

DEAF BILINGUAL EDUCATION: A COMPARISON OF THE ACADEMIC  
PERFORMANCE OF DEAF CHILDREN OF DEAF PARENTS  
AND DEAF CHILDREN OF HEARING PARENTS

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ACCEPTANCE PAGE

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## Dedication

I dedicated this study to the memory of Laurent Clerc, the Deaf educator who commenced American Deaf education pedagogy. Clerc recognized the importance of partnering with the hearing community and led the way in describing how deaf children should learn. To this day, the mission continues to be to encourage native Deaf educators in taking the lead in making reforms for deaf and hard-of-hearing students in this country.

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## ABSTRACT

This study examined the impact of the bilingual/bicultural deaf educational (ASL/English) philosophy on academic performance. The academic performance of deaf and hard-of-hearing students (N=182) was made available from the Indiana School for the Deaf (ISD) which has adopted a bilingual philosophy. It has long been known that deaf children of deaf parents have had superior academic performance when compared with deaf children of hearing parents (Israelite, et al, 1989; Strong & Prinz, 2000; Wilbur, 2000). One would then predict that the espousal of the bilingual philosophy should raise the academic performance of deaf children of hearing parents, placing them on par with deaf children of deaf parents. This study used the bilingual/ESL framework of Nover, et al (1998) to examine the effectiveness of the bilingual/bicultural philosophy used at the Indiana School for the Deaf. The performance of deaf and hard-of-hearing students from the 1995-1996 and 2002-2003 school years was collected, including Reading Comprehension and Total Language subtests of the SAT-HI. A significant reduction was found in the gap between the academic performance of deaf children of deaf parents and deaf children of hearing parents during the 2002-2003 school year. The results suggest that a school, such as the Indiana School for the Deaf, may attempt to imitate the enriched home environment of deaf children of deaf parents in the educational setting. This allows the deaf community to shape the educational experience and optimize the advantages that deaf children of deaf parents have to open the doors of success to deaf children of hearing parents.

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# CHAPTER 1

## INTRODUCTION

### Background

#### *Deaf Education Journey*

According to Locke (Locke, Hay et al. 2000), “to experience a true freedom in society is to have language that is to be the great instrument and common tie of society”. It is well documented that the language skills of a child strongly affect the achievement of literacy (Hoffmeister, 2000; Mayer & Akamatsu, 2003; Nover & Andrews, 1998; Prinz & Strong, 1997). Sadly, the average reading level for today’s deaf and hard-of-hearing (d/hh) students at the time of their high school graduation remains at the fourth grade level (Livingston, 1997; Singleton, et al, 2004; Wilbur, 1977, 2000). It is equally unfortunate that several reforms in Deaf<sup>1</sup> education have produced only minor changes in the English reading and writing skills of d/hh students (Hoffmeister, 2000; Lane, 1992; Lane, et al, 1996; Singleton, et al, 2004). Given this, one has to ask how deaf children with limited reading and writing skills can participate as full-fledged citizens of society, contributing to our diverse community.

The average reading level for deaf students at the time of their high school graduation remained at the fourth grade level from the 1910’s through the 1970’s (Chamberlain & Mayberry, 2000; Grushkin, 1998; Wilbur, 1977, 2000). The oral philosophy prevalent during this time period emphasized using spoken English as a

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<sup>1</sup> The word “Deaf” with a capital “d” refers to the Deaf linguistic minority community in the United States. As is the convention when referring to ethnic groups, capitalization is used.

pedagogical medium of instruction for d/hh students, regardless of students' hearing levels (Baynton, 1992; Lane, 1992; Moores, 2001). Sign language usage in the classroom was banned and measures were taken to ensure that d/hh children did not learn sign language (Lane, 1992). During this period, learning spoken English was considered the most effective way in which d/hh children could become literate (Geers & Moog, 1989; Moores, 2001).

Such terms represent not only a lack of understanding of manual language, but an oral language bias, from which it is exceedingly difficult to escape. These negative attitudes and early linguistic descriptions provided the proponents of oral education for the deaf with the upper hand in so-called "oral/manual controversy." It was their challenge to those interested in the use of sign language to first prove that sign language was both a language and useful in the education of deaf children (which meant, in addition, to prove that it did not harm deaf children's acquisition of speech). The oral language bias inherent in this entire situation is evidenced by the facts that the proponents of manual communication have responded unquestioningly to the challenge while, as Conrad (1975) pointed out, never issuing a similar challenge to the proponents of oral education to demonstrate the effectiveness of their methods for the total development of the deaf child. (Wilbur, 1987, p. 7)

This myth continues today, even in the face of evidence showing that 40-44 million fluent English speakers (with normal hearing) remain illiterate at the lowest level of prose, document, and quantitative literacy proficiencies (Kirsch and Kolstad 2001), and repeated studies which show sign language does not retard the development of the speaking skills of d/hh students (Graney, 1998; Mahshie, 1995; Mahshie, 1997; Moores, 2001; Wilbur, 1987).

During this same period, it was noted that Deaf children of Deaf parents (DCDP) significantly outperformed Deaf children of hearing parents (DCHP) in core academic areas (including SAT scores, specifically Word Meaning, Mathematics and Paragraph Meaning subsets, as well as additional tests of writing, speech, speechreading and

psychological adjustment), regardless of the medium of instruction (Chamberlain & Mayberry, 2000; Meadow, 1968; Prinz & Strong, 1998; Singleton et al., 1998; Stuckless & Birch, 1966; Vernon & Koh, 1970; Wilbur, 1987). Educators then began to look at sign language as a possible language of instruction (Johnson, et al, 1989; Marschark, 2003; Moores, 2001; Wilbur, 1987, 2000). Total Communication emerged as a philosophy that embraced any and all communication methods that were useful to students, combining spoken English, signs, gestures, speechreading and other ways of getting a message across to a student (Moores, 2001). Eventually, Signed English was invented in an attempt to make English visual to d/hh children (Supalla, 1991; Johnson, et al, 1989). Simultaneous Communication, in which spoken English and Signed English are used at the same time, became the prevailing communication choice among educators in the school systems (Johnson, et al, 1989; Supalla, 1991; Wilbur, 1987). Despite these changes, the average reading level of d/hh students did not increase from 1970 through the early 1990's (Moores, 2001; Singleton, et al, 2004).

Until William Stokoe analyzed American Sign Language (ASL), the language that the Deaf community primarily uses, and found it to be a legitimate and complete language, educators had not acknowledged its existence (Israelite, et al, 1989; Kannapell, 1974; Wilbur, 1987). Barbara Kannapell, alumnus of the Indiana School for the Deaf, suggested in 1974 that bilingualism was the direction Deaf education should take. A Deaf political movement was sparked when the Gallaudet University Board selected a new University President who was hearing and a non-signer (Jankowski, 1997; Lane, 1992; Lane, et al, 1996). The "Deaf President Now" movement called to the nation's attention that Deaf people are capable of providing educational leadership (Jankowski,

1997). Eventually, the article *Unlocking the Curriculum: Principles for Achieving Access in Deaf Education* (Johnson, et al, 1989) was a stone thrown in a pond that resulted in huge ripple effects for deaf education by proposing that educators tap into the language and culture of the Deaf community by using ASL in educational settings (Ibid). The academic successes of DCDP (Israelite, et al, 1989; Strong & Prinz, 2000; Wilbur, 2000) were the impetus for a new philosophical approach to the education of d/hh students. Thus began what was to become known as the bilingual/bicultural approach (Drasgow, 1992; Johnson, et al, 1989).

Several of the common variables among the DCDP that were thought to contribute to their academic achievements were: exposure to ASL from birth, emotional acceptance of the child as being deaf and the continued exposure to Deaf culture and traditions that provide the next generation with the tools to use in dealing with the America majority (Israelite, et al, 1989). These factors have been offered as explanations for the superior academic performance of DCDP when compared with the academic performance of DCHP, regardless of the pedagogical methods employed (Israelite, et al, 1989).

Researchers questioned whether or not schools could duplicate the natural home environment of Deaf parents in the school setting. In essence, it was not known if educators could create an environment where there could be early exposure to ASL, where the children would be unequivocally accepted as being deaf, and in which Deaf culture was recognized and modeled on a daily basis (Drasgow, 1998; Hoffmeister, 2000; Strong, 1995).

The bilingual/bicultural philosophy was proposed as a way to offer d/hh children the option of participating fully in either the hearing or Deaf community, interacting in both as they wished (Drasgow, 1998; Strong, 1995). Deaf educational bilingualists believe in the need to develop academic understanding in the first language (i.e., ASL) before academic understanding can be mastered in the second language (i.e., English) (Drasgow, 1998; Cummins, 1991; Hoffmeister, 2000; Erting & Pfau, 1997; Mahshie, 1995). Several studies found a positive correlation between the higher ASL skills of d/hh students and their higher reading skills (Hoffmeister, 2000; Padden & Ramsey, 2000; Prinz & Strong, 1998; Singleton, et al, 2004).

By adopting a bilingual/bicultural educational philosophy, deaf schools were challenged with incorporating the advantages DCDP experience into the school environment in order to benefit all students. A bilingual/bicultural philosophy recognizes the importance of two languages, English and American Sign Language, and two cultures, the American culture at-large and Deaf culture (Drasgow, 1998; Strong, 1995). Research has shown Deaf families provide both languages and cultures in a natural environment (Singleton, et al, 1998). Sweden has shown leadership in this area and shared its successful data (Knors & Renting, 2000; Mashie, 1997). It was believed that if a residential school for the deaf had been successful in emulating the bilingual/bicultural environment and its benefits, the academic gap between DCDP and DCHP would be reduced (Mashie, 1997; Singleton, et al, 1998).

### Statement of Problem

The purpose of this study was to examine academic performance data for deaf students enrolled in the Indiana School for the Deaf, a state deaf school using a Bilingual/Bicultural philosophy. Descriptive statistics were used to describe any reduction found in the gap in academic performance between Deaf children of Deaf parents and Deaf children of hearing parents. The change to a bilingual and bicultural approach was examined as a technique to improve the performance of deaf students to hearing students' levels. Four specific research questions were addressed: 1) Is there an improvement in the academic performance (based on the students' performance on the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test) from 1995 to 2003? 2) Are there any significant differences in the academic performance between Gallaudet's Stanford-9 norms for deaf students nationwide compared to the performance of the Indiana School for the Deaf students during the 2003-2004 school year? 3) Are there any significant differences in the academic performances of DCHP and DCDP at the Indiana School for the Deaf between 1995-1996 and 2003-2004? 4) If the bilingual/bicultural philosophy has been fully implemented, has there been a decrease in the academic performance gap from the 1995-1996 school year, when the bilingual/bicultural philosophy was initiated at the Indiana School for the Deaf, to the 2003-2004 school year?

The studies of the differences in academic performance between DCHP and DCDP have incorporated test scores for students taking the Stanford Achievement Test - Hearing Impaired Version, 9th edition (Stanford-9 Achievement Test) from the spring of 1996 and 2004.

### Definition of Terms

For the purpose of this study, the following definitions were used:

#### **Stanford-9 Achievement Test-**

The Stanford Achievement Test, ninth version, and the Stanford Achievement Test – Hearing Impaired (Stanford-9 Achievement Test) are identical, with the exception of the language in which the instructions are given. Only the following six components of the test have deaf and hard-of-hearing norms: Reading Comprehension, Reading Vocabulary, Language, Spelling, Mathematics: Problem Solving, and Mathematics: Procedures (Traxler, 2000).

Test results were used for multiple purposes, ranging from measuring an individual child's academic performance to evaluating a school's ability to deliver quality academics and a standards-based educational service (Gallaudet Research Institute, 1996).

The Stanford Achievement Test is managed by Harcourt Brace Educational Measurement in San Antonio, Texas.

#### **American Sign Language-**

American Sign Language (ASL) is a natural, visually-based language that is used in the Deaf community throughout the United States (Valli & Lucas, 1995; Wilbur, 1987, 2003).

American Sign Language is a natural language used by members of the North American Deaf community. It is a language that has developed naturally over time among a community of users. ASL exhibits all of the features of language... ASL is an autonomous linguistic system independent from English. (Valli & Lucas, 1995, p. 14-15)

A natural visual language such as ASL allows for optimal language acquisition for deaf and hard-of-hearing students because it uses vision, a sense that can be corrected fully with glasses if necessary, rather than relying on amplification (hearing aids or cochlear implant) that cannot provide full accessibility to spoken English (Luetke-Stahlman, 1998). As a result, a natural visual language empowers its community of users with all the benefits of full language use including the ability to think abstractly, debate concepts deeply, and other higher level thinking and communication skills.

O'Rourke, Medina, Thames, and Sullivan (1975) suggest that nearly 500,000 deaf people and an unknown number of hearing people use ASL, which would make it the third most widely used non-English language in the United States. American Sign Language differs from these other languages, however, because unlike English, Spanish, Italian, and others, ASL is primary manual/visual rather than oral/auditory. ASL (like other sign languages) is not derived from any spoken languages, although its coexistence with English in a bilingual environment allows it to be influenced in a number of ways. Linguists have studied many different sign languages around the world; the consensus is that the influence from the surrounding spoken language is present but limited. ASL's nearest sign language relative is French Sign Language, a result of the intervention of Thomas Gallaudet and a deaf teacher from France, Laurent Clerc. (Wilbur, 1987, p.1-2)

...these studies of ASL included the complexity of language and thought as evidenced by the structure of sign languages, the similarities and differences among various sign languages and between sign languages and spoken languages, and the role of facial expression and other nonmanual information. There were also specific papers on the acquisition of sign languages, short term memory, perception, kinesiology related to sign language structure, brain function and sign language usage, and the history of ASL and its relationship to French Sign Language. (Wilbur, 1987, p. 3)

More recent linguistic research has shifted away from proving that ASL is a language to concentrating on providing a linguistic description... However, more recent educational research is still aiming at demonstrating utility of sign language in education. (Wilbur, 1987, p.6)

### **Bilingual/Bicultural-**

In this study, the term “bilingual/bicultural” reflects two languages, spoken/written English and American Sign Language, and two cultures, the mainstream hearing culture and the community-based Deaf Culture (Drasgow, 1992; Kannapell, 1974). Most academic programs in which a bilingual/bicultural approach to deaf education is used tend to eliminate the word “bicultural” and instead use the term “Bilingual Deaf Education” as they encompass a multicultural approach, rather than limiting it to deaf and English speaking communities (Strong, 1995). The main focus is creating a fully accessible, language-rich environment, meaning primarily that everyone on the campus uses ASL. Bilingual/Bicultural programs attempt to mirror public schools where all staff speak English to and around hearing students, and hearing students can incidentally learn any and all activities occurring in their school environment.

Another parallel is in the homes of Deaf families who sign fluent American Sign Language to and around their Deaf children where a Deaf child may incidentally learn about any and all activities that occur in their home. Thus, the concept of a bilingual/bicultural school would require a critical mass of deaf students and staff to create this signing climate (Grushkin, 1998; Israelite, et al, 1989). For this reason, most bilingual/bicultural programs exist in residential deaf schools. It is possible to practice this approach in public schools; however, maintaining the critical mass of deaf staff/students remains a key challenge for most public school settings (Grushkin, 1998).

## Deaf –

The term “deaf” reflects the continuum of hearing loss that students have which under the IDEA (Individuals with Disabilities Education Act) qualifies them to receive special education services, including the eligibility to receive their education at a deaf school (Moores, 2001).

## Assumptions

1. The difference in academic performance between DCHP and DCDP can be measured.
2. The effectiveness of the transformation of educational methodology at the Indiana School for the Deaf to a bilingual/bicultural methodology can be measured through the difference in the academic performance between DCHP and DCDP from the 1995-1996 and the 2003-2004 school years.
3. The Indiana School for the Deaf has fully implemented a bilingual/bicultural philosophy.
4. The academic performance gap between DCHP and DCDP has been significantly reduced from the 1995-1996 school year to the 2003-2004 school year.
5. Based on Gallaudet University’s Stanford 9 data, the academic performance of deaf students enrolled at the Indiana School for the Deaf is better than deaf/hard-of-hearing students in public school programs or students in residential deaf schools not using a bilingual approach.

6. The procedures used to identify the academic performance gap between DCHP and DCDP, including all Stanford-9 Achievement Test data, are valid measures.

Research Questions:

1) Is there an improvement in academic performance (based on performance on the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test) from 1995 to 2003? 2) Are there any significant differences in the academic performance of Gallaudet's nationwide Stanford-9 norms for deaf students in comparison to the Indiana School for the Deaf students' performance during the 2003-2004 school year? 3) Are there any significant differences in the academic performance of DCHP and DCDP at the Indiana School for the Deaf from 1995-1996 to 2003-2004? 4) If the bilingual/bicultural philosophy has been fully implemented, has there been a decrease in the academic performance gap from the 1995-1996 school year, when the bilingual/bicultural philosophy was initiated at the Indiana School for the Deaf, to the 2003-2004 school year?

Implications-Significance of Study

Deaf education reform movements are ever-present (Commission on the Education of the Deaf, 1988). There is also a significant amount of literature available on the failures of deaf education (Ibid). Currently, reforms are related to the medium of language of instruction, the bilingual development of d/hh students, and the bilingual

skills of deaf educators. Understanding the impact of the bilingual/bicultural philosophy on the academic achievement of d/hh students has been a target of interest among many researchers (Hoffmeister, 2000; Lane, 1992; Singleton, et al, 2004; Wilbur, 2000).

Bilingual/bicultural reforms at the Indiana School for the Deaf also have received much attention (Strong, 1995). Parents, d/hh advocates, and educators alike are questioning the bilingual/bicultural delivery system in terms of its effectiveness and the possible implications for deaf education in general, as well as for the future of individual d/hh students. Despite this interest, there have been few published studies. Completion of this study regarding the bilingual/bicultural philosophy and academic performance adds to the very small body of research regarding the implementation of the bilingual/bicultural philosophy in the field of deaf education. The results of the study will assist in defining variables to be used in the research of bilingual/bicultural practices.

## CHAPTER 2

### LITERATURE REVIEW

A review of the literature will briefly cover the history of Bilingual Deaf Education, the founding premises, how the nature of deaf education was changed and the linguistic and educational process of discovering American Sign Language as a language, rather than a code or simplified English. The academic gap between DCDP and DCHP will be explored and described via summaries of research and the currently held theories offered to explain the gaps. Definitions of bilingualism and biculturalism will be explained via several authors' observations. The concept of whether a classroom is a context for language acquisition will be discussed. Lastly, a review of the Stanford-9 Achievement Test, its history, and usage with deaf students will be shared.

#### Historical Perspective

##### *History of Deaf Education*

Deaf education was officially inaugurated in America in the early 1800s when Laurent Clerc, the first Deaf teacher in America, was persuaded to move from France by Thomas Gallaudet who felt strongly that a Deaf person should lead Deaf education and demonstrate how deaf children should be taught (Lane, 1984). Clerc founded the American School for the Deaf in Hartford, Connecticut and many of his students subsequently founded other state schools for the deaf. One pupil, William Willard, founded the Indiana School for the Deaf in 1843 (Indiana Asylum for the Education of the Deaf and Dumb First Annual Report, 1844; Indiana Institution for the Educating of

the Deaf and Dumb Eleventh Annual Report, 1854). Laurent Clerc saw the move from bilingual schools in 1815 to oral schools in the 1890s and fought many political battles with oral educators about best practices for educating deaf students (Baynton, 1996; Lane, 1984, 1992; Lane, et al, 1996; Nover, 1995). The 1850's were considered a golden age for the American deaf community because there were many deaf professionals including authors, doctors, lawyers, and politicians (Lane, 1984). This ended in the 1880's when the Milan convention in Italy concluded that oral education must spread worldwide (Ibid). This movement permeated deaf education in America and, at its peak in the 1890's, almost all deaf teachers were dismissed (Ibid). Subsequently, the number of deaf professionals dropped to almost none (Ibid). Many deaf oral graduates were working in the blue-collar sector making shoes, running printing presses and tailoring (Baynton, 1996). This period, from 1890 to the 1940s, is known as the dark age of the deaf community (Ibid).

The suppression of ASL in educational settings was quite evident in the early 1900's. The most common argument used against ASL was that it was not a true language and was not on par with spoken languages. Poizner, Bellugi and Klima (1987) studied how language is processed in the brain. Their findings showed that sign language is processed in the left hemisphere of the brain, just as spoken languages are. By studying Deaf people stroke victims (Poizner, Klima, & Bellugi, 1987), they were able to identify the parts of the brain where language, including sign language, was processed. According to prior studies, it was well documented that spoken languages are processed in the left hemisphere. The right hemisphere is responsible for tasks such as visual and

art processing. The assumption that ASL would be processed in the right hemisphere, as a visual skill, was consistent with the notion that ASL was not a true language. The findings, however, were that when a Deaf native sign user had a stroke in the language areas of the left hemisphere, they were unable to process some of the grammatical structures of sign language. When a deaf person had right hemisphere brain damage, he was unable to draw, but could explain, in the linguistic spatial sense, where a bed was located in the room. These reports were a biological breakthrough for brain scientists studying how languages are processed in the brain. Those studies led to the validation of American Sign Language as a true biological language like spoken languages.

The argument that ASL is not a true language is still being used today by some educators. Despite a wide literature base refuting these arguments, educators continue to cite these flawed beliefs to promote oral-only education and justify attempts to eradicate sign language from today's education (Baynton, 1996). As an example, Danielle Sanders (1988) suggested that deafness causes language problems and affects the emotional, social and academic capacity of deaf children. She argued that deaf children must be taught how to socialize properly, deal with their emotions and develop their academic capacity. Sanders' study showed that deaf children were several years delayed when compared with their hearing peers, with the notable exception of Deaf children of Deaf parents (Sanders, 1988). The study did not discuss how DCDP were different other than the fact that they had access to sign language at an earlier age. Many later studies disagreed with her assertions and recognized that the delays were more likely due to the

system failing to align with deaf children's most accessible language (Lane, 1984, 1992, Strong, 1994, Hoffmeister, 1990).

Harlan Lane (1992) examined other cultures' experience of oppression and stigma by the majority population in several industrialized countries. He drew parallels with the Deaf community's experience to oppression in other countries. Joseph Shapiro's (1993) research, with a different population of disabilities, concurred with Lane's study. Shapiro explained that the disabled community backed a strong civil rights movement to halt oppressors' behaviors and to make the majority community more accessible. Interestingly, while the term "disabled" was generally accepted, members of the Deaf community see themselves as a linguistic minority and reject the label of "disabled." Members of the Deaf Community feel that they have more in common with foreigners who do not speak English in this country (Jankowski, 1997; Ladd, 2003; Lane, et al, 1996) and view their community as an ethnic/language and cultural minority. (Padden & Humphries, 1988). The only difference between the Deaf community and the American culture at large is language. They stated that the hearing community uses an interpreter to communicate with the deaf community in the way the French community uses an interpreter to communicate with the Chinese community. The Deaf community feels strongly that they should be treated the same as others and wants access to resources that are available to the hearing community (Shapiro, 1993).

Harlan Lane, Ben Bahan, and Robert Hoffmeister (1996) examined the medical model in the terms of its impact on the regression of Deaf students' progress in academic

and professional growth. They also identified the fact that educators dishonored deaf children with benevolence as a result of their lack of experience with being deaf and because they were not involved with deaf adults to shape their educational experience. Americans' belief in "overcoming the barriers" and "building character" implied that it is better for deaf students to learn how to speak with limited success, even at the cost of academic skills. The authors also discussed bilingual/bicultural practices and how they reflect the current best practice of learning among second language learners and in exercising the human right to participate in the community (Lane, 1992).

The medical model of deaf education creates a climate in which today's deaf and hard-of-hearing adults are reading at a fourth grade level (Lane, 1992). The gap between the academic performances of deaf and hard-of-hearing students and their hearing peers continues to increase (Moores, 2001). There are many controversies regarding how to teach deaf and hard-of-hearing children, especially involving the choice of following an oral approach or a sign language approach. The battle of communication choices continues unabated.

Overall, the Deaf educational system is failing (Commission on the Education of the Deaf, 1988). The United States Congress created a Commission on the Education of the Deaf to study the Deaf educational system. The commission concluded with this statement; "The present status of education for persons who are deaf in the United States is unsatisfactory. Unacceptably so." In the conclusion, their fifteenth recommendation indicates that deaf education should be placed under the Bilingual Education Act to use

finance resources (awards) to improve deaf children's limited English proficiency since their primary language is ASL.

### *DCHP's Academic Performance Gap*

Meadow (1968) evaluated the difference in performance between DCDP and DCHP using a matched-pair research design. She identified 59 pairs of children from a residential Deaf school in California matched by age, sex, I.Q. scores, hearing loss, parents' occupation, and family size. The Stanford Achievement Test (SAT) was used to measure the students' intelligence, social, and communicative functioning. She found as much as 2.1 years mean difference between the two groups in reading levels; a 1.3 years mean difference in mathematics skills, and a 1.3 overall grade level difference.

Vernon and Koh (1970) went beyond Meadows study by including only students with genetic deafness. They found 79 DCDP and 190 DCHP and identified 32 matched pairs. In addition, they added the criteria of selecting DCHP students who used an oral, non-signing approach for communication and education. All had at least 70 dB of hearing loss or greater and were students at the same residential California School for the Deaf. Vernon and Koh compared SAT scores, specifically Word Meaning and Paragraph Meaning subsets, as well as additional tests of writing, speech, speechreading, and psychological adjustment (based on interviews with teachers and counselors). The findings were that DCDP's general achievement performance exceeded DCHP by 1.44 years. In written language, reading and vocabulary, DCDP also surpassed DCHP. However, there was no difference in psychological adjustment noted between the two

groups. Vernon and Koh concluded that early exposure to sign language contributes to DCDP's performance in academic areas.

Vernon and Koh (1971) further investigated the communication and academic performance of DCHP and DCDP. They compared three groups performance: DCDP with no preschool training, DCHP with no preschool training and DCHP who participated in the John Tracy Clinic program, an oral preschool program which provides training in learning to speak but does not include exposure to sign language.

Looking at students of a residential school in California, the investigators identified DCHP John Tracy Clinic graduates from 1944 to 1968 as well as DCHP and DCDP who did not participate in the program and looked at measures of IQ, parent education level and social economic status (SES) level. The graduates had a mean IQ of 114, which represents the top 20% of the population, while the DCDP group had a lower mean IQ and lower mean parent education level and SES than both of the DCHP groups. Despite other assumedly negative conditions, such as lacking early use of amplification and early access to professional services, the DCDP consistently outperformed both of the DCHP groups in academic performance such as reading scores and communication skills. Interestingly, there was no difference between the groups in speech and speechreading skills. The investigators concluded that an oral preschool experience had no impact on academic performance.

Weisel (1988) studied the difference between the academic performances of DCDP and DCHP in Israel. She identified 124 deaf elementary age children with profound hearing loss of genetic etiology and no other disabilities. Thirty-one of the students had deaf parents. Results from three test instruments, a parent questionnaire covering SES, information about the mode of communication, etiology, and deafness in the family, results of a modified version of the Meadow-Kendall Social-Emotional Assessment Inventory to measure social-emotional adjustment, and the Ortar Test of Reading Comprehension to assess reading achievement, all showed the DCDP outperformed the DCHP. These results were despite the fact that the DCHP had higher SES than the DCDP. Weisel attributed the difference to environmental factors including early sign language exposure that contribute to deaf children's academic and psychological performance.

