seen in the experimental

group, hearing children educated in a shared learning classroom, were due to the environmental setting of the shared learning environment and not the result of curricular components, the multigrade level setting, or maturity.

A significant difference did exist between the two survey administrations of the measure for hearing students in the shared learning setting. The presence of a significant difference existing on the information subscales between the November and June administrations of the measure but absent in all other combinations and aspects illustrates the beneficial difference of shared learning environments on children's learning. Specifically, there was a benefit to hearing children in terms of learning about the ear, hearing loss and ASL by being exposed to deaf children on a regular, consistent and ongoing basis through having deaf classmates.

The lack of existing research addressing the information gained in respect to alternative cultural groups in shared learning settings means that the data and findings of the present study provide a novel contribution to our current understanding of the differences seen in shared learning. Overall, the results of the analysis of the data collected from hearing students concerning their knowledge of the ear, hearing loss and ASL suggest that the existing curricular components on sound and the ear are not as effective in increasing student knowledge as exposure to individuals with hearing loss in educating hearing students about the ear, hearing loss and ASL. An even broader generalization would be that the results of this component of the study and survey, that is, knowledge of children who are hearing in terms of the ear, hearing loss and ASL, support existing research on the benefits of experiential and discovery-based learning. Children

can read and study about particular topics, but they benefit more from direct, hands-on experience in order to develop a greater understanding of the information.

Conclusions Concerning the Information Subscale Although no conclusions may be drawn concerning the relationship of shared learning on the knowledge of students who are deaf concerning the ear, hearing loss and ASL, one may conclude that the shared learning experience increased the knowledge of children who are hearing in respect to the ear, hearing loss and ASL. More generally, the present research findings support the use of experiential learning techniques, specifically exposure and hands-on experience, in fostering understanding and learning.

Discussion of Anecdotal Data

The amount and type of comments written on surveys fluctuated in a manner reflective of the scores of deaf children on the attitude subscale of the measure over time. The greatest number of comments were made when negative attitudes were at their peak in February. The number of comments made were at their lowest at time one when student attitudes were highest as determined by scores on the attitude subscale of the measure. The number of responses to statement 19 and the tendency of deaf children to express the feeling that ASL is better than sign language is directly in line with the fluctuations in the amount of comments and in the changes in the attitudes of deaf children toward individuals with hearing loss over the course of the school year. The responses also seemed, for the most part, to be reflective of either clarification, that is,

students stating what they knew to be true, as in the use of a TTY as opposed to a telephone, or that deaf people can hear some.

It is concerning to hear deaf children express the feeling that hearing students are smarter than deaf students. However, there were also a few statements to the contrary or neutral statements and so it is possible that a normal distribution exists, but it would require a larger subject population to determine this. Interestingly, one deaf student expressed the belief that although deaf people can be actors and football players, he or she did not believe that deaf people could be doctors. Another student simply said "deaf people can't hear" in response and answered "no" to statement 5, while during the final administration of the measure one student commented that "deaf people can only become teachers." The roles were reversed in students' reactions to statement 10 at time three, June, as three students responded saying that deaf children are smarter than hearing children and one child commented the reverse, that hearing children are smarter than deaf children.

Although there were written responses from two hearing students in the shared learning program, the lack of responses from hearing students in the regular classroom setting suggests that the increased exposure and knowledge of hearing loss, the ear, and ASL may lead to a greater willingness to communicate about the topic and a greater comfort level with the topic.

Overall Conclusions

Overall, the data collected in this study support the continued promotion of shared learning situations for children who are hearing, as a benefit can be seen in both aspects

of information and attitudes. The long-term differences and benefits of shared learning for deaf children in terms of self-image and knowledge about the ear, hearing loss and ASL, as well as attitudes toward individuals with hearing impairments and individuals who are hearing, remain unclear.

The quadratic trend observed in the attitudes of children who are deaf and educated in a shared learning environment supports the use and applicability of research focusing on the acquisition of a second spoken/written language. Caution must still be taken when applying these theories to the education of deaf children, as many distinct features exist in the population of children who are deaf and hard of hearing that distinguish it from the population of hearing individuals learning a second spoken/written language. It is also important to note that this study was cautious not to compare deaf students to students who are hearing, as the two groups, due to their distinct characteristics, were not comparable.

Limitations of the Study

This study, like all research, has limitations and due to these limitations, one must be cautious in generalizing the research findings or interpreting data. This study focuses specifically on children who are deaf and, therefore, the findings are not directly applicable to children who are hard of hearing or children with cochlear implants. Although these groups of children fall under the umbrella of education of the deaf and hard of hearing, they would likely not rely on ASL as their primary language of conversation.

The use of ASL is also another limiting factor of the study as educational settings in which deaf children are educated using some form of signed English would not fit the criteria of shared learning as delineated by Cazabon et al. (1993), which specifically speak to the cultural exchange facilitated by two groups of students being brought together and taught by educators of their own cultural background in both languages.

