Cecilia Mary Flood

Language, Literacy and Sociocultural Studies

HOW DO DEAF AND HARD OF HEARING STUDENTS EXPERIENCE LEARNING TO WRITE USING SIGNWRITING, A WAY TO READ AND WRITE SIGNS?

by

CECILIA MARY FLOOD

B.A., Child Study, St. Joseph College, New York, 1972
M.A., Deaf Education, Western Maryland College, 1976
M.S., Counseling Education, Long Island University: C.W.Post, 1983

Doctor of Philosophy
Educational Linguistics

December, 2002

DEDICATION

To my mother and father

ACKNOWLEDGEMENTS

First and foremost, I am indebted to my fellow travelers, the 16 families, the Deaf and Hard of Hearing students, their teachers, and all the other supportive staff who courageously joined me on this pioneering journey. While there were a total of sixteen young co-pilots for this literacy learning project, one by one, Emily, Bill, Veronica, and Marie captured our attention. These four focal students not only justified an exploration of a writing medium for American Sign Language, they exacted ownership of a literacy learning experience that emancipated them as writers, "I can write." I am grateful to the managers of the educational environment at each inquiry site, the school administrators who supported the introduction of a writing system that represented the language of a small but very visible "signing" community within their schools. In particular I acknowledge the intuitive observations of two classroom teachers, Gwen and Lana, and applaud them for their willing response to change and to partner with their DHH students as empowered readers and writers of American Sign Language.

I acknowledge my committee members – Sherman Wilcox, Jill Morford, Rebecca Blum-Martinez, and Phyllis Wilcox – who assisted me in designing, recording and documenting the journey. Their reflections helped to keep me focused. In their words: "You will learn a great deal about yourself as a teacher during this project." "Years from now, the DHH kids will be chatting among themselves recalling 'Oh yeah, remember that cool stuff CF showed us way back when we were in grade school?'" "This is going to take off. Are you ready?" "What can I say? This is going to change people's lives."

There were others who assisted in the location of "yellow bricks," the building blocks that made up the path that led to a house of symbols – *SignWriting*. In addition to

introducing me to a theoretical frame that culminated and unified all that I had been learning about dual languages and literacy, Elizabeth Savaadra encouraged me to take very deliberate steps along that yellow brick path. She prompted me to respond to the educational arena in which I had spent most of my professional life. I am grateful to Steve Nover for introducing me to Valerie Sutton, the inventor of a very user-friendly writing system for sign languages, SignWriting. Valerie has a special gift to give the world. Valerie especially wants young deaf children to have an opportunity to become literate in their language, extending to them symbols that will enrich the language that appears on their hands and grows in their minds and hearts. A thank you to Angus Grieve Smith for his computer know how with MS DOS programming and his help in setting up computers.

There were long distance "sounding boards" to whom I am collegially grateful, Chris Knopf, Barbara O'Dea, Nora Ashe, and a teacher "par excellence," Mama Flood. As each phase of the experience transpired and took on an investigative stance that uncovered "what was" in Deaf Education, listeners from the sidelines – Karen Naughton, Bonnie Rudy, and Elaine Wirth – cheered on as the findings suggested new educational potentialities for young deaf children.

The production of the report, the telling and writing of the story, was energized by the creativity and editing efforts of a two-person cheering squad, Cathy Witty and Kathy McWhorter. I am grateful for the time and patience they invested in helping to get the story written and readable for an audience of educators that need to believe, "Deaf kids can."

There were many hours of necessary pensive processing and reprocessing, composing and recomposing, that needed to be accomplished in a quiet, movement free, isolated corner of a shared residence. I will be forever grateful to those who are most important to my *normal core* life circumstance, Denise Mary, Alex Bell, and Ozzie Ezechial, for their tolerance of a very noticeable absence from routine living. Their quiet presence, their faithful belief, their eternal hope that "all will be well," replenished those frightening moments of diminished endurance and encouraged me to renew my sense of purpose.

"Don't limit a child to your own learning, for she was born in another time." – A Rabbinical saying.

HOW DO DEAF AND HARD OF HEARING STUDENTS EXPERIENCE LEARNING TO WRITE USING SIGNWRITING, A WAY TO READ AND WRITE SIGNS?

by

CECILIA MARY FLOOD

Doctor of Philosophy
Educational Linguistics

December, 2002

HOW DO DEAF AND HARD OF HEARING STUDENTS EXPERIENCE LEARNING TO WRITE USING SIGNWRITING, A WAY TO READ AND WRITE SIGNS?

by

CECILIA MARY FLOOD

B.A., Child Study, St. Joseph College, New York, 1972
M.A., Deaf Education, Western Maryland College, 1976
M.S., Counseling Education, Long Island University: C.W.Post, 1983
Ph.D., Educational Linguistics, The University of New Mexico, 2002

ABSTRACT

This community-based action research examined and documented the experiences of four elementary Deaf/Hard of Hearing (DHH) students as they engaged in learning to write using SignWriting, a way to read and write signs. Triangulated data collected included videotaped SignWriting sessions, interviews with parent and teacher adult stakeholders, and research practitioner journal notes. The application of an ethnographic tool, bracketing, allowed descriptive key elements to surface producing a thick descriptive and interpreted account of SignWriting experiences. The results of the inquiry emphasize the importance of reexamining bilingual-bicultural program models, and suggest the inclusion of a writing system, SignWriting, that represents the natural

language of DHH students--American Sign Language. This study suggests that the creation of a biliterate context in which DHH students learn to read and write in two languages is feasible and would complement existing and evolving bilingual-bicultural educational paradigms. The resulting descriptive account highlights critical features of an emancipated and empowered literacy learning experience of a group of DHH elementary school students.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Focus and Framing

A topic that continues to have high priority in educational research is the investigation of Deaf and Hard of Hearing (DHH) students' experiences of learning to read and write. In spite of special education placements, development of communication philosophies, the creation of Signed English codes for literacy learning activities, and the development of specially designed reading curricula, DHH students continue to plateau at reading levels significantly below their hearing peers (Allen, 1986). Recently, there has been a radical paradigm shift taking hold in forums that attend to the education of DHH students. There are a number of residential and day programs that have begun to adopt a bilingual bicultural education model. Similar to other bilingual models, the development of two languages is promoted. American Sign Language (ASL) and English are the two targeted languages in Deaf bilingual programs with a selective emphasis on literacy development in English.

Several motivational factors can account for the change in language focus from monolingual to bilingual. The pioneering work of William Stokoe (1960) gave natural sign languages linguistic validation. In 1988 the sociocultural demands of an ASL linguistic majority at Gallaudet University received national media attention resulting in the repositioning of administrative power and the initiation of linguistic rights of the student majority (Van Cleve & Crouch, 1989). Linguistic validation of ASL, and the sociopolitically driven change in administrative leadership and language policy at the university level, places the consistent negative report regarding literacy skill development

in reading and writing English in a different light. American Sign Language has stepped out of the shadows of educational programs and has acquired a new linguistic and cultural status.

Bilingual education programs recognize ASL as the first language (L1) for Deaf and encultured Hard of Hearing students. ASL will be used as the primary language for communicative interaction and academic content instruction. DHH students are expected to acquire English literacy competency in the same way as other English as Second Language (ESL) students acquire a second language (L2). These expectations are based on an often-cited bilingual hypothesis, the "interdependency hypothesis" (Cummins, 1988). Cummins claimed that an "underlying linguistic proficiency" exists and crosses between all languages. The acquisition process of a second language is contingent on the linguistic development of learners' first language, including the full development of basic interpersonal communicative skills (BICS) and cognitive academic language proficiencies (CALP). Cummins stated that students' linguistic skills and proficiencies in their first language (L1), when allowed to develop and reach higher threshold levels, would not only better prepare linguistic minority students with academic cognitive demands of learning a second language but would also transfer to linguistic competency development in students' L2.

Other scholars in the field of bilingual education have challenged Cummins' interdependence theoretical framework. The primary concern raised was that departmentalized constructs, BICS and CALP, reinforce the narrow and rigid prescriptive school definition of literacy, a definition that "tends to separate the students' efforts to learn to read and write from their sociolinguistic experiences of everyday life" (Martin-

Jones & Romanine, 1985, p. 30). The universality and transferability of school literacy skills has been challenged by findings that suggest, "social functions and psychological effects of literacy are not the same everywhere" (Martin-Jones & Romaine, 1985, p. 30). Those who implement bilingual programs for DHH students by adopting bilingual bicultural education pedagogy highly invested in the credence and viability of Cummins' linguistic interdependency theory should take note of cautionary remarks from other bilingual educators. Popularized "watered-down versions" and "out of context" applications of linguistic theoretical premises could potentially have negative consequences for linguistic minority students in bilingual programs.

Bilingual bicultural proponents for DHH students have challenged the validity of frequently cited low literacy achievement scores in English. Up until recently, DHH students have not been in educational environments that provide for the full development of a natural language base. Educational programs that promote the development of a visual-gestural language, biologically suited and visually accessible to the communicative needs of DHH students, require a review of previous literacy achievement reports. "It is more appropriate to compare the literacy scores of hearing children learning English as a foreign language to deaf students learning English" (Nover, 1998, p. 30).

Establishing two-language use in classrooms for DHH students requires program developers to address both theoretical and practical ramifications. The entire school community needs to be active participants in commitment, development, and evaluative phases of program design and implementation (Reynolds, 1994). Training in bilingual education theory and second language teaching for teachers in bilingual programs, an obvious consideration, has only recently been addressed (Nover, 1998). This is not

unique to deaf bilingual programs. Veterans of earlier bilingual programs in the U.S. for other non-English speaking students report similar "cart before the horse" (politically motivated and pedagogically unprepared) program development (Casanova, 1995).

The Deaf bilingual bicultural philosophy and program implementations are expected to take hold in schools for the Deaf, both residential and day programs. Some proponents express concern that residential schools are at risk of being eliminated. Establishing bilingual bicultural programs for Deaf students in schools for the Deaf is not only a way to guarantee the survival of Deaf schools but also a way to clarify cultural and linguistic distinctions between other educational options, for example, mainstream education in public schools (Reynolds, 1994). Bilingual educational contexts are expected to be available in residential programs, but can also be created in mainstream public education programs in which a "critical mass" of DHH students (20 or more) exists.

In the evolutionary stages of bilingual program initiation and implementation, a significant group of participants have seemingly been overlooked--the DHH students themselves. In order to understand the challenge that learning in bilingual educational contexts presents to students, it has been recommended that academic literature incorporate more *emic* and less *etic* perspectives (Nover, Christensen & Cheng, 1998). The recording and reporting of DHH students' voices, that is the interpretive recording of their experience in developing competency in two languages, warrants investigation.

There are numerous anecdotal accounts of DHH students' behavioral resistance to English literacy activities, especially writing activities. In an investigation of classroom discourse and literacy learning among Deaf students (Ramsey, 1993), "writing" was

described as the "quicksand of all school activities." Deaf students do demonstrate an awareness of their low literacy performance level. "Acting out" behaviors, including both active and passive avoidance tactics, clearly communicate a reluctance and resistance to school writing activities. Literacy materials might be left untouched, incomplete, hidden, pushed away or destroyed. Other non-language responses to writing directives include eye rolling, slumping in desks, and audible groans. On occasion, in anticipation of failure and frustration, tears may appear as an ultimate signal of utter despair.

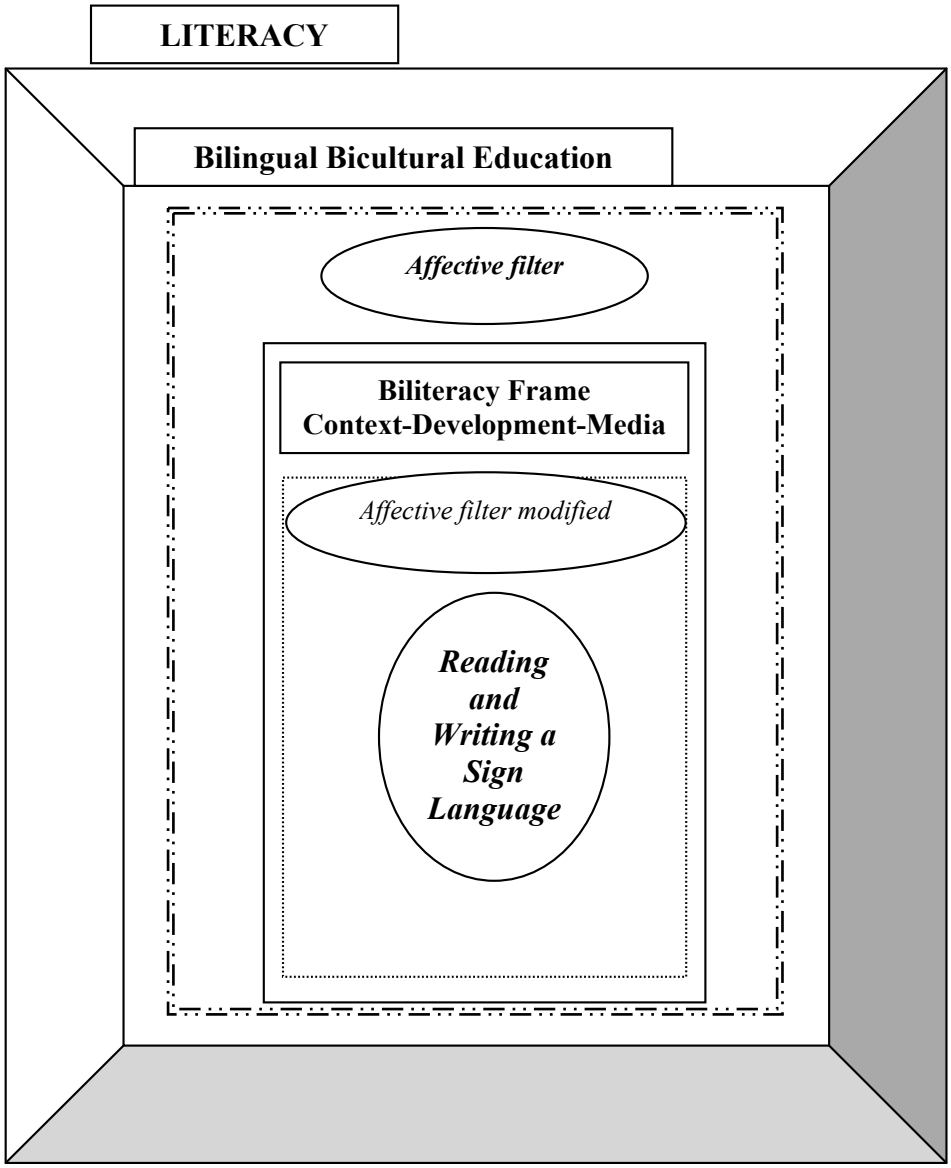
Bilingual theorists and educators have addressed the affective domain of second language learners. Krashen (1982) introduced the notion of an "affective filter" related to second language acquisition processes. Educators responsible for creating second language learning environments need to recognize and consider the effect anxiety and feelings of incompetence have on the language learning process. The monitoring of an affective filter was initially introduced as a factor applicable to adult second language learners. Children learning a second language are not expected to encounter an affective filter. Krashen (1984) does propose, however, that Smith's condition hypothesis for the acquisition of writing (Smith, 1983) is compatible with his affective filter hypothesis. Relevant to developing writing competency by both adults and children, Smith claimed that readers acquire a writer's code. The acquisition of that writer's code is contingent on two factors: *first,* acquisition of the code is possible when the expectation of success prevails over expectations that learning will not take place; and *second,* when readers consider themselves to be a member or at least a potential member in the "club" of writers. Smith continued, "The exclusion from any club of learners is a condition difficult to reverse, whether we impose it on ourselves or have it imposed on us" (Smith, 1983,

p.562, cited in Krashen, 1984). DHH students have been socialized to believe that learning to read and write English is hard and that they will never be really good at it. While the factors contributing to this belief have yet to be fully investigated, it has been suggested that English dominant monolingual educational programs have denied DHH students' access to equitable education (Johnson, Liddell & Erting, 1989). While the implementation of bilingual programs attends to the full development of ASL linguistic and cultural competencies and the development of second language literacy skills in English, membership in an English "writers club" for DHH students cannot be guaranteed.

One of the major tenants of bilingual bicultural education is linguistic and cultural empowerment. Acknowledgment that DHH students do have communicative and language making capabilities in a natural sign language, visually accessible and culturally sustained by a community of adult sign language users, could be significantly enhanced by providing a means to graphically represent that language. Contrary to the opinion of the majority of sign language users in the U.S., there is a way to read and write signs. SignWriting, an alphabetic symbol system that represents natural sign languages world wide, originated from a dance notation system developed by Valerie Sutton in 1974 (Sutton, 1998). In collaboration with Scandinavian educators in Denmark who worked with Deaf students, linguists investigating features of natural sign languages, and a group of ASL native signers here in the U.S., Sutton's SignWriting has evolved into a writing system used internationally. SignWriting symbols are currently used for linguistic, educational, computational, artistic, and conventional communication purposes representing fourteen different natural sign languages.

The bilingual bicultural education model currently promoted emphasizes literacy development in only one of the two languages DHH students will acquire, English literacy. The unquestioned stance, that sign language is not written, has postponed exploration of potential linguistic resources available to DHH bilingual learners. An opportunity to use SignWriting, an alphabetic symbol system that represents DHH students' first language, ASL, will enhance the development of basic interpersonal communication skills (BICS) and cognitive academic linguistic proficiency (CALP). An important aspect that supports DHH students' exploration with SignWriting symbols is the potential impact the experience may have on lowering an operative affective filter that inhibits second language acquisition of written English. Genuine smiles, that require fully flexed cheek muscles, may emerge as evidence that DHH students can self monitor and lower an operative literacy learning affective filter. The purpose of the inquiry is to investigate, describe and interpret how Deaf and Hard of Hearing students experience learning to write using SignWriting, a way to read and write signs. Providing DHH students a way to become literate in two languages, ASL and English, offers students attainable membership in the growing club of bilingual readers and writers in the U.S.

The inquiry question is, **"How do Deaf and Hard of Hearing students experience learning to write using SignWriting, a way to read and write signs?"**



Introduction to a Theoretical Biliteracy Framework

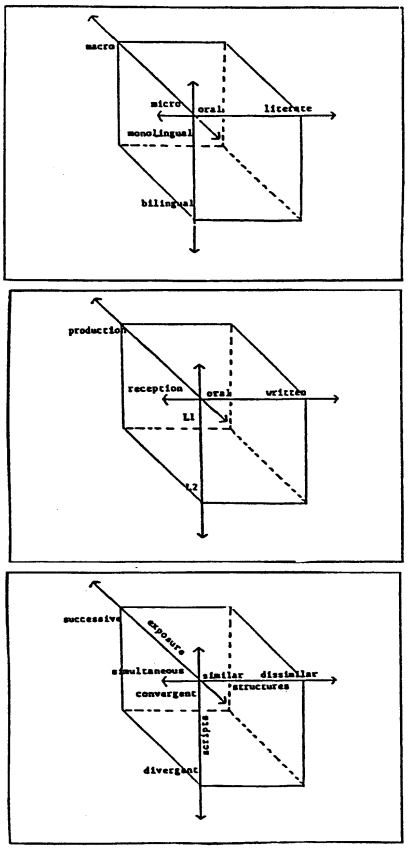
A biliteracy theoretical model values literacy development in two languages. The adoption of a biliteracy framework assists in unifying all of the literacy considerations that need to be explored. The literacy development of deaf students' two languages, American Sign Language and English, would mean attending not only to the development of reading and writing skills in English, but also to the purposeful

development of reading and writing skills of deaf students' first language, American Sign Language.

A biliteracy framework (Hornberger, 1989) provides bilingual educational program designers a more unified understanding of biliterate contexts, biliterate development and biliterate media (Figure 1). This model of biliteracy frames and complex continua was chosen to guide the discussion and the implementation of biliteracy educational contexts for Deaf and Hard of Hearing students. The main tenant of this sociocultural theoretical biliteracy model is the interrelatedness of the notion of biliteracy. In contrast to the varied and conflicting literacy perspectives proposed by different disciplines, Hornberger (1989) uses a complex set of nine continua to illustrate a unified and more complete framework for literacy. For each of the three major frames there are three additional continua constructs: biliterate contexts (micro-macro, oral-literate, monolingual-bilingual), biliterate development of the individual (reception-production, oral language-written language, L1-L2 transfer), and biliterate media (simultaneous-successive exposure, similar-dissimilar structures, convergent-divergent scripts).

Hornberger (1989) presents this set of nine complex continua, identifying them and organizing them using labels that frequently appear in the literature associated with bilingualism and literacy. The suggested way to understand the interrelatedness of these labels is that there are no end points or static relationships between continua but rather energized movement along each and every continua. Each frame is best understood not as separate and distinct from one another but rather as a whole set, that is, each nested one on the other. The related continua for context, development, and media share the same

feature of interrelatedness fostering discussion that reflects the real life movement of reflective thought about bilingual and biliterate experiences of individuals and groups of



(Hornberger (1989) p. 273 & 274)

Figure 1. Continua of Biliteracy.

individuals as opposed to theory driven polarized end points. The discussion of the academic literature that supported the exploration and implementation of biliteracy experiences for Deaf and Hard of Hearing students using SignWriting will follow the suggested frames, not to be "boxed" by them, but rather to tap into the energized inter-related notions presented.

Hornberger cautions educators that attending to any one of the nine continua in isolation will result in an incomplete understanding of biliteracy. This biliteracy framework provided the necessary structure that bids bilingual educators to break away from isolating notions of bilingualism and literacy development. In particular, the invitation is extended to bilingual bicultural proponents for DHH students who support the academic and cultural recognition of American Sign Language as DHH students' first and natural language. Hornberger's third frame, media--exposure, structure and script--challenges bilingual bicultural proponents for DHH students to investigate literacy as a sociocultural practice that allows for the active consideration of a writing system for ASL to be used in literacy development programs.

Perhaps a brief discussion of why consideration of this third frame is so significant and radical during this transition period, motivating the pedagogical shift from monolingual to bilingual education in the field of Deaf Education, is in order. Two educators of deaf children, Ed Basso and Marlon Kuntz (1994) appealed to Freire and Macedo's model of "emancipatory literacy," the sociopolitical theoretical framework in their work, *Literacy: Reading the Word and the World* (Freire & Macedo, 1987), to justify the impending radical change in literacy programs for deaf students. Basso and Kuntz select and relate Freireian themes to the experience of deaf students. Deaf learners need to reclaim voice through ASL use, which up until the present, has been ignored in English monoliteracy program goals. Empowering deaf students to be critical thinkers and problem-solvers, capabilities excluded from traditional mechanical skill oriented curriculums, is made possible through ASL dialogue. ASL is a natural language, which is biologically accessible and readily comprehensible for deaf students. Adopting Freireian

sociopolitical themes would foster recognition within deaf students that they can be agents of change. This recognition comes with a new confidence to "read the world," that is, understand their environment, which holds past and present histories. The Freireian theme the authors emphasize most is the need to challenge deaf students to restructure those histories by assuming authorship, an empowered "writing the world," which for deaf students means control of their social future. These two educators claim that in order for programs for deaf students to truly reflect an empowered and emancipated literacy that dynamically links the "world and the word," an acknowledgment is necessary that this can only be achieved by identifying literacy in two languages, ASL and English. The authors' plea for emancipated and empowered biliteracy use does not include any description of what ASL literacy might entail. Nonetheless, the reader assumes that emancipated literacy for deaf students means reading the world through two languages, one with and one without written words. What if the theme of emancipation and empowerment is extended to include a way to read and write signs? Would advocates for bilingual literacy consider the possibility that deaf students can help define ASL literacy by learning a systematic orthography, SignWriting, that codifies the language they do use to dialogue, problem solve, and construct their own voice, history and future?

For deaf students and the professionals who work with them, a critical understanding of literacy means acknowledgment of the potential tension that exists between ASL, the cultural literacy dimension, and written English, the literacy code of the dominant society. Hornberger's biliteracy frames include continua that address this critical understanding of an energized, not polarized, tension between languages, oral and literate contexts, oral and written development of L1 and L2. Professionals may claim

that additional biliterate tools for authorship are desirable for the emancipated literacy development of DHH students, including recognition of an ASL literacy. Many educators of deaf students, however, still hold onto the belief that ASL does not have and can not have a written component. If this belief is left unchallenged, Hornberger's third frame, biliterate media considerations for two languages, would remain unexplored, resulting in a diminished and incomplete understanding of potential biliterate experiences available to bilingual DHH students.

Fairclough (1989), another critical theorist, in his work *Language and Power,* illustrates how a critical awareness of the use of language in discourse can lead toward an informed understanding of social power relations. It is important to have a critical knowledge of the language use in social power forums in order to participate and achieve personal and social goals (Fairclough, 1989). "Common sense" is a specific phrase that Fairclough has identified as contributory to sustaining existing power relations. Rather than assume the taken for granted, unconscious, unexamined or unquestioned stance the phrase "common sense" implies, informed discourse participants would be newly attentive to an ideological meaning, one that has to do with the social positioning of subjects. Ideologies are successful in fulfilling their purpose, which is to maintain existing power relations, simply by remaining hidden and unexamined. The sign used for "common sense" perhaps metaphorically captures this inherent ideological feature, "hidden-ness." The sign for common sense is articulated near the forehead (metaphorically where thinking occurs) using two hand shapes, the manual letter "c" (common) and "s" (sense). The final handshape of this sign, the fist shape or "s," has previously been analyzed as a "container" classifier which can be used metaphorically to

mean holding onto or grasping an abstract idea or thought (Wilcox, 1993). This bondage-type fist analysis (Wilcox, 1993, p. 147) metaphorically matches the critical ideological meaning that Fairclough has proposed for common sense. Based on a recommendation of Berthoff, in Freire & Macedo (1987, p. xi), *looking* and *looking again* are important in the field of literacy. Perhaps it would be similarly important for true believers who advocate for bilingual bicultural education for deaf students, to begin to pry open that closed fist, that metaphorical container, and take a second look at what might be hidden within. The unexamined common sense certainty that ASL and visually accessible written English should remain unquestioned, non-problematic and ultimately the only literacy components available to deaf students, may in fact be reinforcing rather than repositioning power relations that exist between educational authorities and subjects. The closed or clenched handshape in the sign "common sense" does contain an advantageous resource, a written symbol system for ASL, SignWriting.

This inquiry has extended to DHH elementary school biliterate learners an opportunity to become empowered agents of change, collaborators and co-constructors of literacy learning experiences that emancipated them as writers. Using SignWriting, DHH students can "write the world," that is, express themselves using their own cultural language, ASL. In the next chapter, literature relevant to the academic concepts of biliterate contexts, biliterate development, and biliterate media is reviewed and critically deconstructed, pulled apart and dissected, to reveal conflicting ideologies in a body of knowledge that launched a re-examination of literacy learning realities for DHH students. The literature review is followed by a detailed description of the multi-layered data collection process utilized to obtain the perspectives of three groups of participants that

contributed to the shaping of biliterate teaching-learning experiences within the context of a mainstreamed public educational setting for DHH students. The subsequent chapters organize the triangulated data, constructing a multi-phonic interpretive and descriptive account that motivates cultural and pedagogical consideration for a newly defined biliterate context for emergent DHH readers and writers.

CHAPTER TWO

DECONSTRUCTING THE LITERATURE

In this chapter, the body of knowledge that launched a re-examination of literacy learning realities for Deaf and Hard of Hearing (DHH) students is reviewed and deconstructed. Academic literature is critically examined for constructed views of bilingual program designs and literacy learning practices that motivate an investigation of DHH students' biliterate experiences with an additive component, a way to read and write signs. The rationale for the adoption of Hornberger's (1989) theoretical biliterate frames is repeated with a description on how the frames and associated continua will be used to organize and guide the subsequent discussion.

Biliterate Framework

Three theoretical frames have been selected to guide the discussion of academic literature associated with literacy learning, bilingual bicultural education, and affective response considerations that impact DHH students' literacy learning in two languages. Hornberger (1989) defines *biliteracy* as any and all instances in which communication occurs in two (or more) languages in or around written material. Every instance of biliteracy is situated along a set of nine continua that deepens and refines an understanding of biliterate contexts, the biliterate development of the individual, and biliterate media. The sets of three continua associated within each biliterate frame are best understood as a unified complex whole. An individual, a situation, or a society can be biliterate.

To inform an understanding of DHH students' biliterate experiences, the discussion of biliteracy considerations relevant to DHH students' individual, educational,

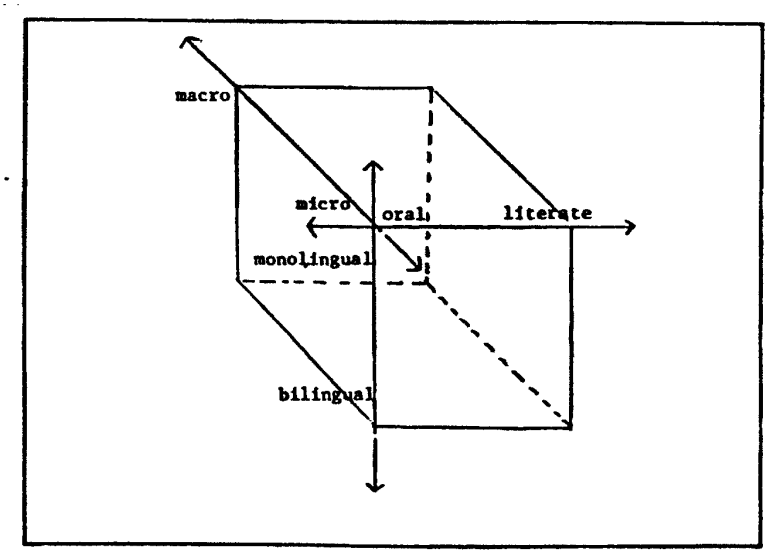
and communal use of two languages relies on all three biliterate frames. The adoption of Hornberger's biliterate frames for this inquiry was contingent on an acknowledgement that a third biliterate media frame did exist for DHH students. The common belief among adult signers that a conventionalized writing system for sign language did not exist warranted some resolve. An alphabetic symbol system, SignWriting, was available and provided DHH students a way to read and write their language of signs. Recalling Hornberger's caution, attention to any one of the nine continua in isolation would result in an incomplete and diminished understanding of biliteracy; therefore, before proceeding with the literature discussion, a review of the frames and continua features is presented.

The labels used for biliterate frames--context, development, and media--evolved from the multiple perspectives generated in the different theoretical disciplines associated with literacy, second language acquisition and bilingual education. Hornberger's biliteracy framework unified the comparative and contrastive features of this body of academic work, emphasizing the interrelatedness of the contributory notions of biliteracy. The frames are best understood, not by their distinct labels, but rather as a whole unit, transparent frames nested one upon the other. Within each frame, the set of continua are also interrelated and need to be understood as bi-directional paths that reflect real-life and not theory driven descriptions of bilingual experiences. Each continuum suggests that there are multiple points along the line that allow for the investigation of descriptive instances of biliteracy. Any single point is related to all other points. All points have more *in* common than *not* with each other (Hornberger, 1989). Movement--not finite, static, or discrete polarized end points--characterize all nine biliterate continua. The more the contexts of the individuals' learning allow them to draw on all points of the continua,

the greater are the chances for their full biliterate development (Hornberger, 1995, p. 177).

Biliterate Contexts

The first biliterate context frame introduces the discussion of academic literature relevant to the construction of descriptive biliteracy experiences of DHH students. As the review of literature generates implications for biliterate contexts, bare in mind, biliterate development and media considerations, discussed and described in later sections, are collateral influences on biliterate contextual perspectives. The biliterate context continua are macro-micro, monolingual-bilingual, and oral-literate.



(Hornberger (1989) p. 273)

Figure 2. The Continua of Biliterate Contexts.

Macro-micro continuum

Any particular instance of biliteracy, individual or social, can be defined at any one point along the continuum. Using the analogy of a zoom lens, a wide-angle

adjustment brings macro societal biliterate contexts into view, while the effortless adjustment of the lens ring results in a more narrow and precise perspective, the *micro* perspective. This manipulation of a macro-micro lens shifts the focus along a path that allows for viewer investigation of literacy functioning of the biliterate individual within socially constructed biliterate contexts. Hornberger provided examples of instances of biliterate experiences along the macro-micro continuum. She characterized the biliterate macro level as a context in which unequal power relationships exist. One or another literacy becomes marginalized or literacies become specialized by function. At the macro end, a language minority population that makes minimal use of its first language in a written form situates the minority language student at the micro end in an unequal biliterate context. The student who wants to learn a second language is provided an L1-L2 dictionary in which her first language, marginalized at the macro end in its written form, is relegated a restricted biliterate function, that is, a medium valued only as a means to access the majority language.

Hornberger's macro-micro examples of contextual instances of biliteracy parallel those of DHH students. Only within the past forty-two years of a two hundred year recorded existence, has the cultural language of Deaf Americans, ASL, been liberated from its marginalized status within the nation's linguistic majority. The adult community of ASL users reinforces linguistic validity and cultural recognition while the functioning within biliterate educational contexts continues to be elusive. At the macro end, the strong oral folk traditions of ASL not only sustain the rich cultural and linguistic values of a community, but also minimize the expectancy that a written form for ASL needs to be considered and incorporated into evolving biliterate educational contexts. At the micro

end, English script has a specialized function reinforced by the published English to Sign dictionaries that dictate English as the primary language of DHH students, which is not the case.

In order to appreciate DHH students' literacy learning environment within a bilingual bicultural educational model, literacy definitions that have changed over time and have been influenced by broader and multiple world literacies at the macro level, need to be reviewed. Inherent in a discussion of multi-literacies is the call for new social futures affecting all aspects of social living: the learning environment, the work place, and the community (New London Group, 1996). Construction of new "social futures" requires an understanding of sociopolitical or critical literacy. Numerous definitions for literacy exist. Definitions that have an orientation toward skill development tend to be more precise. One of the primary goals of western industrialized national governments, as well as governments of developing nations, is the endowment of universal literacy for all citizens. Citizenship requires literacy for full participation in the processes of society, work, home management, child rearing and voting (Venezky, 1990). Politically motivated definitions maintain strong emphasis on the basic skills of reading, writing, numeracy, and document processing. While measurements of required literacy that enable citizens to participate in society remain problematic, politicians continue to debate the *literacy as problem* and a false *literate-illiterate* dichotomy, by channeling funding into survey, research projects, literacy campaigns, and innovative educational programs all presumably aimed at the illiteracy "fix."

Remaining on the macro-micro continuum, educational definitions are found to support the government-motivated skill-based definitions, developing educational

contexts that define literacy in the context of language arts competencies: listening, speaking, reading, and writing (Chew, 1992, cited in London, 1994). There are broader definitions of literacy emerging from educational perspectives that have begun to shift attention from literacy skill to literacy learning processes such as thinking, understanding, learning, and teaching (London, 1994). Whether literacy is perceived as an activity (listening, speaking, reading, and writing) or as a process (thinking, understanding, learning, and teaching), *literacy as problem* remains on center stage in educational forums. Time spent in school is not producing the desired political and educational outcomes of literate individuals competent to participate in society. Sixty percent of the total U. S. population and eighty percent of minority language students, between the ages of seventeen and twenty-five, fail to achieve a twelfth grade reading level. Twelfth grade literacy has been identified as the level needed for employment in a high tech world (Chall, 1990).

Along the macro-micro continuum, the social literacy context on the macro end brings into focus the literacy achievements of DHH students at the micro end. Specialized educational institutions that service students who are DHH report that the academic achievement of high school graduates in literacy development is disconcertingly inadequate. Deaf high school graduates, having spent more than twelve years in school, on average, reach only third grade reading and fifth grade math levels (Allen, 1986).

In response to the above challenge, proponents of bilingual education for DHH students support revised definitions of literacy and recommend alternative means of measuring the literacy achievements of DHH minority language students. This brings our discussion to the next biliteracy continuum: monolingual-bilingual contexts.

Monolingual-bilingual continuum

Moving away from literacy definitions that are politically motivated, and restructuring literacy definitions in educational forums that attend to bilingual experiences of minority language students, allows for the emergence of sociocultural definitions that emphasize bilingual and multilingual literacies. Based on a Vygotskian perspective, a sociocultural definition of literacy emphasizes the use of cultural practices that individuals develop and use to interact with each other and their surroundings. The use of communication, speech, literacy, and mathematics "tools" are embedded in social contexts and are understood in terms of sociocultural processes. Students use these processes to mediate academic and cultural experiences. In contrast to some monolingual educational contexts, literacy is not perceived as a set of isolated skills in bilingual educational contexts. A sociocultural definition of literacy allows bilingual students the opportunity to self generate and co-construct with others in their surrounding, a cultural as well as academic meaning of literacy (Moll, 1992; Ramsey, 1993). Biliteracy program designs foster a socially constructed and individually situated understanding of literacy for students who have access to the communication tools of two languages (Moll, 1992).

The recognition of DHH students' two-language use in literacy development is still at the early stages of exploration and implementation. A significant sociopolitical factor that has catapulted consideration of bilingual education for deaf students stems from the national media attention given the Deaf President Now protest. This 1988 event irrevocably changed the sociopolitical status of American Sign Language for Gallaudet University students and all language users of ASL. It set into motion an educational policy that no longer favored hearing people, mono-language models and educational

policy makers for DHH students. New language policies support Deaf people, especially culturally Deaf persons who have been signing since birth with the belief that "My language is me" (Kannapell, 1980). Following this major sociopolitical event for Deaf students as well as the wider community of ASL users, Johnson, Liddell and Erting (1989) published a small paper that became largely responsible for setting into motion the exploration and implementation of bilingual bicultural programs in deaf education. The main tenant of their call to *unlock the curriculum* was that the time had come to change the persistent oppressive ideology that has dominated deaf educational programs for over one hundred years, that is, oral monolingual education. Deaf children should no longer be expected to access academic learning using the inaccessible majority language, spoken English (Johnson, Liddell & Erting, 1989). The authors argue that deaf students' academic achievement--more specifically reading and writing language achievement--falls dismally below the academic achievement of their hearing peers, due to the deaf students' limited access to the English monolingual education provided them. The authors proposed a bilingual bicultural education for all deaf students, one which acknowledges the importance of a natural sign language that is biologically more accessible (visual) to deaf students and culturally more appropriate. A bilingual rather than a monolingual educational environment would provide a setting for the natural language development of ASL and the learning of a second language, English via print. Curriculum content previously *locked* due to an English dominant, spoken and/or spoken and signed medium would become *unlocked* if ASL were used as the language of instruction. The authors make a strong recommendation for the earliest possible exposure to ASL for the 90 percent of deaf students who are raised in non-signing households. This

recommendation is supported by the academic success documented for Deaf children of Deaf parents who had early development of a strong language base in ASL. Over a hundred years of oppressive experiences have been investigated and comprehensively detailed in *When the Mind Hears,* a publication that examines the history of deaf people, emphasizing the unfavorable social positioning and unequal power relations in the educational experiences of deaf people (Lane, 1984).