Zwiebel (1987) conducted a study to investigate the role genetics play in the superior academic performance of DCDP over DCHP in Israel. His hypothesis was that if genetically deaf children outperform those non-genetically deaf children in academic areas, regardless of having deaf or hearing parents or mode of communication used, then the superior performance would be contributed to genetic factors, not to the early exposure to sign language. Deaf children, ages six to fourteen, were divided into three groups: 23 children of both deaf and hearing parents who were genetically deaf and used Israeli sign language, 76 genetically deaf children with hearing parents and deaf siblings and used mixed communication (primarily spoken language), and 144 non-genetically deaf children with hearing parents and hearing siblings using spoken communication. A

fourth group of 101 hearing children was used as a comparison group. Academic testing was conducted on all the children. The results indicated that the deaf children using manual communication were cognitively superior to the children using spoken language, regardless of whether parents were deaf or hearing. They also demonstrated more understanding of their parents' message and had a higher level of interaction with their parents in terms of communication. DCDP scored equally with hearing children of hearing parents on cognitive tests, but superior to deaf children using oral communication. DCHP with deaf siblings with minimal exposure to manual sign language were found to be equal to hearing children of hearing parents, suggesting that genetics does not play a role in academic performance but rather the contributions of early exposure to sign language.

### *Bilingualism/Biculturalism*

Shawn Mahshie (1995) relates success stories in bilingual deaf education studies in Sweden and Denmark in her book, Educating Deaf Children Bilingually. She emphasizes the perspectives and best practices in pedagogy, which help Deaf students bring their academic performance up to the expected grade level equal to hearing students of the same age.

Singleton and Morgan (2005) have stated that bilingual deaf education is all about providing a child with the acquisition of both languages so that he is able to successfully negotiate his way in both worlds (i.e., hearing and deaf). A child with bilingual skills

should possess linguistic and cognitive competence as well as a clear understanding of his identity so that he can choose to participate in either linguistic and cultural group, depending on the situation. In addition, it is important to remember that deaf educational placement is not about tracking a deaf child into either world, but rather, allowing access to both.

Sue Livingston (1997) believes that the paradigm of “Deaf as a problem” in the education of Deaf children is the problem itself. The author points out that this mindset needs to be changed and that there is no difference in teaching deaf or hearing students. She shows how important it is for Deaf students to acquire ASL naturally and emphasizes that educational instruction is more efficient using their native sign language. She has shared field-tested teaching strategies using both ASL and written English to empower Deaf students.

David Reynolds and Ann Titus (1992) recognized that the system creates oppression in ways that are unrecognized by the dominant (i.e., hearing) community. This oppression is one of several factors that results in the delay of acceptance of the bilingual/bicultural philosophy in a school setting. There are several indicators, such as limited access to information by deaf staff within the system when information is disseminated through spoken language, instances in which deaf staff are not treated as equals due to the residual effects of the pathological/medical model of deaf children, and incorporating a hidden curriculum which indicates that it is better for deaf children to speak and that their success depends on their speaking ability rather than their academic

ability. For the change to occur, it requires both parties, the oppressors and the oppressed, to work together to recognize oppression barriers, to remove them, and to create an environment that celebrates and respects both hearing and Deaf cultures.

Lane, H., Hoffmeister, R. & Bahan, B. (1996) in the book, A Journey into the Deaf-World, show that sign language remains the best language for a deaf child to acquire naturally. Through full access, it is a language that a deaf child can learn as easily as a hearing child can acquire spoken language. However, the written English skills of deaf children will remain a challenge, as some written English is sound based and deaf children may not be able to discriminate the difference between some sounds. Therefore, English will be their second language. Once educators acknowledge and accept ASL and Deaf culture as the deaf child's natural language and culture, children would have higher self-esteem levels and use their strengths in ASL to acquire understanding and knowledge of written and spoken English. They urge the adoption of the principles of bilingual/bicultural education that involve respect for child's language, her/his heritage, use of her/his language as a medium of instruction; the increase in metalinguistic knowledge of their native language; the development of transfer skills from one language to other; and the incorporation of a strong metalinguistic knowledge of English.

The department of education in Ontario, Canada issued a study on the impact native sign language has on the acquisition of English with Deaf children. Robert Hoffmeister, N. Israelite and Carol Ewoldt (1989) open their study with the comparison of Deaf children of Deaf parents (DCDP) and Deaf children of hearing parents (DCHP)

in their performance of academic tasks. The finding was that DCDP outperformed DCHP in all academic tasks, regardless of the communication methods that were used in the educational setting. The only critical factor was the early acquisition of native sign language, which enabled DCDP to understand the world and use their knowledge to acquire English more efficiently. They described how the acquisition of native sign language occurred and compared how a Deaf mother interacts with her Deaf child as opposed to a hearing mother with her deaf child. In order to investigate the educational signing issues, they reviewed the development of written English for Deaf pupils. At the conclusion of the study, the concept of bilingual/bicultural education for the Deaf was introduced by describing several studies and theories of how this education has naturally evolved into the current best practice of educating Deaf students.

Robert Johnson, Scott Liddell and Carol Erting (1989) openly discussed issues that educators have not acknowledged for years, such as limited access to the curriculum due to a teacher's poor signing skills and low expectations for deaf students' reading ability. They proposed changes for deaf education and described a model program for the education of deaf children using the following guiding principles:

- Deaf children will learn if given access to things we want them to learn.
- The first language of deaf children should be a natural sign language (i.e., ASL).
- The acquisition of a natural sign language should begin as early as possible in order to take advantage of critical learning periods.

- The best models for natural sign language acquisition, the development of a social identity, and the enhancement of self-esteem for deaf children are deaf signers who use language proficiently.
- The natural sign language acquired by a deaf child provides the best access to educational content.
- Sign language and spoken language are not the same and must be kept separate, both in use and in the curriculum.
- The learning of a spoken language (i.e., English) for a deaf person is a process of learning a second language through literacy (i.e., reading and writing).
- Speech should not be employed as the primary vehicle for the learning of a spoken language for deaf children.
- The development of speech-related skills must be accomplished through a program that has available a variety approaches, each designed for a specific combination of etiology and severity of hearing loss.
- Deaf children are not seen as “defective models” of normally hearing children.

Johnson, Liddell and Ertling (1989) concur with one of the observations of the report of the Commission on Education of the Deaf, that “there is nothing wrong with being deaf” (1988:vi).

They felt that the definition of “Least Restrictive Environment” for deaf children should be that in which they may acquire a natural sign language and through that language achieve access to a spoken language and the content of the school curriculum.

Drasgow (1992) compared several bilingual/bicultural programs and found common threads of the following Bilingual/Bicultural philosophy in practice:

- Acceptance of American Sign Language as the natural and most accessible language for deaf and hard-of-hearing students, allowing for normal acquisition of ASL as a first language, and using ASL as the language of instruction.
- Emphasis on early exposure to both ASL and English.
- Embracing the importance of partnerships with Deaf people as role models, cultural brokers, instructors and program shapers.
- Embracing the Deaf Culture way of life and celebrating Deaf Culture in the educational setting.
- Recognition of both Deaf and hearing cultures and creating a bridge between both through cultural behaviors and language use.

Knoors and Renting (2000) in the Netherlands measured the level of involvement in educational tasks for six bilingually educated deaf children as indicators of education quality. The investigators examined several assumptions:

- Sign Language of the Netherlands (SLN) is the native language of deaf children and is the only accessible language for deaf children. This accessible native language provides opportunities for fluent communication and creates optimal cognitive development for deaf children.

- Due to the unique communication mode of deaf children, bilingual education would need to be ongoing for those children to acquire SLN and written/spoken Dutch.
- Written and, if possible, spoken Dutch will be taught as a second language.
- Deaf professionals work with deaf children in the school setting to create a bilingual educational environment.

To evaluate the quality of bilingual education, the investigators used Leuven Involvement Scale for Young Children (LIS-YC) to measure the students' involvement in different educational tasks. Subjects were selected based on sex, ethnicity and academic achievement. All were prelingually profoundly deaf. The bilingual approach was compared with Signed Supported Dutch (i.e., invented signs that represent Dutch spoken language (SSD) with the same subjects). On a scale of one to five, the mean score for the deaf teacher using SLN was 4.28 ( $SD = 0.71$ ) and the mean score for the hearing teacher using SSD was 3.80 ( $SD = 0.90$ ). A Mann-Whitney test score was  $Z = -3.13$ ,  $p = .0017$ , which indicates a statistically significant difference between the two groups. The authors noted that the involvement scores for the deaf children being taught using SLN was equal to that of hearing children being taught in spoken Dutch. The study was limited by its small sample.

Strong and Prinz (1997) conducted a study to see if English literacy could be predicted by students' ASL fluency level. They identified 160 deaf children without other

disabilities between the ages of 8 to 15. One hundred fifteen of these students had hearing parents. The measurements are included ASL battery test, Woodcock-Johnson Psycho-educational Test Battery, revised Version (WJ-R), Test of Written Language (TOWL), Matrix Analogies Test (MAT), parent questionnaires covering language usage at home, and background information. Information regarding previous standardized test scores, date of birth, and hearing loss were also gathered. After dividing their subjects into two age groups, eight to eleven and twelve to fifteen, the investigators also divided the groups further based on whether their mothers were hearing or deaf. They looked at ten hypotheses within the various subgroups, including the following three: H1: High ASL skilled subjects will outperform low ASL skilled subjects in English Literacy; H2: Middle ASL skilled subjects will outperform low ASL skilled subjects in English Literacy; and H3: High ASL skilled subjects will outperform middle ASL skilled subjects in English Literacy. They used post hoc Bonferroni pair wise comparisons to test for significance differences between the three ASL skill levels with the subgroups. The F ratio was shown to be .000, which indicated a positive relationship between ASL skills and English Literacy skills. Bonferroni pair wise comparison were shown to be  $p = .000$  for H1,  $p = .001$  for H2 and  $p = .002$  for H3. This study argued that these findings should assure skeptics of bilingual education for deaf children as the results of the study “...strongly suggest the value of an approach using ASL as the language of instruction”.

Nover and Christensen (1998) developed the ASL/English Bilingual Multicultural Acquisition/Assessment framework for deaf students. The framework identified prelinguistic and linguistic dimensions. The prelinguistic dimensions show six common

nonverbal communication proficiencies such as gesture, facial expression, body movement, turn taking, vocalization, and bonding with the caretaker that all deaf and non-deaf babies are expected to master. Eventually deaf babies will show emerging ASL skills through hand babbling and active visual searching for primary information and English skills through vocal babbling and, if possible, auditory support/listening for primary information. The next level would be to acquire ASL signing and English literacy/oracy abilities. For ASL signing abilities, a child will use watching or attending, signing and usage of space, and peripheral vision. For English literacy/oracy abilities, a child will use fingerspelling, fingerreading, reading (i.e., English text), writing (i.e., English text), typing (i.e., English text), lip reading, speaking, and listening (when appropriate). Never based the separation of oracy and literacy in English on the work of Baker (1996) and Bench (1992). *Oracy* focuses on listening as part of receptive skills and speaking as a part of productive skills. For deaf children, this means the development of speaking, listening, and lipreading. *Literacy* focuses on reading as a receptive skill and writing as a productive skill. Never added *signacy* as a skill involving the ability to control the visual/signing medium of linguistic transmission, which has watching as a receptive skill and signing as a productive skill. Thus, his work as a bilingual framework for deaf children is recognized as having three parts: Signacy (ASL), Literacy (English) and Oracy (English). His conclusion was that ASL signacy serves as a booster for deaf children to increase mastery for English literacy and oracy. A deaf child who is more fluent in ASL signacy will acquire English literacy better. With a strong foundation in ASL signacy and English literacy skills, the child will be able to increase the chance of acquiring English oracy in that order respectively.

Nover and Andrews (2003) conducted the Star School project which was funded by the federal government to study ASL/English bilingual instruction for deaf students from 1997 to 2002 with final report completed in 2003. The emphasis of this study was to measure the success of bilingualism using a theoretical framework of ASL/English deaf bilingual education. It involved staff training in assessment and curriculum, and parent involvement and technology usage in classrooms. The staff training included 4 semesters of weekly group meetings sharing what they learned from: reading educational publications, writing reflections on what they learned, trying bi/bi techniques in the classroom, and observing their colleagues' use of bilingual techniques in the classroom. The topics included bilingual theories, first and second language acquisition, and literacy development. The teachers developed action research projects. During that time, teachers also developed ideas for getting parents involved and strategies for maximum technology usage to develop English literacy. For example, a history class would have 8 students on computers communicating with each other through typing. A history teacher may purposefully not sign the communication through typing as if using instant messaging on computer monitors. Students would learn how to discuss history through English by reading and writing. As a group, teachers had the opportunity to discuss critical pedagogical issues, best practices of reflective teaching and engaged learning principles. All students in those participating teachers' classroom are tracked for their academic and language performance over two years. They use qualitative and quantitative data for students' academic performance on Stanford-9 and other demographic variables, teachers' reflections and assessments. The findings indicated that deaf students in this program improved significantly on English vocabulary and English language over three

years. The younger group, students ages 8-12 scored significantly higher on three Stanford-9 English subtests than the norms of nationwide deaf students. An ASL/English bilingual staff development curriculum was developed based on this research and was implemented in eleven programs from 1997 to 2002.

### *Acquisition of ASL in the Classroom*

Between ninety and ninety-five percent of deaf children are born to hearing parents. Numerous debates have taken place among researchers, educators and parents as to whether or not ASL can be acquired in the classroom as a first, or primary, language. There have been no models available to compare the experience of deaf children with hearing parents (DCHP) acquiring ASL in the classroom. Most hearing children come into school having mastered their first language. Increasingly more hearing children with different heritages and first languages enter school having learned English as their second language. However, they have most often mastered their primary language, typically not the language of instruction in the school setting. Singleton and Morgan's work (2005) addressed this very question that educators face with deaf children: What are the contexts that teachers need to have in order to facilitate the acquisition of a primary, accessible language for deaf children in the classroom? Since the classroom becomes the primary place in which deaf children acquire their first language, the teacher becomes the primary role model for deaf children to acquire a strong foundation in ASL.

Singleton and Morgan looked at the work of Rogoff regarding the social context of language acquisition. Rogoff states that for children to acquire language, they need to be in an environment where intersubjectivity and appropriation takes place.

Appropriation happens as a part of further activity between child and caregiver; the child imitating, experimenting, or trying the practices characterizes it. Rogoff (1990) maintains that intersubjectivity and appropriation are essential for the development and growth of a child and are primarily realized through everyday social exchanges with caregivers within joint activities. Appropriation is different from simply internalizing something that is external. Rather, appropriation is taking in or trying on *some* of the meanings that occur in actions; that is, a child's capacity to appropriate is supported (or limited) by her own sense-making and developmental level of involvement. Therefore, the appropriated practices do not exactly mirror the external practices, and the caregiver provides supportive scaffolding for those as-yet unappropriated elements. Through a process of increasing mutual structuring of participation, a child develops a sense of belonging (identity) and shares in the everyday practices (or *ways of being*) of one's community of practice (Rogoff, 1990; Wenger, 1998). A *community of practice* can be a family, a neighborhood, a business, or a larger community. The key idea is that a group of "expert" participants (e.g., adults) shares a set of everyday practices and they support the increased participation of "novices" (e.g., children) into the joint enterprise. (pp. 591)

For example, caregivers and educators are likely to encounter contexts in which a deaf child does not seem to achieve intersubjectivity or appropriate new behaviors, meanings, or forms of language. One can view nonparticipation as marginality or peripherality. In the case of marginality, a child is seen as not fitting into the community of practice. For example, hearing parents may see that their deaf child is not appropriating hearing ways of being, and thus see them as not fitting in (i.e., deficit or pathological view of deafness). With respect to peripherality, a child is expected to appropriate the practice at some point in the future, but for now, the child legitimately participates more as an observer. A deaf child will at some point be able to appropriate *Deaf ways of being*, if guided by Deaf adults who view them as eventual full participants in their community of practice (i.e., cultural view of deafness). (pp. 592)

The meaningful system of engagement with their caregivers seems to play an important role in how children learn how to learn. In their recommendations for teachers, Singleton and Morgan specify that in order to be an efficient first language role model in the classroom, teachers must consider the dynamics of conversational control and the level of deaf student participation, how discourse processes support effective teaching and learning, visual and linguistic teaching strategies, and the classroom as a context for the socialization of language and identity.

The dynamics of conversational control and the level of deaf participation involve how teachers manage the conversational rates among students and when teachers allow longer interactions. Teachers are expected to monitor the students' attention and whether they are ready to receive the "signing" message by using different strategies to call for attention before starting to sign. Teachers can also create strategies to encourage increased student participation in the conversation by using questions based on Bloom's taxonomy that would encourage students to think and actively participate in the conversation.

As for discourse processes supporting effective teaching and learning, teachers need to consider the sociocultural framework in which the conversation occurs. With an emphasis changing from a teacher-centered classroom towards one that is student-centered, students are seen as active participants. In discussing their learning journey, students benefit from having the teachers act as guides who scaffold the students' learning process.

Linguistic teaching strategies are visually oriented, with emphasis on eye gaze, the status of students' visual attention, narrative features in role-playing, and signing in the field of view with objects referenced nearby. The classroom layout and visual organization is critical in how visual attunement works optimally for deaf students who need a clear and direct line-of-sight to the teacher. In an early childhood educational setting, teachers should direct the visual and linguistic traffic as well as help the students to acquire a visually-based engagement by being attuned to the timing patterns of the students' viewing between objects and the person who is talking about the objects.

The classroom as the context for language and socialization involves teachers demonstrating how to be deaf in different scenarios, such as when a deaf teacher meets a non-signing hearing person while on a field trip. The deaf teacher models using the written word, back and forth, in front of his/her students. Another example would be for the teacher to provide narratives in which they share world experiences with the students. Some information may seem trivial or non-significant, however, DCHP are often not exposed to critical information at home where communication may not be accessible. We know that ninety percent of all learning occurs outside of the classroom, so narratives serve an important role for deaf students in the classroom by demonstrating how to deal with daily life experiences. Singleton and Morgan also emphasize that teachers are not the sole primary linguistic partner and should consider involving deaf peers.

These classroom strategies, appropriation, and intersubjectivity are what bring to the deaf children of hearing parents experiences similar to those which occur naturally in the home of deaf children of deaf parents.

### *Stanford Achievement Test*

Carol Traxler (2000) conducted a performance standards study to compare the norms for high achieving deaf and hard-of-hearing students with hearing peers. Gallaudet Research Institute has gathered over 1,400 Deaf/Hard-of-hearing students' Stanford-9 Achievement Test v.9 performance. Traxler initiated a subset study of this large study in which 971 deaf students who had no other disability and were assumed by teachers to be

performing on par with hearing peers were selected. The sample was not randomized so this study should not be assumed to reflect the general deaf population. Except for those students who took the advanced level two, the results showed a delay in the deaf/hard-of-hearing students' academic performance, when compared with the hearing students. Nearly all 8 year olds in this study were considered high achievers while only 10% of students 15 years old or older were assigned to the test level at their age level or above. In total, only 8 of 4,808 Deaf/Hard-of-hearing students were taking a test on a level that was higher than hearing students' age level. The grade equivalent and scaled score in this study as well as the larger study reflect the actual grade level of hearing peers. Traxler pointed out that one should interpret the results with caution due to the lack of randomized sampling and the small number of students in the upper grade and age levels.

The SAT-HI performance standards which included four levels, "below basic," "basic," "proficient," "advanced," were developed by 200 teachers for each test level based on the expected performance for hearing students. The scaled score for primary level two students for the "below base" is from 440 to 560, "basic" is from 561 to 615, "proficient" is from 616 to 660 and "advanced" is from 661 to 730. The Deaf/Hard-of-norms (i.e., 4,808 subjects) which included students from the age of 8 taking the primary two level test, resulted in a 50<sup>th</sup> percentile scaled score of 515 and an 80<sup>th</sup> percentile score of 555. These data show that the Deaf/Hard-of-hearing students at age 8 are performing at "below basic" in the performance standards. Furthermore, the selected high achieving 8 year old Deaf/Hard-of-hearing students were still outperformed by hearing peers.

The author interviewed Carol Traxler concerning whether or not the data was sensitive to those subjects having deaf or hearing parents (personal communication, March 2004). Her study did not set this level of sensitivity but did document those subjects who attended public school or residential program, gender, physical or cognitive disability, hearing loss, etiology of hearing loss, age of hearing loss and in what region of the country they live.

### *Conclusion*

Journeying through the history of Bilingual Deaf Education, one can see how the field of Deaf Education suppressed the usage of American Sign Language and Deaf teachers, which led the Commission on the Education of the Deaf (1988) to proclaim the failure of Deaf education. Today, the usage of American Sign Language and native Deaf educators is slowly expanding with more resources available in second language learning and access to bilingual tools for use in the classroom. Yet, the number of empirical studies for bilingual education of deaf education remains small.

The probability of deaf education making the transformations in their practices becomes higher. Bilingual deaf education has helped teachers and administrators by making their work more efficient. Bilingual deaf education embraces both languages fully and recognizes the importance of the partnership between communities. Thus, it maximizes the vested interest of both parties and acknowledges that curing “deafness” or trying to create a hearing child from a deaf child is impossible. The strategies for a school

to use in making the transformation were documented and can be used by schools that wish to become bilingual deaf education providers. Yet, the available research on how an educational setting can provide or create a bilingual deaf education climate remains small.

The heart and soul of bilingual deaf education has been the home environment of Deaf children of Deaf parents. Early natural language learning, the acceptance of the state of being deaf, and the involvement of the Deaf community are what make Deaf children of deaf parents superior in academic performance. The persistence of this difference over decades has provoked educators to investigate this remarkable phenomenon and the principles of bilingual deaf education as the medium of instruction. Yet, Marschark and Spencer (2003) argue that there might not be enough data or an actual phenomenon as previously thought.

This study hopes to address the lack of empirical research by examining bilingual education of deaf children, sharing the story of how The Indiana School for the Deaf created a bilingual deaf education climate, and lastly, explaining the pattern of results and events using Nover's Bilingual/ ESL framework.

## CHAPTER 3

### METHODOLOGY AND DESIGN

#### *Methods*

The purpose of this study will be to investigate the effectiveness of implementing a bilingual/bicultural philosophy at the Indiana School for the Deaf (ISD). The four specific research questions included are:

- 1.) Based on the scores on the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test, is there an improvement in the academic performance of ISD students from 1996 to 2003?
- 2.) Are there any significant differences in the academic performance, as measured by Gallaudet's Stanford-9 norms, for deaf students nationwide in comparison with the Indiana School for the Deaf students' performance during the 2003-2004 school year?
- 3.) Are there any significant differences in the academic performance of DCHP and DCDP at the Indiana School for the Deaf between the 1995-1996 and 2003-2004 school years?
- 4.) If the bilingual/bicultural philosophy has been fully implemented, has there been a decrease in the academic performance gap from the 1995-1996 school year, when the bilingual/bicultural philosophy was initiated at the Indiana School for the Deaf, to the 2003-2004 school year?

In this chapter, the subjects are defined and instrumentation discussed, followed by a description of the design of the study, procedures used for data collection and information on how the data will be analyzed.

### Subjects

*Table 1*

#### Independent Variables

Variable	
Having no other disabilities	NONE ADHD OHI EH
Students' hearing levels	Mild-Moderate (69 dB or less) Severe (70-89 dB) Profound (90 dB or above)
Age of onset	Under 1 year of age 1-2 years old 3 years old or older
Length of time at this school	3 years or less 4-6 years 7 years or more
Age grouping	8-12 years old 13 years old or older
Hearing status of mother	Deaf or hard-of-hearing Hearing
Etiology	Heredity Meningitis Other Unknown

The demographic variables of deaf students (Table 1) are recognized as contributing factors in this study, as they have an influence in their academic performance (Stanford-9 Achievement Test scores). The variables are: having no other

disabilities, students' hearing levels, age of onset, length of time at this school, age grouping, hearing status of the mother, and etiology of deafness

*Having no other disabilities*

IQ scores are often included in research on Deaf/HoH children. However, because IQ scores were not available for this study, subjects who had no other disabilities were included, and generally assumed to represent a typical distribution of intelligence scores.

However, students with other disabilities that were not generally associated with reduced IQ were included, including students with emotional handicaps (EH) and attention deficit hyperactivity disorders (ADHD). To be included in the study, students must participate in the general education curriculum program at the Indiana School for the Deaf.

*Students' hearing levels*

Subjects are sorted into three groups based on hearing loss: mild-moderate (69 dB or less), severe (70-89 dB) and profound (90 dB or above). Degree of hearing loss has a significant impact on how students acquire English as well as the mastery level they may achieve in the language.

*Age of onset*

The age of onset also plays a role in the degree to when and whether English has been acquired naturally.

*Length of time at this school*

The students' length of time in the academic program at the deaf school affects the amount of exposure to the bilingual/bicultural atmosphere. The earlier the age at which students enter the program, the more exposure they will have had to the bilingual/bicultural experience, and therefore the result of the program can be measured more effectively.

*Age groupings*

Based on arguments by Singleton (2000) and by Strong and Prinz (1997), two age groups were formed: students ages eight through twelve and students ages thirteen and older. As they pointed out in their studies, the age of puberty tends to start at age eleven and students seven years old or younger are still at the stage of learning how to read and write.

*Hearing status of mother*

In determining whether the students' parents are deaf or hearing, the status of the mothers' hearing will be included. This has been found to have a significant impact on student achievement (Strong & Prinz, 1997).

*Etiology of deaf students*

Etiology plays a significant role in identifying possible comorbid conditions. Another reason to consider etiology is to identify genetically deaf students. For students who are not genetically deaf, it is difficult to determine what medical or environmental factors could be impacting their linguistic and academic performance (Prinz & Strong,

1998). Without additional concerns, genetically deaf students should reach linguistic milestones as expected (Maller, 2003; Marschark, 2003).

#### *Access to Data*

The confidential academic files for these students will be reviewed to determine whether each student meets the criteria for this study. The scaled scores of the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test and other background information are available in those school records. None of the students will participate in any activity as part of the study; only records will be reviewed. This study will collect existing data at this school that is in existing files.

#### *Instrumentation*

In 1972, Gallaudet University established the Gallaudet Research Institute in order to conduct a nationwide academic assessment of deaf and hard-of-hearing students (Holt, Judith A., Traxler, Carol B., and Allen, Thomas E., 1997). They investigated the existing assessment tools and decided that the best assessment tool available at that time was the Stanford Achievement Test (SAT), sixth edition, managed by Harcourt Brace Educational Measurement in San Antonio, Texas. The Gallaudet Research Institute established norms for deaf and hard-of-hearing students for this test. Over time, the SAT has been revised several times and the current version is the Stanford Achievement Test-Hearing Impaired, version ten. The Stanford Achievement Test, version ten, and the Stanford Achievement Test – Hearing Impaired (Stanford-10 Achievement Test) are

identical, with the exception of the language in which the instructions are given. For this study, the Stanford Achievement Test, version 9, will be used because of the available norms that Gallaudet University collected based on this version and because the Indiana School for the Deaf continue to use this version until 2004. Only the following six components of the test have deaf and hard-of-hearing norms:

- 1.) Reading Comprehension,
- 2.) Reading Vocabulary,
- 3.) Mathematics: Problem Solving,
- 4.) Mathematics: Procedures,
- 5.) Language, and
- 6.) Spelling.

The reason for choosing those specific areas is that they are not based on auditory knowledge or the ability to hear. The Stanford-9 Achievement Test has eight different administration levels ranging from primary, level one, to advanced, level two. Each level represents an academic grade level from 1.5 – 9.9. The raw scores were converted to scaled scores, which allows for the possibility of comparing those students with different test levels and to identify the progress students have made longitudinally. Harcourt Brace Educational Measurement offers the Stanford Test of Academic Skills: TASK 1 (grades 9.0-9.9), TASK 2 (grades 10.0-10.9), and TASK 3 (grades 11.0-11.9). Gallaudet University did not determine norms for deaf/hard-of-hearing students who are given Task 1, 2, and 3 due to the small pool of candidates who achieve this level.

Standard scores from the Reading Comprehension subtest of the Stanford-9 Achievement Test will be used to measure students' understanding of English

vocabulary, sentences, and paragraphs. The level of the Stanford-9 Achievement Test selected depends on the students' mastery, which may vary from the primary to the advanced level. However, the scaled scores consistently reflect the level of mastery regardless of the level of the test given.