The size of the population of deaf students, seven, is also a factor limiting the study. Sample size impacts on the power of the study and the ability to generalize findings, given the size and specificity of the sample used.

Recommendations for Future Research

A great deal of future research is possible and necessary to clarify not only the differences of shared learning but also group-specific characteristics. It would be beneficial and interesting to investigate more thoroughly the relationship of shared learning on the attitudes of children who are hearing and educated in a shared learning environment alongside deaf peers. Although a positive trend in the attitudes of hearing students educated in a shared learning environment toward individuals with a hearing loss was found, whether these students experienced the same quadratic trend in attitude development as deaf children or whether the trend for hearing children was a simple linear trend, remains unknown.

The benefit to deaf children in the aspect of their knowledge about hearing children and English was not investigated by the present study; however, such an investigation would be both beneficial and interesting. The knowledge gained from an alternative perspective focusing on hearing rather than hearing loss may have an

interesting difference on attitudes and might provide deaf children with information about the ear, hearing loss and ASL by providing them with information that may conflict with their own experience, leading to reflection and interesting child-drawn conclusions.

Perhaps a comparison of two groups of deaf children, both in shared learning environments, using a measure similar to that used in the current study and another measure wording questions in terms of hearing rather than hearing loss, would provide information about the perspective taken by children and the effect perspective has on attitudes. A similar study using different program implementation methods, one focusing on hearing and one focusing on hearing loss, may also be interesting. It would be beneficial as well to repeat the current study with a larger population of deaf students; however, as previously stated, the changing face of deaf children who are educated in day and residential programs, rather than in mainstream settings, is changing and, thus, the feasibility of a repeat study with a larger population of deaf students is questionable.

In terms of the attitudes of deaf children and the benefits of shared learning on attitudes, it would be interesting to conduct a follow-up study with children at the British Columbia School for the Deaf to investigate the long-term relationship of congregated educational settings on changes in attitudes, as although the shared learning classroom was discontinued, the program remains housed in a congregated setting and the student population remains fairly consistent. It would also be interesting to repeat the current study on a long-term basis to investigate whether the quadratic trend continues or whether a ceiling effect or change in attitude occurs later in shared learning settings. A great deal of research questions remain unanswered and their investigation would be very beneficial in determining the applicability of research on second spoken/written language

learners to the education of children who are deaf and hard of hearing, as well as detailing the effects of different learning situations on the attitudes and information deaf children possess about hearing loss.

It may also be beneficial to use the data collected, specifically the anecdotal information, to peruse the revised and completed form of the S.A.I.D. scale, to ensure that those questions in which children felt it necessary to clarify their responses were reworded. It may also be beneficial to add or remove some items on the survey form.

Implications for Practice

Although research is beneficial in and of itself, the true benefits of research are found by many practitioners in their applicability to current educational practices. The benefits of shared learning are evident in the results of this study and may possibly be generalized beyond the confines of the current research construct to children with disabilities other than hearing loss. It seems possible that exposure to individuals who are different in some manner could prove to be the most effective way in which to promote understanding and compassion. Seeing the diversity within a group of individuals, like that seen with students who are deaf when 7 students were placed in a classroom with 17 hearing peers, rather than being exposed to a single individual, or nobody at all, might benefit students in the majority population by preventing the development of stereotypes and facilitating in the acquisition of information and development of attitudes. Such a setting may also benefit students who are disabled in communicating diversity within the group as well as the specific needs of individuals

with a particular disability. It may lead to acceptance of one's disability, as such a setting might possibly provide a support network of others with similar needs.

On another note, it is possible to some extent to see that the findings of the present study might support the use of discovery-based learning strategies in classrooms. This may perhaps extend the value of discovery-based learning beyond the confines of the commonly used science and mathematics concepts to concepts of social understanding, politics, and other curricular areas. Teachers are creative by nature; the findings of this study encourage teachers to continue to be creative, specifically in their quest to increase student exposure to new people and experiences in as many ways as possible.

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Appendix B

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Bowling Green State University

Department of Special Education
 Bowling Green, Ohio 43403-0255
 (419) 372-7293
 Fax: (419) 372-8265

S.A.I.D. Scale

Version K-2

Student Attitudes and Information about Deafness

Martha G. Gaustad

DIRECTIONS: We want to know what you think about having deaf and hearing children in the same school. We are going to ask you some questions about your feelings. Other questions will ask about things you know. I am going to read some sentences and ask some questions.

CIRCLE YES if you think the sentence is right or the answer to the question is yes.

CIRCLE NO if you think the sentence is wrong or the answer to the question is no.

CIRCLE I DON'T KNOW if you are not sure how to answer the question.

Everyone feels differently about things. Be sure to answer yes or no to tell us the way you feel.