Oral-literate continuum

With the support of a sociopolitical *event* and a *publication* that challenged existing DHH monolingual English-dominant education programs, collaborative supporters, linguistic researchers, and educators within the field of deaf education began to design bilingual bicultural educational programs. Program design features for Deaf and Hard of Hearing bilinguals were borrowed heavily from existing minority language bilingual educational models. Based on educational programs that had prior histories of only a few decades, Deaf bilingual program features were evolving that identified language functions--oral and literate components--that both differed and shared similarities with existing regular bilingual programs. Educational bilingual programs recognize oral and literate components of students' two languages. Inherent in bilingual design is the expectation of linguistic transfer from one language to the other. *Maintenance* and or language *loss* are additional descriptors along the oral and literate continuum that establish cultural and linguistic relationships between two languages. Overall bilingual program goals become apparent depending on the degree the design fosters *transfer*, *maintenance,* or language *loss*. The chart below illustrates similarities

and differences between the oral and literate components of regular bilingual programs (RBP) and deaf bilingual programs (DBP).

	Oral L1	**Oral L2**	**Literate L1**	**Literate L2**
RBP Regular Bilingual Program	Expected: ● Maintenance ● Transitional -Transfer L1-L2 ● Submersion -L1 "Loss"	Encouraged: ● Development	Expected: ● Maintenance ● Transitional -Transfer L1-L2 ● Submersion -L1 "Loss"	Encouraged: ● Development
DBP Deaf Bilingual Program	Expected: ● Development	Discouraged: ● Not considered	Disregarded: ● Considered as non-existent	Encouraged: ● Development

The chart outlines descriptions of the oral and literate components of the L1 and the L2 of each bilingual program. The top row identifies the expected and encouraged development of oral and literate components of the two languages in regular bilingual programs. The bottom row indicates which oral and literate components are developed or disregarded based on designated bilingual program goals for DHH bilingual students. The most obvious similarity between RBP and DBP is the explicit bilingual program goal, literacy development in the bilingual students' L2, English. The second similarity between bilingual programs is the identification and potential utilization of students' L1 for language transfer. Depending on the type of RBP (maintenance, transitional, or submersion), each has varying expectations for literacy skill transfer between L1 and L2. Similarly, depending on the school's adopted bilingual model, oral language transfer will be encouraged or discouraged resulting in either further development and maintenance of

the spoken minority language (L1) or in the inevitable loss of the student's home language, *language loss*. Outside of bilingual educational contexts, the linguistic home environments of RBP students may or may not sustain continued development of minority language students' spoken language. Regardless of the different programs that acknowledge the oral and literate skill L1 students bring to school, the oral and literate components of minority students L2 are clearly expected to develop.

The second row, DBP cells, outlines oral and literate component expectations for DHH students' two languages, American Sign Language and English. The identification and recognition of a first, natural, native language for Deaf students, American Sign Language, stresses program similarities. Student literacy development in L2, English, is strikingly similar to RBP program expectations. The remaining cells, however, illustrate greater distinctions between the two programs' oral and literate components. The language components, oral L1 and literate L2, are the only cells in DBP targeted for development. Those familiar with the long debate between oralists and manualists in deaf education history would reasonably accept non-consideration of (English) oral skill development, L2, as a bilingual program feature for DHH students. The disregard of the literacy cell for DHH students' L1 may not be as readily transparent.

Educators and ASL linguistic researchers have yet to agree on a definition or a description of ASL literacy. Bill Stokoe stands out among all other ASL researchers. Since he was the first to claim that American Sign Language is a language, what he had to say about a literacy component, a written representation of ASL, sustains a common belief, that ASL is not a written language. Stokoe was quite sure that writing down what one hears will differ drastically from attempts to write down what one sees during ASL

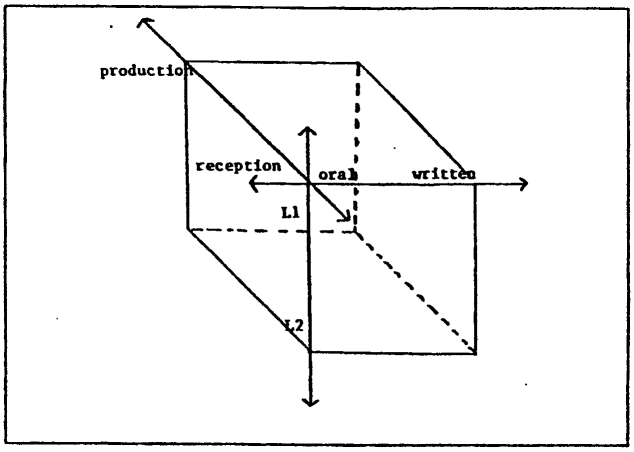
signed communication (Stokoe, 1994). ASL researchers who later supported Stokoe's revolutionary claim that ASL was a valid language worthy of linguistic description, requiring a notation system that identified linguistic sign parts, did concur however, that conventions for writing ASL do not exist (Stokoe, 1993; Padden, 1988; Erting, 1992). ASL researchers have acknowledged that written representation of sign language is needed for purposes of comparative linguistic analysis. Others extend the importance for a way to write signs to achieve teaching and learning goals in the fields of linguistic study, the acquisition of sign language as a second language and the literacy development of deaf students (McIntire, Newkirk, Hutchins & Poizner, 1987). Wilbur (1987) continues to support the creation of a written form of ASL as it could provide the means of recording ASL literature in a more traditional fashion. ASL shares a commonality with other oral languages that have their own cultural and traditional means of maintaining folk language art forms (Frishberg, 1988). Frishberg made reference to the Deaf Community's literary art form, the ABC stories, as an example of a traditional oral art form. ABC stories are brief narratives generated through the formation of twenty-six manual handshapes that are equivalent to the letters A-Z. The above literature supports the introduction of a written representation for ASL. Acknowledgment that there is indeed a way to read and write signs would provide deaf children a means of becoming literate in their first language while simultaneously enhancing their potential abilities in reading and writing in their second language, English. Serious consideration given to a written representation of deaf students' first and natural language, ASL, would give educators who truly believe in bilingual education for deaf children, a tool of immense power (McIntire et al., 1987, p. 206). A bilingual literacy program for DHH students in

DBP would change the proposed differentiation of oral and literate functions between two languages, English and ASL, fostering literacy development in both. This moves the academic literature discussion into the next frame, the biliterate development of the individual.

Biliterate Development

Language development has been *key* in academic forums that focus on educating Deaf students. When asked what educational components are most important for Deaf students to academically achieve, teachers of DHH students reply, "language, language, language."

A learning context for biliteracy is taken to be successful to the degree that it allows children to draw on the three continua of biliterate development, that is, on oral and written, receptive and productive, and first-and second-language skills, at any point in time (Hornberger, 1995, p. 177). The challenge here will be to capsulate the complex relationships that exists between the continua within this frame.



(Hornberger, 1989, p. 274)

Figure 3. The Continua of Biliterate Development in the Individual.

The literature that describes language acquisition by Deaf children does differentiate between first and second languages used by Deaf students, ASL and English. At the time of Stokoe's proclamation, "ASL is a language" (Stokoe, 1960), a shift of language interest from English to ASL language development occurred. Psycholinguistic research attended to the documentation of the natural acquisition of ASL. Prior to the introduction of bilingual bicultural education models, assumptions about language acquisition in an educational setting would maintain focus on deaf students' English skill development only. Literature related to language development of DHH students associated with oral-written, production-reception continua primarily reports on English literacy achievement. Initial documentation and reports about bilingual bicultural programs for DHH students, in fact, continue to emphasize English literacy achievement as testament of program successes. There is relatively little discussion that describes and reports on DHH students' ASL skill development in a bilingual educational setting.

L1-L2 Continuum

One of the major inquiries of psycholinguistics has been how children acquire language. Human infants have at birth the potential to perceive and learn the language in their immediate environment. On the macro end of the language development continuum, multiple descriptors have been given to this seemingly miraculous ability that infants possess. Reflecting differing theoretical perspectives such as *nature vs. nurture* and *innate vs. interactionist*, infants have the following at their disposal to acquire language: Chomsky's LAD, a language acquisition device; Bruner's LASS, a language acquisition support system; and Slobin's LMC, the language making capacity. On the micro end of

the language development continuum, investigation of Deaf infants' acquisition of language indicates that this population of language learners has similar devices at its disposal. Newport and Meier (1985) report on deaf children's possession of similar language making capacity to acquire a modality different language, ASL. Their review described many studies providing evidence that this visual language, ASL, shared between Deaf parents and Deaf children, developmentally follows the acquisition stages of other languages. ASL has the syntactic, semantic and pragmatic properties that are "quickly and easily" (Slobin, 1985) perceived, analyzed and stored into memory by deaf language learners.

In the cumulative research on sign language acquisition (McIntire, 1994) there was an emphasis on correlating developmental time course and milestones in spoken and sign language acquisition. Bonvillian, Orlansky, and Novack (1983) documented earlier and accelerated acquisition of sign vocabulary among infants of deaf parents. The authors speculated that this pattern of sign acquisition might be a result of different motor action involved in sign and spoken modality. They reported that Deaf parents manipulated the infants' hands into appropriate sign formation most likely not done with speech articulators. Maestas y Moores (1980) and Masataka (1992) also reported that Deaf signing parents do modify their signed communication with Deaf infants resembling "motherese" or child-directed speech used by other non-signing adults. Slowing the tempo of the sign, repeating the same sign, and exaggerating the sign movement are a few of the modifications Deaf mothers used with their Deaf infants. Molding the infant's arms and hands into signs and then guiding the action of the sign on either the child's body or the parent's body was another reported strategy used by Deaf parents.

Contributing to a report on language learning strategies, Pettito (1994) highlighted language learning mechanisms that deaf infants engaged in that suggest learning mechanisms go beyond spoken and sign modality differences. Pettito's documentation of manual babbling, the discernible rhythmic opening and closing of an infant's fist, provides evidence of child-centered sensitivity to language making. While demonstrating the existence of a developmental equivalent to spoken babbling, Pettito and Marentette (1991) provided supportive evidence for the neurological equipotential of both signed and spoken linguistic input. Contrary to the earliest observations of Deaf children's sign language acquisition, which highlighted the modality acquisition factor, Pettito concludes that the human brain does not attend to modality differences in languages. If the assumption is made that language learners who are deaf have at their disposal all of the language acquisition devices, systems, capacities and mechanisms, regardless of spoken or signed modality, why then does the perception persist that language learning is problematic for deaf students?

Production–reception continuum

The discussion regarding the development of reading and writing processes and strategies that the biliterate individuals employ are found along the production-reception continua. Two researchers, Hanson (1985, 1991) and Ewoldt (1985, 1990), have addressed the deaf student's use of reading and writing processes. Emergent deaf student readers and proficient deaf adult readers, when interacting with and producing English printed text, use similar phonological strategies and cognitive processes as other readers and writers. Hanson's studies (1985, 1991) challenged the assumption that deaf readers do not develop nor use phonological coding, a speech-based code, for the purpose of

reading print, primarily because of limited auditory access to spoken English. Phonological coding, or the alphabetic principle that one symbol represents each elementary speech sound or phoneme in the English language, has been identified as an important determinant for good readers (Adams, 1994). Deaf students have been faced with developing phonological representations for an alphabetic system (English) without knowing the rules that govern it (Leybaert, 1993). The signs used by deaf children are of little help because there is no relationship between sign formational parameters and the alphabetic code (Leybaert, 1993).

Hanson found evidence that deaf adult college students with both oral and native signing backgrounds do in fact use phonological coding. Hanson's hypothesis that deaf and hearing skilled readers are sensitive to the orthographic structure of printed material was verified by her study. Hanson acknowledged that deaf students experienced difficulty in developing an abstract phonological representation without the support of speech perception and production that hearing skilled readers accessed. Skilled deaf readers, even those with native ASL backgrounds, presumably have used either lip reading or kinetically memorized speech articulation experiences to enhance the development of more reliable phonological representation of English. Hanson's study did not clarify whether the phonological code that deaf readers developed, without sound, preceded the reading skills they could demonstrate or if the phonological coding they were applying to written text was a result of developed reading skills. Hanson did point out, however, that deaf readers who over-relied on the orthographic representation without some understanding of the underlying grapheme-phonemic relationship, incorporated inaccurate phonological representations in their reading functions.

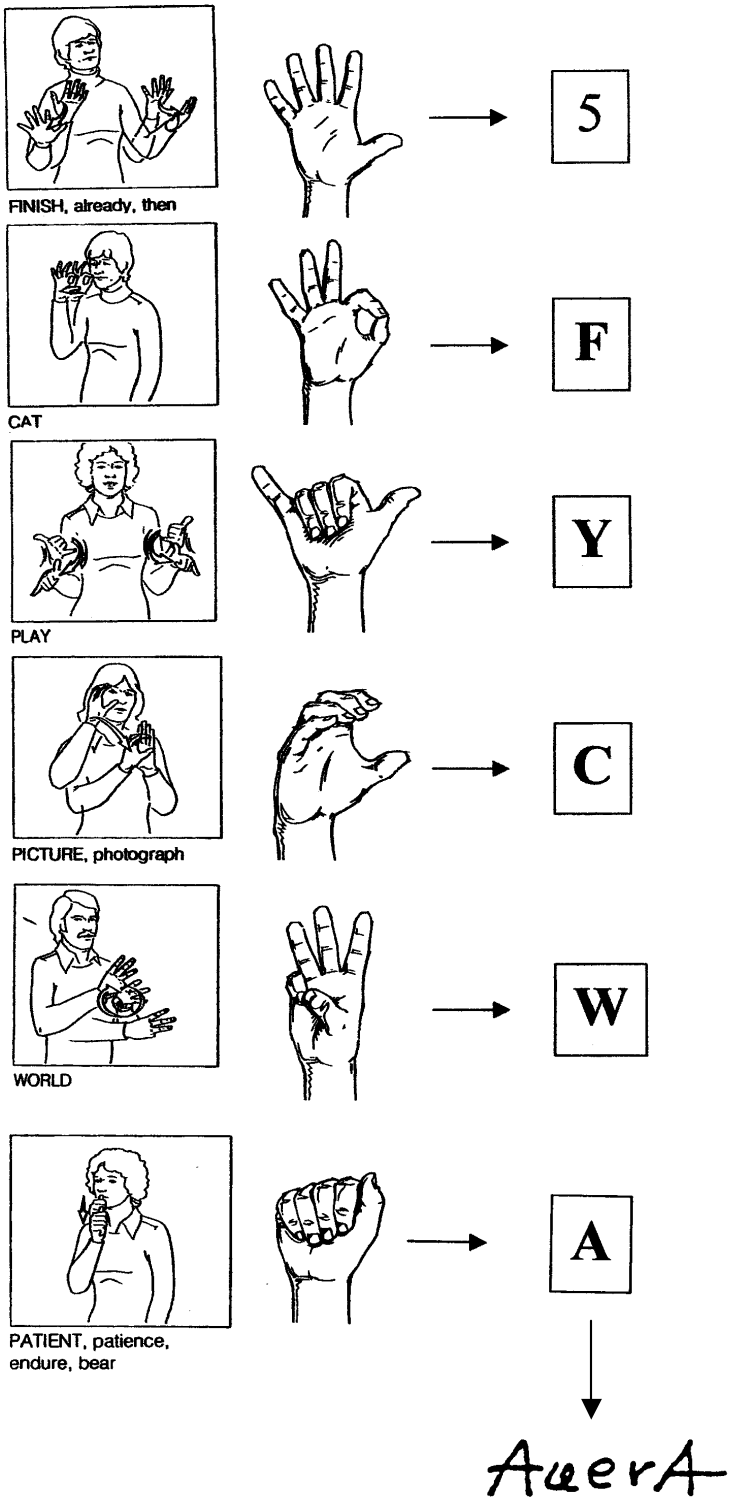
Ewoldt (1985, 1990) focused on the development of emergent literacy strategies used by linguistically advantaged deaf youngsters ages four through seven who had access to sign language input from birth, a natural signing home environment. The naturalistic observation data supports Goodman and Goodman's theory of literacy (1979, cited in Ewoldt, 1985), a "whole-language" understanding of literacy as a process and as a valued social behavior. *Whole-language* opposes prescriptive segmented reading and writing skill-building activities. Ewoldt found evidence that young deaf readers develop the same patterns and strategies observed in hearing readers. Organizational elements of writing proceeded along the proposed paths--scribbling, production of mock letters and later, conventional letters.

Of particular interest were the patterns or strategies that showed some influence of the deaf child's native language, sign language. The adult recorded version of a child's dictated signed story included several repetitions of verb forms, for example, "can't find…look, look, look, look, look…etc., bunny ate, ate, ate…"(Ewoldt, 1985, p.115). These repetitions might demonstrate some level of linguistic mediation. The young deaf writer mediates between the movement features of his natural sign language, repetition of the movement parameter of sign formation, and the single discrete visual representation of words he has come to know via print. The child edited his story by eliminating a few but not all of the repeated printed words. The child writer understood the finiteness of language system parts and the infinite possibilities for the creation of messages through print, known as the generative pattern.

When marks on paper signify meaning for young writers, they have developed *intentionality*, the literacy process referred to as the *turning point* in literacy

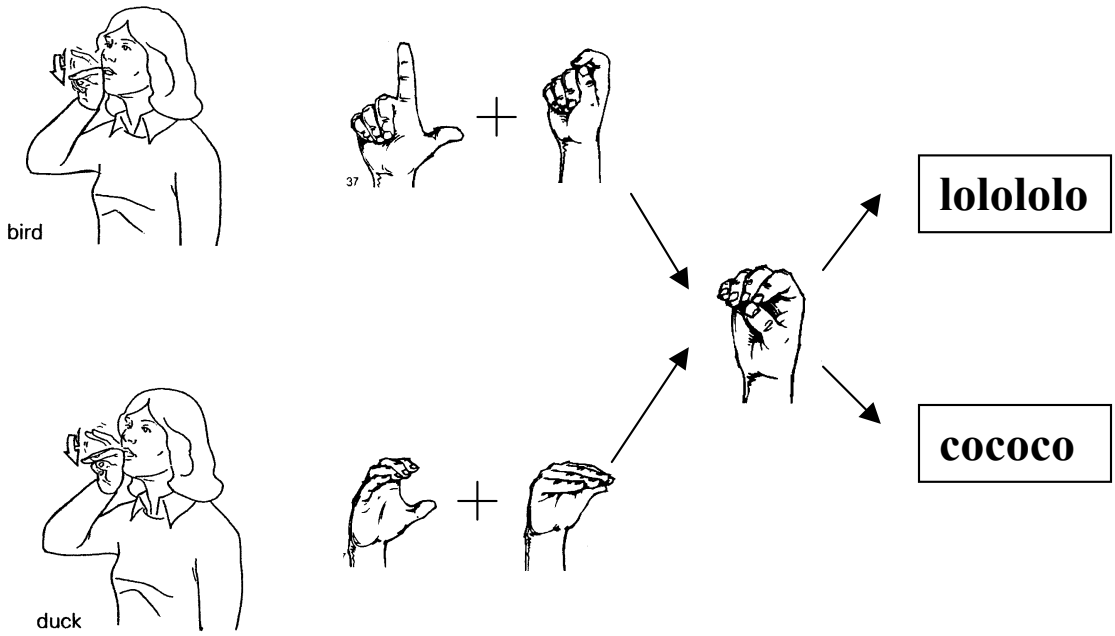
development; object over meaning yields to meaning over object (Vygotsky, 1978, cited in Ewoldt, 1985). Just as hearing children have been observed speaking before writing, an "intention director" (Woodward, 1983, cited in Ewoldt, 1985), deaf children have been observed rehearsing manually (fingerspelling) what they intend to write on paper. Haydon (1984, cited in Ewoldt, 1985) and Romig (1985, cited in Schleper, 1992) identified deaf students' strong dependence on visual and kinesthetic spelling strategies in which the child incorporates the manual hand shapes of sign in their writing of English words. Invented spelling is a common strategy used by both hearing and deaf writers, though identifying inventive spellings of emergent deaf writers requires knowledge of sign handshape parameters. Ewoldt reported that one deaf child, while attempting to spell the word "finish," wrote the numeral "5," the handshape used to produce the sign "finish" (Ewoldt, 1985, p.123). Schleper reports further observations of sign motivated invented spellings used by emergent deaf writers: "f" = cat, "c" = picture, "y" = play, "ww" = world (Schleper, 1992, p.13). Schleper reports that a five-year-old deaf boy incorporated two features of his native language, handshape and movement, extending the use of inventive spelling beyond one-letter representation. His representation of the sign "patient" motivated this spelling: "*A uer A*" (Schleper, 1992, p. 13). The sophisticated thought process of this five-year-old led him to incorporate the double movement in the sign "patient," concluding that the word must then begin and end with the letter "A," the articulating handshape used in the sign, "patient." He was also aware that words contained internal components evidenced by his insertion of "uer" between initial and final letters (handshape configurations).

Another example of an extended use of inventive spelling strategies used by deaf signing emergent writers was reported by a literacy specialist working in a bilingual education setting with very young deaf preschoolers (personal communication, Weinstock, 1997). A four-year-old deaf preschooler produced a series of conventional letters representing whole *sign-word* units. "LoLoLo" represented "bird" while "CoCoCo" represented "duck" (Weinstock, 1997). These spelling inventions had little to do with the grapheme-phoneme relationship of spoken words. He constructed representations of the salient features of *his* language, sign language, demonstrating a clear understanding that marks on paper—writing--signify meaning.



(Sign illustration from Humpries, et al., 1994; Handshape illustrations from Dawn Sign Press, 1984)

Figure 4. Sign Handshapes and Invented Spellings.



(Sign illustrations from O'Rourke, 1978; Handshape illustrations from Dawn Sign Press, 1984)

Figure 5. Sign Illustrations and Jacob's Invented Spelling.

Hoffmeister (1994) investigated older deaf students' transfer of metalinguistic knowledge of synonyms and antonyms between English and ASL, adding to the documentation that deaf students do rely on the linguistic strength of their first language. Metalinguistic knowledge will transfer across languages even when students do not have full control of the second language, English. Hoffmeister pointed out, however, that his subjects' metalinguistic transfer originated from their weaker language, English. The author invites readers to consider potential academic advantages for deaf students if given metalinguistic knowledge about their visual language, the language in which they have full control.

Reported above, it seems apparent that the youngest deaf emergent writers have already demonstrated metalinguistic awareness of their stronger language by incorporating features of their visual-gestural language and by using the letter

representations of a second language. It is unfortunate that older deaf high school students eventually abandon these metalinguistic inventive spellings (Schleper, 1992). Deaf writers and hearing writers alike tend to abandon inventive spelling strategies once students recognize that these inventions do not resemble the conventional spelling in books.

Reconsideration of literacy issues for deaf students in bilingual bicultural contexts is further supported by another study (Strong & Prinz, 1997), that found positive correlation between ASL and English development for deaf students within an educational program that emphasized the development of linguistic strength in DHH students' first language, ASL. A written symbol system for ASL could provide DHH students an opportunity to orchestrate the cueing systems of both languages (phonemic-graphemic representations) building students' confidence as meaning makers and writers in two languages.

Oral-written continuum

We turn to the academic literature to inform an understanding of the complex relationship between the two languages in bilingual bicultural programming for DHH students. The linguistic relationships between oral and written expression and descriptions of some of the world's writing systems will support the discussion. The two languages deemed essential in deaf students' development of literacy, ASL and English, have respectively been assigned oral and written functions. Bilingual education advocates for DHH students propose that ASL dialogue will support Deaf students' development of critical thinking and problem solving. ASL is used to access all required curriculum content information. ASL can facilitate the acquisition of literacy-related skills in deaf

children's second language, English, without needing access to the spoken mode. By providing DHH students quality exposure to written representation of the second language, English, bilingual program designers expect that deaf students' literacy skill development will correlate with literacy developmental stages similar to other second language learners of English. Exploration of literacy considerations for DHH students would take a different route if both languages had written representation.

The oral-written continuum can be viewed using a macro perspective, bringing into focus what mainstream linguists have investigated regarding linguistic "channels" or "registers" available in spoken languages. Distinctions that had been posited for spoken and written language channels either fade or become more distinct depending on the type of analysis the investigator used (Biber, 1986). Attention given to spoken language channels has motivated in-depth investigations contributing to a growing body of research related to the oral-written continua. Some examples follow: the oral-literate continuum (Tannen, 1982), oral and literate cultures (Goody, 1982) the differences between spoken and written language (Smith, 1994), differences in second language acquisition (Hansen-Strain, 1994; Mangelsdorf, 1989), appreciation of spoken and written traditions (Heath, 1983), strategies (Lakoff, 1982), art (Polanyi, 1982), functions and abilities (Green & Morgan, 1981), related to restructuring of thought (Ong, 1992), the "great divide" (Street, 1995), and information "flow" (Chafe, 1992).

Shifting the perspective toward the written end of the oral-written continua, we glean more information from mainstream scholars who have looked at the evolution of some of the world's writing systems, enhancing an appreciation for "writing."

Coulmas (1989) summarized contrasts previously reported in existing literature between spoken and written language. The contrasts he listed were: *first,* the effervescence of spoken language as opposed to the relative stability of written language; *second,* the age and mode of acquisition; *third,* the speed of planning and production; *fourth,* the mode of transmission and reception; *fifth,* the availability of immediate feedback; *sixth,* some complementary situations for speech and writing; and *seventh,* the lexical and syntactic devices that are specialized for speech and writing. Coulmas concluded that while speech and writing draw on the same expressive potential for language, different selections are made for spoken and written forms.

Harris (1995) promotes an integrationist view of writing systems, suggesting that the spoken-written distinctions are not sensory modality differences, but rather time differences. For Harris, time takes priority because time is common to all sensory modalities and is the primary axis along which, for human beings, the various senses are themselves integrated (Harris, 1995, p.38). In every act of communication there is implicit an integration of past, present and possible future activities, but writing is one form of communication that allows for certain time-gaps to be bridged (Harris, 1995, p. 38).

Employing the micro lens, we narrow the perspective along the oral-written continuum to look at investigations of modality and channel differences between spoken and signed languages. Modality (or channel) initially appeared to be the most contrastive element in linguistic investigation of spoken and signed languages. These investigations showed, however, that similarities rather than differences pervaded all areas of linguistic study: phonology, morphology, semantics and syntax.

Padden (1988) provides an overview of the structural formation of ASL grammar. Researchers began with the premise that the unusual resources of a signed language (the articulators: hands, body, and face, and the use of space in front of the signer's body), might alter beliefs about human language which tended to support a speech-privileged association. ASL research analysis revealed, however, more *similarities* than *differences* between oral and sign languages in linguistic formation and organizational features. Segmental phonological analysis provided a framework for the re-analysis of sign phonology that realigned oral and signed phonology--making them similar rather than distinct from one another (Liddell & Johnson, 1984; Sandler, 1986, cited in Padden, 1988). The investigation of morphological process in sign language demonstrated more similarities than distinctions with oral languages. Sign languages followed the same derivational and inflectional rules found in spoken languages. For example, Supalla's analysis of sign movement as "root" and "affix" units, along with proposed constraints on how these units can be attached, illustrate organizational patterns similar to oral language (Supalla, 1982). Swisher (1988) outlined differences and similarities between spoken and natural sign languages, highlighting effects of modality on language processes, production and reception. Swisher suggests that the gestural channel will accommodate the needs of the visual channel by condensing information to be processed. Pronoun incorporation, use of classifiers in space, verb agreement, use of two hand articulators, and non-manual signals are all examples of condensed signed information. The author describes the above-condensed linguistic forms as time *saving*, manual effort *saving* and signed morpheme *saving*. The author stresses that transcription of sign cannot be simply a sequence of signed lexemes without in some way representing the multi-layered

information simultaneously present with manual signs. The hands, eyegaze, bodyshift, tilt of the head, position of the eyebrow and sometimes the position of the tongue, are all part of the linguistic structure of sign language. Visual representation of non-manual signals as well as manual signs would present the structure of natural sign languages more accurately. Written representation of signed languages would place the two modality different languages, spoken and signed, on equal footing, furthering the comparative analysis of linguistic structural similarities and differences.

To glean informed perspectives on *writing* that support written representation of natural sign languages, we return to the macro context of the oral-written continuum. Harris' integrationist view on writing strongly emphasized the creation of signs (semiotic signs). Sign making is not restricted to speech alone but includes other potential candidates for written forms. Mathematical and musical written forms are equally significant *signs of writing*. Harris' investigation of writing posits seven tendencies that occur across written languages that would support *sign making*, the creation of a writing system for ASL. A few of these tendencies relate to the construct features in ASL. They are: *one,* the conceptualization of time in terms of spatial relations; *two,* a progressive divorce between written history and oral traditions; *three,* a divergence of recording functions between writing and pictorial and other iconic forms of representation; and *four*, serious *weakening* or *abolition* of any equation between language and speech. Harris (1995, p. 166) comments, "It cannot be denied that any community which can draw upon some combination of the seven tendencies is in possession of ways of making meaning that would find ready expression in some form of writing." There are linguistic features of ASL that seem to correspond in direct ways to the sign making tendencies of

writing outlined by Harris. His integrated theoretical investigation of writing suggests that the creation of a writing system for ASL is not beyond the reach of the community of sign language users if a communicative alternative, a written form of their language, was seen as possible and valuable.

Comments from other "writers on writing" offer additional support for the creation and use of a written form of ASL by a community of sign language users. Sampson (1985) suggests that it would involve a great deal of redundant effort for members of a society to have to master two unrelated languages (ASL and English), one for spoken (ASL for face-to-face communication) and the other for written use (printed English). Sampson emphasizes that an alternative option is available, that of developing a system for encoding the spoken language used by Deaf people (ASL) into the graphic medium. These suggestions challenge the proposed oral-written functions of the two targeted languages used in bilingual bicultural educational programs for deaf students. ASL, the deaf students' face-to-face language of communication, the language in the air, the "oral" language of instruction, given the option of an encoded form, a written form, would potentially reduce effort and linguistic and cultural complexity between *oral* ASL and *written* English.

Coulmas (1989) addressed the fact that not all of the world's languages have a written form. ASL is among the majority of the world's languages that are *unwritten*. While writing serves different functions from those of speech, Coulmas did posit that all languages still have the potential for written forms. The invention of a written form answers the *here and now* limitations of speech. "By acquiring a written form, the

expressive power of a language is realized to a greater extent than it is in speech only" (Coulmas, 1989, p. 272).

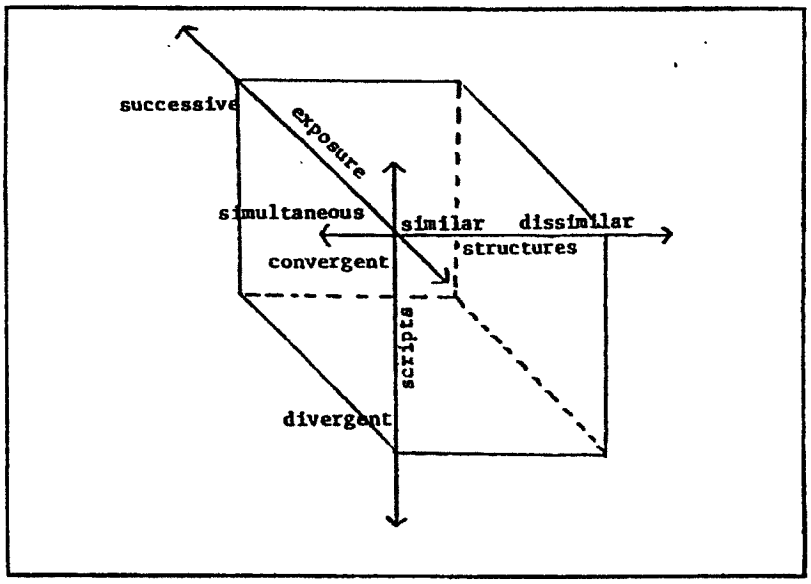
Harris' (1995) attention to the physiological limitations for reexamination and re-checking of here and now language messages (speech or gestural mode of ASL) provides additional support for a *written form* of ASL. Neither speakers nor signers are physically equipped to reprocess spoken or gestural messages without replication of the auditory or visual message. In a non-kinetic form, messages (written, audio, or videotaped) can be processed and reprocessed often and by many who may have access to the recorded message. Communication without access to second chance reexamination becomes memory dependent. Harris states that, "Memory dependent and non-memory dependent communication belongs to a different order of human interaction. Life is not the same under these two conditions" (1995, p. 43).

The conditions of communication described above mirror the description of the oral-written functions assigned to the two languages in bilingual bicultural education for DHH students. It has been proposed that ASL, the DHH student's first language, will fulfill *oral communication* functions, while literacy related activities' writing functions are relegated to the student's second language, English. The possibility for second chance examination of memory dependent communication differs for the two languages used by DHH students. Written English is readily accessible for reexamination and rechecking. ASL messages captured in a video-recorded, non-kinesthetic mode may allow opportunities for re-examination and re-checking; however, the video-save medium creates reprocessing constraints drastically different from reprocessing a written form. Given the opportunity to reexamine and recheck a written representation of an ASL

message, the processing and reprocessing requisites for literacy development would inevitably be altered for DHH students.

Introducing written representation of signs using a computer keyboard would further enhance bilingual DHH student's biliteracy development. Harris (1995) claims, "The computer, the latest technological tool, will not only change the psychology of education but reverse roles between speech and writing. Computers free writers from speech. Computers advance the role of writing from subservience to being more creative. Computers allow for innovative rearrangement of graphic space, the invention of new words, new paradigms, new constructions and new languages. The computer keyboard puts letters, numerals, commas, dollar signs and other symbols on an equal footing" (p. 163). Symbols that represent linguistic units of natural sign languages have been made available on computer keyboards, specifically on the SignWriting computer processing program keyboard. It appears that "writing signs" is not only in line with the latest in writing technologies but in harmony with Harris' speculation that the computers will change traditional boundaries that previously denied status to sign symbols in other ordinary languages. An acknowledgment of a written representation of ASL alters the relationship and function of DHH students' two languages along the oral-written continuum. Adding a *writing provision* to the previously restricted *oral* language, ASL, the discussion of biliterate development of the individual advances into the biliterate frame. The three continua associated with the biliterate media frame are: exposure <simultaneous–successive>, structure <similar-dissimilar>, and script <convergent-divergent>.

Biliterate Media



(Hornberger, 1989, p. 274)

Figure 6. The Continua of Biliterate Media.

Discussion interlude

Before proceeding with the discussion of the three continua in Hornberger's biliteracy media frame, comments about existing sign notation systems for natural sign languages and an explanation or rationale for the selection of SignWriting for this specific inquiry will be addressed.

Considerations given to the implementation of an ASL writing system should first take note of what has already been surveyed regarding ASL notations. As documented by Coulmas (1989), this approach would be in the same vein as the alphabetic borrowings that occurred in the earliest developmental stages of writing systems, the ferried alphabets from one language to the next. It would also be in tune with Harris' analogy of the "linguist's rule of thumb" (1980, cited in Kalmar, 1994, p. 126), that a surveyor

should never start from scratch to map an area already charted but make only minimal adjustments to an existing map.

Alphabetic, syllabic and logographic writing systems best suit the sound systems of the languages they represent. Conventionalized writing systems for many spoken languages rely heavily on sound symbol relationships. Can the organization of sound symbols inform in any way the invention and organization of graphic symbols to represent the non-sound dependent, the visual-gestural messages, inherent in natural sign languages? Would an orthography for sign language start with formational units as small as phonemic sounds (alphabetic letter size), combine formational units to represent morphemic sounds (syllable sized), or resemble the logographic style of writing where symbols represent concepts as whole units, one word equals one symbol?

ASL researchers have attended to these linguistic units and have generated several notation representation possibilities: "chereme" notations, the smallest contrastive units in sign notations (Stokoe, 1960), segmental trees (Liddell & Johnson, 1984), and hierarchical syllable modes (Wilbur, 1982, cited in Padden, 1988). Wilbur (1987) described Stokoe notation as a convenient shorthand for writing signs, suggesting that in some way it is like the English alphabet. Just as we can know how to spell a word and look it up in a dictionary, we can search some sign dictionaries in a similar fashion based on knowledge of sign formation, for example, handshape, movement, and/or placement. Wilbur further comments that Stokoe sign notations are *dissimilar* to the International Phonetic Alphabet because they do not represent how to *pronounce* signs adequately. Wilbur supports the creation of a written form of ASL, not only to fulfill purposes of

comparative linguistic analysis, but also to provide the means of recording ASL literature in a more traditional fashion.

Two notations systems for ASL, SignWriting (Sutton, 1998) and Sign Font (McIntire et al., 1987) share one significant technological writing component: a computer keyboard. Computer keyboards potentially advance the status of represented ASL signs, challenging traditional boundaries that formerly denied "word" status to signs. Using the computer, symbols that represent words and signs are put on equal footing (Harris, 1995, p. 163). SignWriting and Sign Font have the ability to capitalize on the engineering potential of computers, placing phonetic and non-manual features of signs on the same playing field, the computer keyboard. These writing systems, however, for the wider community of sign language users, have not become conventionalized ways of writing ASL.

A particular segment of sign language users that have strongly influenced notation systems for the world's natural sign languages are researchers. The first notation system was motivated by Stokoe's argument that sign languages are true languages (1960). Written symbols that systematically represented structured parts, specifically phonological parts, was the root of the linguistic status argument. Specific and individual research interest that contributed to the growing knowledge of how sign languages are linguistically organized generated multiple variations to Stokoe's original written notations. Modifications of Stokoe's notations were meant to fill in perceived gaps inherent in the system that had addressed neither spatial orientation nor facial non-manual signals. Reliance on the mnemonic value of the Roman alphabet to represent phonologically based handshapes was perceived as a weakness in the system's ability to

generalize representation for other sign languages and their different sets of alphabetic handshapes (Miller, 1994).

Miller (1994) outlines descriptions of notation systems that were in existence at the time of this inquiry's inception. Most were intended for tasks undertaken by linguists, in-depth descriptions of sign language linguistics that require phonological, syntax, semantic and discourse analysis. SignFont (Newkirk, 1987; Hutchins et al., 1990, cited in Miller, 1994) is a computerized Macintosh font designed principally to be used as a writing system for ASL. Invented handshape symbols were partially iconic. The system includes provisions for writing down non-manual and spatial locations, critical linguistic features that lacked representation in Stokoe's original notation system (See Figure 7, SignFont notations).

SignFont New Keyboard Layout

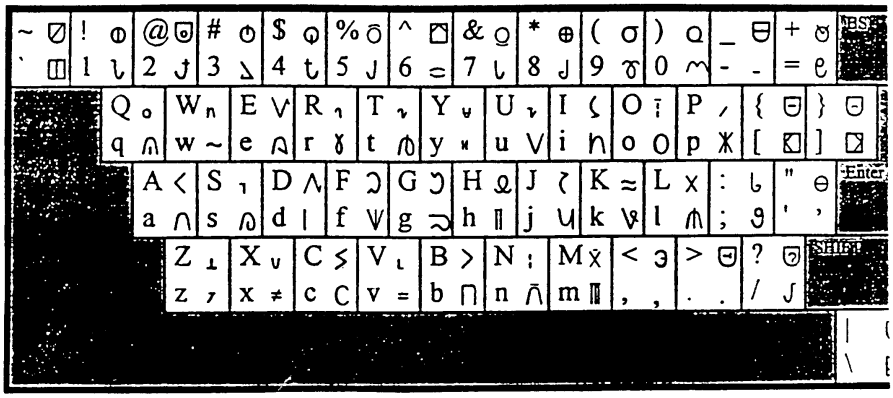


Figure 7. SignFont Notations.

Miller describes the Sutton SignWriting system as a system that is based on the combination of conventionalized iconic representations of body parts and movements

into stylized drawings of signs. Phonetic transcription and shorthand are two levels of detail in which signs can be transcribed. Miller commented that because SignWriting conflates a number of distinct symbols into a single drawing this would work against its use as a database-friendly transcription system, thereby limiting its use among linguist researchers. The author did point out, however, that there is software available for using SignWriting on both the Macintosh and DOS/Windows computers (See sample of SignWriting keyboard below).