It has often been debated whether this instrument is a valid tool to measure English, as it was designed for hearing children who acquire English aurally (Nover, & Andrews, 2003). Nonetheless, it is the only known test that has been given often in programs which serve deaf or hard-of-hearing students (Ibid.). In this case, it serves well as a baseline measurement for purposes of comparison.

#### *Rationale for selecting Indiana School for the Deaf*

Indiana School for the Deaf (ISD) was the first state school to implement a bilingual/ bicultural philosophy in the United States. In 1990, the Superintendent, Lee Murphy, and members of the school administration held a retreat with Deaf educational leaders who were also teachers at ISD. The retreat was the first official action following 4 years of grassroots changes and empowerment of Deaf staff through the work of a communication curriculum committee. The committee's work unexpectedly lead to the discussion of using American Sign Language as the language of instruction, and several Deaf leaders were brought in to dialogue a possible transformation at ISD. At the administrative retreat, the stories of Deaf people and their educational experiences were revealed. By the end of the retreat, all members agreed that it was time for a significant

reform in Deaf education. Within the year, the Superintendent Lee Murphy resigned to allow for a Deaf superintendent. Janet Stailey then served as an interim Superintendent and coordinated the recruitment for a new superintendent. A Deaf Superintendent, Eddy Laird, was hired in 1992. His hiring increased the intensity and pace of the transformation.

At that time, the only other school using a bilingual deaf education approach was a private school, The Learning Center for the Deaf Children, in Framingham, Massachusetts. ISD was selected for this study because it was the first Midwest deaf school to adopt permanently a bilingual/bicultural approach (Strong, 1995).

#### *Rationale for selecting 1996 & 2003 SAT-HI data*

The 1990-1995 SAT-HI data are not available because the test was not administered during those years. There exists no other uniform evaluation tool from that time period that could be used to evaluate changes. Approximately 50 to 75 students had reading evaluations completed by the school psychologist staff as part of a triennial evaluation battery. These tools, used to assess reading, varied and some of the tools provided only grade equivalents. Sometimes older versions of tests were used because they were less auditorally based. Because of these issues, ISD administration decided to offer the more standard SAT-HI tool to assess reading skills in all students. Gallaudet University Research Institute was contacted to see if they still maintained records of ISD's SAT-HI data prior to 1989; however, they did not have that specific data available.

Another reason that 1996 was chosen as the starting year for this research was the nature of the change necessary to achieve bilingual/bicultural program delivery.

Organizational transformation takes 6 to 8 years to complete (Fullan, 1999). This was true for the change to bilingual/bicultural education for ISD.

In the first phase (1988-1990), the retreat between the administration team and Deaf leaders was held, and in the fall of 1990, the announcement was made by the Superintendent marking the official beginning of the change.

In phase two (1990-1992), the bilingual/bicultural office was opened and facilitated by a Deaf leader, David Reynolds, and a hearing leader, Ann Titus. This office was charged with coordinating the study of bilingual/bicultural education as well as designing and supervising a transition plan. They worked with the bilingual/bicultural committee which included thirty Deaf and hearing members from varying backgrounds and educational experiences. Superintendent Lee Murphy resigned in order to create an opportunity for a Deaf person to lead the school

In phase three (1992-1994), a Deaf superintendent, Eddy Laird, was hired to lead ISD through its transformation to a full-fledged bilingual/bicultural program. The bilingual/bicultural office closed, as it had completed the task of creating a 5-year training plan and had developed goals for ISD to complete during the initial phase of the bilingual/bicultural transition. During that time, ISD staff learned about bilingual practices and the importance of deaf students having clear first language models. As a result, ISD formulated a strategic plan (Appendix A, B, & C) for the transition from a total communication school to a bilingual school. Some staff, individually or collectively, studied American Sign Language and its structure through reading, taking

classes, and dialoguing the differences between ASL and English. An ASL diagnostic service was offered to all staff to analyze their strengths and areas for improvement in their signing skills. To create a more accessible communicative environment for students, a communication policy (Appendix A) was set up as a guideline for the staff to follow in handling a variety of communication situations.

In phase four (1994-1996), George Stailey, assistant to the Superintendent, was promoted to superintendent following the resignation of Eddy Laird. The ASL and English as Second Language curriculums were completed. Bilingual/bicultural training began with the introduction of the two curriculums and a presentation by a professor from Indiana University focusing on how English is learned through a second language approach. ASL fluency evaluations for all staff were conducted to facilitate staff ASL skill improvement. ASL courses were offered to all staff.

By phase four, SAT-HI data was available and almost all staff was familiar with the bilingual/bicultural philosophy. There was less resistance to change from staff and more Deaf staff/native signers were hired. Based on the 5-year training plan that was developed by David Reynolds and Ann Titus, the transformation was 33% complete. Thus, this 1995-1996 SAT-HI data seem to be reasonable data with which to start to look at as the beginning of the bilingual/bicultural intervention for the deaf/hard-of-hearing students at ISD.

### *Research Design*

A set of *t tests* will be used to measure the gap between the performances of DCDP and DCHP on the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test taken from the 1995-1996 and 2003-2004 ISD records. For comparison purposes, there will be two age groups: students ages eight through twelve and students ages thirteen and above. The treatment is the full implementation of a bilingual and bicultural pedagogical philosophy, which began at ISD in 1996. An additional measure that was taken to assure the strength of this research is a comparison with the Gallaudet's Stanford-9 nationwide norms for deaf students. In order to measure the difference between the performance of DCDP and DCHP, data quantifying the performance gap from 1995-1996 will serve as a baseline to compare with performance shown in the 2003-2004 data.

In addition, the demographics of students may affect the performance on the two subtests of the Stanford-9 Achievement Test; therefore, a series of multiple regression analysis will be conducted to see if English performance improves over time.

In this study, the dependent variables will be the students' scaled scores on two subtests of the Stanford-9 Achievement Test: Reading Comprehension and Total Language. The independent variables are the bilingual/bicultural philosophy, maternal hearing status, students' age, the length of time in the program, etiology, and degree of hearing loss.

### Data Collection

Since the Stanford-9 Achievement Test data of 1995-1996 and 2002-2003 are documented and readily available, the data will be compiled in the statistical software program known as SPSS, version 11, to calculate means and standard deviations for each category. All the scores for students at the Indiana School for the Deaf will be documented and analyzed using this software. The author will be able to use the Stanford-9 Achievement Test data for students in the public schools and residential schools which is available to the public from the Gallaudet University Research Institution (GRI) in the form of average scores for the Reading Comprehension and Total Language subtests. The means and standard deviations for deaf public & residential school students will be obtained from the Gallaudet University Research Institute.

### Plan of Data Analysis

The first question is to determine whether ISD academic performance for all students in this group for the 2003-2004 school year has improved when compared with the first group in the 1995-1996 school year. The standard scores for the Reading Comprehension and Total Language subtests were calculated for the mean and standard deviation for each group. The *t test* will be used to test the significance of the rate of improvement, if any. If there is a significant difference, the Cohen's *d* value will be computed for the effect size.

For the research question #1: the rows in table 2 represent two groups of students for two separate school years. The columns represent the two groups in two different age brackets: younger and older. The light gray shade reflects the two groups for the

year 1996 and the slightly darker shade represents the two groups for the year 2003. The younger 1996 group mean<sub>1</sub> of READING COMPREHENSION STANDARD SCORES and LT SS will be compared with the younger 2003 group mean<sub>3</sub> to see if there is a significant difference and what its effect size is, if any. The mean<sub>2</sub>, for the older students from 1996, will be compared with the 2003 older group's mean<sub>4</sub>. There will be a total of two *t tests* and multiple regression analyses conducted for this question.

*Table 2*

<u>Comparison of Mean Scores among Groups (Age Group/School Year)</u>		
<u>Year</u>	<u>8-12 years old (Younger)</u>	<u>13-18 years old (Older)</u>
1996	$\bar{X}_1$	$\bar{X}_2$
<b>2003</b>	$\bar{X}_3$	$\bar{X}_4$

The second question (table 3) is to determine if ISD academic performance for all students in the 2003-2004 group outperform the mean standard scores of Gallaudet Research Institution Stanford-9 for students in public schools and residential schools. The Gallaudet Research Institution Stanford-9 mean standard scores were found in the article by Nover & Andrew (2003) and the scores were verified by GRI through personal conversation with director of GRI. The *t test* will be used to test the significant difference in the comparison. If there is a significant difference, the Cohen's effect size will be computed.

Table 3

<u>Comparison of Mean Scores among Groups (Age Group/Gallaudet Norms)</u>		
<i>Year</i>	<i>8-12 years old</i> <i>(Younger)</i>	<i>13-18 years old</i> <i>(Older)</i>
Gallaudet Norms	$\bar{X}_{\text{GNY}}$	$\bar{X}_{\text{GNO}}$
<b>2003</b>	$\bar{X}_{\text{Y}}$	$\bar{X}_{\text{O}}$

The third question (table 4) is to determine whether there is an academic difference between DCHP and DCDP for the 1995-1996 school year. The *t test* will be used to measure the mean standard scores for DCHP and mean standard scores for DCDP and specify any significant differences between them. This information will also be compiled for the 2003-2004 group. For the research question #3: the rows in table 4 represent two groupings of students for two separate school years. The first row reflects four groups in the year 1996 and the second row represents six groups in the year 2003. The columns represent four groups in different age brackets: younger children with deaf mothers; younger children with hearing mothers; older children with deaf mothers; and older children with a hearing mother. The younger 1996 group with deaf mothers  $\text{mean}_{1d}$  of Reading Comprehension standard scores and LT SS will be compared with the younger 1996 group with hearing mothers group  $\text{mean}_{1h}$  to see if there is a significant difference and what its effect size is, if any. This will be repeated for the younger group of 2003 and the older group of 1996 and 2003, as well. The mean of younger students with deaf mothers from both years will be compared with younger students with hearing mothers from both years.

Table 4

<u>Comparison of Mean Scores among Groups (Age Group/Parental Hearing Status)</u>				
Year	8-12 years old (Younger)		13-18 years old (Older)	
1996	$\bar{X}_{1d}$	$\bar{X}_{1h}$	$\bar{X}_{2d}$	$\bar{X}_{2h}$
2003	$\bar{X}_{3d}$	$\bar{X}_{3h}$	$\bar{X}_{4d}$	$\bar{X}_{4h}$
	$\bar{X}_{D\text{younger}}$	$\bar{X}_{H\text{younger}}$	$\bar{X}_{D\text{older}}$	$\bar{X}_{H\text{older}}$

The fourth question is whether or not there is a decrease, over time, in the gap between the academic performance of DCDP and the academic performance of DCHP. The data in research question #3 will be used to compare the degree of any gap in the 1995-1996 group with the degree of gap in the 2003-2004 group to identify whether the decrease occurred and, if so, if the decrease is significant.

### **Multiple Regression Analysis Approach**

Multiple regression analysis will be used to determine the effects of the bilingual/bicultural practice on SAT-HI scores. Several studies have used multiple regression to analyze subjects' demographic characteristics to determine the degree of affect on student academic outcomes (Andrews & Nover, 2000; Moores, 2001; Nover, Andrews, & Everhart, 2001; Geers, 2002; Nover & Andrew, 2003; Polat, 2003). Very few studies using multiple regression were found that used deaf students' academic performance outcomes; most of those studies have not been included here, as they have focused on the use of cochlear implants and factors that may have contributed to the success/failures of that technology. The multiple regression analysis is able to

incorporate several explanatory variables and determining which variable(s) can function as predictor(s). In this case, the author has anticipated that knowing the reading comprehension/total language subtest results (i.e., means) and the gap between the performance of DCHP and DCDP in the school year 2003 may not be sufficient to determine whether the bi/bi approach can show the effectiveness of compensating for the maternal hearing status and allow the DCHP to catch up with the DCDP. For this reason, the multiple regression analysis was employed to determine whether maternal hearing status has an impact on the reading comprehension standard scores and total language standard scores of DCHPs. If this is the case, the length of stay at ISD with immersion in the bilingual/bicultural learning environment could then be examined for the possibility of a compensating factor between both periods of time.

Multiple regression analysis is able to control for explanatory (independent/demographic) variables, while observing the additional demographic variables and their degree of influence on the output of reading comprehension standard scores or total language standard scores.

The standard single-equation used to observe the effect of reading comprehension standard scores/total language standard scores is the shown below:

$$y_s = \beta_0 + \beta_1 X_s + \varepsilon_s$$

The “y” is the predicted variable and stands for the reading comprehension subtest standard scores or the total language subtest standard scores for the s-th student, “X” equals the matrix of the control (explanatory) variables that have role in affecting the

scores of RC or TL with weights  $\beta$ , and “ $\epsilon$ ” stands for the random error term. The variables in “X” are factors such as length of stay, type of disabilities (if any), students’ hearing levels, age of onset, age grouping, maternal hearing status and etiology. These factors may be useful predictors of the standard scores of reading comprehension and total language (Andrews & Nover, 2000; Geers, 2002; Nover & Andrew, 2003; Nover, Andrews, & Everhart, 2001; Polat, 2003).

Several studies evaluated a variety of possible influences on student achievement, however, multiple regression analysis was not used. In the Andrews & Nover (2000), Nover & Andrews (2003), Nover, Andrews, & Everhart, 2001) studies, the same predictor variables were used in the series of repeated measures MANCOVAs (multivariate analyses of covariance): length of stay, type of disabilities (if any), students’ hearing levels, age of onset, age grouping, maternal hearing status and etiology. However, they did not use regression analysis. In Polat’s (2003) study, the variables that were used in the regression analysis were: degree of hearing loss, additional handicap, age at onset of deafness, usage of hearing aids, speech intelligibility, academic achievement, parental hearing status, and communication methods. Geers’ (2003) study had a different focus with predictor variables such as hours of therapy, therapist experience, parent participation, school setting, type of class and communication mode used to predict the outcome of total language and reading comprehension subtest scores.

As discussed in Chapter 3, a variety of factors have been identified in previous studies that are likely to contribute to student performance. Multiple regression analysis

is used here to attempt to identify which factor(s) (if any) are responsible for the outcomes in this study.

This analysis presents the challenge of conferring a value to demographic information, such as having a deaf or hearing mother, in order to calculate for effect. The use of multiple regression with this dilemma allows for categorization of the data into a dichotomous variable, in other words a “dummy” variable which may be assigned a value of 0 or 1.

*Table 5*

<u>Independent Variables</u>	
Variable	
Other Disabilities	None Present (ADHD; OHI; EH)
Students' hearing levels	Mild-Moderate (69 dB or less) Severe (70-89 dB) Profound (90 dB or above)
Age of onset of hearing loss	Under 1 year of age 1-2 years old 3 years old or older
Length of time at this school	3 years or less 4-6 years 7 years or more
Hearing status of mother	Deaf or hard-of-hearing Hearing
Etiology	Heredity Meningitis Other Unknown

The “X<sub>1</sub>” stands for a dummy variable that represents the hearing status of the mother, while “X<sub>2</sub>” is used for the set of dummy variables for the school year. The control variables, such as having no other disability (X<sub>3</sub>), having an emotional handicap (EH) (X<sub>4</sub>), having an attention deficit hyperactivity disorder (ADHD) (X<sub>5</sub>), having an other health impaired (OHI) (X<sub>6</sub>), onset of deafness: under the age of one (X<sub>7</sub>), onset between 1 and 2 years of age (X<sub>8</sub>), onset age of 2 years or older (X<sub>9</sub>), profound hearing level (X<sub>10</sub>), severe hearing level (X<sub>11</sub>), moderate hearing level (X<sub>12</sub>), etiology: heredity (X<sub>13</sub>), etiology: meningitis (X<sub>14</sub>), etiology: other (X<sub>15</sub>), length of stay at ISD: 0-3 years (X<sub>16</sub>), length of stay at ISD: 4-6 years (x<sub>17</sub>), length of stay at ISD: 7 years or more (x<sub>18</sub>) are assigned as dichotomous variables (regressors). (See chapter 3 for detailed discussion of variables.)

For example, when using the control variable for the onset of deafness occurring under the age of one, the subjects who become deaf under the age of one are put in a group with a dummy value of 1 and the rest of the subjects are assigned a value of 0 for being in an “otherwise” category. For the variable onset of deafness having occurred between 1 and 2 years of age, the subjects who become deaf at that period in life would be assigned the dummy value of 1 while the rest of the subjects would receive an “otherwise” value of zero (0). With this approach, a regression analysis will be able to show the relationship with this category and the reading comprehension standard scores and total language standard scores. The complete single equation for this study is shown below:

$$y_s = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \\ \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} + \beta_{18} X_{18} + \varepsilon_s$$

## CHAPTER 4

### FINDINGS

#### *Demographics*

The ISD data from 1996 and 2003 shows a combined total of 407 students who took the SAT-HI during those years. The criteria for this study reduced the number of students from 407 to 182. There are 21 students who participated in both events. The data collection was found to be a challenge due to unexpected missing data, especially in specifying the etiology, length of stay at Indiana School for the Deaf and onset of deafness.

#### *1996 Group*

In the school year of 1996, there were 167 students who took the SAT-HI test. Of those students, 73 had no other disabilities and 94 had either one or two other disabilities. Three students' data were lost. Four students did not meet the criteria due to either being less than 8 years of age or above 18 years of age. There were 6 students with an emotional handicap (EH) and 6 students with Attention Deficit Hyperactive Disorder/Other Health Impairment (ADHD/OHI). For clarification, OHI may include ADHD or other areas of disability that do not fall in the category of a legalized disability which assure a free and appropriate public education. The trend of putting ADHD under the OHI category was not foreseen by the author. The author was unable to discriminate whether these students have ADHD or another disability. In view of this, the author included all students who receive special education service under that category of OHI.

Two students with ADHD did not meet the criteria due to a non-general curriculum placement or being out of the age range. There were 76 students who met the criteria for inclusion. Of the 76 students, there are 30 students with deaf mothers and 46 with hearing mothers. 21 students who participated in the 2003 SAT-HI were in the younger group, from 8 to 12 years old, during the 1996 test. The documentation of variables was found to be limited, despite being from nine years ago. The Administrator's Plus software program used for collecting students' data has numerous data fields that include all contributing variables but they were not completed in during that time period. Thus, the data collection was limited to the data that were available.

*Table 6*

<u>Entire ISD Population (1996)</u>					
Students who:					
Do not meet criteria			Meet criteria		
Missing data	Other DA	Age Factor	EH/OHI/ADHD	No DA	Total
3	84	4	10	66	167
	91		76		167
	54%		46%		100%

Table 6 shows the number of students who met the criteria of this study, which reflects 46% of all ISD students enrolled during that school year. Another 54% of students' data are not being used due to: missing data, having another disability that varied from a mental handicapped to an autism spectrum disorder, and one student with ADHD who is not in the general education curriculum. This sample is only

representative of those ISD students who took the SAT-HI tests. There are several students who did not participate in the SAT-HI test due to illnesses or alternative testing.

*Table 7*

<u>Parental Hearing Status of Mother (1996)</u>			
<u>Age</u>	<u>Hearing</u>	<u>Deaf</u>	<u>Total (T)</u>
8	3	3	6
9	1	4	5
10	6	3	9
11	6	5	11
12	5	2	7
13	6	4	10
14	8	3	11
15	5	2	7
16	4	3	7
17	2	1	3
18	0	0	0
Total	46	30	76

*Table 8*

<u>Age Group (1996)</u>			
	<u>DCHP</u>	<u>DCDP</u>	<u>Total</u>
8-12 yrs	22	17	39
13-18 yrs	24	13	37
Total	46	30	76

Tables 7 and 8 indicate how many children in each age group met the criteria for participation in the study and whether their mothers are hearing or deaf. All of the data will be used with research questions one, three and fourth. As for research question two, comparing ISD students performance on the SAT-HI RC and TL with Gallaudet norms, this 1996 group data will not be used as this research question focuses on the 2003 group data.

*Table 9*

<u>Test Takers (1996)</u>			
<u>Test takers</u>	<u>DCHP</u>	<u>DCDP</u>	<u>Total</u>
Reading			
Comprehension	46	30	76
Total Language	37	24	61

The year 1996 (Table 9) was the first year all students took the SAT-HI tests. The author was unable to determine why all of the students took the Reading Comprehension subtest but did not take the Total Language subtest.

### *2003 Demographics*

For the year 2003, there were 240 students who took the SAT-HI. Of those students, 113 students were without disabilities. Five students' data were lost due to two possible factors: either they were no longer enrolled at the school or they did not take the test for at least three years. Eighteen students' data were not included due being out of the study age range. There were 9 students with an emotional handicap and 14 students with ADHD/OHI. Five students with OHI/ADHD/EH were not in the general curriculum and/or did not meet the age criteria. Eight students did not participate in the 2003 SAT-HI because their academic achievement was above the scope of the test, so their SAT-HI results will be incorporatde from the previous 1-2 years as proxy. Therefore, 106 students' data will be used in this research as they met the qualifying criteria.

The variable data collection for 2003 was more complete as the information was still available and easily accessible. However, there are some missing data for students who withdrew or graduated after the 2003 school year.

*Table 10*

<u>Entire ISD Population (2003)</u>					
Do not meet criteria			Meet criteria		
Students with:					
Missing data	Other DA	Out of age range	EH/OHI/ADHD	No DA	Total
5	109	20	18	88	240
	134		106		240
	56%		44%		100%

Table 10 shows how many students met the criteria of this study which reflects 44% of the entire ISD student population during that school year. Another 56% of students' data are not being used due to missing SAT-HI data, having another disability that varies from a mental handicapped to an autism spectrum disorder, the age factor, or, as was the case with one student, having been diagnosed with ADHD and not being part of the general education curriculum. This data only represents the students who took the SAT-HI tests. There are several students who did not participate in the SAT-HI test due to alternative testing.

*Table 11*

<u>Parental Hearing Status of Mother (2003)</u>			
Age	Hearing	Deaf	Total (T)
8	4	3	7
9	1	3	4
10	3	2	5
11	2	6	8
12	6	2	8
13	9	4	13
14	3	5	8
15	5	4	9
16	13	6	19
17	11	5	16
18	6	3	9
Tot	63	43	106

*Table 12*

<u>Age Group (2003)</u>			
	DCHP	DCDP	Total
8-12 yrs	16	16	32
13-18 yrs	47	27	74
Total	63	43	106

Tables 11 and 12 show how many children in each age group met the criteria of the study and indicate whether they have a hearing mother or a deaf mother.

*Table 13*

<u>Proxy Test Takers</u>			
	DCHP	DCDP	Total
2001	3	2	5
2002	2	1	3
Total	5	3	8

Eight students (table 13) took the test in either 2001 or 2002. These students achieved a high score (post-high school level) in reading comprehension, and staff and parents elected for them not to continue to participate in the SAT-HI assessment. The entire SAT-HI data for 2003 may not actually reflect the current school performance, because if those eight students were included in the data for 2003, the scores would likely have been higher. Their 2001/2002 scores were, therefore, incorporated into the 2003 scores. As for both groups, those with deaf mothers and those with hearing mothers, their age groups are all in the older group and their actual ages are within two years of each other.

*Table 14*

<u>Test Takers (2003)</u>			
<u>Test takers</u>	<u>DCHP</u>	<u>DCDP</u>	<u>Total</u>
RC	63	43	106
Total Language	63	42	105

Table 14 represents the number of ISD students taking the Reading Comprehension and Total Language subtests of the SAT-HI.

### *Data Analysis*

The data analysis will be approached by having each question answered following the data chart of the results. Discussions of the results will follow.

*Analysis of Research Question #1*

Based on the Reading Comprehension and Total Language subtests of the Stanford-9 Achievement Test, is there an improvement in academic performance of ISD students from 1995 to 2003?

*T test Analysis #1.1: Did the younger 2003 students outperform younger 1996 students on the reading comprehension and total language SAT-HI scores?*

According to an independent-samples t-test, the average scaled score on the reading comprehension portion of the SAT-HI test for the 2003 younger group ( $M = 590$ ) is not significantly higher than the average scaled score for the 1996 younger group ( $M = 582$ ),  $t(69) = -.568, p > .05$ . The performance of Reading Comprehension standard scores is similar in both groups.

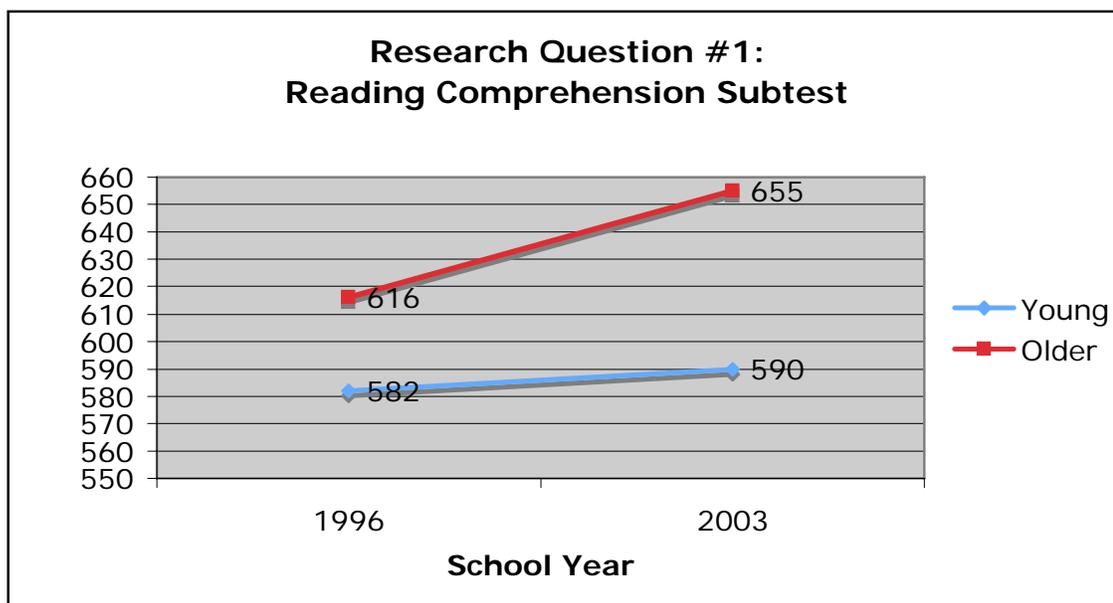
Based on an independent-samples t-test, the average scaled score on the total language portion of the SAT-HI test for the 2003 younger group ( $M = 596$ ) is not significantly higher than the average scaled score for the 1996 younger group ( $M = 588$ ),  $t(56) = -.755, p > .05$ . The performance of TL SS is similar in both groups.

*T test Analysis #1.2: Did the older 2003 students outperform the older 1996 students on the reading comprehension and total language SAT-HI scores?*

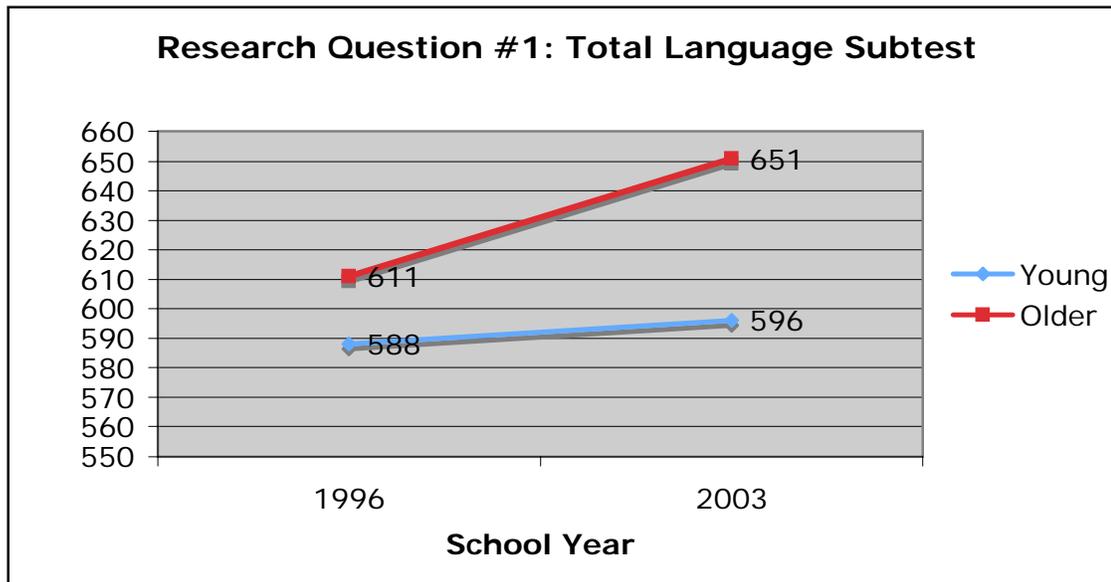
According to an independent-samples t-test, the average scaled score on the reading comprehension portion of the SAT-HI test for the 2003 older group ( $M = 655$ ) is

significantly higher than the average scaled score for the 1996 older group ( $M = 616$ ),  $t(109) = -4.179, p < .05$ . The Cohen's  $d$  for this data is 0.84, a large effect size.