1. There are bones inside your ears

Yes

I Don't Know

N o

2. You feel sorry for deaf people when they sign

Yes

I Don't Know

N o

3. Waving or tapping is a nice way to get a deaf person's attention

Yes

I Don't Know

N o

4. Deaf people drive cars

Yes

I Don't Know

N o

5. When they grow up, deaf people can be actors on TV, football players,
 or doctors

Yes

I Don't Know

N o

6. Deaf people can't hear anything.

Yes

I Don't Know

N o

- | | | |
|--|--------------|-----|
| 7. All deaf children use sign language | | |
| Yes | I Don't Know | N o |
| 8. Deaf people speechread instead of hearing | | |
| Yes | I Don't Know | N o |
| 9. Deaf children are sad because they are deaf | | |
| Yes | I Don't Know | N o |
| 10. Deaf people are as smart as other people | | |
| Yes | I Don't Know | N o |
| 11. You try to sign to deaf students | | |
| Yes | I Don't Know | N o |
| 12. You like to play with deaf students | | |
| Yes | I Don't Know | N o |
| 13. Deaf students can use the telephone | | |
| Yes | I Don't Know | N o |
| 14. All deaf students' moms and dads are deaf | | |
| Yes | I Don't Know | N o |
| 15. Deaf students can learn to speak | | |
| Yes | I Don't Know | N o |
| 16. Deaf students are more like you than different | | |
| Yes | I Don't Know | N o |
| 17. You like to eat lunch with deaf students | | |
| Yes | I Don't Know | N o |
| 18. You should make sure that deaf students are paying attention when you talk | | |
| Yes | I Don't Know | N o |
| 19. Sign language is as good as talking | | |
| Yes | I Don't Know | N o |

- | | | |
|---|--------------|-----|
| 20. Deaf students need special help in school | | |
| Yes | I Don't Know | N o |
| | | |
| 21. You would like to learn more sign language | | |
| Yes | I Don't Know | N o |
| | | |
| 22. Teachers take too much time helping deaf students | | |
| Yes | I Don't Know | N o |
| | | |
| 23. You want to learn more about deaf people | | |
| Yes | I Don't Know | N o |
| | | |
| 24. You like having deaf students in your class | | |
| Yes | I Don't Know | N o |
| | | |
| 25. Deaf students are friendly | | |
| Yes | I Don't Know | N o |

Appendix C

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Bowling Green State University

Department of Special Education
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S.A.I.D. Scale

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Martha G. Gaustad

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CIRCLE YES if you think the sentence is right or the answer to the question is yes. **CIRCLE NO** if you think the sentence is wrong or the answer to the question is no. **CIRCLE I DON'T KNOW** if you are not sure how to answer the question

Everyone feels differently about things. Be sure to answer yes or no to tell us the way you feel.

-
- | | | | |
|---|-----|--------------|----|
| 1. There are bones inside your ears | Yes | I Don't Know | No |
| 2. You feel sorry for deaf people when they sign | Yes | I Don't Know | No |
| 3. Waving or tapping is a nice way to get a deaf person's attention | Yes | I Don't Know | No |
| 4. Deaf people drive cars | Yes | I Don't Know | No |
| 5. When they grow up, deaf people can be actors on TV, football players, or doctors | Yes | I Don't Know | No |
| 6. Deaf people can't hear anything | Yes | I Don't Know | No |

- | | | |
|--|--------------|-----|
| 7. All deaf children use sign language | | |
| Yes | I Don't Know | N o |
| 8. Deaf people speechread instead of hearing | | |
| Yes | I Don't Know | N o |
| 9. Deaf children are sad because they are deaf | | |
| Yes | I Don't Know | N o |
| 10. Deaf people are as smart as other people | | |
| Yes | I Don't Know | N o |
| 11. You try to sign to deaf students | | |
| Yes | I Don't Know | N o |
| 12. You like to play with hearing students | | |
| Yes | I Don't Know | N o |
| 13. Deaf students can use the telephone | | |
| Yes | I Don't Know | N o |
| 14. All deaf students' moms and dads are deaf | | |
| Yes | I Don't Know | N o |
| 15. Deaf students can learn to speak | | |
| Yes | I Don't Know | N o |
| 16. Hearing students are more like you than different | | |
| Yes | I Don't Know | N o |
| 17. You like to eat lunch with hearing students | | |
| Yes | I Don't Know | N o |
| 18. You should make sure that deaf students are paying attention when you talk | | |
| Yes | I Don't Know | N o |
| 19. Sign language is as good as talking | | |
| Yes | I Don't Know | N o |

- | | | |
|---|--------------|-----|
| 20. Deaf students need special help in school | | |
| Yes | I Don't Know | N o |
| | | |
| 21. You would like to learn more sign language | | |
| Yes | I Don't Know | N o |
| | | |
| 22. Teachers take too much time helping deaf students | | |
| Yes | I Don't Know | N o |
| | | |
| 23. You want to learn more about deaf people | | |
| Yes | I Don't Know | N o |
| | | |
| 24. You like having hearing students in your class | | |
| Yes | I Don't Know | N o |
| | | |
| 25. Hearing students are friendly | | |
| Yes | I Don't Know | N o |