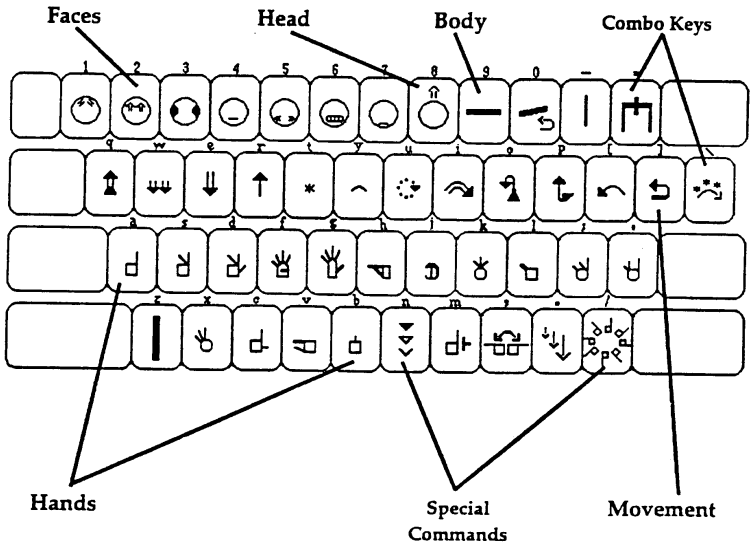


Figure 8. SignWriting Keyboard.

Miller describes one other sign language notation system that appears to be most popular among sign language researchers, HamNoSys (Prillwitz & Vollhaber, 1989, cited in Miller, 1994). This system, designed with the aim of applicability to the largest number of sign languages possible, attempts maximum iconicity in its inventory of

symbols, including handshapes. It provides detailed notation for distinctions such as point of contact on the non-dominant hand as well as notation for spatial locations. Provision is also made for notation of non-manuals. The system is available as a computer font for the Macintosh.

Miller summarized his inventory of existing sign language notation systems by acknowledging the multiplicity of notation systems not only as problematic but that the differences among them, particularly how they are organized, mitigates against the desirable translation between them. Feature and organizational differences among sign notations further confound *learnability*, meaning that potential users of these systems would be faced with learning each system from the bottom up (Miller, 1994).

Learnability is an important feature when introducing a new script, "a way to read and write signs," to DHH students. We have reviewed the linguistic notation invention for sign languages motivated primarily for contrastive analysis. There is a difference between notation systems and writing systems. Sets of notation symbols can represent any number of things including mathematics. Writing systems use notation, they use symbols to represent the structure of language. Two examples are alphabets and syllabaries. Scripts are a collection of symbols that make a writing system visible (Martin, 2000, p. 5).

The evolution of SignWriting as a writing system for ASL was not motivated by linguists' need to represent structural parts of sign languages. The origin of SignWriting symbols was taken from DanceWriting, movement notations invented by Valerie Sutton in 1974. Researchers from the University of Copenhagen requested that Sutton adapt her DanceWriting notations to record movements of signed languages. When asked to record

movement features of signs, Sutton did not, at first, realize that a written representation of a sign would lead to writing a language that never had a conventional way of being written. Sutton's earliest upper body stick figure representation of sign parts were later modified by a group of collaborative Deaf native users of ASL, reducing SignWriting symbols to their present format. The expected evolution of this particular writing system has not yet completed stages of modification and change. A variety of sign language users such as linguist researchers, authors of sign language dictionaries, computer programmers, web designers, educators, and a growing number of hearing and deaf signers, will be the primary contributors to conventionalizing "a way to read and write signs."

For this inquiry, focused on biliterate experiences of DHH students, it was necessary to select a writing system that would best reflect students' expressive language of choice, ASL. Because there was educational literature and material available to introduce students to SignWriting, this writing system became the chosen writing medium. The SignWriting Literacy project, sponsored by DAC (The Deaf Action Committee for SignWriting) made available the materials necessary to implement this biliteracy educational action plan. The materials included instructional manuals, SignWriting computer software, several levels of student-oriented SignWriting reading and writing workbooks, instructional support flash cards and ongoing instructional and technological support from DAC members, and in particular, the writing system inventor herself, Valerie Sutton.

Having completed the review of the existing notation systems that represent natural sign languages currently in use and the rationale for selecting SignWriting to meet

the need of this inquiry, the discussion of the remaining three continua in the biliterate media frame resumes.

Exposure continua <Simultaneous-successive>

Opening the camera lens to the macro view, we use observations from the broader field of bilingual education to inform and shape the introduction of a second media to DHH students. Linguistic transfer is one consideration that has received a lot of attention from second language acquisition researchers. Krashen hypothesized that a second language is acquired--not learned--contingent on comprehensible input. Parallel to the conditions when first languages are acquired, Krashen attests, "We acquire language when we understand it" (Krashen, cited in Crawford, 1991, p. 101). Learners will use knowledge of their first language to aid in the acquisition of a second. They use the rules of their first language to learn the rules of the second language, learning to differentiate between rules as they come to know the contexts that dictate the use of each language. "Use of first language patterns is a performance strategy that decreases as second language acquisition occurs" (Krashen, 1984, p. 42).

Cummins (1979) proposed the "interdependence theory, stressing the notion of an "underlying linguistic proficiency" that crosses all languages. "In short, the hypothesis proposes that there is an interaction between the language of instruction and the type of competence the child has developed in his L1 prior to school" (Cummins, 1979, p. 233). McLaughlin (1978) introduced the notion of simultaneous and successive bilingual acquisition. Specific to child acquisition, McLaughlin maintained that groups of children who acquire two languages simultaneously or successively could achieve bilingual competence (McLaughlin, 1978, p. 73). Whether a child learns a second language after a

first or acquires two languages at the same time, retention of both languages is attainable. Lambert and Tucker (1972) report a positive effect bilingual functioning had on cognitive functioning, "There was some indication that bilingual children were more flexible cognitively than their peers, but only in the early grades" (cited in McLaughlin, 1978, p. 206). While these early bilingual theoretical findings have been criticized for their contradictory and inconclusive features, they have had lasting impact on some continuing educational practices used with bilingual children.

Hornberger summarized the above research, emphasizing that the findings that suggest a stronger first language leads to a stronger second language do not necessarily imply that the first language must be fully developed before the second language is introduced. The first language must not be abandoned before it is fully developed whether the second language is introduced simultaneously or successively (Hornberger, 1989, p. 287). Genesee supported arguments that favor simultaneous exposure of two languages to children. "Bilingual children develop differentiated language systems from the beginning and are able to use their developing languages in contextually sensitive ways" (Genesee, 1989, p. 161, cited in Hornberger, 1989).

An example of bilingual children's writing differentiating abilities comes from Edelsky's (1989) investigation of bilingual Spanish children's written work. Counter to the belief that negotiating between two writing systems, different orthographic systems, would be confusing for bilingual students, Edelsky provided evidence of linguistic strength, not confusion, using written work from Spanish English biliterate learners. Errors indicated that biliterate students were making language hypotheses, they generalized phonetic features, recognized that words are not treated alike, invented

words, made decisions about text types, identified purposes for writing, and were sensitive to their audience's comprehension needs (Edelsky & Jilbert, 1985). The authors conclude that notions of interference are misleading, simplistic, and constrain relationships between two languages and assign a passive as opposed to an active role to the language learner (Edelsky & Jilbert, 1985).

Narrowing the view from the macro lens of bilingual education to the micro perspective specific to the discussion on two-language exposure to DHH students, a fair amount of debate has occurred. Bilingual bicultural advocates for DHH students appeal to the common underlying proficiency of all languages (Cummins, 1979), claiming that well established ASL skills will transfer to English literacy skills. Mayer and Wells (1996) challenge the assumption that ASL and written English are interdependent modes of linguistic expression. The authors suggest that the linguistic situations that deaf students experience are not equivalent to those associated with Cummins' interdependence theory. Mayer and Wells do acknowledge and support the necessity to establish a first language ASL. Bilingual proponents argue that face to face communication in ASL is just as good as any other language used for communication in other bilingual contexts. Deaf and hearing children use similar thinking and reasoning abilities significant to the acquisition of literacy skills. Metalinguistic awareness that links expressions of the first and second language, enhanced by a unique and crucial inner speech mode, assumes compatibility to the codes used in writing. The nature of the deaf child's inner speech, speculated to be a visual-spatial verbal thinking, does not match the code or written representation of aural-oral spoken English. The inner code of a deaf child's speech code, more reflective of ASL, presents obstacles to the

interdependent literacy relationship between the DHH students' two languages. The authors concluded that, because deaf children do not have access to the spoken mode of the targeted literacy language English, and assumed a written synoptic mode representing the first language ASL did not exist, deaf students would not have literacy skills to transfer from ASL to English. Even though the authors were unaware of SignWriting, most deaf children currently do not know a writing code that could represent their ASL "inner speech." DHH students could learn SignWriting, however, and develop ASL metalinguistic awareness that would link written communication between their first and second language.

Bilingual bicultural advocates hold firm their belief that there are strong relationships between ASL and English that allow for positive transfer (Hoffmeister, 1994; Strong & Prinz, 1997) and continue to ignore the prospect that a written form of ASL could support deaf children's English literacy development. At the same time, advocates maintain that ASL can facilitate the acquisition of literacy-related skills in deaf children's second language, English, without needing access to the spoken mode. Mayer and Wells verify that deaf communicators use the written expression of another language, English, to fulfill written language functions. The inner speech and written speech are derived from radically different codes, ASL and English. Bilingual advocates claim that ASL "talk" between deaf students and teachers about written English text will provide deaf students a dialogic bridge between languages. The authors state "talk" does not sufficiently address the difficulties deaf children face in trying to reconstruct the meaning of utterances in ASL into the sequential organization of written words that represent utterances of spoken English (Mayer & Wells, 1996, p. 104).

The above argument highlights significant discontinuity between the application of borrowed "out of context" theoretical models, Cummins' interdependence theory, and the implementation of bilingual bicultural programs for students who are deaf. The resolve of these discontinuities requires a critical examination, not only of the appropriateness of the adoption of a linguistic interdependence theory, but that serious consideration be given an additional bilingual bicultural component, a way to read and write signs. The incorporation of a written representation of ASL into biliteracy program designs will realign linguistic competencies of DHH students, affording them the opportunity to become biliterate as well as bilingual.

It would be negligent to omit from the above discussion the pedagogical training in bilingual methodology that is currently underway for teachers of DHH students. Nover (1998), a deaf language planner, designed a bilingual/ESL model for deaf students. This model was strongly influenced not only by his own educational experiences, but by his intensive graduate study in theories of bilingualism and sociolinguistics. A five-year longitudinal study has been implemented to evaluate Nover's proposed bilingual/English-as-a-second language (ESL) model for deaf children. The model addresses affective, cognitive, social, ASL proficiency, English literacy and academic issues through the use of two languages: American Sign Language and English (Nover & Andrews, 1998). As indicated previously, early proponents for a bilingual bicultural education model for DHH students meant the use of ASL as the language of instruction, teaching English as a second language, and offering speech instruction as an elective. Nover and Andrews (a project collaborator) view bilingual education as involving more than just using ASL to teach English. "It is not enough to present academic concepts in ASL and expect deaf

students to use these concepts to build English skills" (Nover & Andrews, 1998, p. 3). The project authors state that deaf students need explicit instruction about how ASL structures work as well as how English grammar works via reading and writing lessons (Padden & Ramsey, 1996; Stewart, 1992, cited in Nover & Andrews, 1998). (See Figure 9. Bilingual/ESL language and teaching model.)

Bilingual Approach (ASL dominance and codeswitching)	**English as a Second Language (ESL) Approach (English only and no codeswitching)**
ASL signacy abilities 1. Watching or attending 2. Signing *English literacy/oracy abilities* 1. Fingerreading 2. Fingerspelling 3. Reading (English text) 4. Writing (English text) 5. Typing (English text) 6. Lipreading 7. Speaking 8. Listening (when appropriate)	*English literacy/oracy abilities* 1. Fingerreading 2. Fingerspelling 3. Reading (English text) 4. Writing (English text) 5. Typing (English text) 6. Lipreading 7. Speaking 8. Listening (when appropriate)

(Nover, Christensen, & Cheng, 1998, p. 68)

Figure 9. Bilingual/ESL Language Teaching Model.

This model outlines a bilingual component and ESL component, both needed in a bilingual bicultural education program for deaf students. It is reasonably assumed that the bilingual component still relies heavily on the *visual* reading and writing of English lessons to demonstrate structural and grammatical differences between ASL and English. Note the use of parentheses in the bilingual approach column next to reading, writing and typing abilities (English text). There is no mention of texts that can represent the structure of ASL. SignWriting can become an additional pedagogical tool used to represent ASL

and to demonstrate structural differences between the two languages in deaf bilingual/ESL educational models.

There are theoretical features in this bilingual/ESL model that suggest preference for successive rather than simultaneous exposure to dual languages for deaf students. Acknowledgment is made that deaf students arrive at school with diverse language backgrounds and histories. The majority of deaf students come from linguistically disadvantaged non-native signing home environments. Over 90% of deaf children are born to hearing parents and have no older Deaf relative (Meadow, 1972, cited in Mahshie, 1995, p. xv). The addition of an ESL component to this bilingual education model, in which deaf students use English exclusively and do not codeswitch to ASL, is made with cautionary stipulation. The ESL approach is not appropriate for deaf students with an undeveloped language base. That is, those who are in the early acquisition stages of a base language, ASL, should continue using the bilingual approach emphasizing ASL "signacy" and English literacy/oracy abilities. "Signacy" is defined as the ability to control the visual/signing medium of linguistic transmission in the form of signing and watching/attending skills (Nover, Christensen & Cheng, 1998, cited in Nover & Andrews, 1998). The model developers refer to reading and writing skills as literacy skills distinct from oracy skills, the ability in speech fluency and listening comprehension (Baker, 1996, cited in Nover & Andrews, 1998). Speech for deaf students, an added elective when appropriate, is a recommendation that distinguishes this model from earlier proposals of bilingual education for DHH students.

The bilingual model designers' reference to deaf students' signacy skill development and the optional use of oral English skills, where appropriate, add new

dimensions to the biliterate exposure continua. The suggestion to suspend ESL approaches for those deaf students with undeveloped ASL signacy abilities, reflect theoretical tenants of Cummins' threshold theory (1979): develop one language fully before attempting acquisition of second language proficiencies, supporting successive rather than simultaneous exposure. Structuring the model to include both an ASL bilingual approach and an ESL approach, (English as a second language) supports a bi-directional shift between successive and simultaneous biliterate media exposure. This particular inquiry suggests that, given a way to read and write ASL signs, DHH students' signacy abilities would be enhanced and likewise affect student attitude and motivation to achieve biliterate proficiencies.

Structure <similar-dissimilar>

Hornberger had the least to say about the biliterate structure continua. It has been suggested that learning to read in a second language would be "quite different" from learning to read a first language, particularly when the structural relationship between the two languages is linguistically dissimilar (Niyekawa, 1983, cited in Hornberger, 1989). Asian speakers learning European languages would encounter structural differences to a greater extent than would speakers of French and English. The implication here is that learning to read one or another linguistically-related languages would pose fewer difficulties to second language learners.

The structural relationship between sign languages and spoken languages was discussed in a previous section. As stated before, earliest linguistic investigation of natural sign languages began by highlighting structural differences between spoken and signed languages, starting with the smallest linguistic parts, phonological units. Similarly,

the earliest notations that were developed to represent those phonological, morphemic units illustrated differences, which later faded as linguistic analysis of sign languages changed, influenced by models of analysis as they were evolving in the broader field of linguistic research. Multiple notation systems of signs developed over a relatively short period of time, 1960-1990 (Miller, 1994). Each system reflected the specific linguistic interest of individual researchers. Miller pointed out that differences in notation systems made translation between them a difficult task. For example, the sequencing of location, articulator, orientation, and action symbols in Stokoe's system differed from the ordered symbols in HamNoSys. Miller further commented that while transcription on the single sign level presents problems, conversational signing poses another set of transcription problems, challenging false perceptions of neat and precise representations. A major criticism of notation systems that propose representation of sign languages is the omission of representing non-manual behaviors such as facial expressions, head and body movements, eye gaze, blinks and the mouthing of spoken language words. Non-manual features in sign language may be the most salient linguistic component that differentiates the varying structures of the two languages deaf students are learning to read and write--ASL and English. Deaf students have not been presented with notation systems that are used for comparative linguistic analysis. They have been introduced to SignWriting, an adaptation to a movement notation system that offers flexibility in spatial arrangement of symbols. SignWriting symbols representing sign parts are not sequentially arranged but spatially assembled to represent a sign as a whole unit. SignWriting does include facial symbols that represent non-manual signals that mark both grammatical features and affect meanings embedded in sign language communication. When presented with a

means to read and write ASL, it still remains to be seen whether DHH students will become more aware of structural differences between English and ASL. Will DHH students perceive written English and written ASL as structurally *related* or very *different*, thereby creating additional obstacles for literacy transfer between the codification of their natural sign language and representation of a non-accessible spoken language, English?

Script <convergent-divergent>

The discussion of biliterate media frame continues, addressing literacy transfer issues related to convergent and divergent scripts. Orthography similarities or differences can foster or impede literacy transfer. The degree of interference, the mixing of language orthographies, occurs to a greater or lesser degree depending on the convergent-divergent range of orthography difference. Similar to the accounts of structurally related and unrelated languages' influence on literacy transfer, reports on greater or more immediate transfer of reading skills or strategies depends on the number of common characteristics shared between two orthographic systems (Niyekawa, 1983; Feitelson, 1987, cited in Hornberger, 1989). When students are learning to read in two languages at the same time, different writing systems appear to lead to less interference than do similar writing systems (Wong-Filmore & Valadez, 1986, p. 662, cited in Hornberger, 1989). Previously cited, Edelsky's work with Spanish biliterate students reported that students did use Spanish orthography in their English texts. However, they did reserve the tilde accent for Spanish texts and knew to use the letter "k" for English spellings which reflected their knowledge of divergent writing systems at a very early age (Edelsky, 1982, p.223, 225, cited in Hornberger, 1989). Further evidence from Fishman's study of students using four

different graphic systems--Hebrew, Greek, French, and English--supports the impression that convergence or divergence between biliterates' two (or more) writing systems seems to have little influence on the reading and writing of either (Fishman, et al., 1985, cited in Hornberger, 1989, p. 288).

Chapter Summary

This inquiry, focused on biliterate experiences of DHH students, is original and radical. Monoliteracy, the reading and writing of English, has been and continues to be the primary goal of all educational programs servicing Deaf and Hard of Hearing students including bilingual bicultural models. As discussed previously, writing ASL was first motivated by linguistic inquiry to validate that American Sign Language was a language. Subsequent to that validation were intensive comparative investigations that supported the linguistic status of this visual-gestural language and served as a catalyst that challenged and deepened understanding of all human languages.

Over a period of thirty years, various notation systems created to represent visual-gestural features of natural sign languages have emerged, among them, SignWriting. This movement notation system has evolved into a writing orthography that can represent any number of natural sign languages. Its evolution covers a span of twenty-five years. During that time, the symbols used to represent the moving parts of signs have gone through a series of changes. Most of the changes were initiated by native signers who negotiated between the symbols, marks on paper, with their inherent linguistic understanding of how their native language worked. Full body stick figures were reduced to sets of symbols that represented what sign articulators looked like, where they were placed and how they moved. Not unlike linguistic notation systems, SignWriting

originally arranged sign strings, which are *signed sentences*, along a left to right linear arrangement. Native signers implemented another change in how SignWritten sentences would appear on paper. Intuitively, these signers felt that a vertical representation of signed sentences matched the natural articulation flow of signs, a top down flow, rather than a left to right arrangement. Sutton, the inventor of SignWriting, knew that like any other writing system in existence in the world today, SignWriting needed to go through several stages of evolutionary change. Sutton confidently placed trust in the native users of sign language to dictate which changes needed to occur so that the writing of American Sign Language and all other natural sign languages would and could be recorded for any number of diverse reasons. One altruistic motivation Sutton has in promoting the use of SignWriting in educational contexts is that deaf children be afforded the opportunity to learn to read and write their language. Figure 10 illustrates the current appearance of SignWriting in one of the SignWriting literacy project student books.

Similar to impressions reported above, learning to read and write orthographically diverse languages may not present obstacles to the biliterate development of DHH students but rather may offer students a writing medium that best reflects their natural language of expression, ASL. Analysis of the collected data that recorded the experiences of DHH students while learning to read sign symbols that represent their language of communication, visually divergent both structurally and spatially from written English, may reveal either positive transfer or interference between the emerging literacies. While

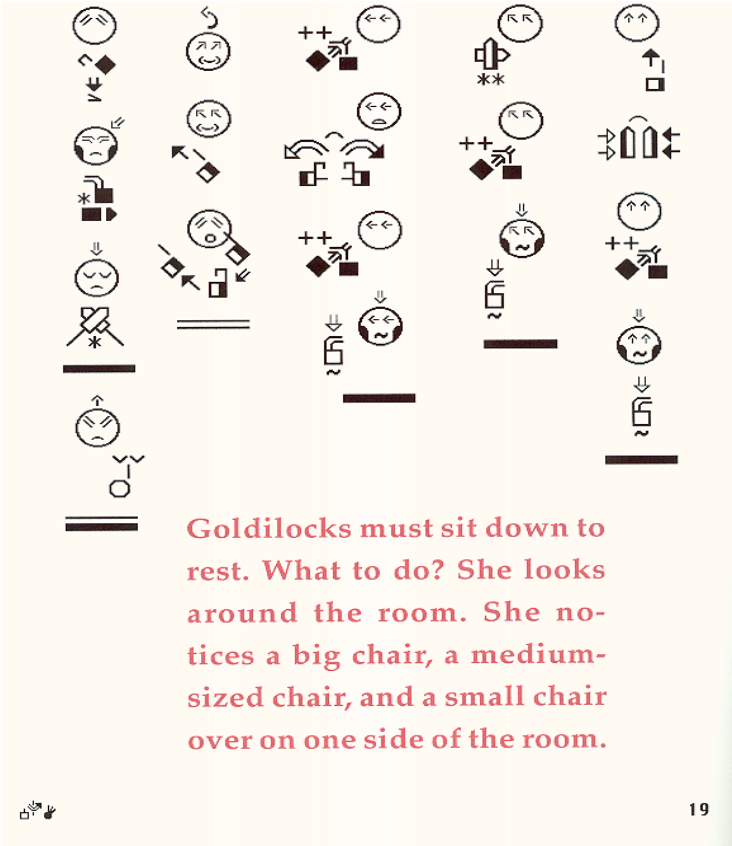


Figure 10. Sample Page from a Student SignWriting Book.

interest in literacy skill transfer dominates most bilingual investigations, the focus of this inquiry is on the empowerment DHH students may experience when presented a symbol system that exploits the metalinguistic knowledge they already possess and extends to them a way to read and write signs.

CHAPTER THREE

METHODOLOGY

This chapter outlines the inquiry process commencing with a rationale for the selection of a community based action research design. Following the inquiry goal statement, the inquiry process is explained, and includes a description of the setting, the identification of research stakeholders, the position of the researcher, the inquiry time line, and the collection process of the triangulated data that was recorded, analyzed, and interpreted. The final section will discuss the inquiry criteria associated with interpretive qualitative research. The methods chapter will conclude with an acknowledgement of inquiry limitations.

Rationale for Community Based Action Research

How do Deaf and Hard of Hearing[1] (DHH) students experience learning to write using SignWriting, a way to read and write signs? There are two terms in the inquiry question that ground the inquiry in a naturalistic research design paradigm: *how* and *experience*. The inquiry question dictates the use of qualitative rather than quantitative research methods because the question is neither deductive nor theory driven but rather inductive and data driven (Goetz & LeCompte, 1984). Qualitative research uses individuals as the primary research *tools*, incorporating value systems of both individuals and researcher. The interaction of sets of unique experiences, including those of the researcher, is expected to produce differences that inform cultural understanding, and not variables that need to be controlled (Guba & Lincoln, 1985).

[1] Capitalized letters is a writing convention used to identify the cultural identity of individuals and groups of Deaf and Hard of Hearing people. Capital letters (DHH) are used for Deaf and Hard of Hearing students.

The inquiry question emerged from previous experiences shared between the researcher and DHH students over an extended period of time. The researcher brought twenty-five years of professional and personal teaching and learning experiences with DHH individuals to this inquiry process. The formulation of the inquiry question is based on an intuition embedded in long-term relationships between DHH students and the research practitioner, not only at the designated inquiry educational setting but at former educational settings as well. These relationships developed within a private day school for the Deaf and a public school mainstreamed educational setting, both constructed to meet the unique communicative and educational needs of DHH students. The uniqueness of these educational settings may be characterized by the use of signed language as the primary communicative mode used by students and the educational program's teaching staff.

The research practitioner's extensive experiences and relationships with DHH students strengthened the intuition that DHH students do possess tacit knowledge about their own literacy learning experiences. The observable non-verbal cues and unspoken behaviors of DHH students engaged in literacy learning activities that introduce SignWriting will provide a means of evaluating literacy competencies outside of the "expert" measurements currently in use--standardized assessment of English reading and writing competencies. The *experts* in this inquiry will be the DHH students themselves who will make judgments about their own literacy learning experiences and in turn evaluate SignWriting as a medium of communicative expression. It is expected that collaborated experiences shared between the "knowers" (the DHH student literacy learners) and the "known" (the research practitioner), will influence the design of the

inquiry process (Goetz & LeCompte, 1984). The goal of the inquiry is that the negotiated descriptive outcomes will confirm the *trustworthiness* of recorded DHH students' literacy learning experiences that include learning to write using SignWriting. A comprehensive descriptive account of DHH students' *slice of reality*, writing the ideas they expressed in sign using SignWriting, will be constructed using multiple perspectives from inquiry participants, including those of the research practitioner. This account of writing experiences could transform perceptions currently held by those responsible for developing DHH students' academic environments.

The collaborative nature of the inquiry prompted the selection of a community based action research design. This ethnographic type of research emphasizes collaborative approaches to questions or problems that provide people a means of taking action to resolve the question or problem (Stringer, 1996). This inquiry repositions DHH students as those *in the know*, the people most knowledgeable of the literacy issue proposed: learning how to write using SignWriting. DHH students are key collaborators to understanding the issue and principal contributors to the formulation of thick descriptions of literacy learning situations. DHH students will be recognized as active partners in devising the course of collaborative actions that address the question of how do they (DHH students), experience learning to write using SignWriting.

Naturalistic inquiry, including the community based action research model selected for this inquiry, is characterized by spiraling dialectic analysis (Goetz & Le Compte, 1984). Community based research analysis requires the research practitioner and inquiry participants to collaboratively engage in three routine activities: *look*, *think*, and *act* (Stringer, 1996). The exploration of literacy learning experiences of DHH students set

into motion the *look*, *think,* and *act* routines of an action research project that first builds a picture. The initiation of SignWriting teaching/learning sessions was perhaps the first step in the *look* routine. The *think* routine guided student participants to reflect on their own learning attitudes (e.g., "I can"), and motivated teacher participants toward observation making that shifted teaching/learning assessments from "They can't" to "They can." The inquiry initiated participants in taking that first necessary step to *look* at how DHH students engaged in SignWriting activities. The inquiry process guided participants through subsequent *thinking* and *action* routines that generated interpretations and descriptive explanations that ultimately fostered a re-examination of, and a dialogue about, the existing literacy learning environments of DHH students.

Inquiry Goal and Question

The inquiry goal is to build a collaboratively constructed description and interpretation of the research question, a cultural and pedagogical phenomenon, "How do Deaf and Hard of Hearing students experience learning to write using SignWriting, a way to read and write signs?"

Inquiry Setting

The inquiry was conducted in a school district located in the southwestern area of the United States, responsible for public mandated education for a population characterized by mixed ethnic, multicultural and multilingual backgrounds. Typical of other southwestern cities in the United States, the educational programs in this school district reflect the cultural milieu of the area, including cultural and linguistic influences from Hispanic, Native American and Anglo people.

Federal and state mandates have challenged theoretical and educational practices in culturally and linguistically diverse school settings. Bilingual Education and Special Education are two examples of federally mandated changes implemented in educational settings designed to improve the bilingual learner's and special education learner's access to federally funded educational programs.

Historically, submersion bilingual education characterized the educational experiences of non-English speaking students. The acquisition of the *school* dominant language maintained an urgency that ultimately devalued linguistic capabilities of non-English speaking students. Bilingual learners need an educational context that will validate the linguistic and cultural competencies that they bring to school. Bilingual educational environments are being redesigned to foster the temporary or full maintenance of students' native languages while simultaneously supporting the development of the academic and majority language of the school. Full maintenance bilingual programs insist that students' native language will be maintained throughout their school career as they learn their second language. Transitional programs emphasized the transfer of skills from students' native language to the students' new school language. There is a predetermined expectation that this transfer will occur within a three year time period. Following that time frame, the educational linguistic focus remains set on developing minority language students' second language--English. When the language that students bring to school is valued, a learning context that fosters the acquisition of the school's dominant language becomes enriched.

Special education programs are designed to assist learners who acquire knowledge at different rates and in different ways. The recognition and incorporation of

alternative learning strategies are incorporated into the academic environments designed to accommodate individual students' physical, emotional and cognitive capabilities. Despite the fact that the primary difference for DHH students is the use of a language other than English, DHH students are currently classified as *special education*, not *bilingual education* students. Similar to bilingual educational models, the development of English language competencies is an implicit and primary goal of special education programming for DHH students. This means that reading and writing language activities in self contained DHH classrooms focus primarily on the acquisition of English language proficiencies. Intense training in and use of aural-oral access to English competencies and the push for receptive-expressive English language skill development takes precedence over any other language-making capabilities DHH students may already possess. While the use of signs is evident in the district mandated special class environments for DHH students, the literacy learning expectation is that DHH students will develop English reading and writing skills.

In this southwest school district, re-examination of the special education program description for DHH students is in progress. Cultural and linguistic influences on educational program designs are being discussed by a variety of individuals, including some teachers of the Deaf and a few parents of DHH students. The current delivery of educational services to the population of DHH students within this district is characterized as mainstreamed education. Within a regular public school setting, there are self-contained classrooms that are specially designed to meet the communication and educational need of DHH students. Classroom teachers use multiple communication modes--speech, sign, and a combination of speech and sign--to instruct public school

curricula to DHH learners. The degree of residual hearing an individual DHH student possesses and functionally uses determines whether classroom instruction is further supported by the use of auditory amplification devices. Students spend the majority of instructional time within these self-contained classrooms. There are program opportunities, however, for DHH students to learn with their non-deaf peers with the communication support of Sign Language interpreters for both curriculum content subjects and other developmental physical and social experiences [Physical Education, Art, Library, Computer classes]. The educational format at the inquiry site reflected the mainstream *norm*, which characterizes the majority of deaf educational programs in the nation.

Increased support for pedagogical change in deaf education programs continues to emerge from other professionals in the field of Deaf Education and from members of the community of Deaf people in the U.S. (NAD proclamation, see Appendix A). ASL, which has been recognized as the natural and *cultural* language of Deaf people, can empower DHH students and radically alter the *pathological* educational perception of DHH students as language deficient literacy learners with limited linguistic capabilities. Parallel to the recent challenges to English dominant bilingual educational programs, DHH monolingual "English only" educational programs are being challenged. Growing numbers of educational advocates from various disciplines, researchers in linguistics and education, and in particular, developers of teacher training programs, have collectively added momentum to the dialogue addressing potential public education program changes for DHH students.

Individuals who work in this southwest school district's program for DHH students have like wise been motivated to consider the linguistic and cultural competencies that users of ASL bring into the literacy learning educational contexts. Even though higher levels of district administration still classify DHH students as *special education* candidates eligible for specialized educational services, a consideration that DHH students be perceived as *bilingual communicators*, users of ASL and English, is currently receiving some administrative attention. Classroom teachers in self-contained DHH classrooms, as well as the certified sign language interpreting staff who service the district's mainstreamed DHH students, have been observed modifying their signed language communication from Signed English to reflect the visual-gestural structural features of ASL. This observation provided evidence that linguistic and cultural communication changes were already under way. The growing recognition of two languages, ASL and English, and the anticipated impact bilingual methodology could have on the literacy development of DHH elementary school students, opened an educational research venue that had not yet been explored. With the support of SignWriting, a bilingual educational environment is emerging in which learning how to read and write *two* languages, ASL and English, can be considered.

Inquiry Stakeholders

In keeping with key principles of community based action research--relationship, communication, participation, and inclusion--the perceptions from all research participants, including those of the research practitioner, are necessary to construct an ethnographic community-based understanding of DHH students' literacy learning experiences. The collective lives of DHH students and their families, their classroom

teachers and the educational support staff affected the inquiry processes and the anticipated descriptive inquiry outcome. The inquiry question was an outgrowth of the research practitioner's long term collaborative experiences with the above community members. Inquiry participants were identified and categorized into three groups of inquiry stakeholders: DHH students, parents of DHH students, and classroom teacher stakeholders. The research practitioner, while not identified as an inquiry stakeholder per se, did assume an active collaborative role in initiating and facilitating the inquiry routine activities. The researcher's role is further clarified in a later section. Above all other participants, the DHH students were identified as the primary stakeholder group and deemed the most important contributors to the inquiry process and outcome.

Recognized for their significant contribution to the social-emotional development of their DHH child and their collaborative role in their son's or daughter's academic programming, parents of DHH students comprise the second group of inquiry stakeholders. They were the first group approached with the inquiry proposal. For the families of DHH elementary students who attended the two DHH program sites within the district, an information meeting was held to explain the goal and the procedures of the literacy learning inquiry. SignWriting materials and SignWriting instructional videotapes were available for parents to review. Written consent was first requested and obtained from the parents or primary caregivers of DHH students prior to identifying DHH students as participants in the SignWriting literacy learning inquiry. Information packets that described the inquiry, along with samples of SignWriting materials and the parental written consents, were sent home to the families that were unable to attend the information meeting. Contingent on received parental consent, sixteen DHH students

were then approached to participate in the SignWriting literacy project. Before making a direct request to obtain DHH students' written consent for their participation in the inquiry, samples of SignWriting materials and an explanation of the inquiry project were presented. One consent form presented to students was written in SignWriting as an additional way of introducing SignWriting symbols to them.

Classroom teachers and support staff, including a classroom educational assistant and a Sign Language interpreter, comprised the third inquiry stakeholder group. On an individual basis, the research practitioner met with each teacher and or staff member to present the background information that supported the inquiry question. It was explained that the recording of DHH student literacy learning experiences, particularly their learning to write experiences, would be incomplete without their valuable observational input. Written consent for inquiry participation was requested and obtained from four classroom teachers and three educational support staff. (See Appendices B, C, D, and E for examples of consent forms.)

In summary, forty participants consented to be inquiry stakeholders. The parent stakeholder group comprised sixteen parents or guardians who gave consent for DHH student participation. At the first school site, seven DHH students comprised the student stakeholder group; two classroom teachers, two signed language interpreters, and one educational assistant comprised the adult stakeholder group. The second school site had a student stakeholder group of nine DHH students. At this same site, two classroom teachers comprised the adult stakeholder group. The research practitioner participated at both school sites as the inquiry facilitator. All stakeholders contributed to the inquiry process and to the descriptive outcome. Individual and joint reflections from all three

groups were obtained using the data collection processes that will be described in a subsequent section.

Position of the Research Practitioner

The research practitioner was the key facilitator and resource person for the initiation of SignWriting literacy experiences for DHH stakeholders. Prior to assuming the facilitating role as "lead" SignWriting teacher, the researcher functioned as a school counselor for district school sites, providing mental health counseling services to DHH students. Not an outsider by any means, the research practitioner was a full participant in the inquiry process and relinquished any objective stance normally associated with traditional quantitative research. The research practitioner's relationships with DHH students and classroom teachers at this southwest school district had developed over a period of six years. Collaborative efforts to jointly support DHH students' academic achievements had already been underway between the research practitioner/counselor, teachers, parents and educational support staff. At each school site, these pre-existing professional and personal relationships provided the contextual collaborative foundation necessary to conduct the literacy inquiry. The primary responsibility of the counselor, now research practitioner, was to provide support to families and the educational staff in the nurturing and development of DHH students' self-esteem and cultural identity. The complementary relationships that had already been developing between and among inquiry stakeholders supported the collaborative component inherent in naturalistic inquiry processes.

Figure 11 illustrates the relationships that developed during the inquiry process among the research practitioner, classroom teachers and DHH student stakeholders at two

different school sites. The combination of lines and arrows represents those contextual relationships.

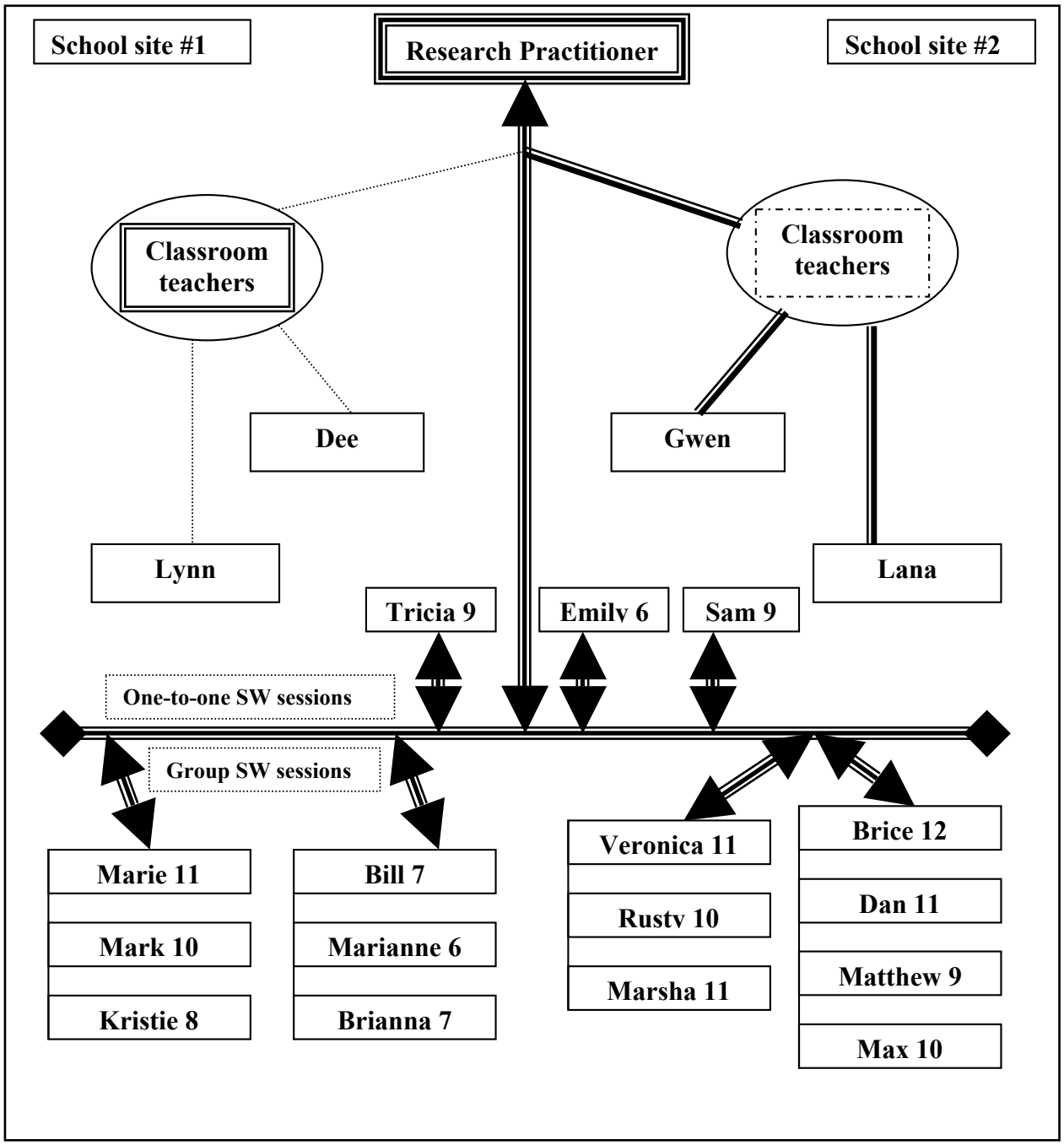


Figure 11. Diagram for the Position of Research Practitioner.