Based on an independent-samples  $t$ -test, the average scaled score on the total language portion of the SAT-HI test for the 2003 older group ( $M = 651$ ) is significantly higher than the average scaled score for the 1996 older group ( $M = 611$ ),  $t(107) = -5.199, p = .0001$ . The Cohen's  $d$  for this data was 1.06, a large effect size.



*Figure 1.* RC Subtest: Comparison of School Years (1996 & 2003)



*Figure 2. TL Subtest: Comparison of School Years (1996 & 2003)*

#### Summary of research question #1

Overall, the older 2003 group outperformed the older 1996 group varying from a slight difference to a strong difference. Both of the younger groups showed a similar performance. The questions remains for the younger groups as to why there was no significant increase in the academic performance from 1996 to 2003 and what the contributing factors were. For the older group, it is clear that the academic performance has improved since 1996. The questions remain regarding the size of the effect and which independent variables play the largest role. Did the data for DCDP contribute to the scores and skew it due to a recent increase in the number of DCDP students enrolled? The answers to those questions, regarding both the younger and the older groups, will be addressed in the analyses below.

*Analysis of Research Question #2*

Are there any significant differences in the academic performance, as measured by Gallaudet's Stanford-9 norms, for deaf students nationwide when compared with the Indiana School for the Deaf students' performance during the 2003-2004 school year?

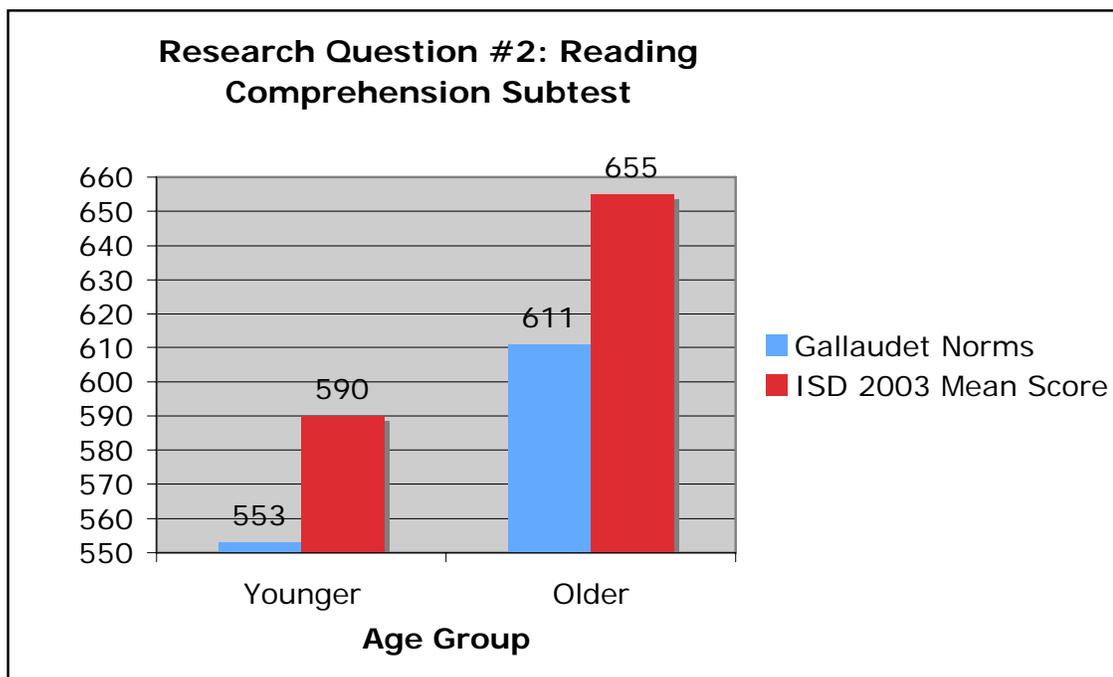
*T test Analysis #2.1:* When comparing the Reading Comprehension and Total Language SAT-HI scores, did the younger 2003 students from ISD outperform the younger students included in the Gallaudet Norms?

The mean score of the younger 2003 group (RC SS M=590; TL SS M=596) is higher and shows a significant difference when compared with the younger students of the Gallaudet Norms (RC SS M=553; TL SS M=566). The results were RC SS  $t(1906)=4.003, p=.0001$ ; TL SS  $t(1906)=4.636, p=.0001$ . The Cohen's  $d$  for this data was 0.7 in Reading Comprehension subtest results and 0.81 in Total Language subtest results, a large effect size for both sets.

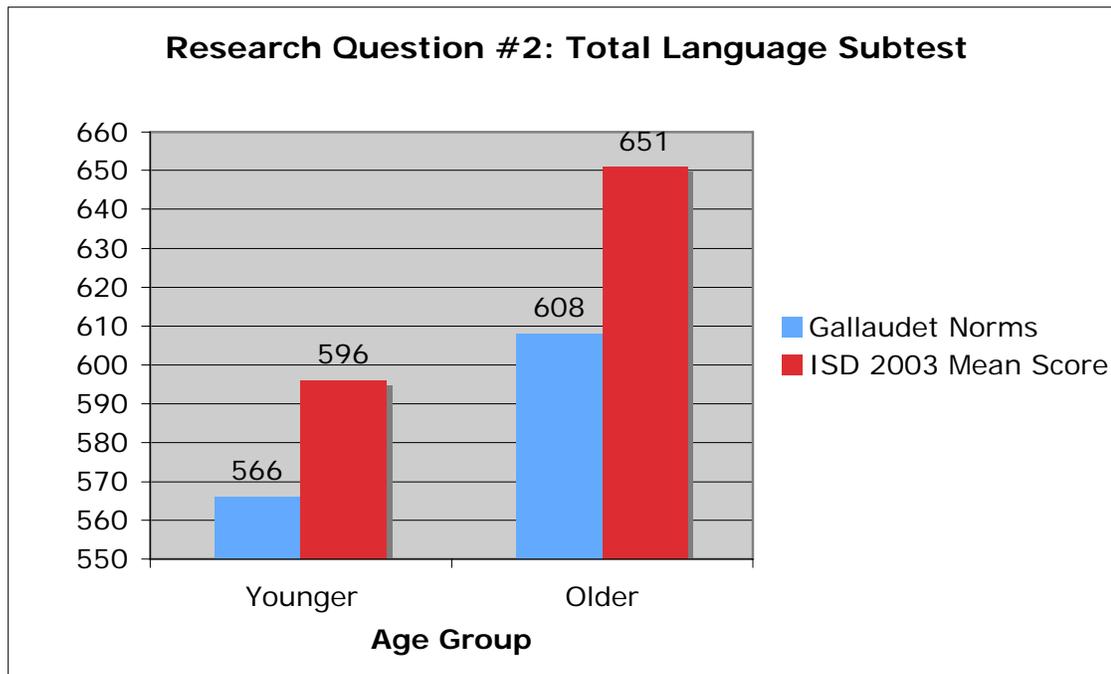
*T test Analysis #2.2:* Did the older 2003 students from ISD outperform the older students of the Gallaudet Norms in Reading Comprehension and Total Language SAT-HI scores?

The mean score of the 2003 older group is higher than the Gallaudet Norms and showed a significant difference: (RC SS  $t(3006)=6.38, p=.0001$ ; TL SS  $t(3005)=7.63,$

$p = .0001$ ). The Cohen's  $d$  for this data were 0.75 in Reading Comprehension and 0.88 in Total Language, a large effect size.



*Figure 3.* RC Subtest: Comparison of ISD students and Gallaudet Norms in 2003



*Figure 4. TL Subtest: Comparison of ISD students and Gallaudet Norms in 2003*

*Summary of research question #2*

Overall, the 2003 groups significantly outperformed the student Gallaudet Norms. It should be noted that the Gallaudet Norms reflect a larger sample and incorporate all deaf/hard-of-hearing students, including those with other disabilities and other factors that may have influenced the scores.

The 2003 ISD group may reflect a more selective group of students because several families moved to Indianapolis specifically to enroll their child at the school when their child was discovered to be deaf. Most of those families who relocated are deaf parents who are graduates of a non-bilingual residential program or graduates of a mainstreamed program for deaf children. The question remains as to whether those

selected students of deaf families still outperform deaf children of hearing parents attending this school. Most of the hearing parents who enrolled their children in ISD were already residents of the state of Indiana. Would the results of this study ultimately be affected by a difference in the performance of those deaf children of hearing parents' when compared with those selected Deaf families who were committed to providing quality education for their deaf children? The reasons to compare both family types becomes more imperative when looking at the type of environment best suited to maximizing students' potential.

*Analysis of Research Question #3*

Are there any significant differences in the academic performance of DCHP and DCDP at the Indiana School for the Deaf between the 1995-1996 and 2003-2004 school years?

*T test Analysis #3.1:* Did the younger 1996 deaf students of deaf mothers outperform younger 1996 deaf students of hearing mothers in Reading Comprehension and Total Language SAT-HI scores?

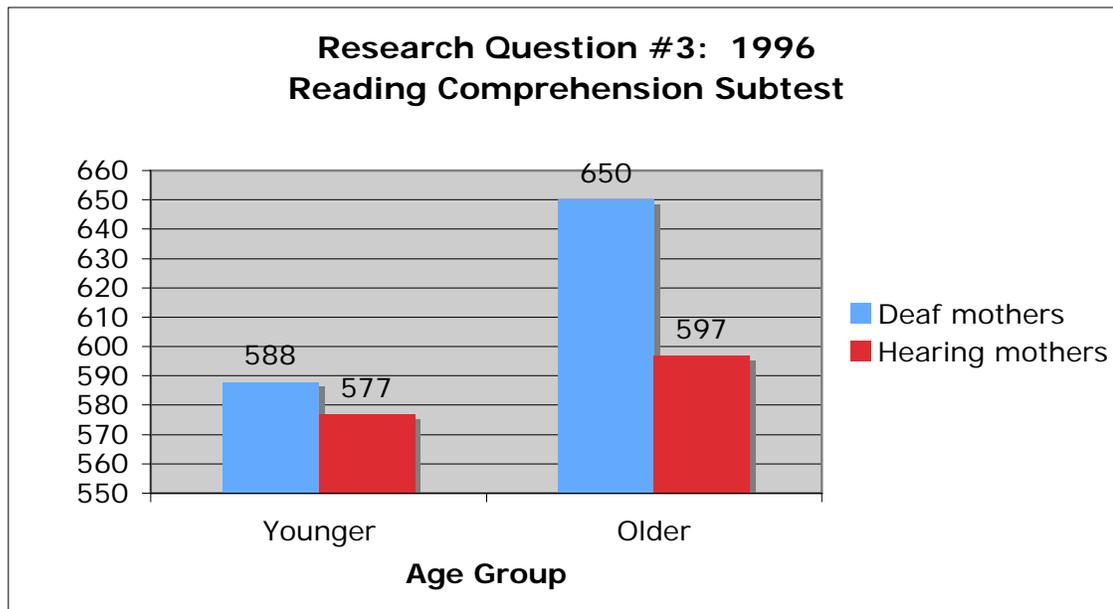
*T test Analysis#3.2:* Did the older 1996 deaf students of deaf mothers outperform older 1996 deaf students of hearing mothers in Reading Comprehension and Total Language SAT-HI scores?

*1996 younger students*

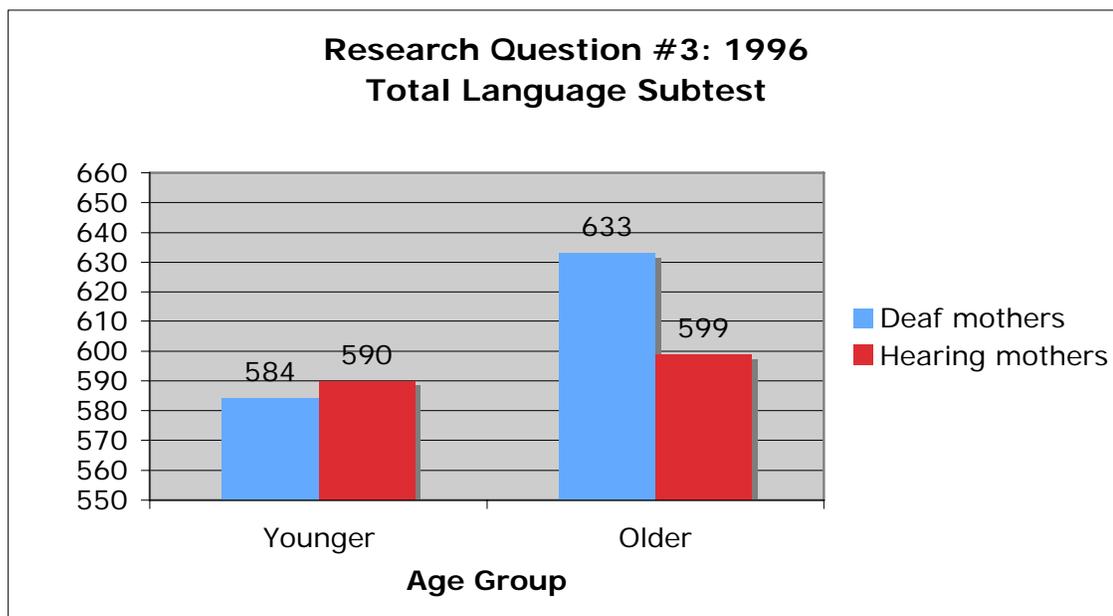
For the 1996 results, the mean score of the younger 1996 deaf students of deaf mothers (RC SS  $M = 588$ ; TL SS  $M = 584$ ) is higher than the younger 1996 deaf students of hearing mothers (RC SS  $M = 577$ ; TL SS = 590), but there is not a significant difference in the scores of the Reading Comprehension subtest. For the Total Language subtest, the result was reversed, with no significant difference in the scores (RC SS  $t(37) = .527, p > .05$ ; TL SS  $t(24) = -0.428, p > .05$ ).

*1996 older students*

The mean score of the older 1996 deaf students of deaf mothers (RC SS  $M = 650$ ; TL SS  $M = 633$ ) is higher than the older 1996 deaf students of hearing mothers (RC SS  $M = 597$ ; TL SS  $M = 599$ ) and showed a significant difference (RC SS  $t(35) = 3.545, p = .001$ ; TL SS  $t(34) = 2.833, p = .008$ ) on both subtests. The Cohen's  $d$  for these data were 1.19 and 0.96, a large effect size.



*Figure 5. RC Subtest: Comparison of DCDP and DCHP in 1996*



*Figure 6. TL Subtest: Comparison of DCDP and DCHP in 1996*

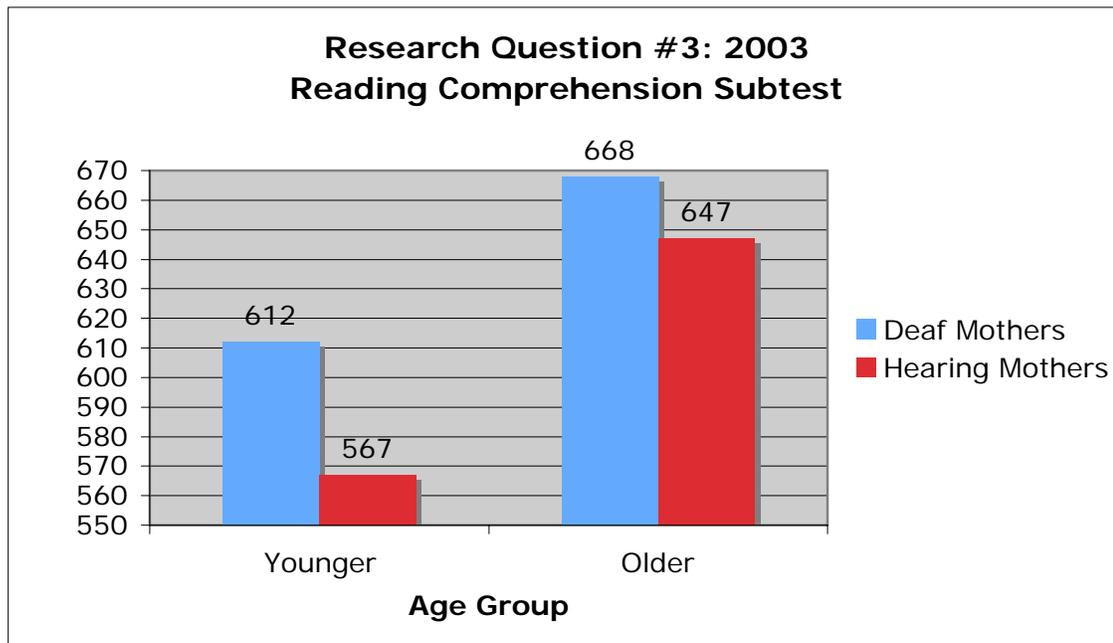
*T test Analysis #3.3 & #3.4:* Did the 2003 younger and older deaf students of deaf mothers outperform the 2003 younger and older deaf students of hearing mothers in reading comprehension and total language SAT-HI scores?

*2003 younger students*

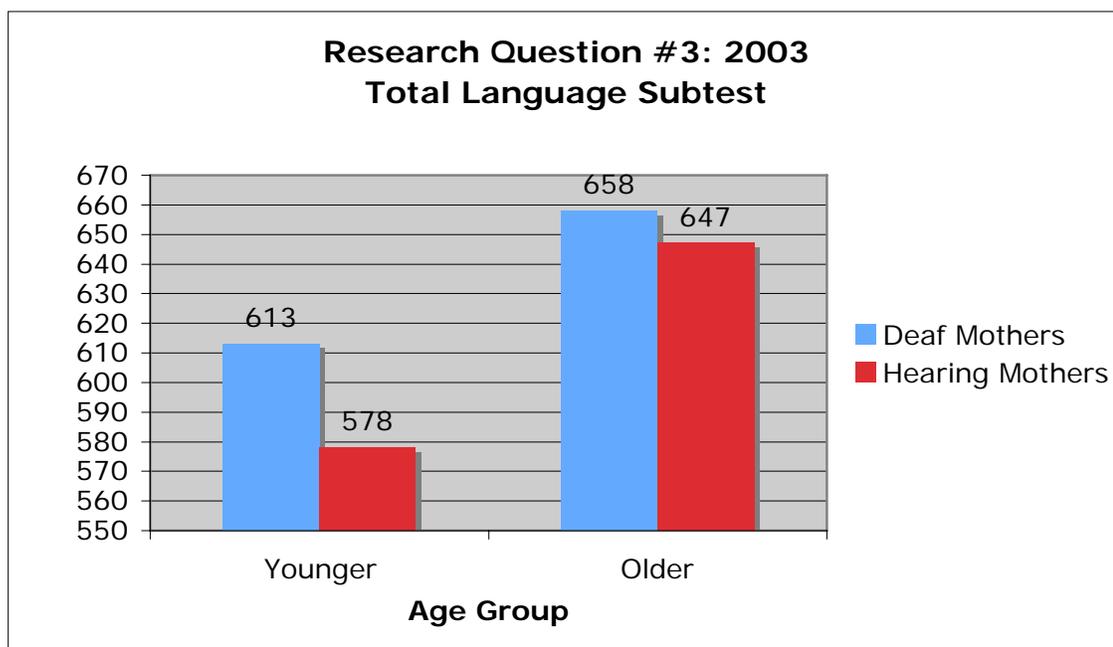
For the 2003 results, the mean score of the younger 2003 deaf students of deaf mothers (RC SS  $M = 612$ ; TL SS  $M = 613$ ) was higher than the younger 2003 deaf students of hearing mothers (RC SS  $M = 567$ ; TL SS  $M = 578$ ) in both subtests (RC SS  $t(30) = 2.517, p = .017$ ; TL SS  $t(30) = 2.576, p = .015$ ). The Cohen's  $d$  for this data were 0.87 in Reading Comprehension and 0.89 in Total Language, a large effect size.

*2003 older students*

The mean score of the older 2003 deaf students of deaf mothers (RC SS  $M = 668$ ; TL SS  $M = 658$ ) was higher than the older 2003 deaf students of hearing mothers (RC SS  $M = 647$ ; TL SS  $M = 647$ ) on both subtests and a significant difference was noted in the Reading Comprehension subtest (RC SS  $t(72) = 2.057, p = .043$ ); however, there was no significant difference in the subtest of Total Language (TL SS  $t(71) = 1.222, p = .226$ ). The Cohen's  $d$  for the RC SS data was 0.49, a medium effect size.



*Figure 7. RC Subtest: Comparison of DCDP and DCHP in 2003*



*Figure 8. RC Subtest: Comparison of DCDP and DCHP in 2003*

*Summary of research question #3*

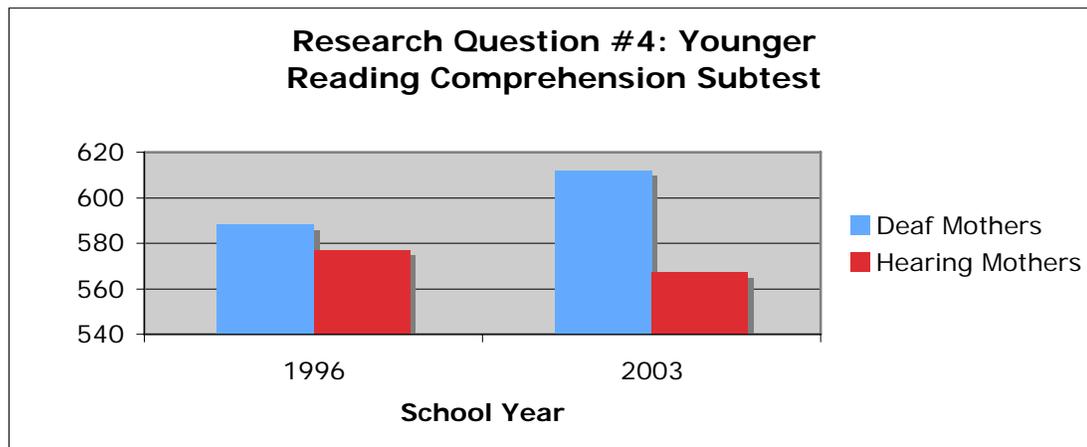
Overall, for the year 1996, both younger groups performed similarly. For the year 2003, the younger students of deaf mothers led the younger students of hearing mothers by a large margin. In 1996, the older group with deaf mothers outperformed the older group with hearing mothers by a large margin and in the year 2003, the older group with hearing mothers was equivalent to the group with deaf mothers on the subtest for Total Language.

*Analysis of Research Question #4*

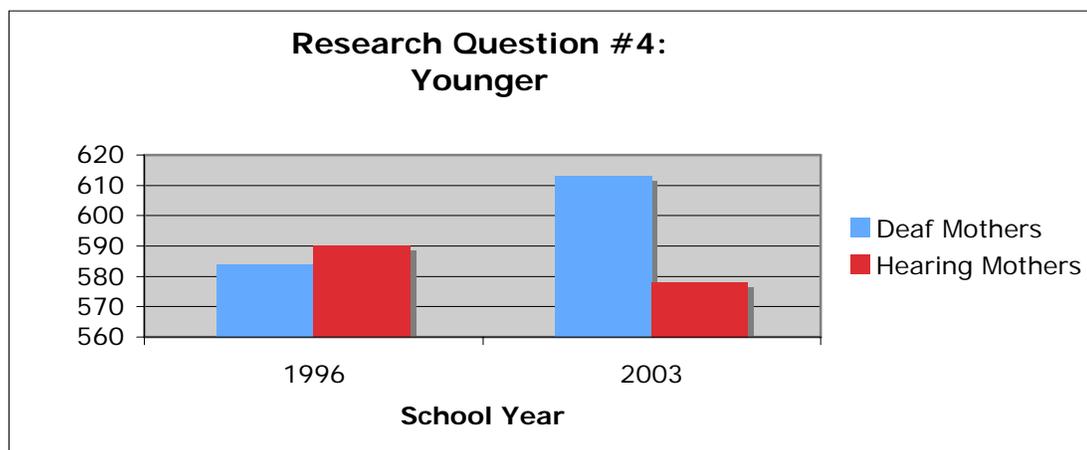
If the bilingual/bicultural philosophy has been fully implemented, has the academic performance gap between DCDP and DCHP shown a decrease from the 1995-1996 school year, when the bilingual/bicultural philosophy was initiated at the Indiana School for the Deaf, to the 2003-2004 school year?

*Data Analysis on the Decrease in the Gap*

For the younger group, a decreased or reduced gap between the academic performance of DCHP and of DCDP did not occur. Therefore, analysis was not conducted for this group.