To reflect the two distinct and separate educational sites, student and classroom teacher boxes are spatially arranged on the left and right portion of the diagram. The double border box at the top center of the diagram identifies the research practitioner. The double perpendicular line that extends from that box and intersects with the horizontal line represents the key relationship the practitioner had as facilitator of SignWriting teaching/learning events. Along the horizontal line, the shorter arrow head double lines represent the direct contact the research practitioner had with each SignWriter learner and the strong reciprocal relationships that emerged during the inquiry process. In the single and grouped boxes above and below the horizontal line, student stakeholders are identified (using pseudo names to insure anonymity). The single student boxes above the horizontal line indicate that SignWriting occurred during one-to-one sessions with the practitioner. The connected boxes located below this line identify the small groups of three to four SignWriting learners at each school site. The enclosed boxes within the left and right ovals identify the sets of classroom teachers from each site. The different borders (closed double line and open dash line) around the classroom teacher boxes represents the degree of flexibility, commitment, and direct involvement teachers had in the establishment of biliteracy environments for their DHH students. The lines that connect the research practitioner with classroom teachers represent the collaboration needed between school site adults to set up appropriate time and space for student SignWriting experiences to occur. The bold connecting lines indicate that classroom teachers at the second school site expressed greater commitment and an interest in assuming co-constructing roles in planning and implementing SignWriting activities in their classroom environments. Conversely, on the left side of the diagram, the dash

connecting lines represent the relationship the research practitioner had with teachers at the first site, indicating limited direct involvement in DHH students' biliteracy experiences. Classroom teachers at this site preferred that SignWriting events be conducted *outside* of the DHH students' self-contained classroom environments.

SignWriting Session Description

Every SignWriting learning/teaching session had a goal. The DHH students who consented to participate in the inquiry project would write, using SignWriting, a way to read and write signs. The research practitioner, as key facilitator of SignWriting sessions, anticipated that student stakeholders would bring to SignWriting lessons the learning to write experiences that they had already acquired in both their school and home environments. To further support the research practitioner's attempt to change DHH student's experience with writing by introducing a different script, SignWriting, the facilitator set out to create a learning/teaching environment that would be more conducive to student-directed rather than teacher-directed writing activities. There was an emphasis on establishing a collaborative writing environment that would encourage both co-constructed and individually written texts.

The number of collaborators present in each SignWriting session was different at each school site. Small groups of three to four DHH students, as well as those individual students scheduled for one-to-one SignWriting lessons, influenced the tempo of all SignWriting learning/teaching activities. The number of adult participants available to engage in SignWriting sessions varied at each school site. Generally, classroom teachers were not expected to be direct participants in SignWriting lessons. Classroom teacher participants were invited to make suggestions for writing activities that would link

classroom language learning experiences (planned class field trips, daily journal writing, SignWriting transcribed spelling words) with weekly SignWriting reading and writing experiences. At one school site, there were three adult participants who were weekly collaborators in SignWriting events--two sign language interpreters and one educational assistant. The role these adult stakeholders assumed during SignWriting experiences evolved over time. They assisted in setting up and focusing the camcorders. Additionally, they participated as SignWriting decoding and encoding partners when students interacted with SignWriting learning materials.

The facilitator anticipated that individual and small groups of students would influence the interactive flow of sessions and contributed to the determination of when and how one planned activity transitioned to the next. The intent was to maintain a balance between reading and writing SignWriting experiences that would support the primary goal, to write using SignWriting. The facilitator wanted to insure that there would be opportunities for students to collaborate and make choices during each SignWriting session. Physical and environmental factors such as time and space needed to be addressed as well.

Scheduled SignWriting sessions were different at each of the two sites. The allotted time for *learning to write* experiences ranged from thirty to forty-five minutes. School settings require a certain amount of flexibility to maintain scheduled routines. This characteristic is particularly evident in educational programs of DHH students because of the number of service providers involved. Consequently, the planning and the implementation of SignWriting sessions were also impacted. The constraints of the physical space available at each school site required an additional degree of flexibility

when designing instructional modifications that met the visual communicative needs of student participants.

Initiating experiences to SignWriting symbols began with commercially prepared materials. The Deaf Action Committee for SignWriting produced the materials or "tools" used. These included visual media such as videotapes, reading and writing books, a picture dictionary (ASL to English} and flash cards. The expectation was that along with these materials and occasional input from classroom teachers, students would influence the direction and creation of additional supportive learning/teaching materials that would enhance their writing experiences.

The above information sets the stage for a description of common or typical literacy practices in which adult and student learners of SignWriting were engaged. Before participants entered the learning/teaching area, the research practitioner prepared the space and organized the instructional materials that would be used for that session. Typically, students were presented with two or three reading or writing SignWriting tasks they could perform within the allotted time. Students were directed to interact with SignWriting texts in a variety of ways. They could trace and copy symbols from a flash card or search for symbols using the SignWriting program on the computer. Both these activities, performed either independently or with a partner, were intended to support the creation of a SignWriting document that students could share with other learners, their teachers, and their parents. As students became more familiar with SignWriting, they made choices between reading and writing activities. Student choices influenced the direction of each session as it evolved. At the end of each session, students were

encouraged to create a hard copy of their writing work and place it in their cumulative personal writing portfolio.

Inquiry Time Line

Figure 12 provides an outline of inquiry events that took place throughout the duration of the inquiry process.

Before SignWriting sessions were initiated in the academic school year 1999-2000, approvals were received from two institutional review boards. Written documentation from the approving agencies was forwarded to the two school site principals. Before obtaining the required written consent from all inquiry stakeholders to participate in the year long project, meetings were arranged to explain the inquiry goal, processes, and projected outcome to parents, teachers and student stakeholders. The time line records the inquiry process involving student stakeholders beginning with the initiation of SignWriting sessions at both sites and concluding with the project's collection of students' final evaluative comments about SignWriting experiences. The time line indicates when and where the four teacher stakeholders and the two parent stakeholder interviews were conducted. The time line shows when Parent Newsletters were published in order to provide families up-to-date information about their child's SignWriting experiences throughout the inquiry process. Included in these publications were samples of DHH students' SignWriting documents, instruction on how to access information about SignWriting on the world-wide-web, and notices about SignWriting related upcoming events (Appendix F). Also indicated on the time line are Deaf community related events that occurred outside the context of the school setting. These events, published in a feature article in a national Deaf publication and presented at a

local community sponsored conference, drew the wider Deaf community's attention to DHH students' SignWriting experiences.

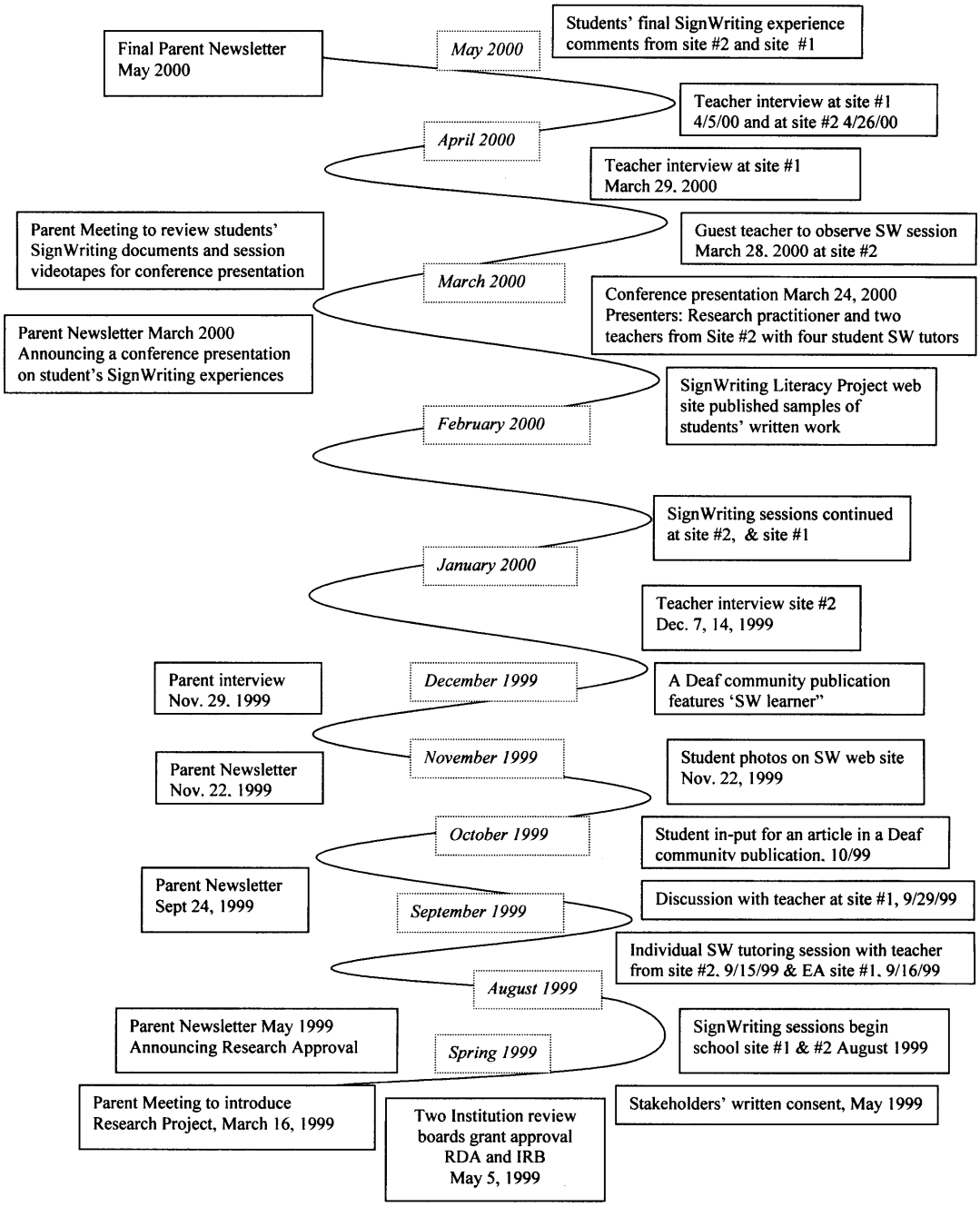


Figure 12. Inquiry Time Line.

Inquiry Triangulated Data Collection

The purpose of an ethnographic inquiry is to obtain an understanding of lived experiences shared among community members who identity themselves as "we." The previous description of the relationships that pre-existed among inquiry stakeholder groups prior to the initiation of the inquiry process indicates that this school based community of child and adult stakeholders acknowledges their joint membership and identifies themselves as a unique group of sign language communicators. Triangulated data, characteristic of ethnographic inquiry, is employed in order that the co-constructed descriptive account of DHH students' experiences learning to write using SignWriting best reflects the multiple perceptions and *emic* voices of all inquiry participants. The inquiry collection process includes recording, analyzing, and interpreting voluminous amounts of data. The ethnographer relies on three sources of data to confirm the authenticity of the interpreted text representation of lived experiences. Instead of relying solely on the researcher's interpretation of events, the ethnographer's tool, *triangulation*, provides multiple perspectives on this single experiential phenomenon--DHH students learning to write using SignWriting--and verifies inquiry constructs. Figure 13 illustrates the triangulated data sources used for this inquiry.

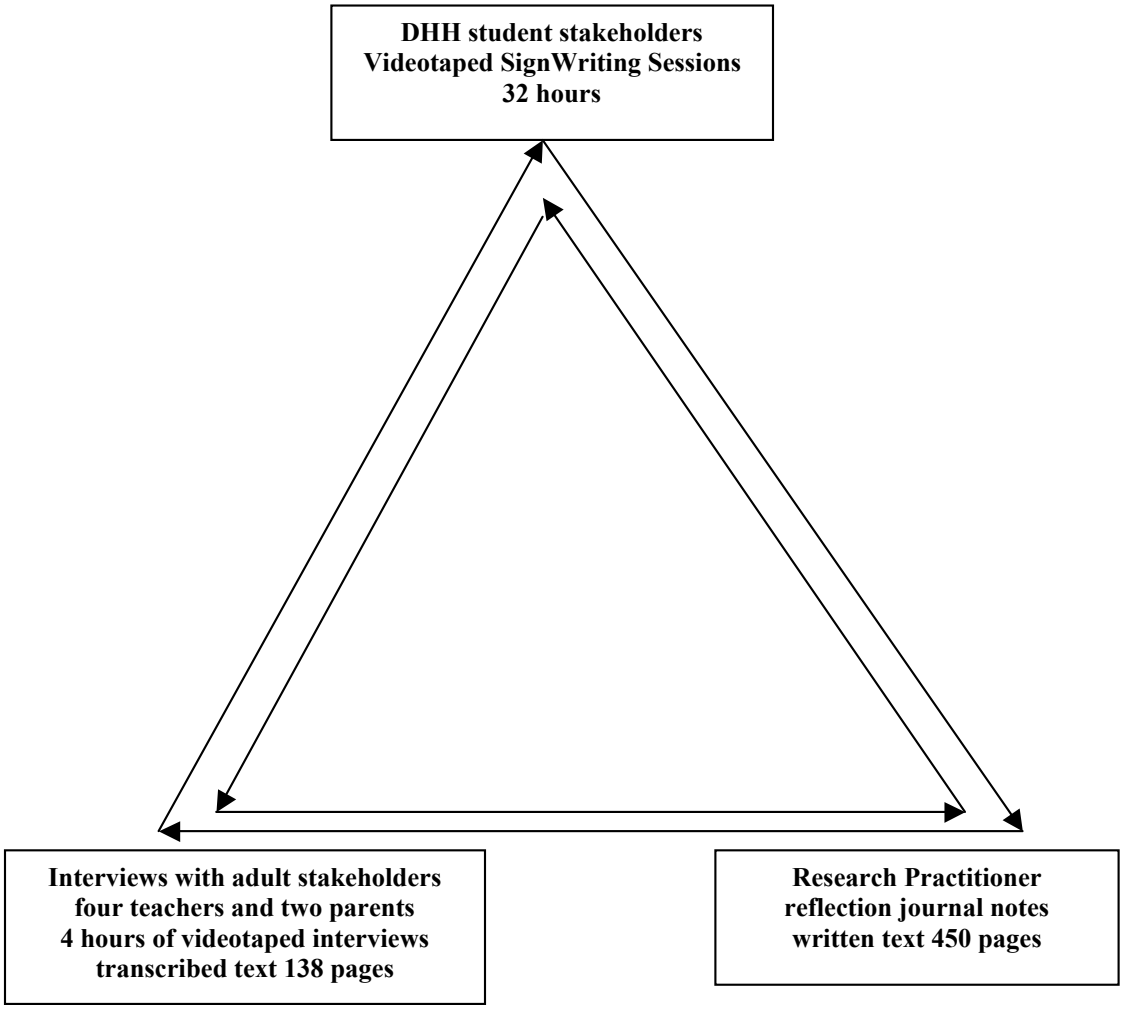


Figure 13. Triangulated Data.

The first data source was videotaped SignWriting sessions that were conducted with DHH students at the two elementary school sites.

At the first school site, one group of three primary-age DHH students participated in SignWriting teaching/learning sessions once a week for thirty minutes, while a second group of three intermediate-age students participated for forty-five minute sessions once a week. One primary-age student at this site experienced SignWriting instruction on a one-to-one basis with the research practitioner for thirty minutes once a week. Sessions

were conducted at this site outside of the DHH self-contained classroom environment. SignWriting participants met in either the research practitioner's work area (located at the far end of the hallway where the two DHH classrooms were located) or in the school library.

SignWriting sessions at the second school site took place within the two self-contained classrooms for the primary and intermediate DHH students. There were two groups of intermediate DHH student participants. One group of three students met twice a week for forty-five minute sessions. The second group of four DHH students met once a week for forty-five minutes. The two primary DHH students at this site met individually with the research practitioner once a week for thirty-minute SignWriting sessions.

The most important data source of the inquiry was the videotaped SignWriting sessions. Video cameras captured multiple levels of information regarding SignWriting teaching/learning sessions. The research practitioner was aware that recording a signing learning/teaching environment would present challenges. The presence of technical equipment that was needed "to capture the visual save" of significant signed student and adult stakeholder interaction would undoubtedly produce obstacles that would need to be addressed at each site. The visual recording of SignWriting sessions was essential in the identification of the affective responses of DHH students to SignWriting literacy teaching/learning events. The cumulative record of one hundred and twenty-six SignWriting sessions was used to verify the accuracy and credibility of subsequent interpretation and description of SignWriting experiences.

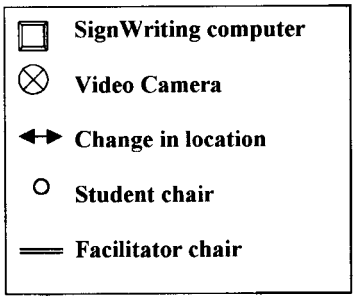
The number of camcorders used was determined by factors such as the physical constraints of the variable settings where SignWriting experiences occurred, the open

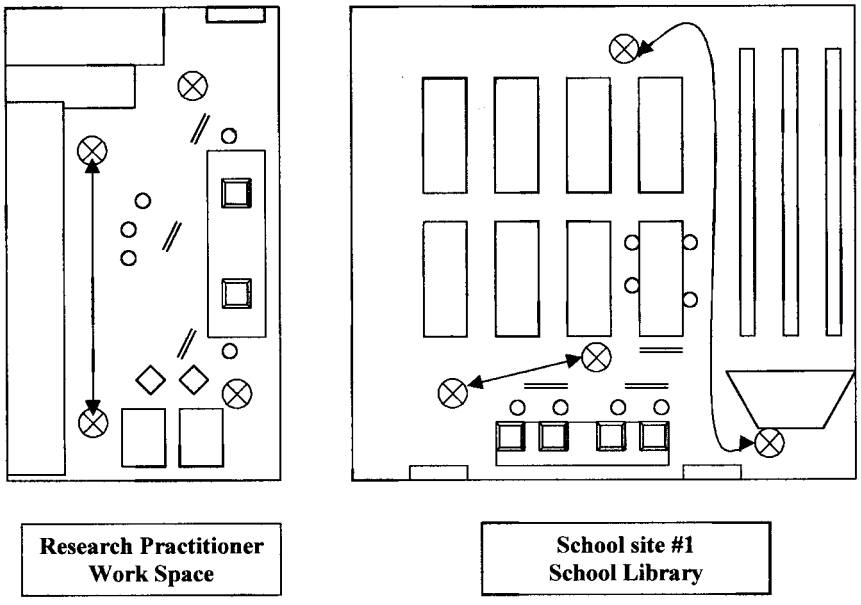
space of the classroom and/or school library, and the confined space of the practitioner's work area, as well as the number of student and adult participants. The setup and operation of two to three video cameras was a technical medium that allowed participants to actively participate in directing, shaping and monitoring the inquiry process. When learning/teaching interaction shifted from reading and writing work areas [table and chairs] to the SignWriting computer areas, the camcorders were repositioned. The participants who took on that responsibility varied at each site. When assisting adult participants were present [interpreters and/or EA], they moved and adjusted the cameras. At the alternate site, during the later part of the inquiry, the research practitioner did occasionally guide intermediate-age students to relocate video camera equipment. This opportunity to position and operate recording equipment allowed student stakeholders to determine how their individual and collective "takes" or perspectives on SignWriting experiences would be documented. Student participants were always invited to signal the start and end of each SignWriting session by manipulating the camcorder remote control devices. When the camera was positioned to capture an individual student's interaction with SignWriting materials and writing tools (the SignWriting computer), they were asked to assist in verifying the accuracy of the camera perspective.

The following diagrams further clarify and detail where and how camcorders were positioned to capture SignWriting experiences. Cameras (minimum of two) were moved when students and the facilitator shifted from one location to the next within each learning environment. Note that depictions of classroom furniture, cabinets, bookcases, student desks and chairs are provided, although not specifically identified, so that the reader can visualize the entire work space in relation to SignWriting activities. The icons

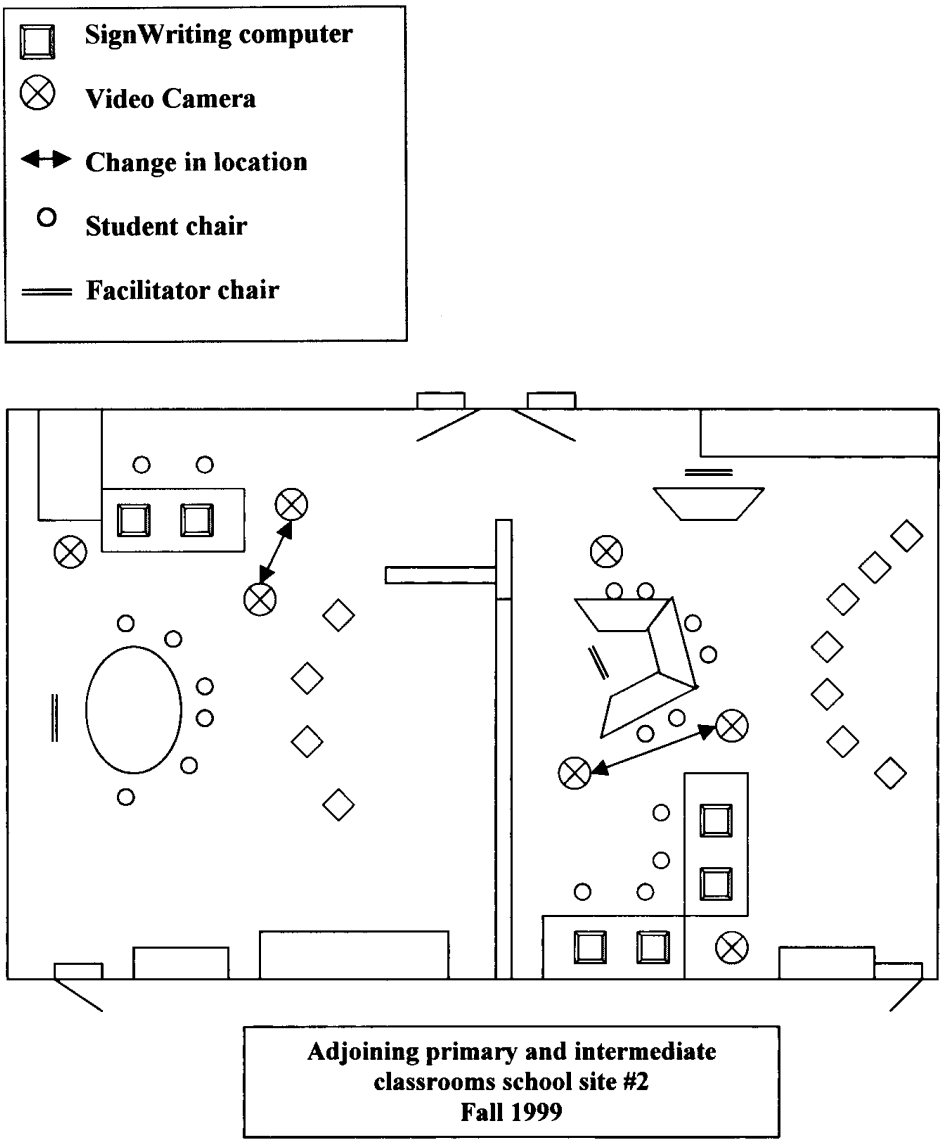
identified in the figures (camcorders, change in location, SignWriting computers, facilitator chair, and student chairs) are those that have the most relevance for the visual explanation in how the video recorded information was gathered.

At school site #1, there were two locations where SignWriting learning/teaching occurred as depicted by the following diagrams. These locations remained stable throughout the inquiry time line. SignWriting participants did move from one location to the other depending on space needed for specific activities.

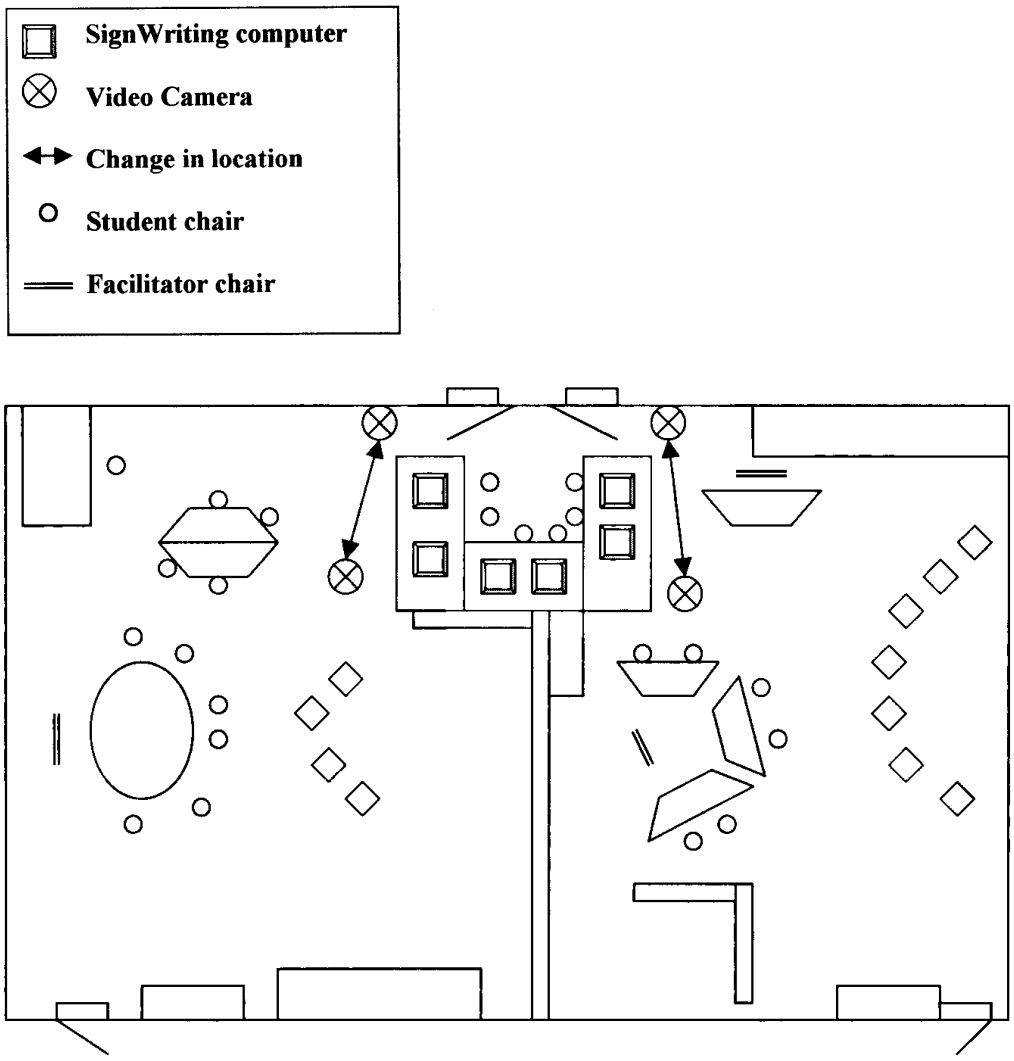




At school site #2, SignWriting experiences occurred in two adjoining classrooms. There are two SignWriting learning/teaching environment diagrams for this site. As the two classroom teachers became more engaged in SignWriting experiences, they took the initiative to recreate the shared SignWriting environment. Their design combined two distinct and separate SignWriting locations on either side of the adjoining rooms into one location so that the SignWriting learners from both classrooms would have joint access to a computer pod of SignWriting computers.



Adjoining primary and intermediate classrooms school site #2
Fall 1999



Adjoining primary and intermediate classrooms school site #2
Spring 2000

The second source of data was the practitioner's written reflective journal notes. These journal entries contributed to the detailed description of SignWriting events including who participated, what activities were planned, and when and where SignWriting sessions occurred. Because the research practitioner was the lead instructor responsible for the content and pacing of SignWriting lessons, taking notes during sessions was not possible. To generate reflective transcriptions of SignWriting literacy events, the research practitioner relied on audio-recorded recollections of SignWriting sessions after they occurred. The post viewing of video recorded SignWriting sessions was used to formulate dated journal entries that were more reflective about the *how* and *why* influences the multiple participants had on SignWriting experiences. This second source of triangulated introspective data complemented video recorded documentation of SignWriting sessions and helped the research practitioner understand the multiple influences that affected the inquiry process. These written journal notes were particularly useful to the research practitioner in the reflective processing of the occasional unexpected conflicts that arose between the *lead* SignWriting instructor and teacher, parent, and/or student participant. These personal interactions required the research practitioner to take steps to resolve the occasional strained and polarized relationships among individual participants so that SignWriting experiences would not be interrupted and would continue to be available for all DHH student stakeholders.

The third source of triangulated data was the research practitioner conducted interviews with representatives of the two adult stakeholder groups, parents of DHH students and classroom teachers (see Appendix G). Two parents of DHH student stakeholders at one school site were interviewed during the first half of the inquiry.

Scheduled interviews with parents from the second school site did not occur due to time and accessibility constraints. Four classroom teachers were interviewed. One primary classroom teacher was interviewed during the earlier stages of the SignWriting inquiry. The remaining three classroom teachers were not interviewed until the final two months of the inquiry. Interview questions for both adult stakeholder groups were formulated using Spradley's (1979) ethnographic descriptive interview format. The questions were divided into descriptive categories, beginning with an explanatory overview of both the SignWriting project and the interview recording and transcription process. Adult ethnographic cultural perspectives were obtained by first posing native language explanation questions that focused interviewee attention on the descriptive talk they use to tell others how DHH students learn to read and write. A series of mini questions expanded the interviewee's descriptive explanation of structural and contrastive comparisons related to DHH student writing experiences. The joint viewing of some edited clips of SignWriting sessions during the interview session provided the interviewee an opportunity to observe DHH students' literacy experiences with SignWriting, which allowed for additional insight to emerge related to DHH students' literacy learning experiences beyond the *academic* scope projected by the interview questions. Transcriptions of interviews with parents and teachers provided data that formulated the adult cultural meaning of literacy learning for DHH students. These written transcripts assisted the research practitioner to verify and confirm with other adult participants, the interpretive analysis and cultural meanings that emerged from the most important source of inquiry data, the videotaped SignWriting sessions, the recorded *cultural* experiences of the DHH students themselves.

	Summary of Teacher Stakeholder Background	
DHH Program Site East Side	Primary Teacher	Dee
	Deaf Education Degree	15 years with DHH 11 years at district site 4 years in Special Education
	Intermediate Teacher	Lynn
	Deaf Education Degree Sign Language Interpreter Training Parent-Infant Intervention Training	10 years with DHH 8 years at district site 3 years as Sign Language Interpreter
DHH Program Site West Side	Primary Teacher	Gwen
	Deaf Education Degree Teacher Training in a Bilingual Bicultural Model	_ year itinerant teacher with HH 2 years with DHH at district site
	Intermediate Teacher	Lana
	Special Education Degree Sign Language Interpreter Degree	8 years in Special Education 8 years with DHH at district site 2 years as Sign Language Interpreter

Inquiry Analysis and Interpretation

During the ten-month inquiry process, massive amounts of data were collected. Video recorded SignWriting sessions captured sixteen DHH students' SignWriting teaching/learning experiences. The research practitioner's reflective journal notes generated a complementary descriptive record of those experiences. Transcriptions of adult interviews (four teachers and two parents) provided an understanding of the instructional literacy learning contexts that DHH students experience distinct from scheduled SignWriting teaching/learning activities.

All three inquiry sources produced enormous amounts of informative data: thirty-two hours of videotaped material and four hours of videotaped interviews that generated one hundred thirty-eight pages of transcription, and over four hundred pages of research practitioner's journal notes. The reduction of interpretive research data produces

cultural translations that make the experiences of others available for reflection (Spindler & Spindler, 1982). Bracketing is the term used in interpretive research to refer to the process of analyzing information by reducing it to its most significant or key elements (Stringer et al., 1997, p.81). Bracketing enables the person responsible for providing the descriptive and interpretive account to derive the "essential recurring features" of the experience under investigation. These recurring features, significant key elements, were uncovered, defined, and analyzed as essential structures or units of analysis that evolved into descriptive instances of co-constructed SignWriting experiences. As a central contributing member to SignWriting experiences, the research practitioner was conscious that the cultural translations that would be produced would emerge from within the experience worlds of all participants, including those of the researcher. The stance of objectivity was given up and replaced with the intentional reference to, and inspection of, multiple accounts of the same event. Bracketing was accomplished by reviewing the content of all three data sources--videotapes, interview transcriptions, and journal notes. A description of the bracketing process used to reduce the collected triangulated data into significant key elements follows.

The cumulative video record of videotaped SignWriting sessions with DHH students produced five two-hour VHS tapes for the first school site and eleven two-hour VHS tapes for the second site. In order to perform the bracketing analysis of videotaped SignWriting sessions, the first bracketing task was to reduce the videotaped data to a manageable quantity. The need to narrow the focus from sixteen DHH student learners to four focal students became evident. Focal students were selected to represent the student stakeholder group's collective and cultural experiences with SignWriting.

Factors that contributed to the focal student selection were school site, classroom teacher, age of the DHH student, and SignWriting instructional format [individual or group sessions]. Four DHH focal students were selected--two from primary age classrooms [first and third grade] at each school site and two from intermediate-age classrooms [fifth grade] at each school site. Each focal student had one of the teacher stakeholders as a classroom teacher. Three focal students participated in small group SignWriting sessions facilitated by the research practitioner. One focal student participated in SignWriting instruction with the research practitioner on a one-to-one basis.

Bracketing continued by using the larger cumulative videotape record to generate new sets of copied and edited SignWriting videotape sessions that captured the SignWriting experiences for each individual focal student. The new sets of edited videotapes were then reduced and readied for interpretive analysis.

The analysis process of video recorded SignWriting sessions proceeded with the review of the full twenty-two hour set of videotaped experiences of the youngest focal student, age five. All observable affective responses, behavioral and spoken (signed comments) were recorded onto three by five index cards. Similar behaviors and utterances were labeled and categorized. A limited set of key descriptive elements--categories of affective behaviors and utterances--emerged from a review of the written interpreted labels. These key affective behavioral and spoken experience descriptors that originated from videotaped SignWriting activities were then accessible for further examination. Applying the bracketing analysis to the videotaped sessions of the remaining three focal students verified the construct of interpreted affective response

categories. The categories of affective behaviors and utterances were similarly observed in all four focal students.

DHH student affective responses to co-constructed teaching/learning SignWriting activities generated four descriptive experience categories: *response, motivation, reflection,* and *assertion* as illustrated below.

Category	Description	Examples
Response	• positive or negative reactions elicited by SignWriting materials and activities	• "I like this" • "Wow" • "That was hard" • a furrowed brow
Motivation	• expressions of interest in SignWriting materials and activities • requests to continue with and do 'more'	• rubbed palms together • counted SignWriting symbols and /or SignWriting documents • "I want to do more of this."
Reflection	• engaged in the process of forming and demonstrating an opinion about SignWriting materials and activities	• sign articulation rehearsals • thoughtful manipulation of hand, finger and facial sign articulators • used self-guided talk to make judgements about symbol accuracy
Assertion	• assertive stance and authoritative claim of SignWriting composition products	• physical hold and manipulation of materials • purposeful deterring of adult "assistance" • dictate directions to generate and arrange symbols

The *response* category comprised observable student reactions that indicated some level of reply or affect to SignWriting materials or planned activity. Smiling, applauding, puzzled facial expressions, shoulder shrugs, "Wow," "I like this," "That was really hard," are some examples. Behaviors and utterances that comprised the motivation category

indicated that DHH students found SignWriting interesting and were willing to invest attentive energy to learn and do more SignWriting. DHH students depicted their interest, their motivation to do *more*, when they rubbed their palms together, counted the number of SignWriting symbols and documents they produced, and repeatedly negotiated for more opportunities to extend, expand, and experiment with SignWriting. The behaviors and utterances that comprised the reflection category indicated that DHH students engaged themselves in the process of forming an opinion about SignWriting. SignWriting symbols motivated student reflective behaviors such as numerous sign articulation rehearsals and thoughtful manipulation of sign articulation parts--the fingers, the hands, and facial features. Students integrated reflective action and self-guided talk, demonstrating capability in making judgements about SignWriting symbol accuracy and appropriateness. The assertion category indicated DHH students had moved along an experiential continuum. Initial reactions, modest to strong, progressed toward deeper motivated interest and were advanced further by the formulation of evaluative reflective opinions. The range of these affective experiences culminated with DHH students' assertive stance, an insistence, an authoritative claim, that SignWriting literacy learning experiences that produced numerous and some lengthy documents *belonged to them*. Some examples of DHH students' assertions are: the physical holds and assertive manipulation of SignWriting materials, physical behavioral reactions intended to deter adult "assists," and the series of insistent utterances that directed when and dictated how SignWriting symbols needed to be generated and arranged. Experience category constructs will be further detailed in the subsequent descriptive account chapters.

Adult interviews were transcribed, producing texts that contained powerful cultural understandings of the divergent literacy learning contexts within which DHH elementary school age students develop. These adult understandings were made available for inspection by employing the theoretical biliterate frame constructs previously used to organize and deconstruct topic related academic literature. In order to capture the recurring themes and common descriptive elements that are embedded in teacher and parent talk, excerpts taken from the transcribed teacher and parent interviews were organized and synthesized using the biliterate context, biliterate development, and biliterate media constructs.

The research practitioner's reflective notes were bracketed by first reviewing the cumulative record of all four focal students' SignWriting experiences. The analysis focused on the identification of SignWriting experience descriptions that matched or differed from descriptive experiences previously reported using either the videotaped SignWriting experience categories or the descriptive accounts found in the written transcripts of teacher interviews.

Inquiry Interpretive Criteria

The inquiry continued over ten months of one school year. The criteria associated with interpretive inquiry that relates to the length of time participants are engaged in the inquiry process is *credibility*. In addition to the ten month school year engagement of participants, the relational contexts that had already been developed among inquiry stakeholders over six years prior to the initiation of SignWriting experiences, increases the credibility of the interactions that transpired during the inquiry process. The high degree of familiarity among all inquiry participants, including the research practitioner,

adds further credibility to the triangulated data sources collected. To verify the accuracy of text representation of the adult interviews, transcripts of the six interviews were distributed to each adult stakeholder for their review. A copy of the videotaped interview accompanied the transcription documents. SignWriting learners were periodically invited to view videotaped portions of previous SignWriting sessions. These post-session videotape-viewing sessions were videotaped as well, in order to capture students' evaluative responses and reactions to their own unique participation in SignWriting learning/teaching sessions.

A collaborated presentation at a Deaf education conference involved extensive dialogue and reflection among two teachers and the research practitioner. This conference provided an opportunity for parents, students, and teachers to engage in collective and reflective processing that strengthened the verification and credibility of the inquiry. The information presented at the conference by adults, as well as the presence of several DHH students who volunteered to be SignWriting "tutors," further enhanced the credibility of SignWriting experiences shared at this particular educational setting.

Transferability of SignWriting experiences from this particular educational setting into other similar educational settings for DHH students will depend upon the clarity, believability and *thick* descriptive written account. In spite of all the academic literature that either justifies or challenges this observation, DHH students have a hard time learning how to read and write. Teachers who work with DHH students almost unanimously share this observation of literacy learning regardless of educational program setting. While SignWriting is not widespread in schools for the deaf in the U. S., this account does not set out to describe widespread experiences. However, the *thick*

descriptive account of these teaching/learning experiences made available for review and reflection may motivate others to introduce SignWriting into their school settings.

Dependability is also a component used to assess naturalistic inquiry. Associated with this evaluative process is validation that the end product of interpretive inquiry authentically represents and values the lived experiences of participants. Since the inquiry question situated DHH students' experiences as the main focus of the interpretive study, the type of inquiry data used to capture those experiences, videotaped SignWriting sessions, was selected to best reflect the *emic* voice of student participants.

Limitations

There are limitations to any written account of human experiences. When taking on the task of reporting the contextual and circumstantial experiences of a community of people, assurance of *completeness* is not possible. The human and material influences on DHH students' SignWriting literacy learning cannot be represented in full. There is no doubt that some consideration, human or materialistic, was left under-investigated. The inquiry sets out to portray a *slice of reality*, to make *private lives public* (Stringer, 1998), with the understanding that there are inevitable limitations to any interpreted descriptive report on human phenomena.

CHAPTER FOUR

ADULT STAKEHOLDER BELIEFS

The production of a descriptive account of how Deaf and Hard of Hearing (DHH) students experience learning to write using SignWriting begins with the situational context in which SignWriting literacy learning events took place. Classroom teachers assume responsibility for the construction and management of school literacy learning environments for students. Teachers have the expectation that parents will assume collaborative roles in the reinforcement of emergent literacy skills at home. Interviews with the identified adult stakeholders, classroom teachers and parents, revealed beliefs about literacy learning for DHH students that contribute to the formulation of this inquiry's descriptive account. Application of the ethnographic bracketing tool reduced the interview transcription data into key elements. Hornberger's (1989) theoretical biliteracy frames previously introduced and implemented to deconstruct the academic literature relevant to the inquiry are revisited. Biliterate context, biliterate development and biliterate media frames and the sets of three associated continua with each frame will guide the discussion of the common themes that emerged from adult stakeholder interviews.

Beliefs About Biliterate Contexts for DHH Students

Recall that Hornberger (1989) describes three intersecting continua for each biliteracy frame. The biliterate contextual frame is composed of a macro-micro continuum, oral-literate continuum and a monolingual-bilingual continuum. The key beliefs gleaned from teacher and parent interviews will be organized according to these continua. When asked to talk about how DHH students learn to read and write, both

teachers and parents indicated an awareness of communication and a rich language background as components critical to all literacy learning contexts. The teachers believe literacy learning contexts at the macro level of inspection are also applicable to the specialized literacy learning contexts prescribed for DHH emergent readers and writers at the micro level. A shared opinion among three of the four teachers that were interviewed was that DHH students go through the same literacy developmental stages that hearing students do, especially in learning to write. The discussion begins with the first biliteracy frame construct, biliterate context, expanded further using the three continua, oral-literate, monolingual-bilingual, macro-micro, and concludes with a concentrated focus on the parent perspectives on the home micro-micro context.

Oral-literate context

Language use was the first key descriptor that emerged from teacher and parent interviews about literacy learning contexts. The two primary classroom teachers, Gwen and Dee, emphasized that language was a necessary component for literacy. Gwen stated, "Language background makes the difference." Dee explained, "The lack of a strong language background is why it's so difficult." Dee frequently used *it* as a referent for the multiple functions associated with language use and literacy learning. The term *language* encompassed communication mode considerations, the use of *oral* spoken language, *oral* sign language and the use of print for meaning making. Several teachers acknowledged that there are communication variables between home and school language learning environments; these are spoken or signed communication. Gwen commented, "Many of our students' parents do not sign at home." Lynn, an intermediate classroom teacher, explained, "Some profoundly deaf children who come into our program do not have this

communication happening at home. They [DHH students] don't have that whole part of literacy before you learn to read and write. Can you speak, can you listen, can you communicate back and forth and carry on conversations that are meaningful?" Gwen expanded on her understanding of contextualized communication differences for DHH students by stating, "I just think it's very different (for DHH students). I think listeners get information by hearing things over and over and over again, but it is going to be different for our kids. They are not getting it all the time, the patterns that listeners hear. I just think it comes at a slower rate because it's not practiced, you know, twenty-four seven. There's not all that dialogue." Dee concurs with Gwen. "Our kids go at a slower rate, a different rate than hearing kids do. It just takes them a lot longer time because obviously they don't have the language background. There is not a lot of language in the home. Because they haven't heard language, to make the connection is very difficult."

Monolingual-bilingual context

Lana, one of the intermediate classroom teachers, made strong comments that frame her beliefs differently about literacy learning contexts from the other three teachers' beliefs. Her description of literacy learning contexts for DHH students addresses the communication and language component. However, her belief shifts language context considerations along the monolingual-bilingual continuum from the monolingual theoretical end point in the direction of the bilingual end. While her teaching peers mention the importance of a signing environment both in school and at home, Lana goes one step further, identifying American Sign Language (ASL) as the other language DHH students use in their literacy learning environment. When asked the question, "How do you talk to teachers and parents about DHH students learning to read and write?" Lana

initially responded with an audible *groan* followed by a *giggle*. These audible responses suggest a more critical understanding of literacy learning environments for DHH students, one that simultaneously evokes heartfelt heaviness and delight. Lana begins to get her point across by stating, "People don't realize there's the whole other language component." On one hand, Lana celebrates the existence of a dual language context for DHH students; however, she acknowledges the challenge this presents. Lana's reflective comments are directed toward classroom teachers working with DHH students. "What frustrates me are teachers who use Signed English with kids sitting there who don't have a clue. They need ASL. You've got to have some kind of ASL background and if you don't, please go and get it because you are not going to be able to meet all the needs of the kids if you are not using both languages in your classroom." Lana explained that her *talk* with parents about bilingual literacy learning contexts for DHH students would definitely be different from her *talk* with teachers. "You have to give more information to parents about two languages." Lana believes that the "whole language experience" is more than just presenting "language, language, language" that reflects the varied communication modes used in a classroom. She acknowledged that the student make up of her classroom required an oral mode and a kind of Signed English mode. She also emphasized the importance of "going back and doing it again in ASL." Lana reflects, "In the past I always said bilingual but it's a biliterate program." Lana acknowledged that the use of the additional program descriptor was a direct result of the collaborative dialogue between herself and the research practitioner, "I love that word. You fed me that word this year. It's biliterate. It's neat because now I can look at that focus." The incorporation

of writing English script with a way to write the other distinct language, ASL, using SignWriting, creates a biliterate environment for DHH students.

Lynn, the second intermediate classroom teacher, did allude to a possible second language component in literacy learning contexts for DHH students. Lynn offered a description of a communication style used by one student in her class, "a profoundly deaf child who has had English signing at home but is natively an ASL signer. I think she has started to incorporate the two, [English signing and ASL], and will do fine with both." Lynn shared her conviction by stating, "I am sure she is going to be signing ASL as an adult." This teacher's evolving beliefs indicate an awareness of a potential shift in literacy learning contexts, moving from a monolingual to a bilingual perspective. However, the shift reflects a non-directive stance, a change that becomes evident only later in a DHH student's adult life. As Lana expressed previously, there is eminent need for a more deliberate and proactive bilingual teaching context for DHH students, " …you are not going to be able to meet all the needs of the kids if you're not using both languages in your classroom!"

Macro-micro context

In addition to school literacy learning contexts located somewhere midway along the macro-micro biliterate continuum, there are descriptions of collaborative home literacy contexts at the micro-micro level. Teachers have acknowledged that parental involvement in sustaining emergent literacy skill development of DHH students, while important, varies tremendously and is dependent on communicative, economic, and social factors. The lack of access to natural communication in the home emerged as the number one literacy learning contextual difference that positioned DHH students at a

disadvantage when compared to other emergent readers and writers. Dee stressed that she could not take for granted that parents would have common knowledge about the correlation that exists between progress in literacy development and a rich reading environment at home. Dee explained that she would "break it down" for parents, simplify "it" so "it" would become more *real* (see page 92). She mentioned how she counseled the parents of a particular student who she felt would benefit from the use of hearing aids while at home. "If he is not able to get it in there, he won't be able to get it out." Dee is making reference to two different types of language exposure, spoken language *input* and language *output* via a print medium.

Lynn predicted, "They (DHH students) are not going to progress to where you might want them to be without more communication going on in the home. Sharing books doesn't just happen here in the classroom, it's got to happen at home." Lynn offered some clarification regarding expectations for parental support. She acknowledged that there are parenting realities that mitigate idealized involvement. Parents are at varying stages of acceptance of their child's deafness. Lynn discussed other factors that influence the degree of parental involvement in their DHH child's literacy development. Parents might work all night, adding complications to taking sign classes and consequently impacting the use of signs at home. Other complications mentioned relate to school-to-home literacy reinforcement activities, such as diminished parental opportunity to sit and go through spelling or reading words with their child, or to implement other teacher suggestions that might motivate their son or daughter to write. Lynn clarified her belief about keeping parent involvement realistic by stating, "If I only preach what's wrong [referring to all those missed home literacy reinforcement

opportunities], they'll hear only what they can realistically do. I don't always know what that might be, however, but I can make tactful suggestions if they want them."

Parent perspective on the home micro-micro context

Interviews with two parents contribute to the inspection of *a slice of reality*, the collaborative home literacy learning environments for young DHH family members. The parents who agreed to engage in the interview process were not parents of identified focal students. Their beliefs about the home literacy learning context for DHH students, however, inform the evolving collaborative descriptive account.

Dori, mother of a ten-year-old Deaf boy, was asked how she talked about learning to read and write with her son. In response to her son's repeated declarations that he hates English, and "English is hard," Dori explained to him that "[his] Hard of Hearing classmates 'keep getting it'… because they have more hearing than you and it's more difficult for you to do." This parent offered reassurances to her son, "You know you have to practice more. I will always help you when you need help." Communal homework scenarios in this family were described. "And we'll sit down and we'll all look at the words and every once in a while Dan will stumble on a word that Carl [his younger sibling] can get." Mom attempted to explain to Carl that there are obstacles that have to be overcome and that it's just more difficult to access English for his Deaf brother. When Dori talks to others about her son's learning to read and write, it usually is a quick conversation with an abbreviated reminder that, "He's deaf."

An interview with a second parent, Karen, highlights features of a home literacy context environment that presents a culturally different family perspective. When asked how this mother talked with family members about her two Deaf sons' literacy learning,

she replied that there is limited discussion among family members about reading and writing differences. The brief discussion was summarized succinctly. “The other guys [siblings] ask if they [her Deaf sons] can read and I tell them, ‘Yeah, pretty much so but sometimes new words are hard for them.’” There are occasional family discussions about the younger Deaf son’s poems. These poems are discussed and passed around, reflective perhaps, of the cultural practices of this Native American family. In contrast to other Anglo and Hispanic families’ assumptions that a deaf family member can’t read because they are deaf, there is an explicit expectation that the two Deaf members of this family will learn to read and write. This expectation was reinforced further by the mother’s reported conversation with a relative who happened to be a speech therapist. “Like she asked questions about their [two Deaf sons] reading and writing and how is it that Deaf kids learn to read and write. She doesn’t understand. They’re not sounding out like other kids. She’s like, ‘OK, explain it to me.’ So I try to explain to her that they learn to read anyway and they learn to write. And I can’t really tell her because I don’t know myself how they learn to read and write.” This parent mentioned that there are frequent discussions with the classroom teacher about the younger Deaf son’s schoolwork. “Yeah, we talk about that quite often and it’s usually when he doesn’t want to do it [reading and writing]. We just keep pushing him, like you just keep on giving him things to do and he’ll keep bringing it back. Yeah, at home we get him to do it.”

Along the micro-micro biliteracy context continuum, a generalized belief evolved from the two parent accounts regarding home literacy learning contexts for young Deaf family members. These parents seemed to have adopted the monolingual literacy development context that the school supported. The primary focus of parent collaborators

was to support classroom activities that target the development of written English skills. Signed communication among family members during supervised homework activities did not seem to be a significant component requiring discussion or inclusion in a descriptive account of an *at home* supportive literacy learning context. These parents may have assumed that the interviewer knew that signed language was used in their households. Issues that dominated the parents' natural talk about DHH kids learning to read and write were: the practice of reading and writing English words, spelling words, and stringing words to make "good English sentences" for journal entries. The way in which young DHH family members engaged parents as collaborative *homework helpers* was another striking similarity between these two homes. When asked how their DHH sons had asked for help or support, both parents mentioned their DHH child's expressed need for physical presence or proximity. The first parent interviewed commented, "He wants someone to sit right next to him the whole time. That's how his homework is done because you sit next to him. That's a help to him. Even though you're not helping him, you're just being there." The second parent explained that the first thing her son does is, "He finds me. He wants me right by him when he's doing his homework. He'll sit on the floor next to me if I'm doing my homework on the computer. He has to be right by me. That's mainly because he wants to know how to spell words, 'How do I spell that?'"

Beliefs About Biliterate Development for DHH Students

The next theoretical frame, the biliterate development of the individual, intersects literacy communication considerations along three continua: receptive-expressive communication skills, oral-written language use, and language transfer between two languages, L1-L2. During interviews, the four classroom teachers of DHH students

stressed the interrelatedness of communication, language development, and literacy skill development.

Lynn offered an explanation as to why many DHH students enter school programs not ready to learn to read and write. DHH students lack *internalized* and *imprinted* language. When asked how DHH students go about learning to read and write and how they feel about it, Lana responded, "That's been my question for the past seven years." Obvious to both interviewee and interviewer, a clear and decisive answer was not expected. Lana reflected, "How and why do some kids seem to take off more than other kids do?" Using the macro-micro contextual perspective, Lana continues, "Any child, hearing, deaf, hard of hearing, you know you've got to have a language. They really do have to be strong in language. I find kids will start reading and then they kind of hit this plateau. So, if their language is delayed by several years, that's where their language is - at the plateau. We get them going on reading and writing even though their language and thinking skills may be delayed. This is the reason they *top out*, but you just keep going on developing the language more."

Language Transfer, L1-L2

Similar to the previous discussion of adult stakeholder beliefs regarding literacy learning contexts, *internalized*, *strong*, *imprinted* language emerged again as key contributors to teacher accounts about DHH students' literacy learning successes and struggles. The issue of language transfer between the two languages that some DHH students use, L1 (ASL) and L2 (English, spoken or in print) did not dominate the teacher's talk about *how* students learn to read and write. There was acknowledgement

however, that two distinct communication modes, signed and spoken, and their connection to the acquisition of reading and writing, warranted consideration.

Gwen made a brief comment about "sign and speech" that was embedded in a lengthy description of a class writing activity. As she explained "the way it works," one of the steps included a follow up reading of a text that was generated by the whole group of emergent writers the day before. Gwen emphasized that a group reading rehearsal of what the text *sounded* like and what it was *signed* like was implemented so that all her DHH students would have access to a familiarizing routine before asked to individually re-construct and "read" the co-authored text.

Lana, the first teacher to identify DHH students' *other whole language*, ASL, used an excerpt from a parent teacher conference that served as an example of her critical acknowledgment that language transfer does indeed happen and that "it is a good thing." Lana reported that when parents look at their kids' writing, they say, "You know, they write terrible. They can't write English." Lana believes that teachers and parents especially need to be reassured that what Deaf students are writing is *their* language and what they write very much reflects ASL. While giving parents information that draws attention to their son's or daughter's two language use, Lana emphasized that "Their kids are going to have to make that transition from ASL into English, and that transition will have to happen in lots of different ways."

One of the parents who engaged in the interview process demonstrated an awareness of that language transfer, particularly evident in DHH student "writing." Dori, a parent of one of Lana's students, reported that her son was beginning to like writing his stories for school. "He still has a hard time with English and he'll come and ask me, 'Is

that good English?'" Dori explained how she helps him out. "I tell him, 'If you put this word in then it's fine.' He knows that he doesn't know English grammar but he does show interest in it." She admitted that her son becomes frustrated with getting his ideas written into *good English*. "He does get frustrated. When I tell him to do this [edit], and then about the third try, he's just like, he wants to give up."

Dee, another primary teacher of DHH students, used a Deaf student's written journal entry as an example of a developmental "big jump" in free writing. Dee read aloud several written journal entries that sounded like strings of single words. Bill wrote the following, "I walk go." "I walk go field." "Go look for a trip." The purpose of this sharing or inspection of his journal entries was to point out how much of a struggle it was to get this student to write. The teacher explained that Bill "loves to draw pictures. If he can't get over the pictures [exclusively drawing pictures]… if you ask him to write, he's like, 'Look at that, look at that'. He wants to keep drawing his pictures. He doesn't understand and you keep saying, 'Writing, Bill, writing.'" The journal entry "Bill gets Hot Wheels" was read aloud as evidence that a writing connection was evolving. Dee added this qualification, "Yeah, you know I get him… you know maybe [this is a connection]… but this was like pulling teeth. 'Come on Bill, write something.'"

The above account hints that there may be language transfer considerations that the classroom teacher is either unaware of or has simply overlooked. More apparent to others familiar with "glossing," the writing convention used to represent signed utterances, is that this student's writing samples do reflect language structures characteristic of visual and signed communication. To this classroom teacher, evidence of making connections in writing, using developmental jumps, is when strings of words

are arranged in an order reflective of conventionalized English writing. More important to Dee, however, was that Bill learn to separate writing tasks from his propensity to draw or illustrate his lived experiences. The effort Bill made to record school trips, family shopping events, and a recent acquisition of a real cool set of Hot Wheels was acknowledged but evaluated in terms of a school based "conventionalized" monolingual written format.

Oral and Written Language Development

When compiled together, the classroom teacher's comments on *how* DHH students learn to read and write created a profile of DHH students as developing readers and writers. These profiled comments fit along the theoretical oral-written language continuum within the biliterate development frame. Similar to Dee's telling of how one student struggled to shift self expression from a comfortable medium of drawing expression to a more challenging written medium, there were additional accounts from teachers and parents that echoed some of the descriptive features Dee mentioned.

Gwen, also a primary teacher working with emergent DHH readers and writers, used a similar "pulling teeth" metaphor situating that *action* within a biliterate writing experience. Gwen shared an observation of one of her "struggling writers." Gwen made note that this nine-year-old DHH student had produced significantly longer documents in SignWriting than any other class or home English writing assignment with which he had previously been presented. Gwen observed, "It doesn't seem like you're pulling teeth over there to get him to use SignWriting. When I look at his documents, I see how long some of them are. Maybe I've gotten that long out of him three times in two years. He'll

write one sentence and then he's like moaning, 'I'm tired.' For this student, that was a lot."

During Gwen's interview she did not make specific quantity comparison between the English and SignWriting texts this particular student produced. The research practitioner, however, was aware that this student's SignWriting portfolio contained SignWriting documents that substantiated the teacher's observation, the length of SignWriting documents *did* increase from single and double lined texts to full page entries during the course of the school year.

The parent of this DHH primary student in Gwen's class shared a similar observation of her son's affective response to "at home writing tasks." When asked to talk about her son's affective response to reading and writing homework, the parent commented, "He'd rather not. I just think he has better things to do because he keeps saying, 'I need to do this, I need to feed the dog.' That's when he comes up with all the things he needs to do because he doesn't want to do it [reading and writing]." The mother described some of the strategies initiated at home to help her son get his work done, so "The sooner you finish the sooner you can play." Overall, this parent's description of the overriding motivation to "write" at home for her DHH son was, "Regular writing he does it because he has to. It's not something he likes. He'd rather draw."

Gwen discussed this same student at length, emphasizing the growth that she had observed over an extended period of classroom teaching and learning experiences. She was anxious to report that there were changes happening with this student which were significantly impacting his literacy growth. Gwen made reference to this DHH student's reluctance to initiate *oral* face-to-face communication with her or with his classmates. In

this communicative context, *oral* communication refers to sign communication among and between DHH class members. Gwen described this Deaf boy as "withdrawn, someone who doesn't share a lot. It's not that he doesn't understand what you've said, it's just sometimes, the sense I get from him is (paraphrasing), 'I might not feel like saying, I'm just not able to talk just yet.'" With this background information it is understandable that Gwen was excited about the big change, "It's like he wants to share, he keeps coming up to me just to tell me things." Gwen commented that previously, not many things sparked the student's desire to communicate. Referring to this student's "struggle to try and get the words to flow," Gwen explained, "It's just getting through." The account of new efforts to share communication was not just happening with the teacher. The student was able to discuss and ask questions of his classmates about a class field trip in which he did not participate. Gwen summarized this literacy growth event, "It's just two things that I've noticed with Sam, he's saying more and he's showing me a big document [written in SignWriting]."

The accounts from the teacher and parent stakeholders draw attention to the interconnectedness of oral and written language use. Teacher and parent experiences and observations indicate that getting some DHH kids to *write* is a process tainted with varying degrees of struggle and success. The metaphor, "pulling teeth" was a recurrent theme. Gwen's reference to the literacy context in which *pulling* was not evident [SignWriting] suggests that when DHH students were presented with the option of *writing* using SignWriting, the size of written documents they produced is quantitatively different from those they produced using English.

In previous accounts, teachers collectively agree that *language* abilities, including shared communication, listening and speaking, and participation in conversations, are all necessary prerequisites for the development of receptive and expressive literacy skills. Teachers expressed strong convictions about skill development related to receptive and expressive language. The teachers agreed that DHH students' lack of strong language background has dictated how they each have developed teaching strategies to guide DHH students' acquisition of English reading and writing skills.

Receptive-productive Reading and Writing Skill Development

"Deafness," Lynn claimed, "is not a reason that can stop a DHH student from getting the information that books and stories have. Just because they can't hear has nothing to do with their intellect. They don't have access to language." Lynn qualified her belief that DHH students can and will attain literacy skills, " …but only if they are read to at home and if they are getting language at home, whether it is signed or if their parents are really involved in sharing lots of stories with them." Lynn's belief is reflective of Lana's earlier comment about "quick start DHH readers" that are just like hearing kids but top out because of delayed language development. "You will have some kids who become fluent readers very quickly because they have been read to at home and have that concept, 'the book means a story.'" Lynn, an experienced and seasoned intermediate teacher of DHH students, talked about the instructional challenges that she has encountered. The perceived reality she expressed was that DHH students "do not have this internalized sense of story a hearing child has," therefore, "they are not going to go to a book with the same expectation for that book because they don't have this imprinted language." Lynn described a DHH emergent reader as "a child who *is not going* to go through the reading

process in the same way as a hearing child. They are *not* going to decode words phonetically unless they are very hard of hearing. They *are* visual learners. They *are not* auditory learners. Their word attack skills are going to very different than a regular hearing child. Those DHH students who are visual learners still *may have* trouble processing. *Some* of our kids *do* come to reading. *Some expect* to read. They know that they can get stories from books. But there are other DHH students where reading is really hard because they *don't have* the experience of getting information from print or the experience of watching reading being modeled to them."

Lynn used the following words to characterize DHH emergent readers; (they) *are not,* (they) *have not,* (they) *may not, some do*, and *some don't.* However, her teaching colleagues expressed different beliefs about how to teach reading to DHH students. Dee stated, "I do phonics with all the kids, even the profoundly deaf students. I think there is a benefit in knowing there's a sound-letter connection. What it looks like on the mouth has really helped, even with Marianne." The teacher typically would not expect students like Marianne, a member of a native ASL signing family, to succeed using a phonics approach. "You see, what kids need to be successful readers, it's always there, that sound-letter relationship."

The phonics feature was also included in Lana's approach to teaching reading to DHH students. "My approach is really eclectic. It's based on language experiences. Writing little stories even with real young students, including the use of sight words, doing phonics, bringing in lip reading. It's a real global approach because not all kids are going to be able to learn with just one approach." Lana emphasized, "There's got to be that desire of the child to want to learn to read." At this time in Lana's teaching career,

she was working with intermediate age DHH students similar to Lynn. Her previous experience however, working with younger DHH emergent readers, cautioned against advancing reading word tasks when "they're just not ready for it." She recounted an episode when one of her younger students came up to her and said, "I can't read." Her response was one of reassurance, "But you can read. You just don't know you can read. You can read. You're going in the car past McDonalds and you just read, 'McDonalds.' You recognized the logo. That's reading, you know." Lana stated her primary goal, "I want reading to be enjoyable. I don't want DHH kids dreading reading or feeling bad about it." DHH students often express, "I can't read." She was glad to report that she did not have any student that year that made the claim, "I can't read." What she observed this year was that her students were beginning to tell her what kinds of books they wanted to read. She noticed students going through books trying to get a feel for the topic. Her experience has told her that similar to her own strategy in choosing a book, "they have to have some kind of personal investment either emotionally in it or that interest level."

Gwen shared a similar testimony about her primary students' reading development, "I don't have a single kid in the class who hasn't developed a love for books. Two students specifically wanted nothing to do with books last year." Gwen described some classroom routines that fostered a positive reading and writing environment for her DHH students. "One of their favorite things to do is to bring you a book and tell you what's happening in the book." Similar to Dee's account of the pre-writing step that addressed one of her emergent writer's reliance on illustrated "story telling" before embarking on written expression, Gwen commented on the age appropriateness of "picture reading." She acknowledged that students do need to shift

from using pictures to tell the story but this shift to "get the whole literacy piece flowing together" would need to happen gradually.

Gwen mentioned two specific things she did in her classroom environment that encourage reading development. "I try to do a reading inventory in the beginning of the year. I try to keep books about the things kids like on hand. I try to make sure each week I have a new book that has something to do with those interests." Gwen described a reading chart that she used to keep track of what her students were reading. The classroom star chart turned out to be a good motivational visual that encouraged Gwen's emergent readers to compete with each other. "They all wanted the opportunity to sit in a chair with all eyes focused on them *reading* for fifteen minutes."

Lana also mentioned the developmental appropriateness of young readers' use of pictures for story telling. "They want to go through the pictures and tell their own story. This is good, it is a pre-reading skill." Lana reflects further, "But sometimes you're thinking, well now they're seven years old and you want to get them going here with some words."

Dee shared her experiences observing DHH students learning sight words. "The difference I've seen between two kids with similar backgrounds in learning language is that, if they don't have short and long term memory, it is going to be very difficult." Dee explained that the amount of time commercial materials are used in her classroom to develop word recognition skill depended on the ability of each child. Similar to Lana's comment, "some are just not ready," Dee described how, "you can work and work on word recognition but they can't retain it." Rather than speed through activities that will not have meaning, Dee limits work on sight recognition because she believes that, "long

term memory and short term memory are very necessary, especially for profoundly deaf kids, because if they don't have the phonics and the awareness, they've got to memorize."

Gwen shared that one of her biggest stumbling blocks, as a novice teacher of DHH students, was to get a kid to feel comfortable with writing. She learned from her teaching colleagues that achieving comfort meant approaching writing using "little rewards," changing tasks during short time intervals, "taking small bites," and "always having on hand *another task* her emergent writers would enjoy." Gwen referred back to a previous discussion regarding reading and writing learning similarities and differences for DHH students. Children who can hear, know that the sound of the first letter in the word "red" leads to the middle then final sound and letter of a word. They (hearing students) can even make word associations using those sounds and letters. "These guys [DHH students] have to remember what it looks like." Gwen described in detail how one student in her class coped with the *memory* task involved in retrieving sight recognition of a three-letter word, "red." "Sam knows the *ABC's* in his brain. He knows what they are supposed to look like. It takes planning for him to get them from here [points toward forehead] to here [points to the paper]. In between this processing, Sam has to remember that the letter is part of a string of letters that makes a word. More planning is required as he approaches the next word. Spending all this energy, doing all that spatial planning, trying to remember the words and trying to remember what I just said, it's really hard."

One of the daily writing assignments Gwen expects her emergent writers to do at home is compose three short sentences about anything they want. Gwen guessed that the assignment would be easy to do and very comfortable. What she discovered about this

writing task was how it evolved into a "favorite thing to do" for her students. They really enjoyed sharing their writing. Gwen acknowledged that for some of her class, there was a *fear* associated with writing. Groans and sighs made this "don't want to do it" response more explicit. Gwen noticed that the words she chose to introduce writing tasks made a difference for some of her emergent writers. "I don't use the word 'writing.' Now I say, 'It's time to put our ideas on paper.'" The sharing feature for both individual and group writing tasks seemed to be the motivating key that allowed Gwen to achieve her goal: student "comfort" with writing. "When it's time to read back what we wrote, you should see the hands fly up. They want to get up there and read what they just wrote."

Shared writing in Dee's primary class of DHH students was also an important literacy development component. "One thing I strongly believe is that children can learn to read through their own writing. So we do a lot of writing books, then reading back what they've written. We have an author's chair. Every day, students read what they've written to others. We do a lot of writing stories."

Lana shared an observation that reinforced the primary teacher's experiences in trying to motivate young emergent DHH writers. "What I've noticed collectively is that older kids seem to enjoy being able to tell about their experiences. Tying their reading and writing into that kind of writer's workshop, letting them free write. That's when I can see them feeling good about their reading and writing because it comes from their personal experience." Lana was asked what she looks for as evidence that her DHH students are becoming more confident as writers. "Risk taking" was her immediate response. Students who took risks in their writing did a variety of things. There was a change in the quality of the writing and the quantity of the writing. "Sometimes you get

two little blurbs, two little sentences. As they get more confident, you start getting a little bit more. They're writing half a page. You can see risk taking in their 'inventive spelling,' spelling words that they don't know. They take risks and use new words from the word wall. They begin to write about new topics." Lana explained that students become aware of writing ability differences among themselves when they make comments such as, "Oh, that person wrote a whole page and I wrote this much," and "Wow, so and so wrote three quarters of a page."

Dee continues, "I think if they see that they are successful, they're going to have a good attitude… even kids who know that reading and writing is a struggle. They work hard. They don't give up. They enjoy it still, I think. They don't ever sit down and say, 'Oh, oh, I don't feel like doing this [hitting the book on the table].'" To clarify this observation of what students do not do, Dee was asked, "Have you seen that behavior before?" Dee responded, "Oh yes, but I don't now. You know…these kids are great. They really do have a good attitude towards just about everything."

Gwen concurred, "If I can get them to experience the success of reading what they just wrote, and feel good about that, maybe their desire to write will increase. That's pretty cool."

Beliefs About Biliterate Media

Biliterate media, the final biliterate theoretical frame, will guide the discussion of the adult stakeholders' observations and predictions regarding the experimental implementation of SignWriting into DHH students' school and home literacy learning environments. Throughout the teacher and parent interviews any reference that was made about media considerations, exposure, structure, and script understandably referred

exclusively to English media. The incorporation of a second script, SignWriting, into the literacy learning environments of DHH students, was experimental. Reflection on media differences, at this point of the inquiry, was not expected. Adult stakeholders shared descriptions of how DHH students were learning to read and write both words and signs. Comparisons between writing with *both* media were evident in their talk. Teacher and parent observations and predictions about the script, structure, and exposure features of the experimental medium introduced to DHH students, SignWriting, follows.

SignWriting script

Given the task to talk about how DHH students learn to read and write, Gwen shared observations of both motivated and exasperated behaviors that young DHH emergent readers and writers employ. The construction of a "comfortable" literacy learning environment for DHH students was Gwen's ultimate goal as a second-year, primary classroom teacher. When the discussion turned toward the implementation of SignWriting, Gwen made the following comments. "I feel like they [DHH students] learn to read and write like this." Gwen pointed to a nearby English text. "This is more of a memory task." Gwen continued, pointing to the SignWriting text, "I feel like this is just like drawing from what they know. They can figure out what the parts are [of a sign] that they need for this SignWriting [text] more easily than they can figure out the parts they need for just regular reading and writing." Gwen continued her reflection, "And why that is so, is because a sign that occurs on their face, they know they can draw the face. They know they can use the handshape, a handshape that goes like this [demonstrates placement and orientation], and then you know, somehow create that sign." To clarify this observable difference between students' *knowing* parts of words and parts of sign,

Gwen illustrated her point further commenting, “If you show them a word, cover it up, then ask them to recreate it or to show that word to you, it’s like a memory thing. There’s no feeling there. They don’t know what it feels like to say a word like *red.* This one [pointing to SignWriting] is more of a movement thing or feeling that you get from something you already know. [SignWriting] is something visually and spatially represented, something known versus the usual ‘I don’t know’ [response].”

During Lana’s interview, she was asked to comment on how her observations of DHH kids learning to read and write related to their new experiences learning to read and write signs. “I think now they’re at a point where they’re really being able to read it [SignWriting] more so than when they were just kind of starting out trying to figure it out.” Lana includes herself in these evaluative comments, “I think, well, it’s fun. We enjoy doing it. It’s fun. We can read it.” Lana observed that some of them [her DHH students] were starting to *carry over* [that reading ability of signs] into their writing. She had some samples of a few spelling words that were written in SignWriting to demonstrate that carry over of two writing scripts.

One of Lana’s students took the SignWriting carry over into the home literacy *practice* context. During the parent interview, Dori was asked if she had seen any preliminary SignWriting *work* brought home. Even though the interview occurred early in the school year, there was evidence of her son’s attempts at “writing signs.” “He’ll bring it [SignWriting] home and show it to me. One time he had a paper with his words [spelling words] and then he added the SignWriting. He was real proud of what he showed me. That was really neat. Just the fact that he showed it to me and that his face lit up, you know that he’s really proud of it [SignWriting].” Dori commented on how her

son had assumed the "teaching role" when it came to explaining what SignWriting symbols meant. "He had to show me what each [symbol] was and he asked, "You know that it's a sign. 'Do you understand?'" Dori happily admitted, "It's real neat, he's teaching me something."

SignWriting structure

When asked if learning to read and write signs might be different than learning to read and write English, Lana qualified her comments about SignWriting experiences. "I'm not sure. I don't know the answer to that because this is a real process, learning to read and write is a real process." She was willing to make a prediction however, "I'm wondering if the process in learning to read and write SignWriting might be shorter for them [DHH students] than trying to do the whole English [process]. That might be because you're trying to teach them to read and write in English and make that connection between what they're signing to English [print]. Where here, they can make that connection [more] possible between what they're signing into this written format. Maybe they can make it faster, that connection. I don't know yet." Lana summarized her observations about how DHH students were experiencing learning SignWriting, "I think it's something they enjoy. You can tell just by looking at them. They're always asking when is it their turn to use the computers. So, it's something that is incredibly enjoyable for them, and I think it gives them that feeling of empowerment!"

The primary and intermediate classroom teachers located at the other inquiry site also shared observations and predictions concerning SignWriting literacy learning experiences for DHH students. It should be noted, however, that these teachers did not observe the SignWriting sessions because they were conducted outside the self contained

DHH classrooms. When asked to comment on the implementation of SignWriting into literacy learning environments for their particular DHH students, both classroom teachers understandably qualified their responses. Dee, the primary teacher stated, "I really can't comment. I really wouldn't feel qualified to comment on that [how DHH students are learning to read and write signs] at this point." Lynn, the intermediate classroom teacher similarly stated, "I haven't had the experience to know whether they are going at [using] SignWriting as an approach to literacy." Lynn expressed regret about how and when SignWriting events happened for her students, "I do feel bad because it [SignWriting] is like any kind of 'pull out,' I don't know what's going on down there, and when they come back [here] it's time to pack up and go home. So, there's not a lot of sharing. They haven't shown me too much. They haven't come back saying, 'Oh let me show you this and try to figure this sign out.' So, I don't know."

The interview process with Dee and Lynn presented the opportunity to share samples of SignWriting documents generated by their students as well as the opportunity to view some excerpts of videotaped SignWriting sessions. This exchange prompted further discussion about how individual DHH students from these two classrooms experienced learning to read and write signs.

Dee discussed in detail how different DHH emergent readers and writers engaged in literacy learning activities in her classroom. Some students had a wide range of literacy deficiencies, primarily due to language background, that widened the gap between what they *knew* and what they *needed* to know to become fluent readers and writers. She indicated that other students, who experience rich language backgrounds, tend to take more risks and experience multiple "jumps" in their literacy achievements within a single

school year. When she was asked to talk about students who were not experiencing success, Dee readily identified those students who she surmised were not feeling positive about their progress in learning how to read and write. “I don’t want to say anything about SignWriting, but I’m guessing and correct me if I’m wrong, that [SignWriting] can really help their need to make the connection.” Dee was able to make that prediction without any direct observation of DHH students using SignWriting books or other teaching materials. Lana had made a similar prediction regarding students making connections between signing and a corresponding written form, estimating that there might be a probability that these connections would occur more rapidly.

When Dee was told that Bill, an identified struggling English reader and writer, was very interested in SignWriting, including the reading and writing practice materials, Dee was not surprised: “I bet. Good. Oh neat! Oh, I bet he loves it. You see, I think that would really be good.” Included in her own recounting of Bill’s “developmental jumps” in writing that had recently appeared in his classroom journal, Dee commented, “So this is a big jump for him just recently. Oh, I don’t know; it may be the SignWriting. I can’t make a connection with it.” Dee was not surprised that Bill had demonstrated an ease and comfort with writing signs. “Yeah, I can see him being willing to do more. He likes to copy. He likes to do anything that takes that kind of perception and yeah, I bet he loves it.” It was reported to Dee that Bill was reading sign symbols quickly. Dee ventured to guess that reading signs might be difficult for some of her other students but not for Bill. Her explanation followed, “It’s just a guess but those who have a lot of trouble with visual perception stuff, motor planning, things that it would take to enjoy that [SignWriting] and to benefit from it. Whereas, Bill is really good at those things, you

know…the perception and the planning. So I can see that it [SignWriting] would come easier for him and he'd enjoy it." Dee made other comments during the course of the interview, however, that confirmed her position as a distant and ambivalent observer, the stakeholder role she had assumed since the beginning of SignWriting learning events in which her students had been engaged. When Dee was asked if she noticed the SignWriting documents that some of her students had produced, she did acknowledge the posters that hung on the wall down the hall but admitted, "I did not look at them."