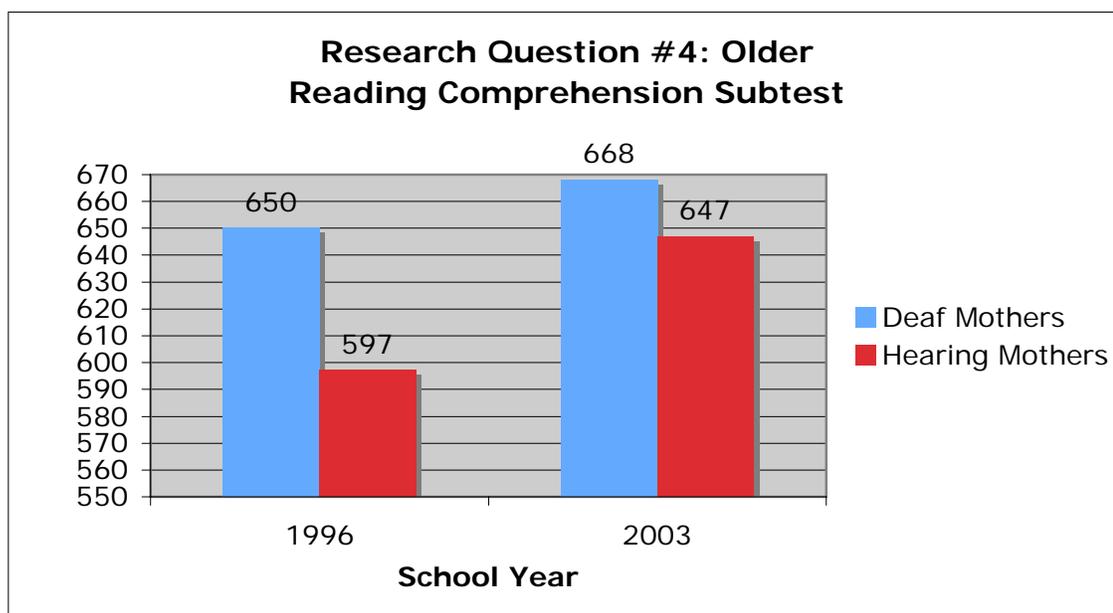
*Figure 9.* RC Subtest: Academic Gap between DCDP and DCHP (Younger) in 1996 & 2003



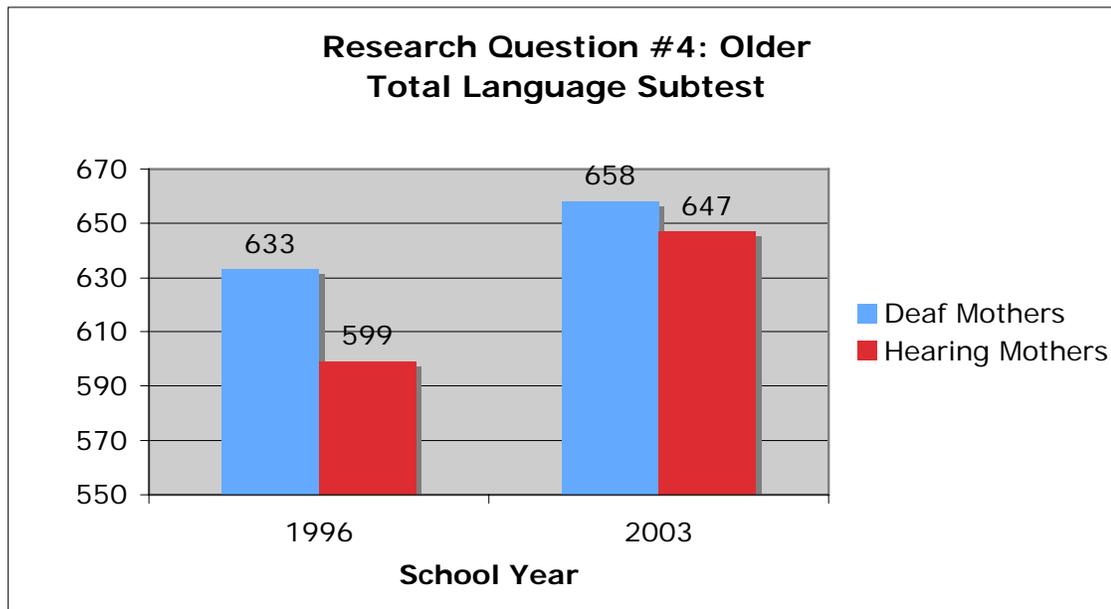
*Figure 10.* TL Subtest: Academic Gap between DCDP and DCHP (Younger) in 1996 & 2003

The mean difference in 1996 between the older DCDP and DCHP was 53.15 points and 34.36 points in RC and TL, respectively, and in 2003 the mean differences

were reduced to 21.47 and 10.86 points, respectively. The older students from 1996 showed a RC SS Cohen's "d" effect size gap of 1.19, and for the students from 2003 the gap was reduced from 1996 Cohen's  $d=1.19$  to 2003  $d = 0.49$ . The TL SS Cohen's "d" effect size gap was diminished from 1996  $d = 0.96$  to 0.3 in 2003.



*Figure 11.* RC Subtest: Academic Gap between DCDP and DCHP (Older) in 1996 & 2003



*Figure 12. TL Subtest: Academic Gap between DCDP and DCHP (Older) in 1996 & 2003*

#### *Summary of research question #4*

In 2003, the younger group with deaf mothers outperformed the younger group with hearing mothers. The older groups exhibited the same level of academic performance. In general, the older group is the focus of the educational programming with the optimal goal of reducing the gap between the groups. The gap has actually been reduced from the period of 1996, where a huge gap was evidenced, to 2003 for which the data shows that the gap has been closed, with no significant difference between the older groups on the Total Language subtest.

#### *Multiple Regression Analysis*

Multiple regression analysis was used to identify possible explanatory variable(s) that may contribute to the scores of students' Reading Comprehension and Total

Language standard scores. This tool is expected to further investigate the research question concerning a reduced performance gap between DCDP and DCHP and where it may occur. The focus is on whether the child's maternal hearing status makes a difference in the 2003 school year performance. The Cohen's *d* does not seem to be able to describe the nature of the phenomenon as well as a multiple regression analysis can. These explanatory variables are: disabilities, etiology, length of stay at ISD, students' hearing level, onset of deafness, and maternal hearing status.

There are 182 subjects when both the 1996 and 2003 groups' data is compiled in a multiple regression analysis. The demographics of these explanatory variables are presented in the following results.

In Table 15, all variables are included in the analysis with no inclusion of disability, emotional handicap or other health impairment. The data for students who have Emotional Handicap or Other Health Impairment was combined to increase the numbers per cell from 12 and 16, respectively, to 28 students total in a new variable called 'has disability (EH, OHI)' for use in this analysis.

*Table 15*

<u>Disabilities within the Groups (School Year/DA)</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
None	37	29	66	None	49	39	88
EH	6	0	6	EH	4	2	6
OHI	3	1	4	OHI	10	2	12
Total	46	30	76	Total	63	43	106
None-no other disabilities; EH-emotional handicap; OHI/ADHD-other health impairment							

Table 16

<u>Onset of Deafness for the Groups (School Year/Onset)</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
Under 1 year old	8	28	36	Under 1 year old	9	42	51
1-2 years old	0	0	0	1-2 years old	4	0	4
3 or above	1	0	1	3 or above	7	0	7
Blank	37	2	39	Blank	43	1	44
Total	46	30	76	Total	63	43	106

The data in Table 16 for the onset of deafness for the 1996 and 2003 groups is limited. The data for students who became deaf between the ages of 1-2 and those 3 or older was combined to increase from 4 and 8, respectively, to twelve students total, in a new variable labeled ‘onset 1 or above’ for use in the analysis. Onset information has been the most difficult to obtain, along with the information on etiology. All variables under the onset of deafness will be used, with the exception of the Blank variable.

Table 17

<u>Etiologies for the Groups (School Year/Etiology)</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
Heredity	7	28	35	Heredity	7	42	49
Meningitis	1	0	1	Meningitis	9	0	9
Others	1	0	1	Others	2	1	3
Unknown	0	0	0	Unknown	8	0	8
Blank	37	2	39	Blank	37	0	35
Total	46	30	76	Total	63	43	106

In the original research proposal, the author focused on four areas of etiology but has since discovered numerous instances of missing information. Table 17 takes into account a fifth “blank” area. The difference between Blank and Unknown is that Unknown indicates that a physician has reported that the etiology is unknown, whereas

for Blank there is no data available as to whether or not a determination has been sought. The Blank etiology is larger than was expected.

For the analysis, heredity, meningitis, and “others” variables will be used. The data for students who became deaf due to meningitis or other known etiology was combined to increase from ten and four, respectively, to fourteen students total, in the new variable ‘Etiology other’ and is used in the analysis. The Unknown and Blank variables will not be used.

*Table 18*

<u>Students’ Degree of Hearing Levels (School Year/Deaf)</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
Profound	9	9	18	Profound	34	23	57
Severe	5	5	10	Severe	11	13	24
Moderate	1	2	3	Moderate	9	5	14
Blank	31	14	45	Blank	9	0	9
Total	46	30	76	Total	63	43	106

Again, a surprising amount of data regarding the deaf status for the 1996 students was missing (Table 18). All students were provided with an annual hearing evaluation, however, the information was not recorded in the Administrator’s Plus program at the time that it was obtained. The files containing these hearing evaluation records are in the state archives but access was limited. Therefore, this information is not available for use in the data analysis.

For the 2003 students, nine students had either graduated or withdrawn from ISD at some point after taking 2003 SAT-HI test, which explains the data lacking for this group.

The profound and severe hearing level variables will be used in this analysis and a moderate hearing level variable was selected to function as a reference group for this analysis. The “blank” variable will not be used.

*Table 19*

<u>Status of the Length of Stay at ISD (School Year/Length)</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
0-3 yrs	0	0	0	0-3 yrs	15	15	30
4-6 yrs	2	8	10	4-6 yrs	11	5	16
7 or more	1	1	2	7 or more	25	20	45
Blank	43	21	64	Blank	12	3	15
Total	46	30	76	Total	63	43	106

The data collected for the 1996 students’ length of stay at Indiana School for the Deaf (Table 19) was incomplete. This data may be important in determining the length of the students’ exposure to pre-bilingual programs and would play some role in determining the contribution to their RC & TL scores. All “length of stay” variables are to be used in the analysis as they are the main demographic variables, as is the maternal hearing status, for this analysis. The “blank” variable is not used.

*Table 20*

<u>Hearing Status of Mother</u>							
1996	DCHP	DCDP	Total	2003	DCHP	DCDP	Total
Number of students	46	30	76	Number of students	63	43	106
Percentage	60.5%	39.5%	100%	Percentage	59.6%	40.4%	100%

The parental hearing status of the mother is one of the main demographic variables that will be used in the analysis (Table 20). It was interesting to note that the

percentage of DCDP and DCHP over time remained constant. In 1996, there was 60.5% DCHP and 39.5% DCDP and in 2003, there was 59.6% DCHP and 40.4% DCDP. There was less than 1 percent decrease in the population of DCHP from 1996 to 2003.

### *Multiple Regression Results*

Table 21 shows the descriptive statistics model of Table 22, 23, 24, and 25. Both Tables 22 and 23 depict the selected unstandardized coefficients from a single-equation regression model anticipating Reading Comprehension standard scores and Total Language standard scores, respectively. The explained variable in all of the equations is the Reading Comprehension standard scores/Total Language standard scores. The single-equation approach measures the Reading Comprehension standard scores/Total Language standard scores by looking at the length of stay at ISD and the hearing status of the mother and by taking into account selected deaf-related characteristics. Model 1 (baseline model) controls for students with no other disability, students with disability, onset of becoming deaf, degree of hearing loss, and etiology. Model 2 uses these same regressors, but adds three dummy variables for length of stay at ISD from 0 to 7 years or more. Similarly, Model 3 adds one dummy variable for the hearing status of the mother minus the length of stay variables. Model 4 adds all variables to the Reading Comprehension standard scores/Total Language standard scores equation simultaneously. The last row of Table 22 and 23 provides the results from an F-test comparing the fit of each model to the baseline model. This test indicates whether each

of the sets of demographic characteristics significantly improves the explanatory power of the model.

*Table 21: Descriptive Statistics of Table 22, 23, 24, & 25*

Variable	Whole Sample (N=182)	1996 Sample (N=76)	2003 Sample (N=106)
RC SS	619.66 (59.142)	598.32 (56.986)	634.96 (56.069)
TL SS	621.82 (45.994)	601.45 (39.064)	633.85 (45.696)
Onset 0-1 yr	.48 (.501)	.47 (.503)	.48 (.502)
Onset 1 year or older	.07 (.249)	.01 (.115)	.06 (.232)
Profound Deaf	.41 (.494)	.24 (.428)	.54 (.501)
Severe Deaf	.19 (.391)	.13 (.340)	.23 (.420)
Etiology: Other	.07 (.249)	.01 (.115)	.08 (.265)
Etiology: Heredity	.46 (.500)	.46 (.502)	.46 (.501)
No other Disability	.85 (.362)	.87 (.340)	.83 (.377)
Has Disability (EH/OHI)	.15 (.362)	.13 (.340)	.17 (.377)
Length at ISD (0-3 years)	.16 (.372)	N/A	N/A
Length at ISD (4-6 years)	.14 (.351)	N/A	N/A

Length at ISD (7 years or more)	.26 (.439)	N/A	N/A
Maternal Hearing Status	.60 (.491)	.61 (.492)	.59 (.493)

Notes: Standard deviations are shown in parentheses.

*Table 22: Effect of Predictor Variables on the Reading Comprehension Standard Scores*

Variable	Model 1	Model 2	Model 3	Model 4
Onset 0-1 yr	-59.887 (43.210)	-63.284 (43.196)	-58.948 (42.485)	-60.902 (42.477)
Onset 1 or above	-21.641 (23.675)	-21.331 (24.076)	-19.925 (23.286)	-18.790 (23.689)
Profound Deaf	-11.025 (9.952)	-17.480 (10.586)	-12.155 (9.794)	-17.777 (10.408)
Severe Deaf	10.316 (12.467)	4.861 (12.901)	7.317 (12.310)	2.724 (12.709)
Etiology: Other	27.329 (26.660)	23.271 (26.583)	28.370 (26.214)	23.992 (26.136)
Etiology: Hereditiy	67.274 (43.598)	70.440 (43.407)	-34.943 (44.573)	37.388 (44.486)
No Other Disability	-----***	-----***	-----***	-----***
Has Disability	-20.126 (12.381)	-15.752 (12.418)	-17.685 (12.208)	13.289 (12.244)
Length at ISD: 0-3 years	-----	7.017 (13.316)	-----	5.008 (13.114)
Length at ISD: 4-6 years	-----	-5.880 (13.778)	-----	-8.746 (13.589)
Length at ISD: 7 years or more	-----	26.001* (11.718)	-----	24.127* (11.543)

Parental Hearing Status	-----	-----	-40.310** (15.234)	-39.812** (15.135)
R-Squared	.054	.090	.091	.126
F-Test (main effects)	-----	1.696	2.168*	2.224*

Notes: Dependent variable in all models is the Reading Comprehension Standard Scores. The coefficients are shown first in the cell and standard errors are shown in parentheses. \*\*p<.01, \*p<.05 (two-tailed test). \*\*\* SPSS excluded variable (No other DA)

Results for Model 1 shown in Table 22, with all variables listed, show a minimal affect on the Reading Comprehension standard scores. The “r” squared was five percent, with the standard errors in unstandardized coefficients high. Similarly, in Models 2 through 4, the variables (i.e. disability, onset, hearing status, and etiology) contributed only a minor effect. Model 2 shows the addition of three variables in length of stay at ISD. For the first two variables for length of stay at ISD from age one to 6 years, there was no impact on the Reading Comprehension standard scores. However, in Model 2, the variable of 7 years or more in the program shows a significant influence with a twenty-six point increase in the Reading Comprehension standard scores. In Model 3, having a hearing mother indicates a negative influence (i.e. minus forty points) on the Reading Comprehension standard scores, indicating that a deaf child with a hearing mother was more likely to have lower Reading Comprehension standard scores than a deaf child with a deaf mother. These results are consistent, in the aggregate, with the general pattern that DCDP outperform DCHP in academic tasks. The older students from 1996 show the RC SS Cohen’s “d” effect size gap of 1.19 and for the students from 2003 the gap was reduced from (1996 Cohen’s) d=1.19 to (2003) d = 0.49. The TL SS Cohen’s “d” effect size gap was diminished from 1996 d = 0.96 to 0.3 in 2003.

In Model 4, where all demographic variables are included with controls for demographic characteristics, the results suggest an explanation for how the Reading Comprehension standard scores were affected with an increase in the F-Ratio from the baseline to .126, with a significance under .05. Having stayed at ISD for more than 7 years and having hearing parents had the strongest effects on the reading comprehension standard scores. The standard errors for other controlled variables (i.e. disability, onset, hearing status, and etiology) remain equal or higher than their unstandardized coefficients and may show no bearing on the Reading Comprehension standard scores.

*Table 23: Effect of Predictor Variables on the Total Language Standard Scores*

Variable	Model 1	Model 2	Model 3	Model 4
Onset 0-1 yr	-44.717 (34.202)	-57.151 (33.780)	-43.834 (33.627)	-55.249 (33.306)
Onset 1 or above	-17.852 (18.778)	-21.948 (18.822)	-16.450 (28.469)	-19.957 (18.572)
Profound Deaf	-4.151 (8.169)	-15.321 (8.703)	-5.132 (8.040)	-15.488 (8.579)
Severe Deaf	-3.189 (10.412)	-13.536 (10.746)	-5.428 (10.274)	-14.802 (10.606)
Etiology: Other	33.918 (21.108)	33.179 (20.758)	34.865 (20.755)	33.755 (20.462)
Etiology: Heredity	48.068 (34.535)	58.542 (33.976)	-23.760 (35.264)	35.603 (34.873)
Disability: No Other Disability	-----***	-----***	-----***	-----***
Disability: Has Disability (EH/OHI)	-9.112 (10.567)	-7.196 (10.527)	-6.499 (10.439)	-4.660 (10.432)

Length at ISD: 0-3 years	-----	16.783 (10.672)	-----	14.867 (10.551)
Length at ISD: 4-6 years	-----	17.793 (11.962)	-----	15.845 (11.819)
Length at ISD: 7 years or more	-----	31.216** (9.475)	-----	29.664** (9.362)
Parental Hearing Status	-----	-----	-31.060* (12.177)	-28.228* (11.967)
R-Squared	.025	.089	.064	.121
F-Test (main effects)	-----	1.529	1.936*	1.342

Notes: Dependent variable in all models is the Total Language Standard Scores. The coefficients are shown first in the cell and standard errors are shown in parentheses. \*\*p<.01, \*p<.05 (two-tailed test). \*\*\* SPSS excluded variable (No Other Disability)

Results for Table 23 are consistent with those shown in Table 22. They show that Model 1, which includes all variables, played a minimal role in affecting the Total Language standard scores. The effect was almost nil and the standard errors in unstandardized coefficients were high. In Models 2 through 4, the variables of disability, onset, etiology, and hearing status made only minor changes. Model 2 shows the addition of three variables: three different lengths of stay at ISD. When having stayed in the ISD program from zero to six years, there was no impact on the Total Language standard scores. However, in Model 2, when having stayed at ISD for more than 7 years, a significant increase of thirty-one points was noted in the Total Language standard scores. Model 2 F-ratio increased from the Model 1's baseline F-ratio level to 1.342 and the squared R show 8.9 % in rationalize the role of length of stay for more than 7 years related to Total Language standard scores. In Model 3, again parental hearing status in the combined groups may have a bearing on the scores of TL of approximately 31 points.

In Model 4, when all demographic variables are included with the control for demographic characteristics, similar results were found with the F-Ratio increased from baseline to .121. With a length of stay at ISD of more than 7 years and having hearing parents, the Total Language standard scores are most significantly affected. For the remaining controlled variables (i.e. disability, onset, hearing status, and etiology), their standard errors remain equal to or higher than their unstandardized coefficients and indicate very little influence on the Total Language standard scores.

These findings become significant as they lead to the comparison of the impact of having a hearing mother in school year of 1996 and in 2003. The findings in the analysis of research question number 4 show the reduction of Cohen's d values from 1996 to 2003. The question remains as to whether the effect of having hearing maternal status will be effective in predicting the scores. Will the bilingual program compensate for the effect that having a hearing mother represents? Table 24 and 25 address this question.

The next multiple regression analysis (Table 24 and 25) was completed to compare the impact of maternal hearing status for each individual year, 1996 and 2003.

Table 24: Comparison of 1996 vs 2003 Maternal Hearing Status on Reading Comprehension standard scores

Variable	Model 1 1996	Model 2 1996	Model 3 2003	Model 4 2003
Profound Deaf	-33.2355* (15.937)	-35.865* (15.633)	-29.529* (13.586)	-29.369* (13.403)
Severe Deaf	6.565 (19.119)	-3.072 (18.770)	-13.944 (16.359)	-15.628 (16.162)
Etiology Other	-90.174 (56.346)	-85.501 (55.135)	27.963 (25.743)	28.547 (25.398)
Etiology: Heredity	7.051 (13.019)	-21.946 (19.045)	44.761 (47.758)	11.500 (50.188)
Disability: None	-----***	-----***	-----***	-----***
Disability: Has Disability (EH/OHI)	-35.865 (19.186)	-31.197 (18.864)	-20.908 (14.664)	-19.477 (14.485)
Onset: 1 yr or older	52.000 (76.432)	52.000 (74.724)	-28.205 (22.826)	-27.324 (22.522)
Onset: 0-1 yr	-----***	-----***	-36.319 (47.027)	-35.880 (46.393)
Parental Hearing Status	-----	-40.071* (19.578)	-----	-39.866 (20.730)
R-Squared	.173	.221	.093	.126
F-Test (main effects)	-----*	2.748*	-----	1.752

Notes: Dependent variable in all models is the Reading Comprehension Standard Scores. The coefficients are shown first in the cell and standard errors are shown in parentheses. \*\*\*-SPSS excluded variable – (No Other Disability-all models, Onset: 0-1 yr-Model 1 & 2) \*\*p<.01, \*p<.05 (two-tailed test).

Table 25: Comparison of 1996 &amp; 2003 Maternal Hearing Status on Total

*Language standard scores*

Variable	Model 1 1996	Model 2 1996	Model 3 2003	Model 4 2003
Profound Deaf	-26.405* (12.816)	-28.488* (12.398)	-15.704 (11.274)	-15.582 (11.180)
Severe Deaf	-37.736* (15.409)	-39.885* (14.895)	-9.730 (13.739)	-10.723 (13.637)
Etiology Other	-32.609 (39.610)	-28.049 (38.265)	34.200 (21.365)	34.647 (21.187)
Etiology: Heredity	.350 (10.075)	-19.937 (13.235)	37.329 (39.632)	13.839 (41.863)
Disability: None	-----***	-----***	-----***	-----***
Disability: Has Disability (EH/OHI)	-19.149 (15.620)	-13.399 (12.572)	-13.399 (12.572)	-12.093 (12.492)
Onset: 1 yr or older	18.000 (52.815)	18.000 (50.951)	-23.766 (18.942)	-23.164 (18.787)
Onset: 0-1 yr	-----***	-----***	-33.770 (39.031)	-33.388 (38.703)
Parental Hearing Status	-----	-31.083* (13.764)	-----	-36.229 (20.116)
R-Squared	.176	.247	.060	.086
F-Test (main effects)	-----	2.531*	-----	1.123

Notes: Dependent variable in all models is the Total Language Standard Scores. The coefficients are shown first in the cell and standard errors are shown in parentheses. \*\*\*-SPSS excluded variable – (No Other Disability-all models, Onset: 0-1 yr-Model 1 & 2) \*\*p<.01, \*p<.05 (two-tailed test).

Results for Model 1 for the 1996 school year, shown in Table 24 and 25, with all variables listed, resulted in a minimal effect on the scores, except for the profound hearing loss status in both tables and the severe hearing loss status in Table 24. In Model 2 for the 1996 school year, hearing mothers showed a significant influence (i.e. minus 39 and 32 points, respectively) on the scores.

In Model 4, for the 2003 school year, a significant finding emerges. The significance of having a hearing mother was no longer present. There was no impact on either the Reading Comprehension standard scores or the Total Language standard scores for this variable. These results are consistent with the observation of a closing in the gap between the performance of DCHP and DCDP and the findings of Prinz and Strong.

## CHAPTER 5

### SUMMARY and DISCUSSION

This chapter presents a brief summary of this study and is followed by a discussion of the findings and consideration of the research limitations. Finally, conclusions and recommendations for future research are presented.

#### *Research Summary*

The educational problem this study addresses is the difference between the academic performance of deaf/hard-of-hearing students of hearing parents (DCHP) and deaf/hard-of-hearing students of deaf parents (DCDP). DCHP traditionally show a more significant delay in their academic performance when compared with DCDP. This has been attributed to the fact that deaf parents have a positive attitude about having deaf children and that they provide their children with an accessible first language, ASL (Singleton & Morgan, 2005). These reasons have been repeatedly offered as explanations for the superior academic performance of DCDP, regardless of pedagogical methods.

By adopting a bilingual/bicultural educational philosophy, the Indiana School for the Deaf was challenged with incorporating into the school environment the benefits that DCDP receive. A bilingual/bicultural philosophy recognizes the importance of two languages, English and American Sign Language, and two cultures, the American culture at large and Deaf culture. Deaf families provide both languages and cultures in a natural environment. If the residential school for the deaf has been successful in emulating the

environment of DCDP and the benefits that they receive, the gap between the academic performances of DCDP and DCHP should be seen to narrow with time as students continue with their program of studies (Singleton & Morgan, 2005).

Researchers have pointed out the significance of the academic gap between the academic performance of DCDP and of DCHP. Among the many questions posed by educators, parents and Deaf community members have been whether a school could duplicate the natural environment of DCDP in the school setting. In doing so, they would be creating an environment where early exposure to ASL is provided, children are accepted as being deaf, and the culture of the Deaf community is recognized and modeled. Researchers have argued that children have the right to experience communication among their peers in a fully accessible manner and that the children should be able to participate in community activities without linguistic barriers (Singleton & Morgan, 2005). The bilingual/bicultural philosophy was proposed in order to offer deaf children the ability to participate fully in either community and interact in both as they wish. Bilingualists (Baker, 2001; Cummins, 1991, 2000; Erting & Pfau, 1997; Freeman & Freeman, 1998; Grosjean, 1998, 2001; Grushkin, 1996, 1998) believe there is a need to develop academic understanding in the children's first language, in this case ASL, before they can be expected to master an academic understanding in their second language (i.e. English).

This study has shown that the implementation of the bilingual/bicultural philosophy compensates for the home environment of DCHP and enhances the academic performance (Reading Comprehension standard scores & Total Language standard

scores) of DCHP in the older group of students between the 1996 and 2003 school years. The gap noted between the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP and of DCHP has narrowed in a large Cohen's *d* effect size in both areas of academic performance, Reading Comprehension and Total Language, from 1996 to 2003. What is particularly interesting is the improvement in the Total Language performance seen for the year 2003 when compared with scores in 1996. This improvement in performance may be attributed, in part, to the students' study of ASL that provided them with an understanding of their own language. By assessing their own language mechanisms, they were then able to apply those language-assessing skills to their second language, English. Although there is a correlation, the Reading Comprehension skills do not seem to have an impact on the Total Language skills for DCDP. What this may show is that when students understand the structure of their first language, ASL, they are better able to understand the mechanics of their second language. Their world knowledge seems to have been expanded by having an accessible communication environment and their interactions with adults perhaps strengthens their abilities to see connections between social events and what they read (Singleton & Morgan, 2005).

### *Hypothesis*

The major hypothesis is that if a residential school for the deaf fully implements a bilingual/bicultural philosophy, the gap seen between the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP and DCHP would be reduced. The null hypothesis is that there is a statistically

significant difference between the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP and DCHP, as measured on the SAT-HI test at a residential school for the deaf.

The minor hypothesis is that if a residential school for the deaf fully implements a bilingual/bicultural philosophy, the gap seen between the academic performance of DCDP and DCHP would be increased between the 1996 and 2003 school years. The null hypothesis is that there is not a statistically significant difference between the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP and the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCHP from 1996 to 2003, as measured on the SAT-HI test at a residential school for the deaf.

### *Discussion*

#### *Younger Groups*

The findings for the younger groups of both investigated years indicate similar academic performances (Reading Comprehension standard scores & Total Language standard scores). Yet, for both 1996 and 2003, the mean scores for the younger students were higher than the norms for Gallaudet's younger students. For the earlier school year, 1996, there were no differences between the academic performances (Reading Comprehension standard scores & Total Language standard scores) of DCDP and DCHP. For 2003, a significant increase in the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP was noted.

However, the gap between the academic performance (Reading Comprehension standard scores & Total Language standard scores) of DCDP and DCHP remained.

The similar performances for the younger group in 1996 and the younger group in 2003 were to be expected. This similarity may be attributed to normal limitations as the children began to acquire English as a second language. It may also be attributed to the relatively short amount of time during which they had been enrolled in the bilingual program (Nover & Andrews, 2003)

In terms of Reading Comprehension and Total Language scores, the academic performance of the younger groups for both 1996 and 2003, when compared with the Gallaudet norms for those same years, was as expected and has been noted in this study.

There was an expectation that the academic performance (Reading Comprehension standard scores & Total Language standard scores) of the younger DCDP would outperform that of DCHP in 1996. This did not happen. The assumption then was that in 2003 the academic performance (Reading Comprehension standard scores & Total Language standard scores) of the younger DCHP would be equivalent to the academic performance (Reading Comprehension standard scores & Total Language standard scores) of the younger DCDP. This did not occur. The strong academic performance of the younger DCDP in 2003 was expected and has been noted in numerous studies (Padden & Ramsey, 2000; Strong & Prinz, 2000). Moreover, the gap between both groups had increased. The DCHP were still acquiring ASL and the length of time they had been enrolled in the bilingual program, less than 7 years, may be the primary reason for them not being able to reach the academic level of the DCDP (Mahshie, 1995; Singleton, et al, 1998; Strong & Prinz, 1997; Wilbur, 2001).