During the end-of-the-year scheduled teacher interview, the third student from Lynn's class that was discussed was Marie, one of the four focal students chosen for the in-depth SignWriting experiential analysis. The research practitioner described Marie to Lynn as a SignWriting learner who appeared to show "a little resistance" to some of the ASL linguistic features more visible and accessible for discussion because of SignWriting. Lynn was not surprised by this observation and shared a similar observation when Marie was resistant to an ASL videotaped story. Reflecting on the resistant behavioral response to the recorded ASL narrative, Lynn realized that Marie needed more background information about the story plot and characters before she could "get it" the second time around. "But when she lets down that barrier, she starts to see it." Marie's comprehension of natural ASL sign communication increases when she lets go of the signing features that differ from her own style of signing, signs that follow an English order with voice. Asking questions was one of the methods Marie used to engage someone in order to obtain the background information she needed to "let barriers down." One of the ASL SignWriting structural features Marie thought "weird" was the vertical arrangement of sign symbols. When it was explained how the writing convention was

established and by whom, Marie's response to the explanation was a spontaneous rehearsal of a simple four sign utterance that followed the prescribed downward vertical path in front of her body, "I play with you." This anecdote is an example of one DHH student's adaptation to the divergent structural arrangement of ASL sign symbols that differed from the more familiar linear arrangement of English words in print.

SignWriting exposure

Lynn discussed her feelings about SignWriting. She began her reflections acknowledging that the recent videotaped demonstration of a student from the other DHH school site made it very clear that this particular student was fluent at reading and writing SignWriting. Lynn speculated, "probably because she [the student recorded on videotape] had internal language." Lynn commented that the response to SignWriting would more than likely vary with each of the three students from her classroom that had participated in SignWriting sessions. The most noted variable would be what literacy skills these three students had already mastered before being introduced to SignWriting. Lynn believes that kids learn in the avenues that come easiest for them. An obvious shared experience among teachers who work with DHH students and expressed by Lynn is, "You do not have kids coming into your classroom from the same place. If you have a classroom where there is SignWriting available, ASL available, and English available in print, you know, let them do what they want to do." Lynn was able to use the viewing of recorded SignWriting sessions to generate predictions about student responses to SignWriting. Lynn's first prediction regarding *ease* with SignWriting was for a student she described as one who "didn't have language internalized. He is most comfortable expressing himself in sign even though his family doesn't sign with him. Mark is going to go to this

[SignWriting] before he's going to try to decode [English print]. He's going to be more skilled in this [SignWriting] than the kids who already know English print." Lynn admitted that Mark was really struggling (with English literacy). "I don't know what to do with him. I think SignWriting will really help him. It's the same thing with communication and learning, you can use whatever you have to, to do it." For the students who have already mastered the ability to read printed English, mastering SignWriting symbols, "trying to figure out what these hand shapes are and what the movement is, it's not real meaningful to them." For Mark, "I think this is something that probably is going to make a lot more sense to him. I'm sure he can read SignWriting much better than print because he doesn't come to print." Watching an excerpt of one student reading a SignWriting instructional manual, Lynn observed, "She looks more comfortable with that [photograph of a signer] than this [SignWriting symbol] because she is still trying to analyze the symbols. She is not quite sure yet." A shared observation from the interviewer (Research practitioner) drew attention to how this particular student had not made the connection between the SignWriting symbols and how she articulated signs. Lynn responded, "I think she will, it probably will [connect]."

Summary of Adult Stakeholder Beliefs

Across all three biliterate frames--context, development, and media--language was the key descriptive element that emerged from interviews with classroom teachers and parents. For the teachers involved in this inquiry, "language" is an all-encompassing term that reflects very broad interpretations including language experiences and the literacy functions of language. Literacy contexts for DHH students were discussed in terms of emergent readers and writers *having* or *not having* the use of a language to

converse, to access information from books, or to share their life experiences in writing. Descriptors such as *strong*, *rich*, *internalized*, *imprinted*, and *delayed* were used to quantify and qualify the observed differences teachers had made regarding how DHH students learn to read and write. The literacy learning macro perspective projected the normal or regular literacy learning expectations, an alignment that was perceived by some, but not all teachers, as appropriate and applicable to literacy learning contexts for DHH students. Teachers did acknowledge that while students proceed through developmental stages, the progression is different, at a slower rate, or students get "stuck" or top out due to language development factors. Literacy learning home environments that included signing and opportunities for shared book reading with parents were identified as advantageous for oral and literate strengthening of emergent literacy skills. One teacher's belief broadened and shifted literacy learning context from monolingual to bilingual consideration. "You have to have an ASL background….or you are not going to be able to meet all the needs of the kids if you're not using both languages in your classroom." This strong conviction situated teacher and parent "talk" about literacy learning for DHH students into a radically new literacy framework that approaches an emancipated literacy, "a vehicle by which [DHH students] are equipped with the necessary tools to re-appropriate their history, culture, and language practices" (Freire & Macedo, 1987, p. 157). Prominent in teacher and parent interviews were features of a monolingual contextual environment. The two conditions that licensed consideration of a biliterate literacy environment in which DHH student could learn to read and write two languages were: *one,* the recognition of the "other whole language," ASL; and *two,* the recognition of a second script to represent that language, SignWriting. Even though only

one of the four teachers acknowledged and expressed a value for incorporating student's natural language, ASL, into literacy learning, the collective comments of classroom teachers, specifically about SignWriting, indicate that biliteracy development may be a viable consideration for some DHH students.

The language issues teachers and parents discussed concerning the biliteracy developmental frame focused primarily on language skill development. Teachers emphasized that opportunities to *talk* or *dialogue* were prerequisites for receptive reading and productive writing skill development. Making *connections* between ideas, mode of communication (signed or spoken), and how you transfer all that to a printed or illustrated medium was discussed. Parents and teachers shared their observations of DHH students' experienced struggles and successes with learning how to read and write. Literacy struggles were acknowledged and described. Writing was analogous to "pulling teeth" for some DHH students. Other young emergent readers were reported to claim, "I can't read." A reliance on *picture story telling* and the preference to *draw* rather than *write* entries in daily journals were indications that students were *stuck* or were not *ready* to progress or transition toward subsequent literacy skills. Teachers discussed the importance of discovering students' individual interests in order to spark their desire to *care about* and develop a *good attitude* toward school and at home literacy learning events. Motivation strategies were shared, including the use of visual charts, provision for individual free writing, and opportunities for generating group co-authored stories. Giving students the opportunity to read individual and group generated texts was one of the stronger motivational techniques teachers utilized.

Parents reported that their DHH children requested an adult physical presence while completing homework assignments. The parents readily acknowledged that their DHH children experienced frustration getting their English words and sentence composition work completed. One Deaf child's expressed goal was that his writing needed to look like *good English*. Students and teachers both applied *the length of a written document* as a common assessment tool for written work. Written assignments that had more than two blurbs, or expressions like "Wow, three quarters of a page" indicated to students that their writing was *good*, and to their teachers, that emergent writers were *taking risks*. The ultimate goal for the two primary teachers was to ensure that DHH students would feel comfortable and experience success with their reading and writing. Success fosters good attitudes and enjoyment and at the same time, *feeling good* will spark students' desire to write more.

Biliterate media considerations were in the foreground during parent and teacher interviews. The writing mediums--drawing, writing, handwriting, and typing--that had been discussed pertained to the script, structure, and exposure DHH students already had experienced, English text. When the interview questions directed the adults toward observations and predictions about SignWriting, the writing medium that had been introduced to the DHH student stakeholders, surprisingly the adult stakeholders had a lot to say. Based on their acknowledged access to and direct involvement with SignWriting sessions, teachers and parents made several observations and predictions about incorporating SignWriting into literacy learning environments for DHH students. Some teachers predicted that the mastery of decoding SignWriting symbols would be an easy first step and more attainable for students who have internalized language and good

spatial planning and visual perception abilities. Teachers and parents observed that SignWriting symbols seemed to make more sense to some DHH students. Teachers were not surprised that students were able to make those sign to symbol *connections* that repositioned students from an "I don't know" and "I can't" stance to a position noticeably "in the know." One teacher predicted that decoding SignWriting symbols may not happen as readily for intermediate students who had already mastered English print as it would for those students who had not yet *come to printed language*. A parent described an occasion when her son proudly presented his sign written spelling words. She was delighted that he was so proud of his work and tickled that he wanted to explain each symbol to her, assuming a kind of *inverted* teaching role. Teachers did qualify their predictions emphasizing that this process, learning to read and write signs, was just like any other learning process. The incorporation of SignWriting into literacy learning environments for DHH students presented uncertainties for the adult stakeholders. Shared testimonies, however, indicated that SignWriting had been *incredibly fun* and *enjoyable* for most SignWriting learners. An attainable *hope* was expressed by adult stakeholders that SignWriting would be *good* and *helpful*. One teacher stated her belief that SignWriting gave to DHH students an experiential feeling of *empowerment*.

A continuation of the descriptive account of how DHH students experienced learning to write using SignWriting follows in the next section. The primary contributors to the collaborative account are the DHH student stakeholders. Videotaped SignWriting sessions recorded *a slice of life*, literacy learning by DHH students viewed through a biliterate lens. The critical component of the descriptive account examined next is the in-

depth analysis of videotaped documentation of SignWriting teaching/learning experiences.

CHAPTER FIVE

THE BRACKETING AND INTERPRETATION OF STUDENT STAKEHOLDER SIGNWRITING EXPERIENCES

Chapter Five will focus on the recorded SignWriting teaching and learning experiences of student stakeholders. The videotaped recorded sessions of four Deaf and Hard of Hearing (DHH) focal students were selected to represent the meaning of the student stakeholder group's collaborative lived experience, learning to write using SignWriting. All affective behaviors and utterances were transcribed from those sessions. Similar behaviors and utterances were categorized and labeled. The outcome of this process was four categories of affective behaviors and utterances all focal students used across the time span of the inquiry. A review of DHH students' behaviors and the comments that they made during recorded SignWriting teaching/learning sessions contribute to the thick description and interpretation of experience categories that were: *response, motivation, reflection* and *assertion.*

Response

Affective *response* was the first experience category that emerged from the analysis of video recorded data. A partial list of response behaviors follows: a grin, a smile, shared smiles, a single clap, self initiated applauding, clasped hands, excited bouncing of arms and legs, body wiggles, hands and arms extended upward above the head, arm waving, a full body embrace, and an affectionate touch extended to an adult participant and/or to SignWriting materials. A shorter list of converse behaviors was also observed: wrinkled noses, puzzled facial expressions, furrowed brows, a hand up to the forehead, hands covering the face, shoulder shrugs, exasperated sighs and body shudders.

Common and repeated verbal utterances expressed by DHH students contributed to the identification of the response experiential category. Some examples were, “Wow, “Neat”, “There’s so much. Wow,” “That’s good,” “That’s cute,” “That’s beautiful,” “I like this,” “Ah, perfect,” and “It’s printing, cool.” DHH students also made comments that indicated the learning process did not happen without challenges and effort. “Well because it’s hard,” “That was really hard,” “I don’t know how,” “I need help,” “I don’t like it like that.” The response category descriptive account begins first with videotaped excerpts that captured DHH students’ behavioral responses to SignWriting followed by a descriptive analysis of their response utterances.

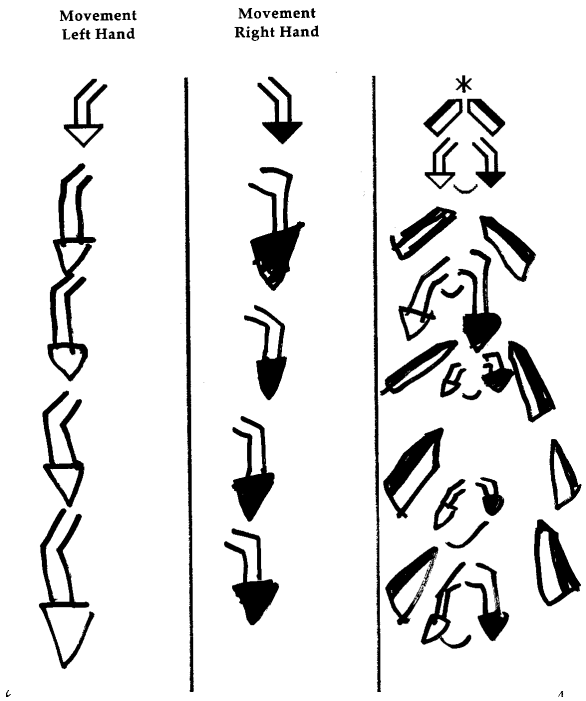
Response Behaviors

Adult and child participants and the SignWriting materials used during SignWriting activities are considered critical components that contributed to the response category description. The physical context and the relationships that existed among the participants during SignWriting events evoked smiles that varied in intensity. Observable smiles were extended toward collaborators present during SignWriting activities as well as to others who students later designated partners in their SignWriting literacy development, a classroom teacher or a parent. Students were observed smiling at SignWriting materials, books, flash cards, videotapes, computer screens, and at the printed SignWriting documents that they co-produced or produced independently.

The analysis of videotaped SignWriting sessions produced twenty-four written descriptions of smile variations. The smile was the most prominent observable response to SignWriting. While smiles were numerous, they were not the same. Smile descriptions ranged from a simple grin to an open mouth smile. Orchestrated with other noted

behaviors that emerged in the affective response category, the variation in smile responses were found in selected excerpts taken from the written analysis of each focal student's video recorded SignWriting experiences. The description account begins with DHH students' first smile responses to SignWriting.

Bill, age seven, responded to an initial SignWriting symbol handwriting task with moderate small grins and half smiles. After completing a column of SignWriting symbols that represented the sign for "house," Bill was congratulated with a "thumbs up" gesture. Bill responded with another gesture. He held up his index finger signaling, "wait a minute." He wanted to reinforce and justify the adult praise of his early SignWriting efforts. He placed his dominant hand onto each symbol that he wrote, then looked over to CF (research practitioner) with a small grin [9.23.10:45:22].



<u>Figure 14.</u> Bill's Workbook Practice Writing 'house'.

Veronica, age ten, started her SignWriting experience with a similar activity, copying and tracing SignWriting symbols. Veronica was busy tracing the set of symbols that represented the sign for "Goldilocks". When Veronica completed copying only one of those symbols, she celebrated her accomplishment by grinning and throwing both arms above her head [8.27.16:12:12].

Figure 15. Veronica Traces a Symbol from the Sign "Goldilocks."

During her first experience with SignWriting media, Marie, age eleven, raised her eyebrows in mild interest. Her group of SignWriting learners was viewing an ASL version of *Goldilocks and the Three Bears* on videotape. After viewing the videotape, the students were exposed to SignWriting symbols related to the story. Marie began to shadow the ASL signing narrator. After sustaining a self initiated re-articulation of forty-five signs, Marie stopped shadowing the natural flow of signs, looked at the TV monitor and began to smile [8.26.3:31:55-3:32:48].

Similar to the other focal students, Emily, age five, started SignWriting experiences supported by SignWriting materials. Her first smile response, a modest grin, occurred during a differently structured preliminary introduction to SignWriting symbols. CF had a full page of written signs that corresponded to one of Emily's illustrated journal accounts of a class cooking activity. Emily was interested in these written symbols. She

picked up a piece of paper that had on it the sign, “cookie,” written in SignWriting. She looked at the symbols then signed confidently, “cookie.” Before Emily proceeded with pasting the cut out symbol into her journal, CF extended to Emily an acknowledgement of her very first accurate decoding of SignWriting. CF pointed to the set of symbols and repeated the sign Emily just decoded, “cookie.” While watching this adult performance of her first successful attempt at reading SignWriting symbols, Emily responded with a modest grin.

Figure 16. Emily Looked at Symbols and Signed “cookie.”

When DHH students recognized their own names written in SignWriting, the most notable smiles emerged. The first experience Emily had with SignWriting on the computer provided her the opportunity to view symbols that represented her name sign, the culturally specific gesture by which she was identified at home and in school. With some guidance Emily read the SignWriting message that appeared on the computer screen. Emily looked at the symbols that appeared on the screen. She independently recognized the symbols that represented her name sign. As Emily signed her name, she

smiled. She briefly glanced over toward CF then returned her gaze back to the monitor. Her smile broadened as she continued to sign the symbols that appeared on the monitor, Emily's own name [10.27.10:37:50-10:38:00]. Also visible on the computer screen was the fingerspelled manual representation of her name, "E-m-i-l-y." Emily moved forward toward the monitor with her hand already formed into the "e" handshape configuration, the first letter of her name. Emily studied the SignWriting symbols, then began to smile as she manually spelled her first name. She moved back in her chair while she articulated the last three letters of her name. After completing the manual spelling of her first name, Emily embraced herself with both arms. She smiled at the computer monitor, maintaining the self-embrace. Remaining in this affectionate pose, Emily did manage to sign a comment with one hand, "That's mine. That's mine." She released her body embrace, moved closer to the monitor then emphatically repeated, "That's my name" [10.27.10:38:02-14]. Several months later, Emily exhibited an even more enthusiastic affective response to seeing her name appear in SignWriting on the computer screen. During an *in progress* SignWriting transcription activity, CF and Emily were conferring about a SignWriting entry. Emily's name was the next item to be included in the SignWriting document. To facilitate the sign search in the SignWriting computer dictionary, CF typed the letters for her name. When Emily's name sign appeared on the monitor, CF feigned a surprised reaction. As Emily looked at her name on the computer screen, she broke out into enthusiastic applause. Emily intensified her display of delight when she jumped up and down and smiled big time. CF joined the celebratory clapping reinforcing the unexpected "find" with a gesture, two fisted downward movement meaning, "Yes, we found your name" [4.24.9:22:51-9:23:00].

Bill also had an opportunity during SignWriting sessions to read and to write his name using the SignWriting computer program. Bill was dictating to CF a signed Valentine's Day message to be transcribed into SignWriting. During the first few attempts to access the SignWriting computer dictionary, the message collaborators, CF and Bill, confronted some technical difficulties. While these difficulties were being resolved, Bill impatiently folded his arms at his chest, tapped one foot on the floor and shook his head. His disparagement transformed when he realized the first two signs he had dictated, "Dad" and "Mom," now appeared on the screen. He gave a single clap accompanied by an out loud, "Yeah." The third item Bill wanted incorporated into his Valentine dictation was his own name. Bill articulated his name sign, pointed to himself, then turned to his peers and smiled. CF sought Bill's approval for the sign symbols assembled to represent his name sign. Bill nodded his head in affirmation several times, making clear his acceptance with the comment, "That's right" [2.10.9:34:42].

Veronica shared her experience using SignWriting on the computer to write and read her name with her classroom teacher, Lana. The videotape captured a range of facial affective responses from Veronica toward this encoding and decoding task. Veronica switched the typing mode on the computer from sign mode to manual alphabet fingerspelling mode. She started out typing her first name. Veronica and Lana leaned closer to the monitor to inspect the accuracy of the manual symbols. Veronica's face scrunched into a frown. She turned to Lana with a pouting face pointing questioningly to one of the symbols on the screen. Lana moved back in her chair, then shared her handshape guess. She used her index finger signaling attention toward her formed "a" hand configuration. Still puzzled, Veronica looked back at the monitor. As she looked

back toward Lana, Veronica let a small smile emerge signaling a degree of recognition. To confirm the suggested handshape, Lana physically placed her "a" handshape configuration directly onto the monitor. The faces of both collaborators broke out into huge smiles. Lana moved away from the monitor then used both her hands to gesture, "Oh wow." Veronica pointed to her name on the monitor and smiled again. Veronica began to type the letters of her last name. Lana leaned forward to point to the SignWriting manual letter symbol Veronica first typed, "S." Veronica stared at the monitor, squinted with one eye and smiled as she turned to face Lana. She continued to smile as she turned back toward the computer to resume her search on the keyboard for the remaining letters of her last name. When the typing was completed, Lana and Veronica inspected the letter symbols by pointing and shadowing the manual spelling of each letter. Veronica could be seen smiling as Lana and Veronica moved back into their chairs, exchanging affirmative head nods [9.17.3:41:58-3:42:38].

Marie's experiences with the SignWriting computer were less satisfying in comparison with other DHH SignWriting learners. The search for her name in the SignWriting computer dictionary was not successful. The video excerpt that captured this experience did show that Marie had achieved competency in accessing pre-written signs in the dictionary using the required two command keys. Marie typed her name then leaned back in her chair to get assistance from an adult participant. She rehearsed the sign that appeared on the computer screen. Marie dubiously asked out loud, "That's Marie?" An adult assistant responded, "I think it says 'march.'" More certain that the symbols on the screen did not represent her name, Marie pointed to the computer screen, and with a wrinkled brow and wrinkled nose, she confidently decided, "No, that's not it"

[11.4.0:28:20]. Even though frustration was the more frequent affective response Marie experienced with learning how to use the SignWriting computer, it is interesting to note that, at the very end of the SignWriting learning project, Marie chose to demonstrate her SignWriting competence by hand writing SignWriting symbols that represented her name.

Response Utterances

The initial review of SignWriting materials by student stakeholders elicited behavioral and verbal responses that strongly indicated that DHH students found the set of *Goldilocks and the Three Bears* SignWriting instructional books particularly attractive and desirable.

Bill energetically reached for his SignWriting workbook with both hands and then proceeded to look at the contents carefully and intently. Before he tucked it securely under his arm, Bill playfully fanned his face with the book, giggling and smiling. Outside the camera's view, CF asked Bill, "Is that your book?" Bill responded with a loud "Yea" and smiled [9.30.10:24:30-36].

Veronica did misplace her SignWriting books on occasion. She would scour the bookshelf until she located the missing book. On one occasion, before packing all five SignWriting books back into her folder, Veronica tapped the edge of her desk with the carefully aligned pack and announced, "I like these!" [10.1.3:57:24] Veronica frequently referenced her SignWriting books during SignWriting sessions. One videotaped session showed Veronica with an open book held against her chest. She affectionately rubbed the back of the SignWriting book and smiled [11.8.5:16:37-39]. Several months into the literacy project Veronica maintained her interest and enthusiasm for SignWriting media.

During a group viewing of commercially prepared videotaped SignWriting lessons, Veronica tapped CF to get visual attention. She excitedly extended her full arm pointing toward the TV monitor that momentarily showed the full collection of SignWriting materials. Smiling big time, Veronica quickly commented, “I have these. I’ve looked at all of them already. I really like them”[1.14.5:05:16].

Marie helped with the unpacking of SignWriting materials received from Valerie Sutton, the sponsor of the SignWriting literacy project. Marie was seen on the video holding several books close to her chest with her arms folded around them. She faced the recording camera and said, “Thank you Valerie. See you later Valerie”[9.9.3:27:24-32]. The following week Marie had a longer opportunity to look at one of the SignWriting books. She smiled as she turned each page. She was seen commenting to herself, “Wow, this is beautiful,” reinforcing her comment with a definitive head nod [9.16.3:33:26-32]. With big grins, Marie continued to turn pages one by one, inspecting the columns of SignWriting symbols and the full-page illustrations. With eyebrows raised and a puckered mouth, Marie made another candid comment, “That’s pretty.” Abruptly Marie leaned forward and down toward the book and gave the illustration of the baby bear a gentle kiss. Before being noticed, Marie straightened herself up in the chair and smiled [9.16.3:33:35-47].

During her very first SignWriting session, Emily was presented with three SignWriting books. As Emily opened the first page of the level one workbook, she opened her mouth wide letting out an audible “ah.” She pointed to an illustration in the book and commented, “That’s cute.” As she wrote her name on the three books, she used a whole body wiggle denoting her claim and approval of each book. Emily turned more

pages in the SignWriting picture dictionary. She fingerspelled an evaluative comment that CF initially could not discern. When asked to repeat her comment, Emily placed two hands on either side of her mouth and signed a fingerspelled loan sign, "W-O-W." CF replied, "So, wow, you like this." This clarifying comment was basically ignored as Emily continued to look at the illustrations and sign symbols in the book. When Emily closed the book she continued to inspect the cover. She commented, "This book, yeah, I really like this." Emily proceeded to identify all the objects on the book's cover with playful singsong like sign articulation. Before Emily shut off the recording camera that ended the session, she concluded her commentary with a gestural display of enthusiasm. She rubbed her hands together then with a sharp clap she combined motivation with determination to imply, "Let's get to it" [9.10.10:59:24-11:11:35].

"Wow" was a repeated superlative both child and adult stakeholders used in response to SignWriting media and materials. Another recurring responsive and evaluative utterance was, "hard." Degree of difficulty did not always reflect the message SignWriting learners expressed. Additional contextual behavioral cues assist in formulating the perspective students' held when they used the qualifier "hard" to describe SignWriting materials or learning activities.

A videotape excerpt showed the presentation of the day's SignWriting task to Emily. Emily was given a strip of paper to hand write SignWriting symbols from one of her books. With the strip of paper arranged in the way she had become accustomed, horizontally, Emily readied herself for the activity. CF tapped Emily to remind her that, just as it was in her book, SignWriting symbols are spatially arranged vertically. Emily responded, "Well because this is hard, really hard" [1.21.10:59:09-14]. The next few

segments of the videotape provided additional clues on how to interpret Emily's comment. Emily was in the process of hand copying the sign for "bear" from her SignWriting text. Emily completed the last stroke for one of the bent fingers used in the sign's hand configuration. Emily's initial facial reaction to her sign reproduction was one of surprise. As Emily reflected on her unexpected capability to hand write a whole sign, her facial expression changed to sheer delight. She celebrated her accomplishment. She scrunched her face into a big smile, raised her hands up toward her shoulders, clenched her fists into tight curls, and waved her arms back and forth in front of her body [1.21.11:01:56]. Perhaps due to the burst of physical energy, the paper strip on which Emily had been working fell to the ground. As CF bent down to retrieve the paper strip, Emily commented, "Oh, it's crying." She took the strip of paper from CF, laid it across one of her shoulders and tapped it in a consoling manner. Emily looked over at CF, threw back her head and smiled broadly [1.21.11:02:00]. The descriptions of this SignWriting event made it clear that Emily's comment, "hard," was not used as a measurement of task difficulty. Rearrangement of the paper strip from a horizontal to vertical position did not stop Emily from the initiation and completion of the SignWriting copying task. What "hard" meant was perhaps the effort that was now required to adjust a strip of paper on a desk top in coordination with a book that was needed for visual reference.

During Bill's very first SignWriting session, he took on the task of writing SignWriting symbols down vertical columns in a workbook. When Bill had completed writing the third and final column of symbols, he put the top on his marker and looked over to CF. He grasped his writing forearm, opened his mouth wide feigning a yawn, and then with squinting eyes and a full smile he commented, "That was really hard." CF

replied, “You think it’s hard?” Bill folded his arms and acknowledged agreement by nodding his head several times. With a slight grin, Bill confirmed his assessment, a verbal affirmative, “Yeah it is. Yeah” [9.23.10:44:52-57]. For Bill, writing symbols down columns did not seem objectionable. He did use the qualifier, “hard,” but *after* the assigned writing symbol task, not before. Holding his forearm indicated he did exert effort. However, his smiles and head nods indicated he enjoyed and took pleasure in his writing achievement regardless of the energy expended.

Marie’s responses to SignWriting teaching and learning experiences were analogous to the high and low feelings a one-time rider on a roller coaster experiences. Marie was clearly attracted to the SignWriting materials used to introduce the basic features of SignWriting. Over time, Marie’s initial positive affective response to SignWriting activities seemed to fray and frazzle, primarily due to the frustration she experienced with the SignWriting computer program. The videotape excerpt selected to portray the levels of difficulty Marie experienced with SignWriting occurred following one of those frustrating computer events. Understandably, the build up of unresolved frustration motivated the ambivalent response Marie exhibited during her group’s viewing of commercially prepared SignWriting videotaped lessons. Similar to the sign shadowing Marie initiated during her first SignWriting session, Marie began to imitate the signer and articulate the sign symbols visible on the TV monitor, “SignWriting.” She caught herself and stopped shadowing. She covered her face with two hands, leaned forward in her chair, then uncovered her face to reveal an apprehensive smile [1.13.4:24:48-52]. Following instructional remarks made on the videotaped lesson, CF used a SignWriting book to demonstrate and reinforce how SignWriting text differs from

English text. English is written horizontally and SignWriting is written vertically. Marie first commented, “Yes, Yes,” indicating that she knew that distinction. Wrinkling her nose she made a more explicit response, “I don’t like that.” CF requested clarification from Marie; “You don’t like what?” Marie pointed to the book brushing her finger down the page following the vertical sign symbols repeating, “I don’t like it like that.” CF suggested that Marie might wait a bit to see if she would get used to signs arranged that way but if not, it would be ok. How Marie arranged her sign symbols when she wrote SignWriting would be up to her. Marie shrugged and repeated with a smile, “I like this way, going across” [1.13.4:45:57- 4:46:28]. During this same session, Marie had a discussion with one of the adult participants. They were using a SignWriting teaching manual that had photographs and sign symbols that corresponded to the SignWriting text in an advanced SignWriting book. Marie tapped the Deaf educational assistant and made this comment, “I think we won’t find it in there.” The assistant responded with a reassuring head nod. Marie continues to express her pessimism adding, “It’s hard.” Her collaborator proceeded to turn pages in the instructional manual continuing the search but did concur with Marie, “A little bit.” Their discussion continued revealing more hints explaining why Marie, at that current time, perceived SignWriting as “hard.” The photographs in the manual were of a native ASL signer, the same narrator of the *Goldilocks and the Three Bears* videotape Marie had previously viewed. Marie commented to the assistant, “All the signs in there, many of those signs are different.” Marie implied that the signs being used in SignWriting instructional books were not only spatially arranged in a way that she “didn’t like;” the signs themselves were “different,” unfamiliar to her as a sign communicator.

In regard to SignWriting activities or events, Veronica never did use the qualifier, "hard." She had made, however, acknowledgements that there were features of SignWriting that she found difficult. A mid-year videotape excerpt captured Veronica working in her SignWriting workbook trying to fill a page of vertical columns with sign symbols. She waved her pencil high to get visual attention from CF who was out of the recording camera's visual range. Veronica, using the end of her pencil, referred back to one of the columns in the workbook. She shrugged her shoulders and resumed her effort in getting attention from CF. Veronica wanted to communicate that she was experiencing difficulty with this writing task. She shook her head "no," indexed again the entire length of the column in the workbook and commented, "Don't know" [12.6-0:29:44]. She resumed writing symbols down the column after she received some feedback from off camera. Soon after, Veronica looked up from counting the symbols she had written in each of the three columns. She was given another directive from off camera that evoked a facial grimace and the repeated comment, "Don't know" [12.6-0:20:54]. Documentation of Veronica's earliest exposure to SignWriting indicated that she clearly decided that SignWriting was fun and rewarding and not particularly hard. She maintained her enthusiasm and motivation for SignWriting activities throughout the duration of the project. It was not only evident but also confirmed by the classroom teacher that Veronica, at age eleven, experienced cognitive and perceptual difficulties, especially eye hand coordination. It is reasonable to assume that the manipulation of a writing utensil to create replicas of sign symbols would evoke from Veronica a hesitant stance. She did communicate that she *didn't know*, but perhaps this paraphrase informs her intended message, "I know I'm not good at this stuff you do with a pencil and I'd rather not have

to do so many down this long column." What was significant with Veronica, however, was that in spite of her own perceived difficulty, she did continue to write sign symbols. By the end of the SignWriting literacy project, Veronica filled all the pages in her SignWriting workbook with recognizable but not always proportionate SignWriting symbols.

Response Category Summary

The principal behavioral response to SignWriting events and materials was *smiling*. The most notable smiles emerged when students were able to recognize or access their name using the SignWriting program on the computer. The descriptive accounts detailed other response behaviors students adopted, including spontaneous clapping, affirmative head nods, and an affectionate self-embrace. Students' verbal utterances indicated their response to SignWriting materials was notably on the plus side. The superlative, "Wow," emerged as the most frequent descriptor. Other positive response statements tended to be more personalized. Specific references to the colorful and attractive SignWriting books resembled announcements and proclamations. Veronica announced, "I like these." Emily reflected, "Yea, this book, I really like it." Marie expressed gratitude to the SignWriting inventor and sponsor, "Thank you Valerie." When introduced to the distinct writing convention that arranged SignWriting symbols vertically, DHH students chose one word to express their response: *hard*. When presented with literacy activities DHH students perceive as beyond their capabilities, anecdotal descriptions portray DHH students as less than responsive. Contrary to those anecdotal accounts, the SignWriting videotaped data revealed that DHH students would verbally assess a writing or reading task as *hard*, but then proceed to surprise and delight

themselves with the documents their efforts produced. The videotaped data provide evidence that DHH students responded in an overwhelmingly positive way to SignWriting literacy learning experiences--even students with past negative experiences with English print. They also expressed a willingness to participate in and to do more SignWriting. The descriptive account of how DHH students learned to write using SignWriting is further developed in the next experience category, *Motivation.*

Motivation

The second experience category, motivation, was characterized by collective observable behaviors that indicated students were attentive and personally invested in SignWriting reading and writing activities. All four focal students were seen rubbing the palms of their hands together, a gesture that signaled motivation. A translation is more demonstrative of the motivation DHH students communicated, "I'm really eager, enthusiastic, and anxious to continue doing this particular activity." In addition to a repertoire of motivational behaviors, students made frequent requests for "more" SignWriting. They requested to look at it more, to read and write it more, and to collect more of their own SignWriting documents. Excerpts taken from the videotaped SignWriting sessions will provide *thick descriptions* that contribute to the unfolding narrative account focused on the behaviors and spoken and signed utterances DHH students used to communicate their motivational experience with SignWriting.

Motivational behaviors

The rudimentary preparatory behaviors DHH SignWriting learners exhibited were probably not unique to SignWriting teaching and learning events; however, they did occur frequently enough to warrant the identification as motivational. Prior to and during

SignWriting activities, several students were seen physically repositioning themselves in their chairs, leaning closer toward their work on the table or at the computer keyboard, and reaching over to get a better look at, or to actually take possession of, SignWriting media. Positioning a hand in the air above the head is a customary classroom signal that students use to be acknowledged by a group or group facilitator. DHH students enthusiastically volunteered to provide information or respond to questions regarding SignWriting symbols. The intermediate students, more practiced with this classroom cultural signal, tended to put more energy into getting a turn. Veronica and Marie frequently shot their arms up in the air, displaying an eagerness to volunteer to perform a reading or writing SignWriting literacy activity. When presented with two activity options, that of using the SignWriting computer program or writing signs with markers on a new easel, Marie responded with certitude. She shook her head "no" vehemently to the computer option, and with a smile, shot her hand way up to indicate she wanted to do the writing activity [2.10.2:27:35]. Given a series of similar SignWriting activity choices: use the SignWriting reading books, look up signs to copy by hand, or use the computer--Veronica immediately responded, nodding her head affirmatively several times and with a big smile, "The computer, yes the computer, that's for me" [1.13.2:53:48]. Veronica enthusiastically volunteered to participate in nearly all SignWriting activities. She was becoming more confident with her ability to read the instructional SignWriting books. CF had just completed modeling a "read-aloud" of the level two SignWriting version of *Goldilocks and the Three Bears* [11.19.4:58:52]. When the cover of the book was closed, Veronica shot up her hand with her arm fully extended, signaling to the group that she was ready to take her turn to read aloud. With pursed lips, her face showed a confidence

and a determination to get a turn to read SignWriting in front of this small group of her peers. When her request was acknowledged, Veronica opened her own copy of the book and smiled big time. After her reading turn ended, Veronica closed the book cover, sat straight up in her chair, puffed her chest out, leaned forward onto her book, then looked up with a smile to receive her peer group's reward, a deaf culture "hand wave acclamation" for her reading accomplishment.

Videotaped SignWriting sessions captured numerous occasions of "palm rubbing." This behavior was the most frequently used motivational signal DHH students adopted to communicate their enthusiasm for SignWriting activities. Emily was working on transferring a sign from the SignWriting computer dictionary into one of her mid-year SignWriting documents. Studying the monitor intensely, Emily tapped the designated enter key to make the transfer. When the sign "bear" appeared on the screen, Emily clapped her hands several times, glancing back at CF with a smile. Emily ended her applause by rubbing her hands together, eager and motivated to search for more signs in the SignWriting dictionary [1.28.10:52:56-59]. Bill employed an elaborate *hand rubbing* gesture during one particular practice event using the SignWriting computer [1.27.9:50:30-36]. Bill was given a directive to open the SignWriting computer dictionary. Bill shifted in his chair, clapped his hands together, rubbed them several times, molded his hands into a two handed clasped, released them, then performed a one handed "finger-trill" before striking the letter "k" key on the keyboard. On a different occasion, Bill was invested in the accumulation of SignWriting flash cards being systematically arranged on the top of his desk. The video camera caught Bill playfully spinning one flash card on the desk. For some reason he suddenly looked up into the

video camera lens which seemed to prompt Bill to *first*, rearrange the flash cards on his desk in a straight line and *second*, clap his hands then briefly rub them together enthusiastically. SignWriting computer events generated frequent student initiated clapping or self earned applause. Before taking on the task of generating a sign *from scratch*, students were generally directed to first check the computer program's SignWriting dictionary that made prewritten signs accessible. Veronica was highly motivated to write, then read back, the many SignWriting documents she composed. She had developed a level of independence using the multiple key commands the SignWriting program required. On this occasion, Veronica was searching for the sign, "love." She successfully used the hunt and peck key search routine to locate the letters that spelled the targeted word. With a great force of confident energy, Veronica tapped the final key and rubbed her two hands against one another as she intently studied the computer monitor anticipating the appearance of the sign she desired [4.3.2:07:06]. Operating the two key commands of the SignWriting computer program was more challenging to some learners. Multiple factors seemed to have influenced Marie's initial enthusiasm to use the SignWriting computer program. During the later part of the year, the classroom teacher did share information about Marie's visual spatial learning challenges that partially explained why there might have been a decline in Marie's motivation to *write* using the SignWriting computer program. Nevertheless, Marie did experience success during the earlier sessions when SignWriting symbols were being introduced by way of the SignWriting computer dictionary [9.23.3:48:49]. During one practice session, Marie was engaged in the task of locating signs for many simple three to four letter words she had listed. To locate these signs, Marie had to sequentially press two computer keys. When

she successfully opened the dictionary, located the sign that she wanted and transferred that set of symbols to her document, Marie clasped her hands and then rubbed them together. Marie leaned closer to the long list of words from which she was working, anxious to proceed with her sign search task. After she completed the SignWriting task for the day, Marie did a few stretching maneuvers to release some of the physical tension that mounted during the hunt and peck sign search activity. Spontaneously, Marie faced the lens of the recording video camera and with widened eyes, raised eyebrows, and a spreading grin she claimed, "Hi, I got it!" To further verify Marie's satisfaction with locating signs in the computer dictionary, Marie was asked, with the remaining session time, did she want to continue or select some other activity. Marie responded with a series of emphatic head nods toward the computer screen indicating that she was motivated to continue, supported by an expressed commitment, "Yeah, I really do want to [use the computer]."

Motivational utterances

The very first SignWriting event at both project school sites was viewing an ASL videotaped narrative of *Goldilocks and the Three Bears*. The videotape was used to introduce students to the series of SignWriting books that transcribed the narrative. Immediately after this viewing, Marie shared a prediction with her group of SignWriting learners that the written form of the signed narrative was, "…going to be beautiful." This positive expectation heralded the promotional tone that appeared in the motivational utterances of other DHH students.

What sustained the motivational response to SignWriting was the frequent and consistent verbal requests made by DHH students for *more*. They wanted more of

everything related to SignWriting. When Emily was engaged in a SignWriting "copying" activity and was given the option to change tasks, she replied, "I'll do one more" [10.1.11:48:27]. When asked if Bill wanted to copy three more SignWriting flash cards, he responded, "I want five more" [12.2.11:39:39]. He graciously took the additional cards and placed them on an adjacent pile of cards that was growing larger with the cards he had already completed. When CF was checking Veronica's SignWriting workbook, Veronica tilted her head observing as each page was flipped to the next [12.6-0:20:34]. She commented with furrowed brows, "I have to do more there." She pointed to a page, looked up to CF, smiled then commented again, "I need to do more of these other ones on here."

Physically and verbally counting SignWriting books, generated SignWriting documents, and handwritten SignWriting symbols in a workbook evolved as a unique but common student determination of SignWriting success. Marie counted the number of SignWriting symbols she located using the computer program [9.23.3:48:24]. She pointed to each sign that appeared on the monitor and both manually and verbally counted aloud, "one, two, three, four, five, six, seven, eight, nine." Emily was presented with the complete set of SignWriting reading and writing materials [1.21.10:41:53-10:42:02]. She pointed to the last two books, levels three and four, then commented, "Yes, I will read those." To signal her determination and motivation, Emily used an emphatic whole body nod "yes." Emily then lifted the additional three books just presented and counted aloud as she touched each one, "one, two, three, that's all of them." CF acknowledged Emily's enumeration and confirmed, "Yes, there are three more." Emily looked up at CF and once again, *body nodded* "yes."

Bill was in the process of composing another SignWriting document using the computer [3.30.9:45:24]. When the program menu appeared on the screen showing the list of SignWriting files Bill had previously composed, CF and Bill exchanged a "high-five" congratulatory gesture. Bill began to count, "I have four, no-no, there's a Bill five, Bill four, Bill three, Bill two and a Bill one [file documents]." Bill pulled his two arms back behind his chair, smiled broadly, retracted his hands and commented, "There's many." CF replied, "Yes, you typed many pages Bill. Are you ready now to continue?" Bill shifted in his chair, still smiling; he nodded his head affirmatively and said, "OK" as he leaned closer toward the keyboard. Veronica did an out loud counting when she worked in the level one SignWriting workbook [12.6.-0:19:57]. The task was to practice writing several vertical columns of SignWriting symbols. Veronica used her left hand to count the symbols in each column that she had completed, "one, two, three, four." Veronica interrupted her writing and used a visual attention getting wave to get eye contact with CF. With the end of her pencil Veronica brushed down the full length of each remaining column and signed, "There's more." Satisfied with her expressed motivation, Veronica pushed back in her chair, paused, then returned to her SignWriting workbook task.

A phrase such as, "I want," communicated clearly that DHH students were motivated to read and write signs. It would be conceivable that this utterance would be expressed at the onset of SignWriting sessions. It was more common, however, that these expressions of demonstrative intent were expressed either when it was time to transition to another classroom or at the end of the school day.

During a SignWriting session, students were always given a variety of tasks to choose from. On one occasion, Emily had been hand writing handshape configurations for signed numbers then moved on to exploring one of the SignWriting books, the ASL picture dictionary that had just been presented [11.5.1:14:30-36]. The end of the session was approaching and SignWriting materials were being collected and put away into a folder. Emily intercepted one of the papers on which she had been working. With a tight finger hold on the corner of the paper, Emily made this comment: "Oh, I forgot this. I want to do this now." The suggestion was offered that she might consider doing more writing on this paper at home, for homework. Emily seemed to feel this suggestion was not persuasive enough. She held onto the paper with her right hand as she responded, "I'm feeling that maybe I'll think about this some more. I really want this here so I can see it." Emily placed the paper on her desk and signed, "I'm going to write this. I will write this."

SignWriting sessions for Veronica were scheduled for the final forty-five minute period of the school day. Before being dismissed from the designated classroom area for SignWriting, the videotaped sessions captured frequent "pleadings" or negotiation attempts from Veronica to do *more* SignWriting task items, or at least "one more."

One of the earlier *pleading* videotaped captures indicated that Veronica could be persuaded to accept the schedule time constraint. Veronica was engaged in a classification activity with SignWriting flash cards with CF and one other peer. A card just decoded by the group was being replaced to the pile situated near CF. Veronica abruptly got up from her chair and leaned forward to turn over another flash card gesturing with an outstretched hand, "and here's another one." CF pointed to the

classroom clock to indicate there was not a lot of time left to continue with the activity. Veronica held up her index finger and placed it very close to CF communicating that request for "one more." CF repeated, "Yeah but wait, look at the clock." Veronica did gaze at the clock, nodded her head then began to shuffle and pack away her SignWriting papers. Veronica could be most persuasive to extend the allotted time for a SignWriting session when she worked on the computer. Veronica enjoyed locating signs in the SignWriting dictionary, using her SignWriting reading books as spelling references. During one occasion, Veronica had already located several signs [1.24.3:09:35-43]. Brushing her index finger across the monitor, she indicated to CF that she wanted to fill another whole line of her opened SignWriting document. CF clarified, "You want to do more?" Veronica nodded her head affirmatively. CF gazed toward the classroom clock, felt her wrist to confirm the accuracy of the time, then returned eye gaze to Veronica. The videotape showed both Veronica and CF head nod "yes," signaling a mutual agreement that Veronica could proceed. Veronica wanted to show CF the signs she located and placed on the negotiated "new line." She took her index finger and tapped the three SignWriting symbols she added. There was another reminder about the remaining session time. CF obtained Veronica's visual attention from the SignWriting book on her lap and pointed to the clock once again. CF reminded, "It's time to stop." Veronica, determined to do one more sign search, looked at CF and signed, "Just one more." Veronica engaged in negotiated communication to do *more* SignWriting. As the biliteracy project continued, these motivational expressions were transformed into stronger declarations of motivational intent. Veronica and one of her partner SignWriting learners were presented with a portfolio that contained all the SignWriting documents they had produced

[3.3.2:42:58- 2:43:02]. Veronica took the folder and with a grin that gradually broadened into an open mouth smile, she leafed through each page. With a quizzical expression, she held up to CF an empty plastic sleeve. After receiving the assurance that she will be doing more SignWriting documents, Veronica turned to her peer to make more public her intention. “I want to do more, many more of these.” Both were then seen paging through their personal SignWriting portfolios of written work, nodding their heads in joint agreement.

The motivation to direct SignWriting tasks was often fueled by DHH students’ declaration, “I know.” When students used the SignWriting program on the computer, CF offered them a list of words in Roman script, or CF would actually fingerspell the words, as a visual spelling reference to facilitate sign searches. Once the students were familiar with the key commands to open the SignWriting dictionary, independence at the computer keyboard became an obvious student-initiated goal. Veronica’s classroom teacher had been the adult collaborator during one particular SignWriting session [9.17.3:45:30]. Using the program command that required the use of two keys to open the dictionary, Lana and Veronica had successfully accessed several signs. As the search for another sign began, Lana attempted to remind Veronica to use the required keys. Veronica watched as Lana modeled the sign “dictionary.” Veronica repeated the sign for dictionary, looked back at the monitor, and signed, “I know, yeah, I know, the ‘d’ key. I know.” The adult collaborator could be seen on the tape smiling as she moved further back in her chair, acknowledging the student’s expressed competence. On another occasion, Emily stated, “I know,” several times during a single SignWriting session [1.28.10:53:09]. The videotape capture of this self declared competence similarly sparked

amusement from the adult facilitator, who also physically pulled back, exhibiting both surprise and delight [1.28.10:53:09]. CF was giving Emily the directive to open the SignWriting dictionary on the computer. When CF lifted her hand to fingerspell the lexical item that Emily wanted to access, Emily interrupted the dictation with this comment, "*M-o-m*, I know, I do know [how to spell Mom]." She expressed the same assurance to CF that she knew how to spell many other signs that she intended to locate. As the session continued, Emily become more insistent that she did not need or want dictated fingerspelling. When the search began for the sign "Dad," Emily confidently tapped the required two keys to open the dictionary, waved CF's positioned fingerspelling hand away and signed emphatically with two hands, "I know already, I know [how to spell Dad]." The seriousness of Emily's declared competence further intensified when Emily bent down closer to the keyboard, blocking any further visual interference from the adult, CF, who was by now very amused and laughing out loud.

Motivation Category Summary

Two main themes emerged from an analysis of students' motivational behaviors and utterances. First, students expressed an eagerness and desire to explore SignWriting materials and to sustain their involvement in SignWriting activities. Descriptions of preparatory behaviors signaled motivation, including posture shifting, leaning closer toward, and reaching forward to obtain instructional media. Motivated participants enthusiastically raised their hands, volunteering to put their SignWriting "know-how" in the spotlight. DHH students incorporated a hand or palm rubbing gesture into the behavioral repertoire that supported their learning experiences using the SignWriting program on the computer.

A second theme that emerged was that students recognized their own success with SignWriting and were motivated by that success. This theme was expressed through students' interest in how much they had accomplished, as well as in their determination to complete SignWriting activities without intervention. A candid video capture of a student's motivational jubilation, "I got it," changed the focus of the descriptive discussion to student motivational *talk*. "More" was a repeated request SignWriting learners expressed. They were motivated to count aloud the number of signs they found in the computer dictionary, the number of additional SignWriting books added to their collection, the number of SignWriting file documents they created, and the number of handwritten symbols they completed in their practice workbook. "I want" and "I know" were declarations that students used not only to express motivation but also to communicate their increased levels of comfort and confidence in learning how to read and write signs.

Reflection

While learning SignWriting, a way to read and write signs, DHH students engaged in a reflective process. Videotaped SignWriting sessions captured reflective behaviors and utterances that demonstrated how the four focal students engaged in independent as well as interactive literacy learning activities. SignWriting symbols that visually represent the unique articulation features of sign gesture plainly motivated students to experiment with and thoughtfully rehearse sign pronunciations. The descriptive and interpretive narrative account on how DHH students learned to read and write signs incorporates key elements of reflection that emerged from the analysis of recorded SignWriting sessions.

Reflective behaviors

When presented with SignWriting media, flash cards, reading and writing workbooks, instructional videotapes, and the SignWriting computer program, the four focal student SignWriting learners could be seen experimenting with sign articulation. There were numerous occasions when students experimented and practiced with sign movement, hand placement, and the repetition of sign contacts. Symbols motivated long rehearsals of whole sign repetitions sometimes well exceeding the practice norm of three to five trials. Individual students purposefully studied and inspected SignWriting symbols to self-correct sign pronunciations or to achieve accurate articulation of familiar and unfamiliar signs. Prior to incorporating symbol specified handshape configuration into a complete pronunciation of a sign, students were observed using behaviors that helped isolate handshape distinctions such as, rotating a thumb, wiggling fingers and rubbing the upper portion of their hands. The following excerpts from videotaped sessions converge to exemplify DHH students' reflective experience with SignWriting symbols.

Bill was presented a large flash card with the SignWriting symbols for a familiar sign, "house." After looking closely at the card, Bill attempted his first articulation. Perhaps guided by the movement arrows as they appeared on the card, Bill raised his hands and articulated the sign, "camp."

Figure 17. Motivated by SW symbols, Bill Changed Handshape Articulation.

This close "sign approximation" was abandoned after Bill heard his peers verbalize the sign/word equivalent, "house." Bill deliberately looked at his hands, changed the right and left handshape from the hand configuration "three" to the closed palm handshape. He signed and said *house* aloud, repeating the spoken and signed articulation several times [9.30.10:34:14-27]. This same session presented another example of a reflective self-correction. Bill used tracing paper to record the SignWriting symbols for the sign, "walk." He wanted to share his writing work with the research practitioner. He pointed to the flash card, then his tracing paper. He pointed to each symbol he traced, signing and saying, "I put this here and here, then here and here."

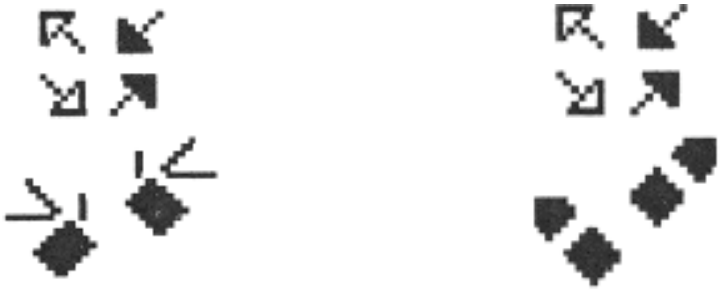


Figure 18. SignWriting Samples for "walk" (3 handshape) and "walk" (palm handshape).

Bill repeated the sign, “walk” three times. For the first two rehearsals, Bill pronounced *walk* using the handshape configuration “three” to which he was more accustomed. The third repetition of the sign “walk” changed, apparently motivated by the closed palm handshape symbols Bill had just traced [9.30.10:48:16-34].

Marie had been learning about SignWriting symbols for several months. She was offered the opportunity to be a SignWriting “tutor” with one adult participant who joined SignWriting sessions later in the year. She proved to be an informative and reassuring instructor. This particular excerpt was taken from a videotaped session during the month of February [2.10.2:27:57]. The video-recorded encoding and decoding process of a seasonally appropriate sign, “love,” provided an opportunity to inspect a reflective step-by-step, symbol-by-symbol decoding experience shared between Marie and CF (research practitioner).

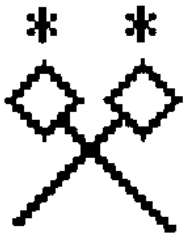


Figure 19. Marie’s Sign for “love”

CF wrote a square handshape symbol on a white board for students to examine. CF asked, “This sign handshape, what is it?” With a puzzled expression, Marie lifted up her hand in a closed palm configuration and rotated it front and back. CF modeled the handshape that Marie presented, the closed palm, pointed to the board, then asked, “Is it this handshape?” Marie looked down at her palm, shook her head *no*, and then curled her

fingers into a fist. CF placed her own closed fist onto the drawn square and then responded to Marie, “Right, that one!” Marie glanced back down at her fist to release her thumb that was curled up inside her tight fisted handshape. As CF added a second square to the white board, Marie extended her two arms to position her two fists parallel to one another. She held this position as CF added two line symbols representing the position of the signer’s arms, diagonally crossed. Seeing these added symbols prompted Marie to immediately cross her two arms. CF confirmed Marie’s signing posture then added two asterisk symbols adjacent to each handshape drawn on the board. Marie began an experimental decoding of this sign. Marie added a swinging movement to alternate her arms from a diagonally crossed to uncrossed position. This experimental articulation was repeated several times possibly because it resembled another sign familiar to Marie, “to save or deliver.” CF continued to offer hints to guide Marie in decoding the sign symbols as they were sequentially written. Marie knew that the star symbol, the asterisk, meant there was a touch contact feature in the sign. When CF suggested that a movement symbol was not present, Marie repositioned her arms diagonally-crossed in a freeze mode before she added a sharp touch contact that brought the two-fisted handshape configurations close to her chest. Adding that final articulation feature made it evident that Marie had successfully decoded the meaning of the sign. CF pointed to Marie and gestured with a head nod, “that’s it.” Marie held the final position of the sign she just decoded while CF fingerspelled the word, “*l-o-v-e*.”

In addition to the articulation rehearsals and experimentation that sign symbols motivated, DHH students were also observed using physical tactile reference to the hands and the face, the primary articulators signers use to communicate. SignWriting learners

purposefully touched and rubbed sign articulators. They were seen outlining facial markers with their fingertips--the eyebrows, the mouth, and the nose. Students initiated the incorporation of touch and rub contact behaviors during SignWriting sessions, conceivably demonstrating the internalization of salient SignWriting symbols.

During one of Emily's SignWriting transcription sessions, her right arm was in a sling recovering from a fracture. This real life circumstance positioned CF at the computer as the designated typist. Emily and CF conferred about a sign entry that could not be located in the SignWriting dictionary, "a letter." Both collaborators realized that the sign would have to be generated using the sign symbols available in the computer program. After demonstrating to CF the precise sign articulation for "a letter." a document you write and send to someone, Emily commented to herself with very small signs, "Oh, we'll have to make another one." While CF tapped on the keyboard, Emily is seen looking at her own hands. She held up her right fist with the thumb extended and then brushed the edge of her thumb with her left index finger. She repeated this brushing action along the thumb side of her closed fist several times, perhaps in anticipation of selecting the orientation of the handshape for the sign in question.

Figure 20. Emily's Sign for "letter."

Out of all the DHH student stakeholders, Veronica generated the most SignWriting documents. Similar to Emily, Veronica was frequently generating signs using the SignWriting computer program. With the aid of a yellow computer keyboard card that displayed the array of SignWriting symbols, Veronica confidently assembled sign symbols to write signs. During one writing event [4.3.2:03:19], Veronica wanted to write the sign "flower," a sign she wished to add to a captioned illustration she planned to give her parents.

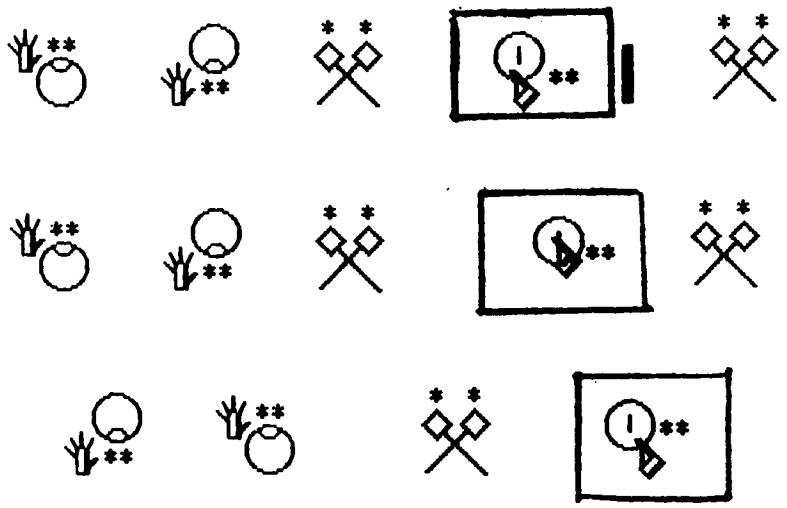
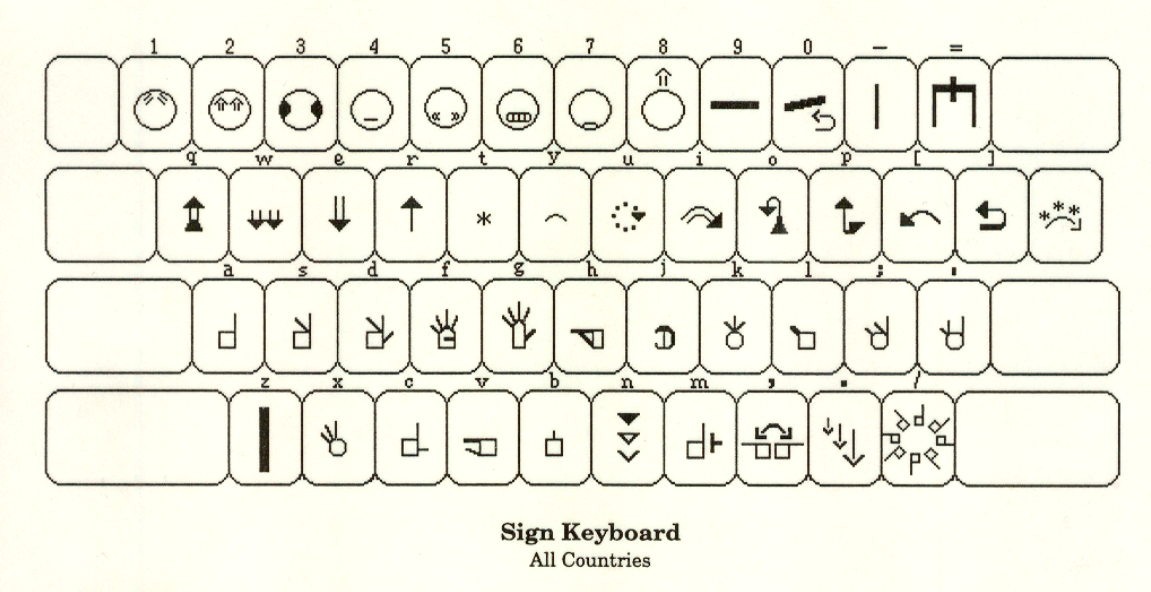


Figure 21. Veronica's Three Signs for "flower."

After several rehearsed articulations of the sign, "flower," Veronica slowed the articulation, deliberately exaggerating the placement of the sign handshape on the right side then the left side of the nose. Veronica used her index finger to rub the right then left side of her nose adding more clarification about this sign's articulation placement. As Veronica repeated the sign she was writing, "flower," she looked back over to CF,

affirming one last time the precise location of her sign. She pointed to the center of her nose and smiled.

Marie was an active contributor during a group brainstorming session that focused on sorting signs into handshape categories [12.2.0:05:32]. A handout was distributed to guide the "Think of as many signs as you can" literacy learning event. The index finger handshape is one of the more common or frequent handshape configurations used in natural signs. Marie was observed studying the paper handout. She held up her left index finger and with her right index finger referenced back to the handout and pointed to the SignWriting symbol for that handshape. She expanded this reflective inspection further. Marie applied a right handed pincer grasp to the index finger of her left hand outlining the hand configuration by lightly brushing her pincer grasp up and down the index finger several times. In another SignWriting learning context, Marie used tactile reference to process handshape and SignWriting symbol correlation. To locate and select symbols to write signs at the SignWriting computer, Marie also used the yellow symbol keyboard card [12.2.4:49:37].



Sample of yellow keyboard card used to write signs "from scratch"

Figure 22. Sample Yellow SignWriting Keyboard Card.

Marie was attempting to locate the symbol for the index handshape configuration. Pressing the letter "a" key on the keyboard will access the SignWriting symbol for the index handshape. Marie held up two hands above the keyboard. She positioned her left index finger close in front of her and with her right hand, she positioned an "a" handshape behind her index finger. The spatial arrangement of her own hands seemed to be a reflective strategy Marie initiated to access the SignWriting symbol that she needed.

Bill employed a physical tactile reflective behavior quite different from his SignWriting peers [1.27.9:25:41]. This SignWriting session particularly challenged Bill's ability to "wait his turn" during a group writing activity. Prior to students doing independent work in their SignWriting workbooks, students were invited to the blackboard to practice writing basic number handshape configurations, "one," "two," and

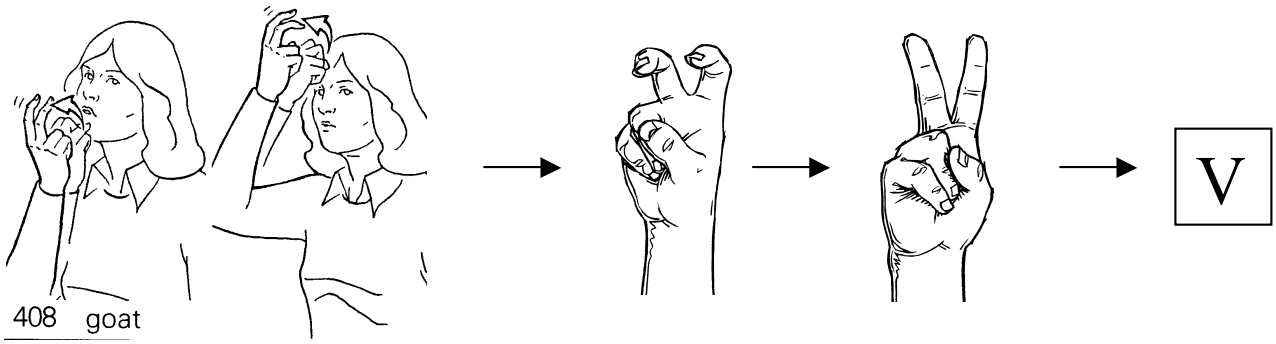
"three." In an attempt to cope with the long waiting time, Bill was seen bouncing in his chair, slapping his knees, moving physically closer toward the board and stretching his arm to retrieve the writing utensil from a peer. Bill did periodically monitor the writing practice of his peers in between a series of protests, "I want to use the white chalk," "It's not their turn," and "It's my turn." With both his hands resting on his knees, Bill watched the writing progress another peer was making while writing a number handshape. As the symbol line slowly appeared on the board, Bill simultaneously vocalized softly and rotated his head to track the direction of the line as it was being drawn. These descriptive behaviors may be interpreted as simply a student initiated "waiting" compromise. Bill did nonetheless reflect on the physical outline of a SignWriting symbol using perhaps a very unusual physical referent, his head.

Two other examples of reflective behaviors DHH students applied to reading and writing signs are the physical "hold" of a handshape and a reflective "pause" before adding the movement feature to a sign. Bill was in the process of decoding the sign, "porridge." He studied the card, then raised his two hands into the signing area in front of his chest. He held one hand up near his forehead and the other near his chin. Both hands were formed in a letter "u" handshape. He paused, then slowly moved his right hand up toward his head. After CF demonstrated the base hand for the sign, Bill automatically began to sign, "porridge," repeating the sign several times [9.30.10:35:49-10:36:00].

Figure 23. Bill Decoded the Sign for "porridge."

Students used mnemonic strategies that assisted them in locating keys on the keyboard. Students were observed manually spelling with their left hand as they searched the keyboard with their right hand to first locate then tap the corresponding letter key. Many students were accustomed to accessing signs in the SignWriting dictionary, typing the English word referent first. There were instances when students were observed cross-referencing Roman alphabet graphemes and SignWriting graphemes. Veronica approached the encoding task of a sign by holding the initial handshape configuration constant as she searched the keyboard for the symbol key that corresponded to that handshape. Veronica initiated her search for signs in the SignWriting computer dictionary for signs using what others have previously described as "inventive spelling." Veronica informed her classroom teacher that she wanted to locate the sign for "goat." She held up her "v" handshape and started her keyboard search for that hand configuration symbol. Veronica abandoned her intuitive spelling when prompted by her teacher to use the alternative hand configuration "g" to access the sign, "goat." Veronica then resumed her

key search, using the recommended "g" handshape prompt [9.17.3:54:36-40]. The figure provided illustrates how Veronica decided that her spelling for "goat" began with the letter "v." While the English spelling is quite different, the handshape used to articulate the sign does resemble the letter for which Veronica started her search. The letter "g" handshape is useful, however, when you need to spell the word that can access sign symbols that would affirm intuitive spelling guesses. Growing competence in SignWriting would foster inventive spelling that would no longer have to be abandoned in favor of conventionalized English spelling. Using SignWriting symbols to spell signs capitalizes on DHH students' linguistic and literacy competencies.



(Sign illustration from O'Rourke, 1978, Handshape illustrations from Dawn Sign Press, 1984)

Figure 24. Veronica's Inventive Spelling for "goat."

Reflective utterances

Self-talk or guided-talk signaled that DHH students were thinking about the SignWriting reading and writing process. The discussion turns to examples found in the videotaped SignWriting sessions that highlight the reflective *talk* DHH students used to monitor their progress in learning how to read and write signs.

Veronica, age ten, exhibited reflective behaviors and private utterances during her very first SignWriting session. While engaged in tracing SignWriting symbols from large flash cards, Veronica was observed using self-talk to guide her correction of traced symbols. She used the SignWriting cards to monitor her *writing* progress. She pointed to specific symbols on the card and commented to herself about her traced replications, "I forgot that," and "that's wrong." At one point she stopped her tracing work to ask CF a question about a SignWriting symbol. She reached over to tap CF and with a puzzled expression, she pointed to a portion of a sign symbol on a flashcard and signed, "What's that for?" [8.27.21:44:28-48:22] Veronica continued to develop a repertoire of reflective behaviors and utterances during subsequent SignWriting teaching/learning sessions. A few months later during a SignWriting *writing* event using the SignWriting computer program, Veronica and CF were in the process of generating a written symbol for the sign, "to run."

Figure 25. Veronica's Sign for "run".

To locate, then select the symbol that corresponded to the handshape used in the sign, "to run," Veronica did several things that demonstrated her reflective participation in the symbol writing process. Some examples are: Veronica leaned very close to the SignWriting book to inspect the symbol parts, she scanned the bottom of the computer

screen that displayed handshape symbol options, she hit keys to change orientation and positioning of selected handshapes, and she conferred with CF, her writing collaborator, to seek confirmation and agreement as selections were being made. Veronica could be seen making evaluative judgements about symbol options as they appeared. She would shake her head *no* or point to the row of options on the screen, commenting to herself with a negative head shake, "No, it's not there." As symbols appeared on the computer screen during this activity, Veronica frequently used her own hands to spontaneously experiment with handshape orientation and spatial positioning. She was observed playfully positioning her bent and wiggling index finger (the selected handshape to represent the sign "to run") in various spatial locations, upward, toward herself, away from herself, to the right then, to the left. During these experimental trials, as Veronica positioned and repositioned this wiggling bent index finger handshape, she also used a whole body shift to mark the spatial orientation distinctions. These observable reflective behaviors dramatically show that Veronica had grasped the symbol-to-sign correlation. Her quick affirmative head nods and big smiles indicated that Veronica was confident and pleased with her collaborative SignWriting accomplishment.

At age five, Emily's instantaneous affective response to the initiation of SignWriting experiences were characterized by smiles and body wiggles. Similar to Veronica, an older SignWriting peer, Emily, occasionally signed to herself in a reflective manner to monitor and guide her preliminary attempts at writing and reading SignWriting symbols. During her second SignWriting session, [10.1.11:50:34-37] Emily pointed to her white board to indicate a needed correction. As she reached for a nearby Kleenex to edit her attempted symbol transfer, Emily offered this brief self-directed commentary:

"Oh no," shaking her head, "that's wrong." Emily then turned her attention to CF expectantly. She did receive an *affirmative head nod* acknowledgement that signaled Emily to proceed with her intended correction task. Several weeks later, Emily engaged herself in a private conversation with a recording camera lens [10.27.10:49:07-29]. This candid capture of Emily reading a portion of her first computer-generated SignWriting document caught Emily guiding her reading effort with reflective *self-talk*. An adult in the room needed to communicate with CF, causing a momentary interruption during Emily's SignWriting session. Emily took it upon herself to face the recording camera, smile, look back at the computer monitor, then proceed to sign what she just composed using the SignWriter program.

Looking directly at the camera, Emily signed "bear." With a strong head nod she signed the next entry, "Dad." She proceeded quickly to the next item signing with precise hand and placement articulation the sign, "boy." Suddenly she gestured "no-no," shaking both of her raised hands toward the camera. Still facing the camera, with a little grin, Emily signed to herself twice, "That's a mistake." She supported her resumed reading attempt by mouthing the letter "b" as she signed, "bear." She returned her eye gaze back to the monitor and signed three more items that she had written in SignWriting, "Dad," and "baby boy." This private shared reading with a camera lens ended abruptly when Emily thought of the next SignWriting item she wanted to include, the sign for "Mom." Emily decided to regain attention from CF. She tapped her writing collaborator, anxious to proceed using the SignWriting program to write often-used signs.

Reflection Category Summary

Videotaped SignWriting sessions captured DHH students' behaviors and verbal utterances, confirming that student stakeholders thought about what they did and said during SignWriting sessions. Sign repetitions beyond the practice norm and thoughtful sign articulation rehearsals indicated students were synthesizing the sign features now more apparent by way of written symbols. Wiggling integers, the thumb and fingers, indicated that students were processing articulation distinctions by isolating the parts of the hand that moved or made a sign placement contact. Tracing and copying SignWriting symbols motivated students to self-correct their sign articulation rehearsals. The description of the procedural steps to encode the sign, "love," stressed the collaborative reflective process students utilized to decode written signs. Students were observed making tactile reference by brushing, rubbing, and grasping parts of handshape configurations, and by displaying facial features that marked sign articulation differences. One student's inventive spelling strategy, the cross-referencing of alphabetic symbols with SignWriting symbols, suggests that students can understand that symbols have meaning-making capabilities in two different languages. The descriptive account that focused on student utterances indicated that SignWriting learners synchronized their reflective talk with their reflective behaviors. Students utilized actions and talk to demonstrate their capability to make judgements about SignWriting symbol accuracy and appropriateness. Two examples were offered to exemplify DHH students' use of self-guided reflective talk. A descriptive account detailed the reflective process a DHH student employed to assemble sign symbols to represent the verb, "to run." A young SignWriting learner's candid and private conversation with a camcorder lens did

illustrate reflective action and talk that spawned a new urgency to continue with a writing event that provided a way to put on paper new ideas as they illume, “Let’s find ‘Mom.’”

Assertion

When the focal students’ videotaped analysis categories were combined, *assertion* was the second most frequent experiential category that was observed. Similar to the descriptive accounts of the previous categories, student observable behaviors and utterances made accessible through videotaped SignWriting sessions served to construct an interpreted description that specifies how DHH students asserted control during SignWriting teaching/learning events. Included in the assertion category are instances when students asserted claim of supportive instructional SignWriting materials and declared ownership of the SignWriting documents that they produced.

The description of the assertion category begins with attention to when and how often assertive behaviors emerged. Veronica and Bill were two focal students who expressed assertion early. Marie, by contrast, did not attempt to assert control of SignWriting activities until the fourth month of the inquiry. Emily asserted her first claim to SignWriting symbols during her third SignWriting session, when she recognized her culturally specific name sign on the computer monitor, “That’s really mine, my very own [name sign]” [10.27.10:38:02:14]. Frequency also distinguished one focal student from another. Veronica emerged as most assertive while Marie was least assertive. The two younger SignWriting learners, Emily and Bill, exhibited assertions close in numbered occurrences. However, within the inquiry time span, they differed in the timing of the occurrence. In an attempt to ward off all assistance with his very first SignWriting *writing* task, Bill made several requests to the session facilitator, “to wait.” Emily exerted

more demonstrative control of SignWriting sessions toward the later part of the inquiry time line. All four focal students demonstrated a sustained increase in production and interest in SignWriting activities during this same approximate time period.

Assertion behaviors

DHH students signaled explicit ownership of SignWriting materials using physical contact that ranged from a simple investigative touch into physical holds that were tight and firm. During the viewing of the introductory SignWriting videotape, *Goldilocks and the Three Bears*, Bill placed one of his SignWriting books securely under his arm maintaining a firm hold [9.30.10:24:41-46]. He reached for SignWriting flash cards and instructional books frequently. Bill would try to gain or regain possession of SignWriting symbol cards. With both hands he would hold the corners of the card with tight pincer grasps, clearly communicating an unwillingness to relinquish possession [9.30.10:34:35-40 and 9.30.10:35:14-21].

On one occasion, Veronica resisted a directive to look at a SignWriting book different from the one she had on her desk. Her declaration, "This is the one I want," received a response from the session facilitator that asked her to wait a bit until the group completed the pre-planned task. She challenged that request by first folding crossed arms down on her SignWriting picture dictionary, deliberately looking down at the book, and then with a head nod she began to open the book's cover. A gentle reminder and a cautionary stare from the adult participant did sway Veronica from her playful attempt to manipulate the planned flow of the session. She closed her book with a mischievous smile. Before Veronica complied completely, she continued to display disappointment. She folded her arms in front of her chest, took another look at her preferred book, then

securely placed the book in her folder with her other SignWriting books [10.1.3:41:47-3:42:02].

A TV monitor was playing back one of Emily's videotaped narratives in the process of being transcribed into a SignWriting document. The videotaped documentation of this session showed several instances of discussion and negotiation between the narrator and the transcriber. The narrator, Emily, began to assert a new insistence that SignWriting symbols needed to represent the precise articulation of signs used in her recorded narrative. Emily pointed to the TV monitor to make more explicit the two handed pronunciation she used for the verb, "to go." While the TV screen was in a momentary paused position, Emily tapped the portion of the monitor where her right and left hands were halted [3.31.10:52:55-10:53:09]. She reinforced her certainty with an affirming head nod and a verbal assertion, "Yes that's how I signed it." During this same session, Emily used other gestures signaling dissatisfaction with the transcriber, CF. Emily had already selected a sign articulation option for the verb, "to give." When CF pushed the search keys to display more options, Emily threw her head back in dismay and put her hands on her hips. The transcriber tapped some keys. The transcriber's actions were redeemed after Emily paused to look again at the computer screen, pointed to the monitor, and with another series of affirmative head nods confirmed once again her first sign selection [3.31.11:02:24-33].

The SignWriting computer program was an essential tool used to introduce students to symbols that represented the articulation features of signs, handshape configurations, hand orientation, movement, placement, and facial grammatical and adverbial signals. During the inquiry, the research practitioner and students would

assume designated roles for that session, as typist or as the one who gave dictation. Over time, DHH students became noticeably more confident and assertive during SignWriting sessions that involved the computers. Active negotiation among session collaborators motivated a natural flow between shared typing and dictation roles. Excerpts from videotaped SignWriting sessions accentuated the procedural steps SignWriting learners took to assume more control over the composing process involved in creating their individual and unique SignWriting documents.

There was a common behavioral feature focal students used to assert strong involvement in and eventual control over SignWriting sessions that involved the computer keyboard. All the DHH students attempted to intercept impending assistance from other participants--a peer or adult facilitators. A momentary hold, grasp, grab or wrestle of typing extremities was a demonstrative display of assertion students employed to achieve their self determined goal, a more decisive control of a SignWriting writing activity.

Bill was frequently content to give directives to CF, the designated transcriber for some writing events. He knew that arrow keys on the keyboard would alter the SignWriting representation of hand orientation, and he would voice his directive to CF to push a key on the keyboard that would change the symbol visible on the monitor to the appropriate palm orientation [12.2.11:31:28]. When Bill was positioned as typist at the keyboard he wanted independence. Bill was hunting for the letter key, “V.” While looking down at the keyboard, he gestured with both palms upward, signaling a request for assistance. The camera lens showed CF’s hand moving closer toward the keyboard. With his left hand, Bill intercepted CF’s assisting hand and held it away from the

keyboard [1.27.9:49:28]. The description continues, indicating that Bill did find the key he needed to type the sign "TV," the SignWriting letter symbols he desired to use for one of his captioned illustrations. He promptly announced his find to CF, adding certainty by nodding his head affirmatively several times and repeating aloud, "That's right!" He then leaned closer to CF and affectionately placed his hand gently on CF's lap, perhaps wanting to acknowledge and soften the bold interception that took place prior to his claimed success [1.27.9:49:49].

There have been several descriptions incorporated into other experience categories concerning Marie's use of the computer program. Most of those accounts indicated that SignWriting on the computer presented more challenges than successes in learning to operate the symbol writing program. During one session, one of the adult participants offered some assistance to Marie to locate a specific SignWriting symbol, the index finger handshape configuration. The assistant reached to tap a key on the keyboard. As Marie watched the assistant's hand approach the keyboard, she first leaned back on her chair raising the front legs of the chair off the floor. Abruptly, she then held up her index finger toward the adult participant signaling a request, "wait a minute." She lowered the front legs of the chair, hit a few keys, and then commented to herself, "I know. I know what to do" [12.24:50:34].