Meanwhile, deaf parents may have become empowered during the Deaf President Now uprising at Gallaudet University when a strong ASL movement emerged (Lane, et al, 1996). A possible explanation for the performance of the younger DCDP in 2003 may be that more deaf mothers had been educated about the importance of using ASL and of embracing the uniqueness of having deaf children. Another contributing factor may be that many parents of those deaf children had moved to the state specifically so that their child/children would be able to attend the Indiana School for the Deaf, a school that supports the vision of deaf enculturation.

#### *Older Group*

Based on the strength of the academic tasks (Reading Comprehension and Total Language) of the SAT-HI, the primary findings for the older group of 2003 were compared with the scores for the older group of 1996 and with the Gallaudet norms. The academic performances (Reading Comprehension and Total Language standard scores) for the DCDP and for the DCHP were similar. The gap in academic performance had been significantly narrowed.

The older 2003 group clearly improved by a large margin when compared with the older 1996 group as well as with the Gallaudet norms. Both the Reading Comprehension and Total Language mean scores of the older 1996 group were above the Gallaudet norms. As for the older 2003 group, the margin was wider when compared with the 1996 group relative to the Gallaudet norms. This may validate the increase in the older 2003 group's academic performance (Reading Comprehension and Total

Language standard scores), given the fact that both younger groups start at nearly the same level of performance, although that level still does exceed the Gallaudet SAT-HI norms.

Although the mean scores of the DCDP are still higher than those of the DCHP, there was no statistically significant difference indicating that both groups are performing at the equivalent level. One interesting observation is that the scaled scores for the DCDP on the Reading Comprehension subtest were similar for 1996 and 2003 while a spike in the Total Language scaled scores was noted; the scaled scores for the DCHP soared on both academic tasks. This suggests that the Reading Comprehension abilities for the DCDP were constant, regardless of how they are able to evaluate the grammatical mechanism of English. However, when it comes to assessing their first language, ASL, in the formal setting, when they were given tools to learn the grammatical mechanism of their first language, the DCDP seemed able to apply this knowledge towards assessing written English (Prinz & Strong, 1998; Strong & Prinz, 1997; Wilbur, 2000, 2001). This would account for a higher Total Language score. The Reading Comprehension skills appeared to be related to global knowledge and life experiences with a fully accessible language benefiting those DCDP (Singleton & Morgan, 2005). However, in order to evaluate the mechanics of a language requires an evaluation of the mechanisms of the first language.

The surprise in these findings was the appearance of the actual reduction in the gap between the academic performance of DCDP and DCHP and the fact that multiple regression analysis did identify the parental hearing status variable and length of stay at ISD for 7 years or more as contributing factors for that group. Why does the 7 year or

longer stay ISD contribute to the academic scores for those DCHP? Was it due to a cumulative benefit from the experience and acquisition of first language in the classroom (Jambor & Elliott, 2005; Singleton & Morgan, 2005)? Was it the benefit from a related change such as improvement in hearing parents signing skills over time? This result of the narrowing the gap by DCHP in 2003 with the DCDP may be, in part, attributed to the length of stay at ISD, in spite of parental hearing status.

Overall, there are still questions as to whether the full impact of the bilingual program can be shown due to numerous missing data. The large increase in overall academic performance provided significant incentive to pursue this study.

#### *Limitations*

Selection Bias: The low incidence of students who are deaf/hard-of-hearing makes it difficult to use a random research design (Yoshinaga-Itano, 2004). This type of research design would yield more validity and allow one to generalize the findings to the entire population of deaf students.

Ethics: It is possible that administering the Stanford-9 Achievement Test could cause the students to become stressed. It is assumed that the subjects who took the tests did so in comfortable situations. There may be some ethical issues surrounding the use of this data for purposes other than their intended use, which was to determine educational programming for students. Parents and students would not have expected the data to be used to evaluate the educational program at the Indiana School for the Deaf.

Design Contamination: There is a dilemma in that the poor performance by DCHP on the SAT-HI scores may not simply be attributed to a difference in the attitude

of hearing parents towards having a deaf child or by a child's early exposure to ASL. The control variables may contaminate the data or a combination of unidentified variables may affect the results.

Ecological Validity: There is a possibility that the recent implementation of a statewide standards-based curriculum has given recent graduates different educational experiences that may have led to different achievement scores thereby closing the gap between the academic performance of DCDP and of DCHP.

Instrument Contamination: The reading comprehension subtest of the Stanford-9 Achievement Test was designed for use with hearing students. The focus of the subtest is to measure the comprehension of written English by native users and thus there exists an inherent bias. Nover & Andrews (2003) discussed several studies that specify the limitations of this test instrument. In addition, most older deaf students are taking the test at a level that is designed for younger hearing students (Holt, Traxler & Allen, 1997). Gallaudet University has collected data on deaf students and their performance scores in different educational settings, making this subtest a valuable tool. Moreover, Gallaudet University has developed norms for deaf students that can be used for comparison purposes. The strengths of this instrument, therefore, outweigh the acknowledged limitations.

Multiple Regression Analysis Contamination: When this tool was used with small sample size, the standard errors of the coefficients of parameters (demographic variables) became larger. This made the rejection of the null hypothesis more difficult. In this case, to control the contamination required that the sample size be larger than number of parameters being examined. In the single-equation formulation the possible

interactive effects of the variables (all variables that was used in Table 22, 23, 24, and 25) might be overlooked.

### *Implications/Conclusions*

This section of the study will review the current trends, the changing terminology, findings of this study, and recommendations for deaf education.

The deaf education reform movement continues with bilingual deaf programs developing nationwide. More ASL classes are being offered in higher education than ever before. Signed English course offerings in deaf education teacher training programs are rapidly disappearing. There have been numerous research studies on how ASL helps deaf children develop literacy skills in both languages. Yet, there is only one known case study of a residential deaf school using ASL as the language of instruction with an emphasis on English as a second language (Grushkin, 1996).

This study can now address the effect of the bilingual/bicultural philosophy on the academic achievement of deaf/hard-of-hearing students. In addition, the Indiana School for the Deaf received a great deal of attention from parents (who live both inside the state as well as in other states), deaf/hard-of-hearing advocates, and educators who have requested academic performance evidence. This study will truly address the bilingual/bicultural delivery system in terms of its effectiveness and the possible implications for deaf education in general, as well as for the future of deaf/hard-of-hearing students.

The findings of this study suggest that deaf/hard-of-hearing students are making significant progress in their academic skills in the bilingual/bicultural program. With sufficient time in the program, the acquisition of American Sign Language, and a respect for and celebration of the state of being deaf, DCHP are then able to academically match DCDP. Their understanding of American Sign Language may help them to analyze more effectively the English in the Total Language component of the SAT-HI. This is the case in spite of the incomplete implementation of the bilingual/bicultural strategic plan. The results may yet be stronger if the entire educational staff were to complete the Star School Project training program, now known as the ASL/English Bilingual Professional Development (AEBPD) program of the Center on ASL and English Bilingual Educational Research (CAEBER).

The term “bilingual deaf education” appears to be evolving into an “ASL/English program.” What this study has shown is the promise of an ASL/English program that embraces and celebrates both languages and allows children to achieve their potential. In most cases, when changes in deaf educational programs were suggested, the use of spoken English or Signed English was discussed and the implementation of the chosen program was completed relatively quickly, apparently without much in-depth study. This seems not to be the case for the ASL/English philosophy. It is hoped that this study will encourage more schools to explore this idea and provide comprehensive training for all of their staff, parents and students in order to make changes in educational policy that can be successful. Rather than experiencing any deprivations in either language, students in the ASL/English program are able to read and write English, sign ASL, and

for many, use spoken English. This type of program allows children to maximize their potential in both languages.

Furthermore, the collection and analysis of this data has led to the synthesis of an entirely new concept, one in which federal and state educational agencies would consider having mandatory data collection that could be used to help educators shape their early intervention, preschool, elementary, middle school, and high school programs. It is well known that being deaf does not cause a language delay. Rather, it is the lack of access to language in the environment of a child that creates a language delay. Therefore, it becomes imperative that we seek to create an optimal language environment for all deaf/hard-of-hearing children so that they can acquire language naturally, as do DCDP.

Part of the mandatory data collection initiative would require collecting all completed test data for deaf/hard-of-hearing students in a variety of different educational placements. Data collection could include, but not be limited to: onset, etiology, parental hearing status, parental home language usage, parental language fluency in both languages, number of signers in the family (if applicable), length of stay in each program, communication method selected at each age level, Indiana State Testing Educational Performance (ISTEP) scores, students' hearing levels, critical mass (i.e., the number of students in the same program with each child), parental educational levels, social economical status, other disability (if any), communication environment of the educational program (i.e., communication access in public areas, classrooms, cafeteria and other environments), teachers' experience level, teachers' and students' fluency in both languages, teachers' training in bilingual education, teachers' training for providing auditory development, children's type of hearing devices (i.e., traditional analogue

hearing aids, digital hearing aids, and cochlear implants), frequency of hearing device use for each student, IQ test results, audiological test results, and other information that may affect educational success.

In addition, a tracking number should be assigned to each deaf/hard-of-hearing student in the state of Indiana to allow data to be followed and updated for use by the Department of Education. This type of tracking would assist in the evaluation of the delivery of deaf education services. There is no known comprehensive, longitudinal study of this type. Currently, there is a tracking system for all Indiana students, including deaf/hard-of-hearing students, which includes ISTEP scores and the length of time spent in each educational program. The scope of this tracking system should be expanded to incorporate the variables listed above. A more precise instrument is needed to assess the ASL, spoken English, and reading skills of deaf/hard-of-hearing students. The SAT-HI, version ten, was originally designed for native English speakers (i.e., those who have had normal language acquisition through the auditory channel) and a better tool should be developed for use specifically with today's deaf/hard-of-hearing students.

The degree of family involvement in this English/ASL program should be studied and tracked for each child, as previously suggested.

The Department of Education will need to measure the teachers' pedagogical knowledge and understanding of English and ASL and document the amount of training that is offered by the school. This can be done by documenting the type of training sessions and attendance and by evaluating teacher portfolios including lesson plans, handouts, videotapes of their teaching, students' work, and interviews of their experiences before and after the implementation of the bilingual/bicultural philosophy.

In addition, the administrators of the educational programs should be included in the evaluation of the teachers' knowledge and delivery of the English/ASL program.

This study was unable to determine all of the critical factors in the improvement of academic performance seen in this study due to a large amount of missing data. Therefore, it is strongly recommended that this school diligently collect and maintain student data.

The improvement of methods for tracking and collecting data will help identify the critical features that may contribute to the improvement in the academic performance and help optimize the educational system delivery for all deaf/hard-of-hearing students in the state of Indiana.

#### *Recommendations for Future Study*

Considerations for future study could include several areas of focus, such as the effect of parents' signing skills on their child's academic success and the academic skills of students with cochlear implants. Additionally, the variables of this study could be studied at another educational settings. There are also questions that need to be addressed as the tide has changed in deaf education with growth more rapid than at any other time in the past 200 years.

This study has found that DCHP's academic performance has caught up with DCDP. Was it because the hearing parents are signing more than they have in the past? Are they better signers? Should all parents' signing skills be evaluated to determine

whether the ASL skill levels of hearing or deaf parents have an effect on the English and ASL literacy skills in their deaf/hard-of-hearing child(ren)?

Apparently, we are experiencing a new “neutral zone” having just come out the period of “new beginning” (i.e., the last 10 years) where many deaf children are receiving cochlear implants. Our challenges have been to determine how to serve students with cochlear implants. Are they to be treated as children with traditional hearing aids? Some assumptions have been made that an ASL/English program cannot meet their auditory needs (Ertmer, 2005). However, the professional experience of the ISD speech language pathologists who work with both hard of hearing students and children who have received cochlear implants has suggests the opposite. According to Julie Buck, Holly Geeslin, and Jackie Katter, Speech Language Pathologists (personal communication, January 4, 2006), these children’s speech skills continue to improve, as does their ASL fluency, after entrance to ISD. Further exploration of this subset of children and their spoken English skill development in a bilingual/bicultural program is warranted.

The study could be replicated using a larger number of residential programs to create a national sample. Within the past five to ten years, several state schools for the Deaf have implemented an ASL/English program. Those schools include Maryland School for the Deaf, Delaware School for the Deaf, Texas School for the Deaf, New Mexico School for the Deaf, California School for the Deaf-Fremont, and Kansas School for the Deaf. Additionally, the study of the same variables in an alternative educational setting could be expanded to incorporate a mainstreaming program, a privately funded school, and/or a charter school. There are several public schools that practice the

ASL/English philosophy and their performance has not been well documented. The South Shore Cooperative Educational program in the Quincy area of Boston is one of few public schools that practice the ASL/English philosophy. Is it possible for public schools and private schools that serve both hearing and deaf students to provide an environment that uses two languages, ASL and English? There are several charter schools that have enrolled both hearing and deaf students. Some of those programs have two teachers in the classroom, one using only ASL and the other using only spoken English with both languages being provided simultaneously. Again, the question remains, how many deaf students would it take to have a critical mass and to promote the use of the two languages within both groups of students?

With further studies address parental signing skills, performance in other educational settings, and how cochlear implanted students can benefit from ASL/English program, our understanding of the educational experience of deaf/hard-of-hearing children could be greatly enhanced.

In this way, we can better understand how to provide all deaf/hard-of-hearing children with opportunities to acquire, exercise, and pursue their freedom in both languages as full-fledged citizens of society, making a difference in our diverse community, as was the vision of Laurent Clerc.

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Appendix A; (Indiana school for the Deaf, 1992).

## **Indiana School for the Deaf: Communication Issues on Campus**

**A Report Submitted to Superintendent Eddy F. Laird Summarizing  
the Results of Training Completed in the Spring of 1992**

**By:**

**David O. Reynolds  
Ann Miller Titus  
Bilingual/Bicultural Coordinators  
August 1992**

**Final Report Edited by  
Ann Miller Titus  
Transition Consultant  
July 1993**

## PREFACE

The Indiana School for the Deaf *is* in the process of becoming a bilingual and bicultural school (Reynolds and Titus 1991). At the heart of this bilingual/bicultural philosophy is the fact that Deaf people represent a cultural and linguistic minority (Bienvenu 1993). Deaf people have a unique language, American Sign Language (Klima and Bellugi 1979)), and also use English as their second language (Baker and Cokely, 1980). They have a rich cultural heritage that includes behavioral norms and identity that are distinguishable from general American Hearing culture (Bienvenu and Colonomos 1988, Padden and Humphries 1988, Philip 1993). They are, in fact, bilingual and bicultural individuals. .

Since the mid 1800's, educational programs for the Deaf in this country have failed to recognize Deaf people as a cultural and linguistic minority (Lane 1984). Instead, programs for Deaf children have been founded on the belief that they are handicapped or afflicted with a medical pathology. Thus, any school committed to bilingual and bicultural education faces a major philosophical transition. Such schools must take on the task of changing the values, beliefs, and assumptions that guide every action within the school. This transition brings many questions and conflicts to the surface. The Indiana School for the Deaf has begun to deal with those questions and conflicts.

One such question has been, "How do staff communicate with each other outside of the classroom?" This paper will describe our process for answering that question. We would like to acknowledge several people who directly or indirectly assisted us with this process:

M.J. Bienvenu and Betty Colonomos

The Bicultural Center  
Riverdale, Maryland

Marie Philip and Anita Small  
The Learning Center for Deaf Children Framingham, Massachusetts

Tom Fuitak  
The Center for Change University of Minnesota Minneapolis, Minnesota

## BACKGROUND

### Establishing a Language Policy

In January of 1990, the Indiana School for the Deaf made a commitment to Bilingual Bicultural education. That commitment was the result of four years of planning by a "Communication Curriculum Committee" and came following intense negotiations between that committee and the school administration (Reynolds and Titus 1991).

In the fall of 1991, a new mission and philosophy for ISD was developed. It reflected the school's intent to become bilingual and bicultural. A position paper explaining the rationale and defining bilingual and bicultural education for Deaf children was prepared in 1992. As these two documents were prepared, the school began to realize that it was changing its Language Policy. This realization brought to light the nature of language and language use. A *language* is a set of arbitrarily chosen symbols, governed by a set of rules or grammar, whose meaning and use are shared by a group of people. *Language* permits a person to exchange information about a particular situation that is not present. In other words, a *language* is not context bound. A *language* can be used for communicating and as a tool for thinking.

Our Mission and Philosophy and the Position Paper explained the Language Policy of the school. These documents clearly defined our beliefs about Deaf people and the languages they use. The documents also described how these two languages are used in the classrooms of a bilingual and bicultural school.

### The Need for a Communication Policy

As the school studied this concept of *language*, we began to realize the difference between *communication* and *language*. *Communication* refers to the exchange of information between two or more people. Often those people can communicate without having a common set of symbols or grammar. *Communication* can involve the use of any means to transmit information. It is therefore highly bound to the context and a highly negotiated process. The people involved are constantly agreeing, disagreeing, monitoring, and adapting the means of communication to insure that their messages are clear.

We began to think that ISD needed a Communication Policy as well as a Language Policy. Staff seemed to understand how two languages, ASL and English would be used for the education of the students, however, many conflicts were arising between staff because people were unsure about how to communicate with each other. Deaf staff indicated their concern that the students have a "barrier free" and "language rich" environment in which to learn. They were also reporting that they often felt ignored and left out of conversations because so many Hearing people were speaking English outside of the classroom. Deaf people indicated that many Hearing people were using Simultaneous Communication (SIM COM). In other words, these people were signing and talking at the same time. This method of communicating tends to be ineffective (Johnson, Liddell and Erting 1989) and is often insulting to Deaf people who see it as a manipulation of their natural language.

Hearing people were experiencing a different set of feelings. Some Hearing staff felt that their rights were violated if they were required to sign ASL all the time while at ISD. Others felt afraid because they were not skilled, enough to fully participate in ASL conversations. Still other Hearing people felt awkward because they were not sure what they should do: should Hearing people stop speaking English while on campus?

### *Communication Cannot Be Mandated*

Initially, it seemed that a Communication Policy was needed. Such a policy would provide rules for people to follow in a variety of situations. It was through discussions with M.J. Bienvenu and Betty Colonomos, however, that we began to remember the nature of *communication* itself. It is highly negotiated. People try different things until messages are effectively communicated. The process of communicating cannot be mandated to fit a specified set of rules and regulations. If we were to try to establish such rules, the list would be so cumbersome and so full of exceptions that no one would be able to remember them all. A Communication Policy would tend to make people feel that they were living in a "police state" and may in fact, lead to dissension and rebellion. We realized that people cannot be forced or coerced into communicating with each other in specified ways. Rather, communication must be negotiated between the parties involved out of the respect that they have for each other.

### Planning Conflict Resolution

In October of 1991, the school's Assistant Superintendent for Education, Rachel Stone, asked the Bilingual/Bicultural Coordinators, David Reynolds and Ann Titus to attend one of the weekly meetings of the Educational Supervisors. This group wanted to discuss procedures for resolving some of the conflicts that were continuing to arise regarding communication on campus. The group asked the BIBI Coordinators to help design a plan for workshops and training. They requested that the plan meet the following requirements:

- The workshops must involve all staff.
- The training must give all staff the chance to openly express their opinions and feelings.
- The workshops must be designed to build consensus through negotiation.

A plan was then submitted by the BIBI Coordinators and accepted for use by the Educational Supervisors. This same plan was then shared with the Assistant Superintendent for Student Life, Dan Fitzpatrick. He agreed to carry out the same plan with residential staff.

## COMMUNICATION ISSUES ON CAMPUS: THE PLAN FOR CONFLICT RESOLUTION

The Educational Supervisors, the Assistant Superintendent of Education, the Assistant Superintendent for Student Life, and the BIBI Coordinators agreed that the school would first train all the Supervisors, including Curriculum, the Supervisor of Clinical Services and a Deaf and Hearing Representative from each of their departments. This training group would go through a process for conflict resolution and would then replicate an identical process in each of their respective departments. The Deaf and Hearing Representatives in the training group were selected by the peers in their departments. Training sessions were to consist of the following:

- Session 1: Participants will discuss in detail the plan for this training. They will complete a survey that will be developed by the BIBI Committee. That survey will help participants focus on major issues regarding communication on campus and help to show what attitudes and opinions are prevalent before training begins.
  
  - Session 2: The Deaf participants and the Hearing participants will meet separately. Each group will discuss a series of questions. Those questions will help the participants identify their interests: their needs, concerns, fears, and desires related to communication on campus. Each group will predict the interests of the other group. All of these ideas will be written and saved on chart paper.
  
  - Session 3: The Deaf and Hearing groups will meet together and compare their lists. They will identify those interests that are common to both the Deaf and Hearing groups. Then they will list behaviors of "how-tos" that are consistent with those interests. They will also discuss those interests that are different or are in conflict.
  
  - Session 4: Participants will brainstorm behaviors or "how-to's" that will meet the interests of the Deaf and Hearing group that are in conflict. After brainstorming, they will discuss the pros and cons of each suggestion and will select several possible behaviors as solutions to try.
  
  - Session 5: Participants will review the agreements that have been reached, the behaviors they will try, and identify those situations that are still not resolved.
- Participants will review the training they have just completed and will plan to carry out the same process in their respective departments.
- Participants will repeat the survey to see if any changes in attitude have taken place. Participants will also fill out an evaluation form for the training.

It was agreed that as the Supervisors and the Department Representatives began training in their respective departments, the BIBI Coordinators would provide consultation to them. It was also agreed that when training in all departments had been completed, supervisors and representatives would meet together with the BIBI Coordinators to share the results of their meetings. Those results would become guidelines for staff.

### The Rationale Behind the Plan

Certain aspects of this plan for conflict resolution were considered very carefully. We wanted to ensure that some consensus was reached on these communication issues and to provide staff with the opportunity to experience negotiation in a positive way. This paper will now explain the rationale for certain aspects of the plan.

*Why was it important to train Supervisors and Representatives from each department to become facilitators?*

We knew that it would be nearly impossible for the BIBI Coordinators to facilitate these meetings for each department on campus. We also knew that the school was in the process of becoming more participatory. That commitment includes giving staff the training and support to assume leadership roles in their respective departments. A reasonable solution was to train Representatives and Supervisors to facilitate these meetings for their peers.

*Why should the Supervisors and the Representatives go through the training themselves, then replicate the process in their departments?*

We wanted to ensure as much consistency as possible. We wanted all departments to be examining the same questions and to have the same opportunities for discussion. If we had trained the Supervisors and the Representatives by discussing theories or philosophical approaches to conflict resolution, each department would have had a different process, based on the interpretations of the facilitators.

We were also basing our training approach on an educational theory developed by Paulo Freire (1990), this approach suggests that learning can best take place when the context is the real-life situation of the learners. We felt strongly that the Supervisors and the Representatives would learn more about facilitating conflict resolution by first going through the process themselves. We felt they had to explore these communication issues themselves before they could facilitate the process for others.

*Why did participants have to discuss the details of the plan for training in the first session?*

There are two elements to any discussion. One element is the "topic" or what is being discussed. This element can also be called the "substantive aspect" of the discussion. The second element of any discussion is "how" the topic is discussed. This can also be thought of as the "process" of the discussion.

Both substantive and process aspects are very important, particularly in situations of negotiations. If anyone is unclear or uncomfortable with the substance or process, communication can easily break down.

We discussed the plan for the training sessions with the participants, examining both the substance and the process before beginning the training because we wanted the participants to be clear and comfortable with both.

*Why divide in to Deaf and Hearing groups in the second session?*

We have found that dividing into Deaf and Hearing groups can be a valuable tool for the following reasons:

Both Deaf and Hearing have the chance to discuss the issue in their native languages. This is important, because even when very competent interpreters are used, the nature of a discussion changes in a bilingual situation. Participants are more constrained for time and for fluency when interpreters are used. By breaking into Deaf and Hearing groups, all participants can experience a free flowing discussion.

By breaking into Deaf and Hearing groups, a safer environment for discussion is created. Given the tension that exists in any school that is becoming bilingual and bicultural, it is sometimes difficult for people to express their true feelings or views. When divided into Deaf and Hearing discussion groups, we tend to *see* people become more candid and open. Ideas are written down as a group, not as coming from specific individuals so that people do not have to be afraid that a statement will be held against them. Rather, the statements remain anonymous.

*Why did participants have to discuss their "interests"?*

Roger Fisher and William Dry are negotiators with the Harvard Negotiation Project. Together, they have written a book called Getting To Yes. That book describes tactics for successful negotiations.

Fisher and Dry explain that very often people enter a negotiation saying "I want you to do this and this and this," Each party continues stating their: *position*: they focus on what they want the other person to do. This type of negotiation is rarely successful. Parties do not get the point of understanding each other and often the discussion ends in deadlock.

Fisher and Ury suggest that people negotiate by focusing on their *interests*. They suggest that the parties involved clearly explain their needs, desires, concerns, and fears. *Interests* are what cause a person to take a certain *position*. Behind opposing positions lie both compatible interests and conflicting interests. By examining interests from both sides, the parties can see exactly where they agree and why they may disagree. They can then brainstorm solutions that meet both parties' interests. If both parties enter into the negotiation having already made up their minds on a position, they may overlook a solution that satisfies both sets of interests. Finding those solutions is the key to successful negotiation. By focusing on interests, the Deaf and Hearing groups will give each other the opportunity to glimpse at the situation from another point of view. This type of communication is critical to cross-cultural understanding and for establishing a bicultural environment.

*Why conduct a survey?*

It was necessary to have some way of measuring consensus at the school regarding communication issues. By conducting surveys before and after training and on a regular basis thereafter, we could monitor the perceived changes in behavior and attitude. Surveys can provide valuable feedback to organizations that are proceeding through critical transitions (Bridges 1991).

## RESULTS OF THE SURVEY

### Description of the Survey

A sample survey is found in Appendix A. As you can *see* from this sample, the survey was divided into four sections. Each section dealt with a particular communication situation. Those four situations were:

- 1) Formal Communication Between Staff
- 2) Informal Communication Between Staff
- 3) Communication Between Staff And Students
- 4) Communication With Parents And Visitors When A Staff Interpreter Is Not Available.

For each situation, respondents were asked to circle a response or a set of responses that best represented what was happening in their department. They were then asked to agree or disagree if information was accessible to all people under those conditions. Thus, results of the survey would demonstrate what communication choices people were making in various situations, the frequency of use of those choices, and whether or not staff felt those choices made information accessible to all people involved.

### Hypothesis

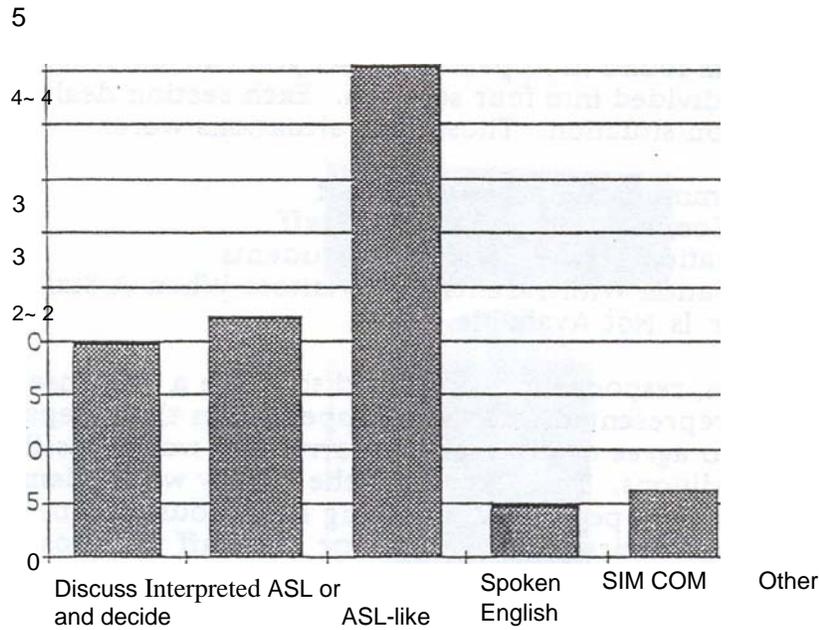
Bilingual situations offer interesting communication options for participants. People in bilingual environments may choose to use one or the other of the two languages. They may use some form of contact communication with one another (Lucas and Valli 1989). They may choose to use interpreters. They may also choose to express themselves while code switching from one language to another (Cook 1991). As was previously discussed, communication itself is a highly negotiated enterprise and that negotiation is made even more complex in bilingual environments.

We would expect for people who are in the process of becoming bilingual and who are working within an organization that is becoming bilingual to be searching and negotiating an entirely new set of agreements regarding communication. We would expect those people to be using a wide variety of means to communicate. We might also expect them to be feeling awkward and uncertain as to what choices would be most effective and most accessible. Thus, we expected the survey to show a wide distribution of responses. We also expected the survey to show that staff were not in agreement about the accessibility of information.

### Results

Pre training surveys were completed and returned to the BIBI Office by three of the discussion groups: Educational Supervisors and Representatives, Clinic and Curriculum, and Preschool Department. A total of 57 people responded, 16 of whom were Deaf and 41 of whom were Hearing. Surveys were not returned by the Elementary, Middle School, High School, and Vocational Departments or the Dormitory Staff. Even fewer post-training surveys were returned and because of the small sample of post-training data, those surveys were not analyzed.

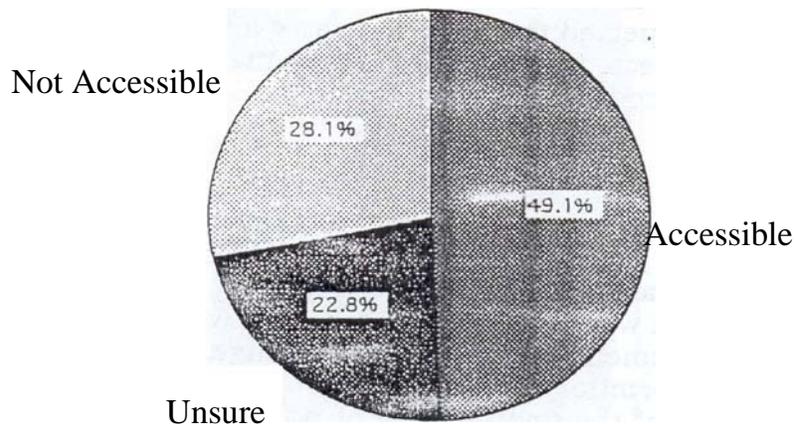
**Situation # 1: Formal Communication Between Staff**



The graph above illustrates the communication choices being made in formal communication situations. Respondents indicated that for workshops, department meetings, assemblies, etc., ASL or ASL-like signing was being used 45% of the time. Nearly 20% of the time, groups would discuss and negotiate the communication situation before the meeting and then proceed. 22% of the time interpreters were being used in such meetings. Spoken English was reportedly used 5% of the time and SIM COM was used 6% of the time.

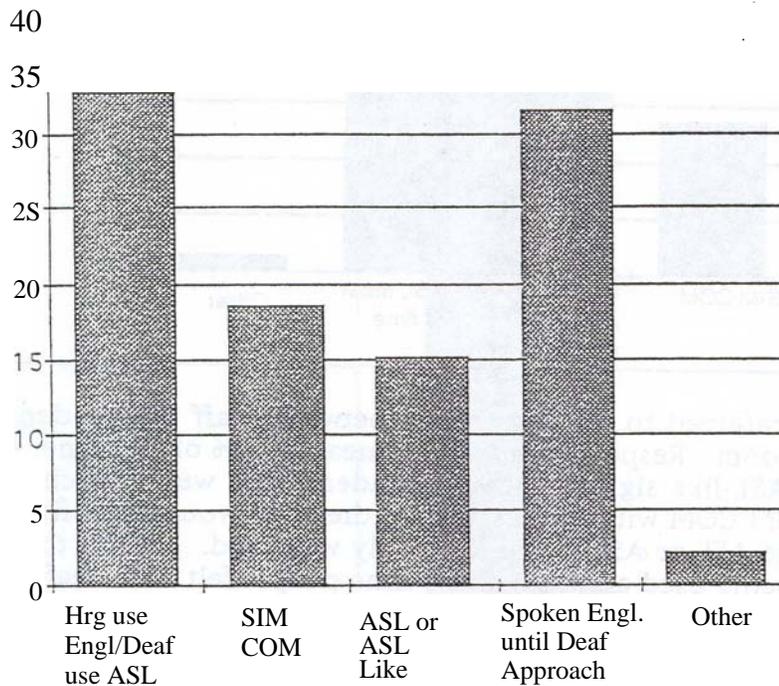
Only 49% of the staff felt that given those communication choices, information was accessible to all people. 23% felt unsure about accessibility and 28% of the staff felt conditions were not accessible during meetings, workshops, etc.

**Situation #1: Rating of Accessibility**



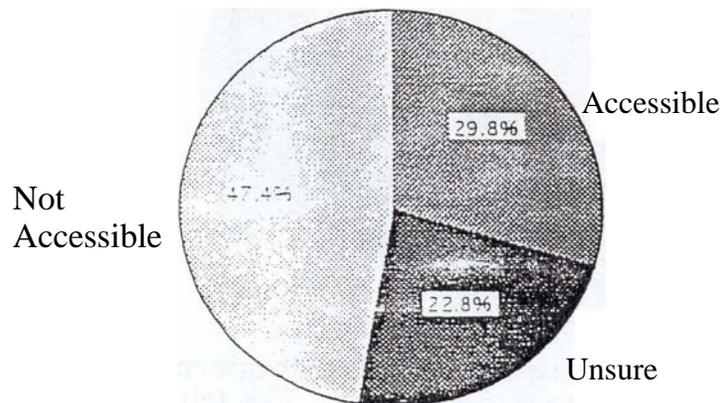
Situation #2 referred to informal communication between staff such as that taking place in hallways, in the cafeterias, and at social functions. Staff reported that: 32% of the time Hearing people spoke English and Deaf people used ASL. 31% of the time Hearing people spoke English until Deaf people entered the discussion space. Then the Hearing people would begin to use ASL. 18% of the time SIM COM was used and 15% of the time ASL or ASL-like signing only was being used.

Situation #2 Informal Communication Between Staff

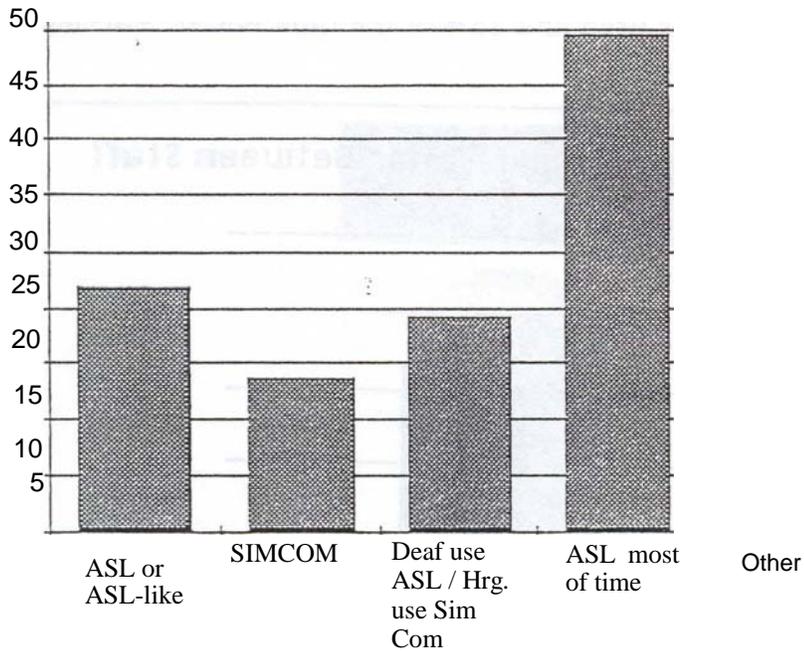


47% of the respondents felt that information was not accessible to all people during informal situations.

Situation #2 Rating of Accessibility

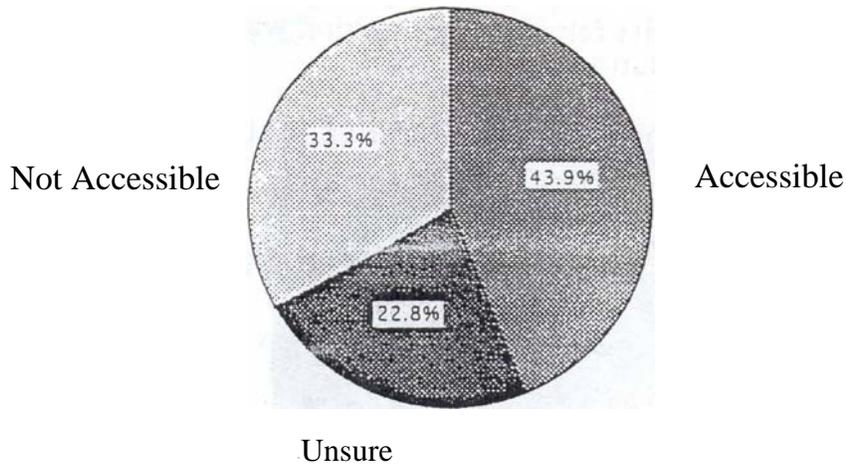


### Situation #3 Communication Between Staff and Students



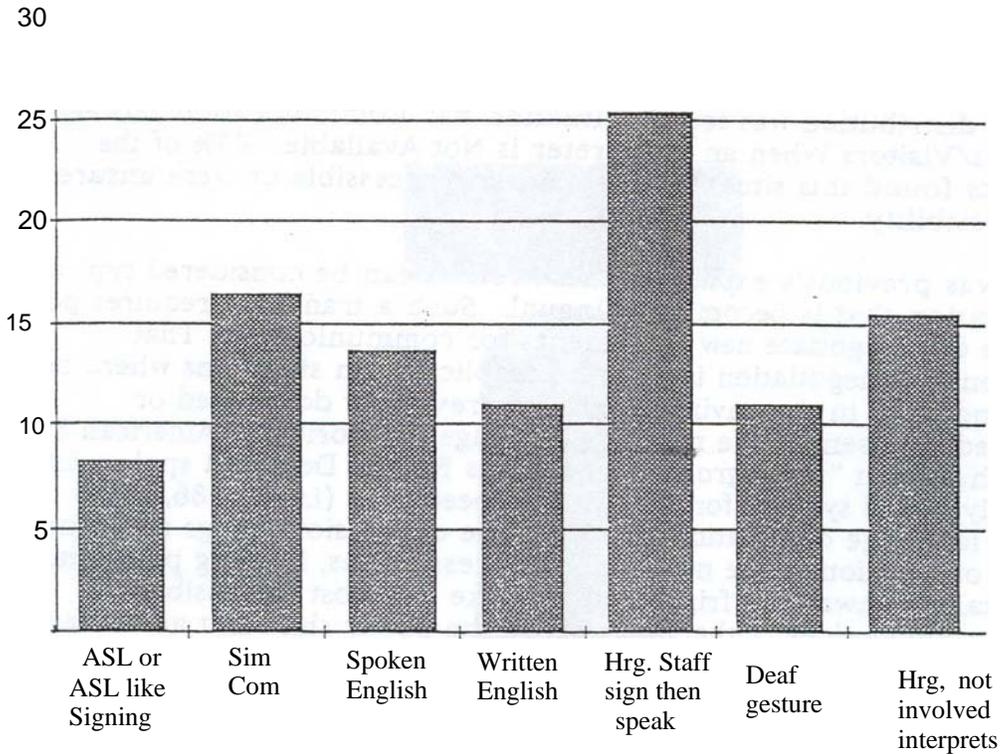
Situation #3 referred to communication between staff and students outside of the classroom. Respondents felt that nearly 45% of the time, staff were using ASL or ASL-like signing with the students but were switching to spoken English or SIM COM with those students they felt would benefit from its use. 21% of the time ASL or ASL-like signing only was used. 13% of the time SIM COM only was being used and 18% of the time people felt that Deaf used ASL and Hearing used SIM COM.

### Situation #3 Rating of Accessibility



Nearly 44% of the respondents felt that information was accessible to all participants under these circumstances. 33% felt information was not accessible and 23% of the respondents were unsure.

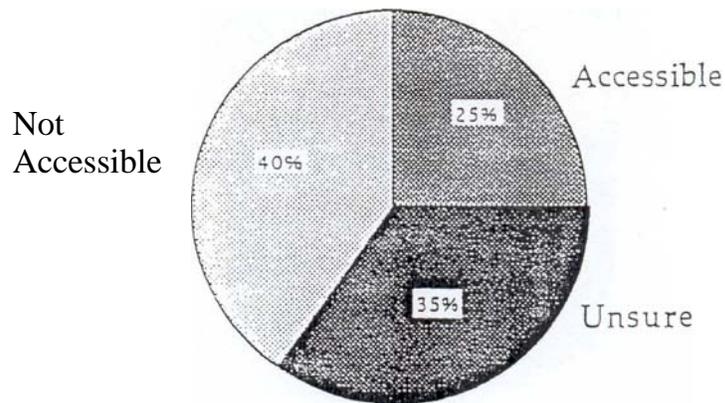
### Situation #4 Communication Between Staff and Parents /Visitors



Situation #4 dealt with communication between staff and parents or visitors when an interpreter was not available. From the graph above, we can see that staff were making a wide variety of communication choices in this situation. The choice used most was for Hearing staff to sign, then to present the same message to Deaf people present using ASL or ASL-like signing. This means of communicating is called consecutive interpreting.

Forty percent of the respondents felt that information was not accessible to all under these conditions.

### Situation #4 Rating of Accessibility



### Discussion of Survey Results

As was expected, the results indicated a wide distribution of responses in each communication situation. The most narrow response was seen in Formal Communication between Staff where 45% of the time ASL or ASL-like signing was being used. This situation was also rated as the most accessible situation. The widest distribution was seen in Situation #4: Communication Between Staff and Parents/Visitors When an Interpreter is Not Available. 75% of the respondents found this situation to be either inaccessible or were unsure about accessibility.

As was previously explained, these results can be considered typical for an organization that is becoming bilingual. Such a transition requires people to examine and negotiate new agreements for communicating. That examination and negotiation is further complicated in situations where one of the two languages in the environment was previously dominated or manipulated by users of the majority language. Historically, American Sign Language has been "underground" in schools for the Deaf and spoken English or manually coded systems for English have been used (Lane 1986, 1992). This history of language domination and language oppression brings a tension and high level of emotion to the negotiation process. Thus, Hearing people may feel especially awkward or frightened to make the most "accessible" communication choices. Others may sense the power shift that accompanies the negotiation and perceive that shift as a loss of their power within the system. Such perceptions of lost power may lead to forms of rebellion such as continued use of English in situations where it is not "accessible".

## RESULTS FROM TRAINING

The following departments took part in the Communication on Campus training:

Preschool	Middle School	High School
Elementary	Vocational	Clinic and Curriculum
Educational Supervisors and Representatives from Departments		
Dormitory Supervisors and Representatives from Dormitory		

Each group proceeded through the plan as described on page 4. After the 5 sessions, their conclusions and agreements regarding communication on campus were forwarded to the BIBI Office for documentation. These notes can be found in Appendix B.

Several noteworthy observations were made as the various departments took part in the training:

Most Deaf staff indicated that their major interest was that students have a "barrier free" and "language rich" environment at the school. They explained how important it is for information to be fully accessible to the students for the purpose of cognitive, linguistic, and social-emotional development. They cited human development theories as well as their own experiences as evidence for this need.

Each group stated that their primary interests were respect and access. Participants agreed that ISD should model respect for both English and American Sign Language and should strive for equal access to information for both Deaf and Hearing people.

In four departments, the Communication on Campus discussions became a vehicle for sharing the joys and frustrations of becoming a BIBI school. Participants expressed deep emotions associated with such a philosophical transition. Through such dialogue, Deaf and Hearing participants gained a clearer understanding of each other's point of view and in some cases, established new levels of respect and trust. It is interesting to note that this occurred primarily in those departments that had already experienced many BIBI workshops and discussions. In those departments with limited BIBI experiences, the training was either not completed or the discussions did not reach the intense emotional level seen in the other groups.

Six of the eight groups concluded that trying to use two languages at the same time (SIM COM) was not effective. Those groups agreed not to use SIM COM.

Seven groups agreed that the use of interpreters in Situations #1 and #2 were important for effective communication and recommended the use of interpreters as much as possible.

All eight groups agreed that it is appropriate for Hearing people to speak English at the school. Each group qualified that belief by stating that because spoken English is not accessible to Deaf people, it should not be used when Deaf people are around. All groups agreed that ASL or ASL-like signing should be used when Deaf adults or children are present.

Survey results were supported by comments made during the training sessions. People expressed a general concern that they were not sure "what they were supposed to do any more." Most staff reported that Situation #4, Communication with Parents and Visitors, was the most challenging communication situation and no one was quite sure how to handle those instances. There was also some disagreement as to whether current conditions made information accessible to all.

In some discussions, the question of using SIM COM with students was raised. From those discussions, it was clear that understanding and consensus had not been reached regarding the use of ASL and English for educational purposes in a BIBI school.

## RECOMMENDATIONS TO THE SUPERINTENDENT

Based on the results of this process, several recommendations were made to the Superintendent, Eddy F. Laird by the BIBI Coordinators. Those recommendations are as follows:

*ISD should adopt guidelines for communicating with each other on campus. Those guidelines might include:*

### In Formal Situations

- Use interpreters when intense discussions or important information is expected.
- When ASL or ASL like signing is used and no interpreter is employed, practice strategies for clarifying information for helping each other.

### During Informal Situations

- Set up "signing zones" or areas where it is highly probable that students will approach. In these zones ASL or ASLlike signing will be used.
- Use of spoken English should be kept to short conversations outside of the signing zones. If longer conversations in English are desired, move to a private place.

### Communicating with Students Outside of the Classroom

- Use ASL or ASL-like signing.
- Do not use SIM COM.
- If and when spoken English is used, be sure to inform other students or Deaf people by using consecutive interpreting.

### Communicating with Visitors and Parents

- Use an interpreter.
- Use consecutive interpreting.
- Do not use SIM COM.

Again, these guidelines are based on the results and agreements made during the Communication on Campus training.

*Similar training should be completed for staff in Business and Operations and in Student life.*

Several groups of employees have not had the Communication on Campus training. That training should be completed as soon as possible, incorporating their input into the guidelines.

*Disseminate the guidelines to Staff and Parents.*

Information about the guidelines and how they were developed should be explained to staff and parents. This information should be documented in both English and in American Sign Language.

*Agree on how to use the guidelines.*

The ISD Management Team should work with Supervisors to decide how these guidelines should be used. For example, should the guidelines be used as school policy and thus become enforceable through State performance evaluations?

*Staff development should continue.*

Opportunities should be provided for staff to develop the skills necessary for them to follow the guidelines.

## ADDENDUM TO THE REPORT

Over the course of the 1992-93 school year. Three events took place related to communication on campus:

- On October 26, 1992, Rachel Stone and the Educational Supervisors submitted feedback regarding the rough draft of this report to the Management Team and the Consulting Team. Their recommendations can be found in Appendix C.
- In April of 1993, the Management Team and the Consulting Team completed a strategic planning retreat. One outcome of that retreat was the goal to finish a Communication Policy for the school in the Fall of 1993. That Policy is to be based on the results of the Communication on Campus training. A report of the strategic planning retreat can be found in Appendix D.
- In May of 1993, several grievances were filed by staff members suggesting that the school was denying Hearing people the right to use English while at ISD and supporting the use of SIM COM with some students and with Deaf adults. These grievances were made public by the circulation of a paper describing the complaint. Student's held several meetings, during which they aired their protest to the grievances and their support to the use of American Sign Language. Parents also called a meeting to discuss the matter. While these meetings provided opportunities for various groups to express their opinions, resolution of the conflicting views was not obtained. It was indicated by members of the Management Team that a Communication Policy would be ready for the Fall of 1993.

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Indiana School for the Deaf  
Communication on Campus

APPENDIX A

Survey

Date:

My dominant language is:

ASL                      English.

This survey identifies four different communication situations that we encounter daily: Formal staff communication, informal staff community, communication between staff and students, and communication between staff and parents or visitors. Various options for dealing with each situation are presented. Please circle the option that you feel is most generally used at this time. Then mark if you feel that option provides accessible information to all members of the ISD community: staff, students, parents, and visitors.

SITUATION #1

DURING FORMAL STAFF COMMUNICATION (i.e., department meetings, workshops, etc.) most of the time:

1. Departments discuss language choices at the beginning of the school year and decide on one language to be used for meetings all through the year.
2. Interpreters are used at meetings.
3. ASL or "ASL-like" signing is used.
4. Spoken English is used.
5. Simultaneous communication (signing and talking at the same time) is used.
6. Other \_\_\_\_\_

Under the circumstances that I circled above, information is accessible to all members of the ISD community.

Agree

Undecided

Disagree

Appendix B; (Indiana school for the Deaf, 1992).

### **Bilingual/Bicultural Education Goal Statement**

The Indiana School for the Deaf is a bilingual/bicultural program. The goal of this program is to provide for early language acquisition and to facilitate the development of two languages, American Sign Language and English. This goal is accomplished with the belief that for most Deaf students, American Sign Language is the accessible, dominant language used for communication, and thinking, while English is learned as a second language. By fostering competencies in these two languages and by providing an academically and culturally enriched learning environment, Deaf students will have the opportunity to develop a sense of identity within the Deaf Community and will have the skills and attitudes necessary to function effectively with members of the Hearing Community.

The school builds this concept of bilingual/bicultural education for Deaf students on several beliefs about language learning and group identity. This concept is also founded in a belief that educational practices and the administration of educational institutions must reflect attitudes of equality and self-determination for all people. Those beliefs are listed below.

1. When children are born, they are predisposed to learn a natural language. Deaf children also have this predisposition to learn a natural language. Deaf children will acquire a natural language if that language is made accessible to them during the critical, developmental years of infancy and early childhood.
2. The accessible, natural language for Deaf children is a visual language. The natural, visual language of this country is American Sign Language. Thus, American Sign Language is the natural language of Deaf children and will be used for communication and thinking.
3. Deaf children are capable of learning a second language, given that certain skills in their first or natural language have been acquired. This first language base facilitates the learning of a second language.
4. Deaf children are capable of learning English as a second language. The teaching of English must, however, present this spoken language in its visual, written form. Thus, learning English is the process of learning to read and write English.
5. Some Deaf children are capable of learning how to understand spoken English and to speak English. The most significant factor for the development of spoken English is the ability to hear. Skills in spoken

English are most easily learned after the children have acquired competencies with the written forms of English. Early vocal practice and auditory stimulation are important to this process.

6. Many Deaf students will enter school having established a communication system that may include gestures, speech, home signs or signed codes for English. These systems are not, however, representative of a complete language used both for communication and thinking for most students. The Indiana School for the Deaf will facilitate those students' acquisition of American Sign Language as a first language and English as a second language.

Other students will enter the program having become Deaf following the acquisition of English. Those students will be given the opportunity to learn American Sign Language as a second language.

7. Some Deaf children grow up in families who speak languages other than English and whose cultures are different from that of what is thought of as mainstream American culture. Those students will have the opportunity to learn to read and write their family's language and to speak that home language. They will also have the opportunity to acquire the skills necessary to function effectively within that culture.
8. Classroom instruction will utilize American Sign Language as the language of instruction. Students will also use written forms of English as a tool for learning in the classroom. 'Through such an approach, students will have the opportunity to explore content areas through two languages, American Sign Language and written English, developing competencies in two languages.
9. Literacy in any language is enhanced when that language is studied in an academic setting rather than simply learned through interaction with others. Students therefore have the opportunity to study both ASL and English academically in order to improve literacy skills in both languages.
10. People develop identities with groups of other people who share similar life experiences. These groups are generally characterized by the use of a common language. People within each group also share a belief system that governs their behavior, a specific way of conceptually organizing the world, a set of values, and a rich heritage of traditions. Deaf people are one such group. They have a strong sense of identity as members of the Deaf Community. They also share certain cultural aspects of the Hearing Community and apply those cross-cultural skills in order to achieve economic and political goals and to communicate with Hearing people. The Indiana school for the Deaf recognizes Deaf people as a linguistic and

cultural group and is committed to the preservation of the group's rich cultural heritage and to nurturing its growth and development.

11. Infants and young children form their identities with a cultural group through interactions with skilled members of that group. The norms, values, behaviors, and traditions of the culture are transmitted, via language, in the day-to-day interactions between children and members of the group. Deaf people transmit cultural information, regarding the Deaf view and the Hearing Community to Deaf children through such interactions. Deaf children also learn about the Hearing world through interactions with Hearing people. This aspect of human development is recognized and the enculturation of Deaf children will be facilitated by providing linguistic and cultural role models.
12. True learning occurs when people are able to think critically. Critical thinking refers to the process of linking knowledge to power and human interest. It requires that students have a firm and confident understanding of their own identity and the ability to view the world from a variety of perspectives. Critical thinking demands a respect for and appreciation of different cultures. Critical thinking also implies a commitment to and the skills necessary for taking social action for the good of oneself, one's immediate community and for the world community. A classroom that facilitates critical thinking is a place of empowerment for students as they develop a positive self-image and the skills necessary to control their own lives. The acquisition of critical thinking skills will be facilitated through curriculum that reflects the cultural diversity of our world, through educational methodologies that encourage reflection and social action, and through evaluation procedures that are democratic in nature.
13. Students will also see this attitude of cultural acceptance and equality reflected in the power structures of the school, the lines of communication within the school, and within the relationships between Deaf and Hearing Staff. All aspects of the school administration will indicate this sense of self-determination for Deaf people.

These assumptions are based on a theory of human development. That framework describes the relationship between cognition, language, and culture. The assumptions are further based on current research in the areas of American Sign Language, spatial cognition, first and second language learning, and sociology.

Most importantly, these assumptions and the concept of bilingual/bicultural education for Deaf students are founded on a cultural perspective of Deaf life. This differs greatly from previous educational approaches that have been founded on a medical or pathological view of Deaf people, thus a bilingual/bicultural program represents a major shift in educational philosophy and attitudes. The success of such a program depends on a school

administration's willingness to initiate policies consistent with this cultural view and the school and community's understanding and acceptance of this cultural point of view.

Appendix C:

To: Members of the Management Team and Consulting Team

From: Ann Titus

RE: Summary of Results from Retreat

Date: April 30, 1993

On April 16 and 17, 1993, members of the ISD Management Team and Consulting Team met to begin building a strategic plan for the next five years at ISD. Those attending were:

Eddy Laird	Dan Fitzpatrick
Rachel Stone	Kathy Smith
Judy Cass	Cindy Lawrence
Linda Lloyd	

The meeting was facilitated by Ann Titus.

After considerable discussion regarding the structure of the two teams and interpersonal communication between members on the teams, certain goals were set for the school a description of the results follows.

GOALS FOR ISD  
1993-1998

- GOAL #1                   The Indiana School for the Deaf will be a "barrier free" environment. Within five years, ail communication and information equipment such as phones, warning systems, message systems, etc. will be accessible to Deaf people and will represent "state of the art" technology. Within five years, the school will be structurally accessible.
- GOAL #2                   The school will plan and implement a process whereby staff, students, and parents come to a consensus regarding the nature of human development and learning. This "educational philosophy" will reflect the relationship between language, cognition, culture, and will encourage empowerment, self-actualization, and cultural pluralism. Such a consensus will be reached through workshops, seminars, discussion groups, and classes.
- GOAL #3                   Staff, students, and parents will come to a consensus regarding a "language policy" at the school. This policy will describe the nature of languages and the process of acquiring first and second languages. The policy will describe the nature of bilingualism in the American Deaf Community. The policy will define the expectations for language proficiency of school staff. Over the next five years, the school will implement a plan for workshops, seminars, discussion groups, and classes regarding this topic.
- GOAL #4                   Over the next five years, ISD will plan and implement a process for defining the communication policy" at the school. This policy will provide guidelines for how people communicate with each other outside of the classroom setting. Through workshops, seminars, and discussion

groups, staff, students, and parents will build a better understanding of how communication occurs in a bilingual environment and how respect for different language groups can be achieved.

GOAL #5

Within the next five years, staff, students, and parents will create a "curriculum policy", They will go through a process of workshops, seminars, discussion groups, and classes to build consensus of how to create curricula in various content that are consistent with the educational philosophy and the language policy of the school.

GOAL #6

Over the next five years, ISD will build a "advocacy network "of parents, business, politicians, local, state and federal agencies for the purpose of political action. Projects may include: establishing ASL as an official language in the State and recognition of bilingual/bicultural education as the most appropriate education for Deaf children.

## SPECIFIC EXPECTATIONS FOR EACH GOAL

### Goal #1                      BARRIER FREE ENVIRONMENT

1. All technological equipment associated with communication and information will be accessible to Deaf people (ie. telephones, computers, emergency warning systems, message and information systems, doorbells, class bells)
2. Any equipment presently in use that is not accessible must either be made accessible or must be removed from operation.
3. People who design this plan will consider future technology to insure state of the art equipment at ISD.
4. The campus must be structurally accessible to all people (ie. sidewalks, ramps, elevators, etc.).

### Goal #2                      LEARNING AND HUMAN DEVELOPMENT THEORY

1. The ISD theory must integrate school and residential life so that “education” is thought of as a 24 hour process.
2. Our theory must take into consideration the relationships between language, cognition, and culture.
3. The ISD theory must empower students, staff, and parents.
4. The theory must be The theory must be student centered, recognizing cultural, racial, gender, and ethnic diversity, recognizing personality and style differences, and recognizing the impact of family and group dynamics.
5. The ISD theory must include all age groups from birth through adulthood.
6. Staff, students, and parents will understand and support the theory.

### Goal #3                      LANGUAGE POLICY

1. The language policy will define the nature of languages, explaining the relationship between language and communication, how language is related to culture and cognition, and the nature of first and second language acquisition and learning
2. The policy will explain the nature of bilingualism in the Deaf Community. The policy will describe the role and uses of American Sign Language and the role and uses of printed English and spoken English.
3. The policy will state the language of instructional discourse at the school and the

language proficiency expectations for staff.

4. The policy will describe how Deaf people acquire ASL as their first language.
5. The policy will describe how Deaf people learn English as a second language.
6. This policy will be understood and supported by staff, parents, and students.

#### Goal #4                      COMMUNICATION POLICY

1. This policy will give guidelines for how staff, parents, and students can most effectively communicate in a variety of situations.
2. These guidelines will be adopted by staff, students, and parents.
3. The policy will include strategies for families to use at home.
4. The policy will encourage people to use only one language at a time.
5. The policy will explain the nature of languages in contact in bilingual or multilingual situations.
6. This policy will describe the role of interpreters, the expected proficiency levels, the concept of communication facilitator, and the examine the needs of the school

#### Goal #6                      ADVOCACY NETWORK

1. Those responsible will identify and develop a political action network of businesses and corporations, teacher training programs, universities for the Deaf (ie. Gallaudet, NTID, Boston University), PTCO, State Office for the Deaf and Hard of Hearing, other Midwest Schools for the Deaf, and Federal agencies.
2. Those responsible will develop goals for political actions such as:
  - a. ASL as an official language in the State,
  - b. Changes in the Department of Education,
  - c. Changes in the State Department of Health
  - d. Become a center for education and the Deaf Community
  - e. Recognition of bilingual/bicultural education
  - f. Program for CODA students and siblings of Deaf students
3. Those responsible for advocacy will prioritize these goals and design a plan for accomplishing the goals. That plan must involve staff, students, parents, and the Deaf Community.
4. Those responsible will implement this plan.

## FACTORS TO CONSIDER WHEN PLANNING AND MAKING DECISIONS

Many different activities and projects will be needed to complete these goals. As these activities and projects are planned and carried out by various departments, centers, or working groups, it is suggested that the following factors be considered:

1. Does the project or activity ultimately serve the best interest of the students?
2. Does nature of the project or the activity empower staff, students and parents?
3. Does the project or activity focus on “internal” aspects of the school as its first priority, rather than focusing on issues “external” to the school?
4. Does the plan for the project or activity include a plan for communicating the ideas and results from the project to staff, parents, and students and to those outside of the school?
5. Does ISD have the appropriate facilities to house the project or activity?
6. Does the project or activity fit into the goals set for the next five years?

If projects or activities are planned but the answer to one or more of the questions above is “NO”, then the project or activity should be put aside until all can be answered with “YES”. By going through this checklist, groups can more easily assign priorities to their activities.

TIMELINE FOR GOALS					
GOALS	YEAR 1 1993-1994	YEAR 2 1994-1995	YEAR 3 1995-1996	YEAR 4 1996-1997	YEAR 5 1997-1998
Barrier Free Environment	Identify communication and information equipment that is not accessible and remove or replace. Design a plan for getting new tech.	Seeking funding for new equipment.  Investigate accessibility for all people.	Begin to implement plan for getting new equipment.  Plan, seek funds for access.  Design and begin a maintenance and evaluation plan.	Continue implementation of plans	Continue implementation of plans
Learning and Development Theory	Begin to investigate and study theories through workshops, etc.	Continue building consensus  Complete paper documenting theory.  Begin study and consensus building.	Continue consensus building.	Continue consensus building.	Continue consensus building.
Language Policy		Begin study and consensus building.	Continue consensus building.  Complete policy document	Continue consensus building.	Continue consensus building.
Communication Policy	Follow-up the 1991-1992 workshops on Communication Issues and complete guidelines.				
Curriculum		Begin to investigate and study various curriculum formats.	Examine various formats and see if they reflect our learning and development theory.  Begin building consensus	Continue consensus building.	Complete policy document. Continue consensus building.
Advocacy	Development political action network.  Complete priorities and plan.	Implement plan.	Continue Implementation	Continue implementation	Continue implementation

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## **EARNED DEGREES & LICENSES**

- State of Indiana Teacher License (Standard) #916179 Elementary Administration and Supervision
- State of Indiana Teacher License (Professional) #628481 Deaf Education: All Grade Major: K-12
- State of Massachusetts Teacher License (Life) # 296205 Deaf Education: All level
- Doctor of Education: Educational Leadership, May 2007, Indiana University, Bloomington, IN [Nancy Lois Faye Fellowship]
- Masters of Education: Deaf Education, January 1991, Boston University, Boston, MA
- Bachelor of Arts: Linguistics, May 1989, Purdue University, West Lafayette, Indiana
- Two years undergraduate coursework: August 1983-May 1985, Gallaudet University, Washington DC.
- Graduate of the Indiana School for the Deaf, Indianapolis, Indiana, 1983.

## **ADMINISTRATION, INSTRUCTION, AND RESEARCH EXPERIENCE**

### **Administrative/Consultant Positions**

**Chief Executive Officer/Superintendent**, Indiana School for the Deaf, Indianapolis, Indiana. July 2006 - present

**Educational Consultant**, Indiana School for the Deaf, Indianapolis, Indiana. June 2003 - June 2006

**Supervising Teacher (Principal of Elementary)**, Indiana School for the Deaf, Indianapolis, Indiana. September 1997 - 2003

**Administrator (member of the Administration Team)**, Indiana School for the Deaf, Indianapolis, Indiana. September 1996 - October 1997

**Interim Director of Outreach**, Indiana School for the Deaf, Indianapolis, Indiana. January 1996 - March 1996

**Interim Assistant Director of Outreach**, Indiana School for the Deaf,  
Indianapolis, Indiana. September 1995- April 1996

**Interim Director of Assessment Services Center**, Indiana School for  
the Deaf, Indianapolis, Indiana. March 1995- August 1995

**Language Assessment Specialist**, Indiana School for the Deaf,  
Indianapolis, Indiana. August 1993- August 1997

**Consultant (Language Assessment Specialist)**, Boston Children  
Deaf Network, Boston Children's Hospital, Boston, Massachusetts.  
August 1989- August 1990

**American Sign Language Assessment Coordinator**, Indiana School  
for the Deaf, Indianapolis, Indiana. August 1992- June 1993

### **Instruction: Higher Education**

#### **Deaf Education**

**Visiting Lecturer**, *Special Education*, Indiana University, Bloomington,  
Indiana. Spring 2005

#### **Interpreting Training**

**Instructor ASLG215: *Careers in American Sign Language***, Vincennes  
University, Indianapolis, Indiana. Spring 2004 & 2005

#### **ASL Linguistics Course**

**Instructor HDI 220: *Introduction to American Sign Language  
Linguistics***, Vincennes University, Indianapolis, Indiana. Spring  
1994, 1995, 1996, & 1997

**Instructor DE 538: *Linguistics of American Sign Language***, Western  
Maryland College, Westminster, Maryland. June- July 1995

**Visiting Lecturer**, *ASL Linguistics*, Vincennes University,  
Indianapolis, Indiana. Spring 1993

## **Introduction to ASL**

**Instructor** ASL 2: *Introduction to American Sign Language*, Vincennes University, Indianapolis, Indiana. Summer 1992, 1993

**Instructor** LS 570: *Introduction to American Sign Language*, Boston University, Boston, Massachusetts. January 1990-May 1990

## **ASL & Deaf Culture**

**Visiting Lecturer**, American Sign Language and *Deaf Culture*, Purdue University, Lafayette, Indiana. Spring 2005

**Visiting Lecturer**, *Diversity in Clinical Practice*, Indiana University, Bloomington, Indiana. Spring 1997

**Instructor** AUS 590i; *American Sign Language and Deaf Culture III*, Purdue University, West Lafayette, Indiana. January 1989-May 1989

**Instructor** AUS 400; *American Sign Language and Deaf Culture II*, Purdue University, West Lafayette, Indiana. August 1988-December 1988

**Instructor** AUS 300; *Introduction to American Sign Language and Deaf Culture*, Purdue University, West Lafayette, Indiana. January 1988-May 1988

## **Instruction: Elementary Education**

**American Sign Language Consultant**, Indiana School for the Deaf, Indianapolis, Indiana. August 1994-June 1996

**American Sign Language Teacher**, Indiana School for the Deaf, Indianapolis, Indiana. August 93- June 1994

**Third grade Teacher**, Indiana School for the Deaf, Indianapolis, Indiana. August 1991- June 1992

**Teacher of the Deaf**, South Shore Educational Collaboration, Norwell, Massachusetts. August 1990- June 1991

## **Research**

**Research Coordinator**, Indiana School for the Deaf, Indianapolis, IN.  
June 2003- present

**Field Reviewer**, Culturally and Linguistically Appropriate Services:  
Early Childhood Research Institute: University of Illinois at Urbana-  
Champaign, Illinois. March 1998- 2001

**Research Assistant**, Dr. Robert Hoffmeister's American Sign  
Language Research Grant, Boston University, Boston,  
Massachusetts.

**Research Assistant**, Dr. Ronnie Wilbur's American Sign Language  
Linguistic Research Lab, Purdue University, West Lafayette,  
Indiana. January 1988-May 1989

## **WORKSHOPS PRESENTED**

### **Bilingual Approach in Deaf Education**

“Rethinking our Bilingual/Bicultural Educational Philosophy: How can we get ISD to next level of Deaf Bilingualism?,” Administration Team Retreat, Indiana School for the Deaf. Indianapolis, Indiana November 2004

“How Can You Incorporate Deaf Bilingualism into Your Charter School?,” Las Vegas Bilingual Charter School Committee. Las Vegas, Nevada November 2004

“Bilingual/Bicultural Orientation for staff,” Indiana School for the Deaf. Indianapolis, Indiana. August 2004

“Bilingual/Bicultural Orientation for Ball State Students,” Indiana School for the Deaf. Indianapolis, Indiana. August 2004

“No Deaf or Hard-of-hearing Child Left Behind”, First Annual Indiana Deaf Educators Conference 2004, Indianapolis, Indiana. August 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Invited Presenters to the RID Region III Annual Convention, Indianapolis, Indiana. July 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Invited Presenters to the Indiana Speech Language Hearing Association Annual Convention, Indianapolis, Indiana. April 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Student Life Training, Indiana School for the Deaf, Indianapolis, Indiana. February 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Interpreter Training, Indiana School for the Deaf, Indianapolis, Indiana. January 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Family Education Series, Indiana School for the Deaf, Indianapolis, Indiana. January 2004

“No Deaf or Hard-of-hearing Child Left Behind”, Education Department, Indiana School for the Deaf, Indianapolis, Indiana. December 2003

“No Deaf or Hard-of-hearing Child Left Behind”, Invited Presenters to the American Speech Language Hearing Association Annual Convention, Chicago, Illinois. November 2003

“What is happening in Deaf Education? What is Bilingual/Bicultural Education for Deaf children?,” Parents Infant Program Conference, Indianapolis, Indiana. October, 2003

“Bilingual/Bicultural Orientation for staff,” Indiana School for the Deaf. Indianapolis, Indiana. August 2003

“Bilingual/Bicultural Orientation for Ball State Students,” Indiana School for the Deaf. Indianapolis, Indiana. August 2003

“Bilingual/Bicultural Orientation for staff,” Indiana School for the Deaf. Indianapolis, Indiana. August 2002

“Bilingual/Bicultural Orientation for Ball State Students,” Indiana School for the Deaf. Indianapolis, Indiana. August 2002

“The Bilingual/Bicultural Journey for Students from Diverse Backgrounds,” 1997 Colorado State Symposium on Deafness, Copper Mountain, Colorado. October, 1997

“What is happening in Deaf Education? Why is Bi/Bi the best thing out there?,” Utah Association of the Deaf convention, Salt Lake City, Utah. June, 1997

“The Journey of Bilingual/Bicultural: Experiences of Parents, Hearing and Deaf staff,” First Annual convention of Bilingual/Bicultural of Utah, Ogden, Utah. April 1997

“What is Bilingual/Bicultural Education in Deaf Education? Is it just a Buzz Word?,” Indiana Federation Council for Exceptional Children Convention, Indianapolis, Indiana. February, 1997

“Introduction to Bilingual/Bicultural Philosophy,” Michigan State University, Indianapolis, Indiana. October, 1996

“Introduction to Bilingual/Bicultural Philosophy,” Indiana State Department of Education, Indianapolis, Indiana. September, 1996

### **ASL Linguistics**

“ASL Linguistics,” American Sign Language Teacher Association Clinic, Indianapolis, Indiana. February, 1996

“Emergence and Recognition of American Sign Language as a Language,” Ball State University, Muncie, Indiana. October, 1995

“ASL Linguistics: Phonology,” Indiana Chapter of Registry of Interpreter for the Deaf workshop, Indianapolis, Indiana. March, 1995

“ASL Linguistics,” American Sign Language Teacher Association Clinic, Indianapolis, Indiana. January, 1995

“ASL, Deaf Culture and Deaf Community,” American Sign Language Teacher Association Clinic, Indianapolis, Indiana. January, 1995

“American Sign Language Linguistics,” Indiana School for the Deaf High School Department, Indianapolis, Indiana. Jan.-Feb., 1994

“American Sign Language and Deaf Culture,” Indiana School for the Deaf students, Indianapolis, Indiana. May, 1993

### **Assessment of Deaf/Hard-of-hearing Children**

“Deaf/Hard-of-hearing Student Reading & Writing Strategies,” Hearing Impaired Educational Workshop. East Allen School Corporation. Fort Wayne, Indiana. December 2004

“Deaf/Hard-of-hearing student’s BICS/CALP”, Educational Interpreter’s Workshop, Columbus, Indiana. August 2003

“Deaf/Hard-of-hearing student’s Technology Needs,” Patins workshop, Indianapolis, Indiana. March 15, 1999

“Deaf/Hard-of-hearing student’s Technology Needs,” Patins workshop, Indianapolis, Indiana. April 12, 1998

“How to Evaluate Deaf/Hard-of-hearing Children’s Language within Deaf Culture Framework?” Indiana University, Bloomington, Indiana. February, 1997

“Evaluating Deaf/Hard-of-hearing Students: How To Avoid Misdiagnosis,” School Psychology Seminar, Ball State University, Muncie, Indiana. February, 1997

“Is Bilingual/Bicultural Philosophy Proper for Deaf/Hard-of-hearing Students? How Can You, as an Audiologist, Recommend It?,” Purdue University, West Lafayette, Indiana. February, 1996

“Evaluating Deaf/Hard-of-hearing Students: How to Do a Proper Assessment,” Northeast Psychologist Round Table, Fort Wayne, Indiana. November, 1994

### **Deaf Children’s Language & Culture**

“Deaf Students: What Makes Them Unique?,” Monthly Seminar with Pediatric Residential Medical Students, Indianapolis, Indiana. Monthly basis

“Deaf Students: Where are They? How are They Doing?”, First Annual Indiana Deaf Educators Conference 2004, Indianapolis, Indiana. August 2004

“Deaf Students: What is the best Early Intervention They Can Get?,” Center on Disease Control/First Steps Meeting. Indiana Department of Health. Indianapolis, Indiana. April 2004

“Successful Deaf Students: What Do They Have in Common?,” Hearing Impaired Educational Service Workshop. Columbus High School. Columbus, Indiana. April 2004

“Who are we? Can we drive? Can we hear?,” Allisonville Elementary School, Indianapolis, Indiana. May 2003 & January 2005

“Language, Literacy and Culture for Deaf Children,” Goshen College, Goshen, Indiana. March, 1993

“Language, Literacy and Culture for Deaf Children,” Indiana University, Bloomington, Indiana. November, 1992

“Language, Literacy and Culture for Deaf Children,” Community East Hospital, Indianapolis, Indiana. October, 1992

“Language, Literacy and Culture for Deaf Children,” St. Francis Hospital, Indianapolis, Indiana. October, 1992

“Language, Literacy and Culture for Deaf Children,” St. Vincent Hospital, Indianapolis, Indiana. September, 1992

### **Panel Discussion**

Panel Discussion “Growing Up Deaf: A Variety of Perspectives,” SKI-HI Training Conference. Indianapolis, Indiana, 2005

Panel Discussion “Growing Up Deaf: A Variety of Perspectives,” Indiana First Annual Deaf/Hard-of-hearing Family Conference. Indianapolis, Indiana, 2004

Panel Discussion "Interpreter Issues," Annual Indiana Chapter of Registered Interpreter of Deaf Conference. Indianapolis, Indiana. November, 1997

Panel Discussion "Oppressor and Oppressed Behaviors," First Annual Bilingual/Bicultural Parent's Conference, Indianapolis, Indiana November, 1996

Panel Discussion "Hearing and Deaf Issues," Ball State University, Muncie, Indiana October, 1995

Panel Discussion "Growing Up Deaf: A Variety of Perspectives," Purdue University, Lafayette, Indiana. April, 1993

Panel Discussion of "Hearing and Deaf Marriage," Miss Deaf Indiana Pageant Talk Show, Indianapolis, Indiana. March, 1995

### **Other Topics**

"InSITE-Indiana Standards for Interpreters and Transliterators working in Educational setting. Indiana Chapter of RID (ICRID) Fall Conference, Fort Wayne, IN. November 2006

"InSITE-Indiana Standards for Interpreters and Transliterators working in Educational setting." Indiana Conference of Administrators of Special Education (ICASE), Merrillville, IN. September 2006

"InSITE-Indiana Standards for Interpreters and Transliterators working in Educational setting." Third Annual Indiana Deaf Educators Conference 2006, Indianapolis, IN. August 2006

"Role of Educational Interpreters in the Classroom", Third Annual Indiana Deaf Educators Conference 2006, Indianapolis, Indiana. August 2006

"Role of Educational Interpreters", Lakeland High School Staff Development Training. LaGrange, Indiana. October 2005

"Indiana: National Deaf Education Agenda", Second Annual Indiana Deaf Educators Conference 2005, Indianapolis, Indiana. August 2005

- “Politically Incorrect: ASL & Deaf Education,” ASL4US: Teaching All Kids ASL Midwestern Conference. MSM Productions, Ltd. Indianapolis, Indiana. June, 2005
- “Deaf/Hard-of-hearing Students and CART Experiences,” Related Services for Deaf/Hard-of-hearing People Keynote Speaker. College of Court Reporting. Hobart, Indiana. May 2004
- “True History of Deaf Education that No One Knows,” Gallaudet/Clerc Celebration. Indiana School for the Deaf. Indianapolis, Indiana. December 2003
- “Leadership: Empowerment Tools & How to Use Them,” Deaf Pride in the Midwest: Leadership Workshop. Cedar Rapids Association of the Deaf. Cedar Rapids, Iowa. September 1998
- “Sim-Com and its perils,” Residential program, Indiana School for the Deaf, Indianapolis, Indiana. October, 1996
- “Mental Health Service for Deaf/hard-of-hearing Children in Group Homes,” Lutherwood Group Home, Indianapolis, Indiana. September, 1996
- “Indiana School for the Deaf-Language, Educational and Parent issues,” WFIU-Public Radio, Bloomington, Indiana. August, 1996
- “The Role of the Deaf Educator,” Delta Zeta North Central Alumni Chapter, Indianapolis, Indiana March, 1996
- “Who are We, Deaf People?” Sertoma, Indianapolis, Indiana October, 1995
- “Transition Issues,” Bi/Bi Training Conference, Indianapolis, Indiana. April, 1994
- “Building Inclusive Campus Communities: Academic Transition,” Bi/Bi Training Conference, Indianapolis, Indiana. March, 1994
- “What is a Culture?” Indianapolis Speech & Hearing Center, Indianapolis, Indiana. December, 1992

## **PROFESSIONAL EXPERIENCE**

### Chairperson

**Chairperson**, Indiana School for the Deaf Cultural Audit Task Force,  
Indiana School for the Deaf, 2006-2007

**Chairperson**, Legislative Committee, Indiana Association of the Deaf,  
Indianapolis, Indiana. 2005-2006

**Chairperson**, Bilingual/Bicultural Self-Study Committee, Indiana School  
for the Deaf, Indianapolis, Indiana. 2004-2005

**Co-Chairperson**, Parents Action Committee, Indiana School for the  
Deaf, Indianapolis, Indiana. 1997

**Co-Chairperson**, Board of Interpreter Standards, Department of  
Deaf/Hard-of-hearing Services, Indianapolis, Indiana. 1997

**Co-Chairperson**, Continuum Mental Health Service for Deaf/Hard-of-  
hearing Adolescents, Department of Education, Indianapolis, Indiana.  
1996

**Chairperson**, Indiana School for the Deaf Accreditation “Student &  
Community Profile” Committee, Indianapolis, Indiana 1995

**Chairperson**, Education Committee, Indiana Association of the Deaf,  
Indianapolis, Indiana. June, 1995

**Chairperson**, D.E.A.F. Network Committee, Indiana Association of the  
Deaf, Indianapolis, Indiana. June, 1995

**Chairperson**, American Sign Language Bill Committee, Indiana  
Association of the Deaf, Indianapolis, Indiana. October, 1994

### **Facilitator**

**Facilitator**, Deaf and Hard-of-hearing Early Intervention Advisory  
Committee, Indiana School for the Deaf, Indianapolis, Indiana. April,  
2005

**Facilitator**, Tri-Country & ISD Services Retreat Series, Indiana School  
for the Deaf, Indianapolis, Indiana. February, 1997

**Facilitator**, Outreach's Retreat, Indiana School for the Deaf,  
Indianapolis, Indiana. November, 1996

**Facilitator**, Counselor's Retreat, Indiana School for the Deaf,  
Indianapolis, Indiana. November, 1996

**Facilitator**, Coach's Retreat, Indiana School for the Deaf, Indianapolis,  
Indiana. February, March, 1996

**Facilitator**, Parent's Workshop, Indiana School for the Deaf,  
Indianapolis, Indiana. February, 1996

**Facilitator**, Preschool Staff Workshop, Indiana School for the Deaf,  
Indianapolis, Indiana. February, 1996

**Facilitator**, High School Retreat, Indiana School for the Deaf,  
Indianapolis, Indiana. January, 1995

**Facilitator**, Parent's Workshop, Indiana School for the Deaf,  
Indianapolis, Indiana. October, March, 1995

**Facilitator**, Parent's Workshop, Indiana School for the Deaf,  
Indianapolis, Indiana. October, March, 1994

**Facilitator**, Bilingual/Bicultural Workshop, Indiana School for the Deaf,  
Indianapolis, Indiana. April, 1994

**Facilitator**, Elementary Department Communication Committee,  
Indiana School for the Deaf, Indianapolis, Indiana. April, 1992

### **Indiana School for the Deaf Committees**

**Member**, Indiana School for the Deaf Bilingual/ Bicultural Committee,  
Indianapolis, Indiana.

**Member**, Indiana School for the Deaf Communication Committee,  
Indianapolis, Indiana.

**Member**, Indiana School for the Deaf Tech Prep Curriculum Committee,  
Indianapolis, Indiana.

**Member**, Indiana School for the Deaf Technology Committee,  
Indianapolis, Indiana.

**Task Force Member**

**Member**, Indianapolis Public School Cultural Audit Task Force, Indiana  
Public School, Indianapolis, Indiana. 2006- 2007

**Member**, Educational Interpreters Committee, Department of Education,  
Indianapolis, Indiana. 2004-2005

**Member**, Bilingual/Bicultural Core Committee, Indiana School for the  
Deaf, Indianapolis, Indiana. 2004-2005

**Member**, Education Needs Advisory Group, Department of Education,  
Indianapolis, Indiana. 2004-2005

**Member**, Indiana Deaf-Blind Services Project Usher Syndrome Task  
Force, Department of Education, Terre Haute, Indiana. 1996

**Member**, Indiana School for the Deaf and Indiana Blind School  
Governance Task Force, Department of Health, Indianapolis, Indiana.  
1996

**Member**, Mental Health Task Force, Department of Mental Health,  
Indianapolis, Indiana. 1995

**Court Testimony/Expert Witness**

**Expert Witness/Linguist**, Indianapolis, Indiana. October, 1996

**Expert Witness/Linguist**, Anderson, Indiana. October, 1995

**Expert Witness/Linguist**, Washington, Indiana. May, 1995

**Expert Witness/Linguist**, Worcester, Massachusetts. November, 1990

## **Political Activities**

**Board Member**, State Advisory Council on the Education of Children with Disabilities, Indianapolis, Indiana. January 2005 - present

**Chairperson**, Legislative Committee, Indiana Association of the Deaf, Indianapolis, Indiana. November 2005-2006

**Board Member**, Indiana Deaf Heritage, Indianapolis, Indiana. May 2003-2006

**Board Member**, Board of Interpreter Standards, Department of Deaf/Hard-of-hearing Services, Indianapolis, Indiana. 2003-2006

**Board Member**, Board of Interpreter Standards, Department of Deaf/Hard-of-hearing Services, Indianapolis, Indiana. 1997-1999

**Delegate**, NAD Convention, Indiana Association of the Deaf, Portland, Oregon. July, 1996

**Master of Ceremonies**, Biannual Convention- Indiana Association of the Deaf, Indianapolis, Indiana. June, 1995

**NAD 1996 Convention Delegate**, Indiana Association of the Deaf, Indianapolis, Indiana. June, 1995

**Member**, Legislative Committee, Indiana Association of the Deaf, Indianapolis, Indiana. June, 1995

**Board Member**, Indiana Association of the Deaf, Indianapolis, Indiana. March, 1995

**Member**, Indiana Association of the Deaf, Indianapolis, Indiana. 1993