After several months of collaborated effort using the SignWriting computer program with CF, Emily had become more precise in determining which symbols were needed to write signs and what keys positioned the SignWriting symbols into a readable arrangement. On one occasion when the monitor displayed a symbol that did not accurately represent her intent, Emily smiled and put her hand up to her head, a gesture

meaning, “Oh no.” She returned to manipulate the arrow keys on the keyboard and changed the orientation of the sign. Emily signed, “That’s perfect!” CF’s hand was already positioned to use the same keys. With one hand Emily gently grabbed CF’s hand to move it away from the keyboard. After Emily assumed a control position over the keyboard, she knowingly pushed arrow keys to reposition the symbol with which she was working. Emily repeated her self-evaluative comment: “It’s perfect.” When she turned back to face CF, she brushed her hair back with one hand (the other was in a sling), an assertive gesture to finalize her assessment, “that’s it” [2.25.10:50:30-42]. During that same session, CF suggested Emily push a key that corresponded to a movement symbol needed for a sign. CF used an index finger to point and tap the monitor, indicating which symbol to select. Wanting to study the other possible selections, Emily signed, “Wait a minute.” Emily wrapped her hand around CF’s arm and took CF’s index finger and placed it on a different symbol option. There was a brief struggle, an “index finger wrestle” between CF and Emily that evoked broad shared smiles. A brief argumentative exchange occurred between the collaborators. CF started with, “I say no that’s not it,” followed by a rebuttal from Emily, “Well why not then?” Emily still had a hold on CF’s index finger. She manipulated CF’s index finger to tap the monitor directly on the symbol Emily had selected. Before she released CF’s index finger, she maneuvered one more final tap on the monitor and then moved away from the computer screen [2.25.10:51:44-58]. Physical assertion escalated during this session. Another segment of the videotaped session showed CF manipulating arrow keys on the keyboard while Emily looked intently at the computer screen. Obviously displeased with what she saw, Emily turned toward CF’s typing hand that was operating keys and assumed an impending “slap” posture

above CF's hand. CF pulled her hand away, then both faces broke out into acknowledging grins. While the episode ended with shared grins and some out loud chuckling, there was a mutual recognition of demonstrative assertion. CF's reenactment of what had just transpired between the two, an impending *slap*, prompted Emily to quickly glance back at CF's face with a cautionary grin followed by a broader smile and a head nod, "Yeah, I almost did do that" [2.25.10:52:01-09].

Videotaped excerpts of SignWriting sessions portrayed Veronica as an exceedingly responsive, motivated, reflective and assertive participant in SignWriting literacy learning activities. She especially enjoyed using the SignWriting computer program. The video camcorder frequently captured Veronica and CF adjacent to one another with two sets of hands hovering over the computer keyboard. Veronica would sometimes attempt to intercept a helping hand or gently tap that hand, requesting that it be removed from the keyboard area. There were sessions when CF and Veronica collegially shared the keyboard, taking turns tapping keys that would either select or adjust sign symbols as they visibly appeared on the monitor. Veronica would point to the screen after sign symbols were assembled for a targeted sign and comment, "That's just fine the way it is." She made it clear that the last key tap that finalized the arrangement of sign symbols was her responsibility. She would locate that key, purse her lips tight, lower her head, hit the key, direct her eye gaze back to CF and with a determined smile had the final say, "so there" [1.24.-0:04:56]. Veronica caught on early that the yellow demonstration card that showed which keys on the keyboard corresponded to SignWriting symbols was an invaluable tool to use when writing signs from scratch. CF and Veronica were discussing a particularly complicated representation of a sign that was

used in the introductory ASL signed narrative. Veronica pointed to the symbols in the book, requesting CF to demonstrate how to pronounce that sign. Veronica watched as a slow rendition of the sign unfolded. She made a decoding attempt herself but then reached over to obtain the yellow keyboard card. She pulled the card close to her chest and nodded her head in the direction of the computer indicating that she wanted to reconstruct the sign herself, using the trusted keyboard card to first reference and then access the required symbols [1.24.-0:03:56-0:03:48]. A videotaped excerpt of a SignWriting session that occurred in the month of March captured several instances when Veronica and her writing collaborator, CF, struggled to achieve leverage over the computer keyboard. Veronica had used the verb, *to bite*, in two different ways in one signed sentence.

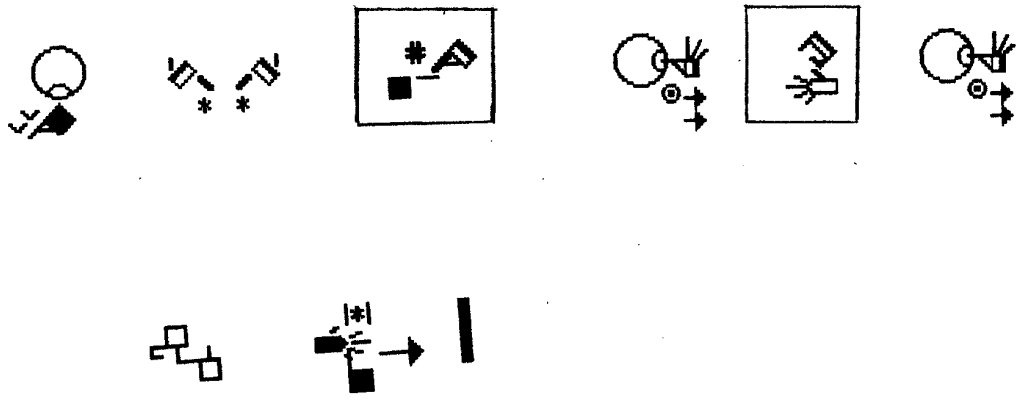


Figure 26. Veronica's Transcribed Narrative, "biting pets."

A few handshape configurations for that sign had been accessed and were visible on the screen. CF turned toward Veronica to get approval of the evolving sign representation. Veronica first responded with a re-articulation of the sign, "to bite,"

accompanied with a full body jerk toward the monitor and tightened lips conveying the message, “Yea, that’s what I said” [3.17.0:18:49]. In a subsequent video frame, Veronica asserted, “No, that’s wrong,” as she moved her fingers closer to CF’s above the keyboard and began to tap keys. As she typed, she studied the monitor and continued to tap more keys [3.17.0:19:47]. There were repeated instances when Veronica tried to get her hands nearer the keyboard. She brushed CF’s hands aside, used her right arm to reach over and across CF’s typing hand, and even physically grabbed CF’s fingers in order to obtain control of the keyboard tapping function. Veronica needed to *brush*, *reach,* and *grab* so that she could maneuver her own fingers closer to the keyboard. To soften this display of physical assertion, CF first responded by reciprocating the grabbing behavior and attempting to guide Veronica’s fingers in the direction of the lower row of keys, the keys that would appropriately position the sign symbol currently on the screen. CF tapped a specific key, pointed to that key, and then signaled Veronica to take over the key tapping command. In a playful manner, CF grabbed Veronica’s hand once again to exchange a vigorous handshake. Veronica played along with the handshake gesture but with her other hand, she commented, “there’s many other ones to find.” Veronica then proceeded to type on the keyboard [3.17.0:25:45-57].

During this same SignWriting session, in addition to the explicit assertion Veronica clearly demonstrated, she took the opportunity to resolve a difference of opinion about how her SignWriting transcription, a caption for an already completed illustration, would be pasted onto another separate piece of paper. CF made a suggestion about how her string of SignWriting symbols could be cut out and pasted onto her drawing. Veronica looked at the suggested arrangement, then responded with a puzzled

negative facial expression and a headshake "no." To demonstrate how she would cut up and arrange the SignWriting symbols differently, Veronica abruptly moved closer to the screen, pointed to her illustrated paper, and showed where the cut out symbols would fit. CF shrugged and Veronica responded with a smile--closing her eyes in an expression of determination [3.17.0:31:43]. CF again questioned Veronica's planned arrangement of cut out sign symbols. Veronica ran a classifier handshape, the "g" hand configuration, along the first row of her SignWriting document. She pointed to the last two SignWriting symbols, indicating that she intended to first separate them from the string of symbols and then paste them on her illustrated paper in a different location. CF responded, "You want it that way?" Veronica smiled, pointed to the monitor, then to her SignWriting document and with a forceful point, she indicated where on the page the symbols would fit. CF replied, "That's fine." Veronica, having resolved this difference of opinion that favored her idea, shook her head affirmatively, "yeah," and then smirked [3.17.0:31:56].

Assertive utterances

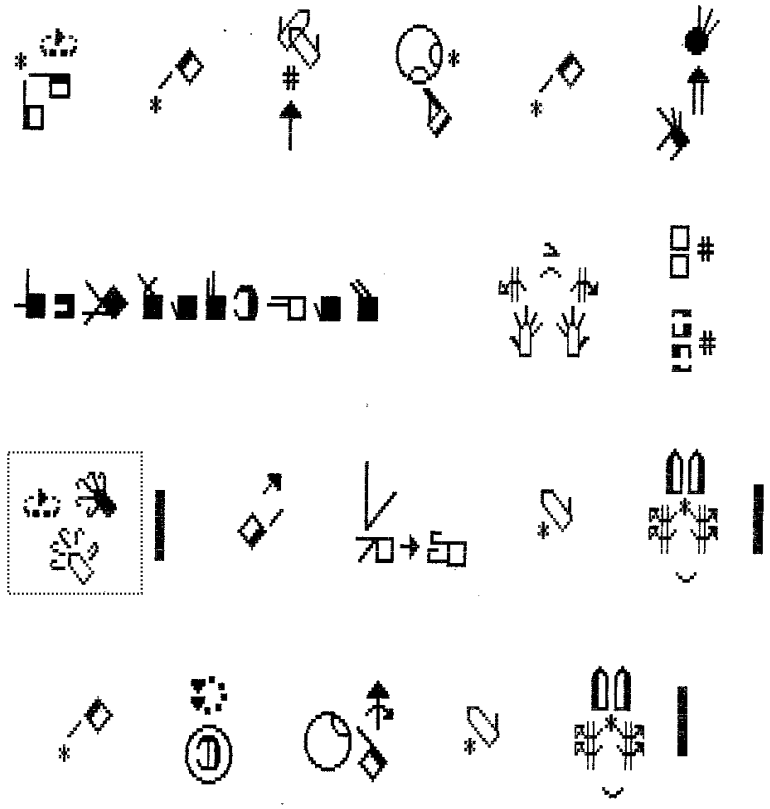
The descriptive account above focused on assertive behaviors. While verbal comments and reported dialogue between student and adult participants were incorporated into the account, a re-examination of assertive utterances further authenticated the claims of ownership DHH students expressed for their SignWriting documents. Some examples of verbal assertion follow: "Wait," "I'm done," "It's all finished," "That's perfect," "That's right," "Yea, that's it," "No-no, that's wrong. Take it off. Get it out," "Move it a little that way," "That's fine just like that," "Now let's print it," "I want a copy," "I'm getting better at this," "This one is mine," and "Can we print a copy now?" The composition of SignWriting documents became the focal point of

SignWriting sessions in the later part of the SignWriting inquiry. A step-by-step descriptive account of two different SignWriting events illustrates how intermediate age DHH students took control of and commandeered a collaborative writing session. These sessions validated DHH students' acquired "know how" in following procedural steps that would generate a sign not available in the list of two thousand pre-written signs contained in the SignWriting computer dictionary.

Marie was in the process of dictating text to be transcribed into SignWriting. The intent was to write a SignWriting caption for a St. Patrick's Day illustration. Marie directed this transcription process. Transcription typist was the designated role CF assumed for this particular collaborative writing event. Marie began to sign her dictation about a Leprechaun who visited her home and wreaked havoc by messing up the inside of the house and stealing some of her books. The computer dictionary did not have an entry for the sign, "a mess." Rather than displaying a defeated response, Marie took the initiative to begin the procedural steps she had learned to generate a sign *from scratch*. With the yellow keyboard card in hand, Marie directed CF to locate the symbol that corresponded to the handshape configuration needed for the targeted sign. The open-five handshape configuration with claw-like bent fingers appeared on the screen. CF gazed over to Marie to receive confirmation for the symbol selected. Marie nodded affirmatively. CF inquired about the next step. In reference to the palm orientation of the handshape configuration, CF asked, "Is it going to be white?" Marie nodded affirmatively. CF demonstrated the initial articulation position of the sign, one claw-like handshape configuration positioned on top with the second bottom hand mirroring the spatial arrangement of the first. Using her own hands, Marie imitated the demonstration

of the hand positions. She stopped for a moment to rub the top of the upper claw handshape and commented, “Make this one black and the other one white,” referring to the palm orientation of each hand. CF tapped keys while Marie leaned back on her chair, suspending the front legs of her chair from the floor. Her two hands were clasped together on top of her head. Marie halted her relaxed posture and brought her hands down to re-articulate the targeted sign, “a mess.” When Marie moved her two claw-like handshape configurations in a circular twisting motion, she announced, “Yea that’s the one.” CF tapped some more keys. From her relaxed leaned back position, Marie watched the result of CF’s key tapping appear on the computer monitor. As the symbols were being re-arranged, Marie removed one hand from the top of her head, looked down at her own handshape configuration, then nodded her head affirmatively several times. When the symbol for the claw handshape appeared on the monitor, Marie verbally announced, “There it is.” Marie was asked about the next articulation feature of the sign. Marie’s response was a slow and deliberate rehearsal of the sign, emphasizing the circular twisting motion that alternated the palm orientation positions of the two-handed, claw-like configurations. CF performed two different directions for the movement feature. Marie stretched her arm forcefully toward the computer monitor and said, “That’s right, that one.” The collaborators focused on the precise direction of the movement symbol. Marie had in her possession the yellow keyboard card throughout the transcription task. CF leaned forward to get a better look at the card. Marie rehearsed the sign once again, pointed to a symbol on the card and said, “This one.” CF was unable to see which key corresponded to the selected movement symbol. Marie gave more directions to the transcriber, “Use the ‘u’ key.” Marie slid her chair closer toward the computer as the

symbol appeared. Marie re-articulated the sign, "a mess" once again before confirming the accuracy of the movement symbol selected. Anxious to proceed with the rest of the caption, CF clapped her hands, rubbed them together, then started to key the next segment. Marie signed the next part of the dictation, "my book." CF pointed to the monitor for Marie to inspect the symbols that had already been arranged in her evolving document. Marie smiled broadly and responded, "That's perfect." Still in charge, Marie directed the search for the next lexical item. She signed "book," then automatically added a manual fingerspelled dictation, "*b-o-o-k*." CF indexed toward the monitor, signaling Marie to confirm the accessed sign. Marie forcefully pointed to the screen and announced, "there" [3.16.1:04:08 -1:06:16].



<u>Figure 27.</u> Marie's St. Patrick's Day Poster.

This descriptive account portrayed Marie as competent and comfortable while she orchestrated the arrangement of SignWriting symbols that would represent a sign she used in a dictated signed statement. She knew the procedural steps required to *write* a sign. She attended to each articulation feature--the hands, the spatial positioning and orientation of the hands, and the sign movement. Since CF assumed the role of transcription typist for this writing event, the burden of operating the command keys on her own to locate each SignWriting symbol was alleviated. Marie was clear and precise in directing and affirming the transcriber's actions. Assertive utterances, "Yea, that's the one," "There it is," "That's right, that one," "That's perfect," exemplified Marie's ability to not only recognize SignWriting symbols, but in addition, illustrated her ability to direct and coordinate symbol placement that would achieve a precise representation of a distinct sign.

The assertion experience category is further augmented by a second descriptive account centered on assertive utterances expressed by a SignWriting learner during a similar SignWriting transcription event. In order to direct the video playback of one of her videotaped signed narratives, Veronica relinquished to CF her coveted position at the computer keyboard. Veronica's signed narrative described a seasonal family activity, an Easter egg hunt. Before the transcription process began, Veronica performed all the preliminary steps of starting and naming a new SignWriting file document and opening the SignWriting computer dictionary. She rehearsed the beginning portion of the narrative using self-directed talk, "Right, now we type what happened. What happened was about eggs." Veronica's first dictated sign to the designated transcriber, CF, was the verb, "to hide." CF located a sign for that verb in the dictionary. Veronica had assumed

the accessed sign matched the articulation she used and was ready to proceed with the next lexical item. CF pointed to the monitor to indicate the pronunciation discrepancy. Veronica signed to herself, “No, no.” She waited and watched the keyboard as CF tapped a few more keys to locate another sign. Veronica studied the computer monitor more carefully then signed again, “No, no.” It was decided that the sign Veronica used in her narrative would have to be written using the symbols on the yellow keyboard card. Veronica began the step-by-step procedure to write her sign for “hide,” searching first for facial symbols that matched her recorded expression. She ran her finger along the row of facial symbol options and decided she needed to look at more options. She turned to CF to model the option she selected, a circle symbol for the face with a straight-line at the bottom of the symbol representing a tense closed mouth. Veronica traced the outline of her own lips with her index finger. Her finger first followed a straight path across her lips, then she used a circling movement around her whole mouth. Veronica continued to reflect on the distinctive facial feature of her sign. She playfully moved facial muscles at the left and right corners of her mouth, added an index fingers at each corner, then moved the left and right side of her jaw. She finalized her symbol selection by confidently pointing to the computer monitor. Before looking back down at the keyboard to locate symbols for the next sign component, Veronica closed her lips tight, resembling the face symbol now permanent on her evolving document. The next portion of the videotaped transcription excerpt captured Veronica as an active and assertive negotiator in this process of writing a sign. Typical of other collaboration experiences at the computer, two sets of hands, CF’s and Veronica’s, are seen hovering over the keyboard. Veronica offered quick head nod approval after each key CF tapped and accepted the directive to

inspect the screen for symbol accuracy. While Veronica demonstrated the placement of the handshape configuration for “hide” on her own face, she reached over CF’s hands to tap a key on the keyboard. She briefly glazed at CF, then commented to herself, “It’s got to move over more.” She pointed to the symbol on the keyboard card then demonstrated, “It’s like this,” placing her palm over her one eye, reaffirming again, “Yes.”

CF attempted to regain her typing task and gently moved Veronica’s hands away from the keyboard. Veronica continued to command the transcription process by intently examining the screen and gesturing with her hand for the typist to halt, to stop and go back, to halt again, to move a symbol to the left, then up, then right, then to a final stop. Veronica consistently reserved the right to forcefully tap the cursor key that finalized all symbol selection and symbol spatial arrangement on her document. She would announce the completion of each procedural step, “That’s finished.” She proceeded with the next step, forcefully pointing to the keyboard card referencing the “star” or asterisk symbol and then directed, “And OK, now we do this.” The collaborative transcription process ended with Veronica taking full possession of the keyboard. She reached for it with two hands and moved it closer to take over the typing of her sister’s name. As the SignWriting symbols for the manual representation of her sister’s name appeared on the screen, Veronica added the commentary, “I know how to spell this one.” She completed her document with the fingerspelled concluding remark, “The end.” After Veronica’s final dramatic key tap, CF moved closer to the keyboard to fulfill the transcriber’s final duty. With a few more key taps, Veronica’s completed transcribed narrative appeared on the computer monitor, a full screen of SignWriting symbols.

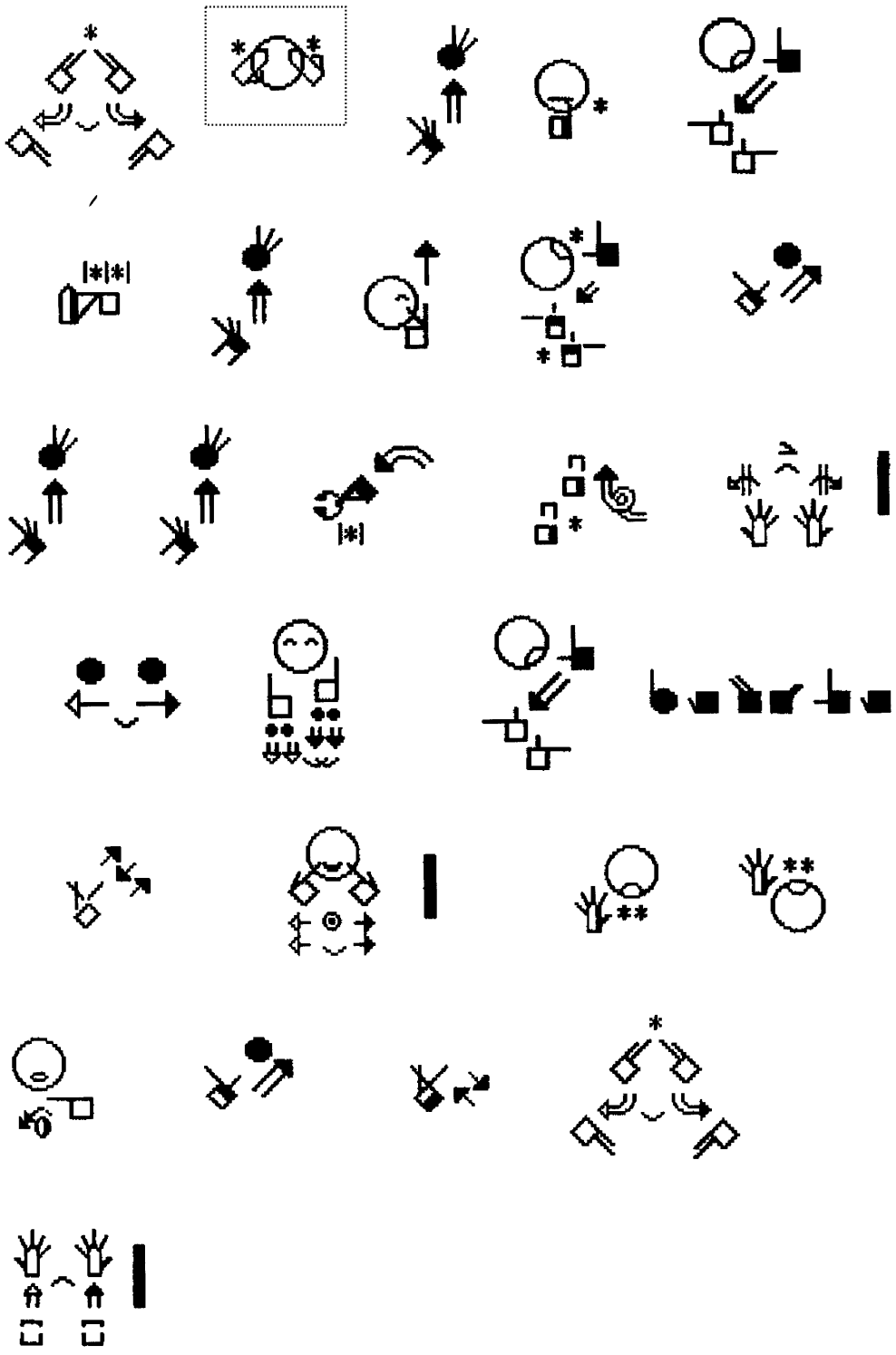


Figure 28. **Veronica's SignWriting Document with the Sign "to hide."**

Expecting some pleased response to this display of a lengthy SignWriting product, CF leaned forward to get a glimpse at Veronica's face. Veronica continued with her assertive command of this writing event. "It's all finished. Let's print it. Yea, let's print it now." CF attempted to commend Veronica on the exceptional length of her SignWriting document, "It's really long, huh." Veronica repeated her directive with a very big smile, "Print it. Come on, print it" [4.24.2:03:25-2:27:32].

The two descriptive accounts above relate both common and different assertion experiences. Marie and Veronica knew how to write a sign using the yellow keyboard card that displayed SignWriting symbols. They were competent in giving the typist/transcriber directions regarding the sign articulation features necessary to make a sign readable. Both guided the access and assembling of the corresponding articulation symbols and added evaluative comments about sign *preciseness*. Marie and Veronica did exhibit different styles of instructional delivery. Marie approached the transcription task in a relaxed, laid-back manner. She seemed relieved that she was not responsible for using the computer program independently. She was familiar and confident enough to give directions to another person on how and when to use the program's operating key commands to achieve the desired results. She was straightforward with her assessment of the accuracy and preciseness of written signs. Veronica, on the other hand, only partially relinquished her responsibility for operating the keyboard. She actively maintained her key tapping privileges, especially when it was time to finalize a symbol selection or placement on her document. Veronica tended to process her understanding of distinct sign articulation features with the corresponding SignWriting symbol in a more explicit way. She was particularly attentive to facial, non-manual sign features. She actualized

this realization using repeated sign rehearsals along with making physical contact to her own face or hand to reinforce those distinctions even further. Veronica was more assertive in directing the transcriber. When her suggestions were not followed to her expectation, her hovering hands would become more active and start tapping keys. She refrained from making comments that signaled either mild or excessive satisfaction with the selection or arrangement of sign symbols. She was more exacting with her gestural directives, "stop," "move it over this way, to the right, or to the left." The culmination point of the transcription process was when Veronica's strong and urgent claim to own and have in her possession a printed copy of her SignWriting document superceded a congratulatory comment from the session facilitator, CF.

Assertion Category Summary

All four focal students made explicit positive assertions that they perceived themselves as knowledgeable contributors to SignWriting activities. The students' assertive behaviors and utterances illustrated how DHH students took on an authoritative stance, especially during the creation of SignWriting documents they had constructed. The physical behaviors displayed by students (i.e., holds, grasps, and tapping of SignWriting materials and equipment) conveyed an undeniable insistence that these SignWriting materials were intrinsically valued and rightfully claimed. Use of the computer keyboard motivated multiple instances of domineering behaviors--hovering hands, the waving away of intercepting typing hands, impending slaps, and even a brief episode of index finger wrestling. When the descriptive telephoto lens focused on the interactions between SignWriting collaborators during sign to symbol transcription processes, the one in possession of the yellow keyboard card frequently signaled the lead

director of the transcription activity. Over time, students became that "director." SignWriting learners became more positive about when and how to access and arrange sign symbols on the computer monitor. Student expectations for sign-symbol accuracy and precision were expressed, "Yea, that's the one," "There it is," " Move it over this way," "That's perfect." The most significant evidence of positive assertion about SignWriting, evidence that leaves very little possibility for denial, was how focal students requested and obtained printed copies of their SignWriting work. Some examples are: "It's printing, cool," "Print it, come on, print it!" and "Can we make a copy here?"

Chapter Summary

This chapter was about what happened during co-constructed SignWriting experiences. Videotape data of cumulative sessions provided descriptors that focused on what students said and what they did with the SignWriting medium. As the data was reviewed and organized into key elements, four affective categories emerged which formed the basis of the story. As the story unfolded, it became clear that students were actively engaged in the process of *creating meaning* using SignWriting symbols. Examples taken from SignWriting experiences became more significant when students themselves arrived at a moment of personal realization that these symbols made a difference in their learning to read and write. The next chapter will detail how and when focal students experienced these individual turning points within SignWriting literacy events. These moments of changed realization are considered *epiphanies*.

CHAPTER SIX

STUDENT STAKEHOLDER EPIPHANIES

This chapter will describe epiphanies. Epiphanies are turning point experiences, interactional moments that mark people's lives and can be transformational (Denzin, 1989, cited in Stringer, et al., 1997). Each focal student experienced an *epiphany*, a change, a transformation, and a greater awareness of their learning to write using SignWriting. Student epiphanies are relevant to the ongoing inquiry process and will be identified and described. The descriptive account of SignWriting experiences started with adult stakeholder beliefs that assisted in describing the literacy learning environments constructed for Deaf and Hard of Hearing (DHH) students at school and at home. The subsequent account of what actually happened during SignWriting captured student stakeholder perceptions. Four key elements, or experiential categories, became evident throughout the inquiry: *response, motivation, reflection* and *assertion.* A thick descriptive account of DHH students' epiphanic moments contributes to an appreciation for how special SignWriting experiences were for the focal students and reveals significant aspects of their teaching/learning SignWriting literacy experiences. Three sources of data--videotaped SignWriting sessions, interview transcripts with classroom teachers, and the research practitioner's reflective notes--were integrated and elucidated focal student epiphanic experiences.

Prior to the introduction of SignWriting, the focal students were reading and writing English at various levels and were experiencing varied levels of success. There was an anticipation that when DHH students were introduced to SignWriting, a writing system that represents the language they use to communicate and interact with significant

others in their signing community, they would reposition themselves "in the know" as empowered readers and writers. Their resulting interest in learning to read and write signs generated an energy and excitement that motivated students to engage certain adult SignWriting participants to share a realized confidence in one teaching/learning school experience, leaning to write using SignWriting.

Each epiphany story drew upon videotaped sessions, interviews, and notes; however, the sequence of data presentation was determined by the uniqueness of each situation.

Emily's Epiphany

Emily, age five, positioned herself *in the know* while sharing with her classroom teacher, Gwen, a *read-aloud* of a very lengthy videotaped signed narrative that had been transcribed into a SignWriting document. In a shy but confident and assertive manner, Emily invited her teacher to witness her literacy achievement using SignWriting. She read SignWriting symbols from a transcription text with an automaticity she had yet to achieve when reading English texts. Frequent full-face smiles emerged as Emily confidently read her transcribed narrative. Her teacher, Gwen, trying to keep time with the rhythm and pace of Emily's reading flow, physically rocked back and forth in her chair, dramatizing her surprise and delight.

Practitioner's Notes Prior to Emily's Epiphany

Excerpts from the practitioner's journal notes detail the SignWriting transcription process that generated the SignWriting text that Emily and the practitioner (CF) co-constructed the day prior to the epiphany event. Emily waltzed over to the familiar SignWriting area, where video camera, TV with VCR, and the computers were located.

Emily told a story, a narrative about Easter events that occurred at her home. The narrative focused on people, waiting and searching, and gifts--necklaces and bracelets.

Emily's narrative was videotaped in a similar sequence to previous SignWriting literacy sessions. A video recording of signed stories usually preceded a joint transcription activity. Emily would review her video recorded signed narrative, then dictate to CF the signed sentences to be transcribed using the SignWriter word processing program, producing a text written in SignWriting. During this dictated re-tell, Emily monitored the access, location, and selection of SignWriting symbols for her SignWriting document. This particular narrative required the generation of written sign names for people and two-handed articulation of some action signs, for example, signs for "search" and "hide." During this session, Emily remained generally attentive to this *technologically driven* transcription task, offering affirmative head nods as signs appeared on the computer monitor. She was not as particular with sign pronunciation options during this session as she had been in past transcription sessions. She communicated her approval of sign symbol detail with just a "good enough" attitude, frequently using the comment, "OK." This joint transcription activity exceeded the normal scheduled time for weekly SignWriting events (thirty minutes), pushing Emily beyond her usual attending ability and energy level to remain engaged in the task.

After forty-five minutes, Emily's working posture of manning the video camera remote to freeze-frame her narrative for dictation changed to a gentle "body lean" on CF's left shoulder. CF was attempting to incorporate some new features into Emily's sign written narrative, such as punctuation symbols and sign articulation modulations characteristic of Emily's signing style. Emily knew the transcription activity was not

complete but she had reached her attention "saturation" point and requested recess by asking, "Can I play?" A two page transcribed narrative was printed out for Emily to sign, date, and file in her SignWriting portfolio.

The researcher practitioner's journal notes about this SignWriting literacy event recorded that there was no notable affective response from Emily about the sign written product that had been generated. The research practitioner's post session reflection suggested that it would be interesting to note how much Emily would remember of her now written narrative and her ability to read the SignWriting document that sequenced the events of her family's Easter celebration. The reflection notes offered a potentially interesting follow-up event, to see if she understood what she dictated and wrote. The video recording of Emily's *read-aloud* SignWriting text would possibly show comprehension and "text reading" that included sign modulations naturally articulated by the original narrator, but not transcribed on the SignWriting text.

Videotaped Epiphany Session

Gwen and Emily are seated at the computer, ready to "read" the dictated SignWriting transcription of Emily's signed videotaped narrative completed the day before. Emily prepared her teacher, providing her a frame of reference for the SignWriting document she was so eager to share. Emily signed, "You know, I worked real hard at this. It took me almost all day." She leans back on her chair and continued to sign with a smile, "I was so busy and it finally was finished, even though it exhausted me especially my hands and arms." Emily's teacher began to respond, "You mean just right now--today?" Emily continued her introduction to the writing/reading task by signing, "I forgot about the rabbit. I really wanted to include the rabbit and I also forgot to include

my Dad." For effect, Emily used playful gestures--an index finger scolding and a *pretend* face-slapping reprimand. In her own way, Emily wanted her teacher to know that there were things she left out that were important to include.

Emily and Gwen were taking turns tapping keys that would open the SignWriting program. As the main menu appeared on the monitor, Emily jumped up from her chair and approached the monitor real close and signed a two handed, "OK." Gwen leaned forward to the monitor as well. As Emily typed the last key command that opened the SignWriting document, she realized that Gwen was carrying on a verbal/signed conversation with someone else in the room. She then gave Gwen's knee a sharp tap, conveying the message that Gwen needed to attend to what now appeared on the screen. While Gwen continued to be distracted talking with someone else, Emily turned toward her but then engaged in *self-talk*, signing "OK," using small signs made close to her body, indicating that she was ready for the impending *read-aloud* task.

When Emily tapped the return key that opened the SignWriting she was about to *read*, she quickly turned to look at Gwen with an expectant expression. Gwen leaned back and put her hands together, feigning shock and surprise. Her face broke out into a huge smile. Emily returned her gaze to the computer screen, still smiling. With much exaggeration, she pointed with two hands at what appeared on the screen and signed, "Write, write this can!" Emily wanted to make it quite clear, "I can write and write. See how long it is!" While pointing downward along the monitor, Emily continued her broad smile, but began to move away from the monitor and from Gwen. Perhaps Emily, in a shy embarrassed way, anticipated her teacher's reaction to a very special writing accomplishment she was about to share.

Emily read her sign written document with a natural fluency, a reading momentum that surprised not only her teacher, but also Emily herself. At several intervals, Emily would turn to face Gwen, mid-articulating signs, smiling from all parts of her face, open mouth, cheeks and eyes. Her partner would respond, continuing the "shocked and surprised" expression, accompanied by periodic squeals that increased in volume and crescendo.

During the process of reading aloud her SignWriting document with her teacher, Emily appeared to be "stumped" by one sign that was in her SignWriting document. Presented here is a portion of Emily's transcribed Easter narrative. The sign that stumped both Emily and Gwen was the last sign on the fourth line of Emily's two page SignWriting document. The troublesome sign for both the writer and co-reader was the written symbol for the sign, "light." (See Figure 29).

Emily clearly asserted ownership of this lengthy SignWriting text by redirecting the participants of the *read aloud* activity to the reference medium that would assist in decoding the sign symbol that stumped both readers. She directed CF to place the video recorded narrative into the VCR so that Emily could locate the troublesome sign. She indicated her insistence by holding her index finger toward the TV and VCR. Gwen squinted at the screen, attempting to decode the sign symbols. "Is it chili? Is it delicious?" Emily clearly communicated that she knew how to access the information that would help decode the troublesome sign. Emily tapped Gwen and signed, "No, wait. Let's see and watch the tape. We really don't know what the sign is, but if we put the tape in the VCR, we'll be able to see the sign." Emily then folded her hands on her lap, placed one knee crossed over the other, and with a confident facial expression, a closed lip "smirk,"

intensified the significance of this *epiphany* SignWriting experience. Emily held a steady confident posture seated in her chair while waiting for a response to her clear directive. She knew that the videotape would resolve the momentary interruption of her *epiphany* reading. Clearly Emily had put herself in charge of this special literacy learning event and had indeed positioned herself *in the know* as a reader and writer.

Figure 29. Emily's Transcribed Easter Narrative.

Teacher's Interview

During Gwen's interview, she made frequent references to the shared reading of Emily's transcribed SignWriting narrative. "Emily can create this document in SignWriting and then go back and 'brrrrrr' [mechanically speed through it]. She can tell you what it says because she can read the signs. It's more connected to what her language looks like. Words printed in English don't look like her language." Gwen supports this observation using an example from Emily's epiphanic literacy event. "For example, Emily got stumped yesterday while reading one of her written signs. I was kind of excited when that happened because she seems to be real comfortable with SignWriting. She can fly through it. And when Emily said, 'I don't know what I created there,' it was kind of like, 'Oh well, that can happen reading SignWriting too sometimes.'"

Gwen wanted to explain the difference she had observed in Emily's *knowing* how to read SignWriting and how to read English. "As I read books with Emily over and over and over again, what I think is interesting is that it seems that we might know these words today but there's no guarantee we'll know them tomorrow. We may know them the next day but in two more weeks we may not know them. We could be reading one day and it's like, 'By golly, she knows it,' but if you leave them [words] for a very short period of time, they're gone again."

Gwen described what she thinks might make the difference for Emily in learning how to write and read SignWriting. Gwen commented, "This one [referring to SignWriting] is more of a movement thing; a feeling that you get from something you already know--something visually and spatially represented." Gwen also talked about the importance of being able to use the classroom environment to access language in print for

reading and for writing literacy activities. The interviewer, CF, asked Gwen to clarify if there actually were different strategies Emily used when she stumbled with reading *signs* and reading *words*. What visual references did Emily use? How did Emily's use of visual reading cues *differ* when she needed help reading words and signs?

Gwen responded, "Emily may not know where to access the information like references for words in the environment. She may not know where to look to find them. If I tell her to look at the bulletin board for the word, she'll look and she may find it or she may not." In describing Emily's access to environmental cues for reading SignWriting, Gwen used the joint *read-aloud* of Emily's sign written Easter narrative as a powerful example of a learned strategy. Gwen quoted Emily regarding the strategy used to access supportive environmental information. Referring to accessing environmental clues for SignWriting, Emily directed, "And I know how to find out so give me the tape." Gwen concluded, "With the SignWriting, she knew where to look. It was on the video camera and she requested that access."

During the later part of Gwen's interview, CF asked if Gwen could describe how Emily feels about English reading and writing and her feelings about SignWriting. Gwen explained Emily's feeling about English this way, "She requests help with the English. It's like she's saying or indicating, 'I don't know. So tell me. I give up.'" Gwen admitted she was not sure how Emily actually felt about reading English and reading SignWriting. Gwen used herself as an example to describe or report about feelings of, *not knowing*. "You feel unsure. You don't like not to know. Not knowing where to look is a bad feeling. It is not like you've failed, but you're stuck." Gwen described how she thinks Emily might be feeling about reading English. "Emily looks really unsure. She doesn't

look as comfortable as when she's reading SignWriting. I feel like she's frustrated and that sometimes interferes with reading [as] being fun."

As for Emily's affect associated with reading SignWriting, Gwen recalled the joint read-aloud, "I think it was a real clear picture of confidence when she said, 'I know where to look,' and she went ahead and got it. Emily knew to use the videotape to access the content for her SignWriting."

Practitioner's Notes Following Emily's Epiphany

Emily continued *reading* her SignWriting narrative. Both Emily and Gwen are smiling broadly. While Emily was mid-articulating a sign, "chair," Gwen is audibly giggling, chuckling. At the same time, CF, off-camera, is giggling and laughing aloud while watching the two, Emily and her teacher, Gwen, share a read-aloud literacy event, a joint reading of Emily's signed Easter narrative that had been transcribed into SignWriting. After spending nine months, once a week for thirty minutes, with CF (the research practitioner), learning how to write the visual gestural language she used comfortably with her culturally Deaf family members and her teachers, Emily had arrived at a position of *knowing*. She could indeed write and read something about her life and confidently share that literacy ability with her classroom teacher.

Bill's Epiphany

During a mid-year SignWriting teaching/learning session, nine-year-old Bill, normally a timid communicator, requested and received a reply to a very specific question. He wanted the opportunity to view the SignWriting session as it was being recorded. The two mediums he chose to make this request demonstrated the integration of language-making capabilities. Bill "took a risk" and incorporated into a precise and

detailed drawing, a writing medium to which he had recently been introduced, SignWriting. Bill, using the SignWriting computer program, generated a simple SignWriting text to caption his drawn request.

Bill chose a medium to express his request that demonstrated an ability to integrate familiar and comfortable meaning making strategies with a newer medium of written expression, SignWriting. He made an illustration, a very good depiction of the SignWriting literacy learning context that he and his peers shared with the research practitioner on a weekly basis. He drew a camcorder hooked up to a TV monitor. His illustration included the detail of corresponding connecting cables. On the drawn TV monitor, Bill's precise drawing also showed the video-capture of the appropriate number of SignWriting peer participants. He composed a sign written caption for his illustrated request that read, "TV, camera, both together."

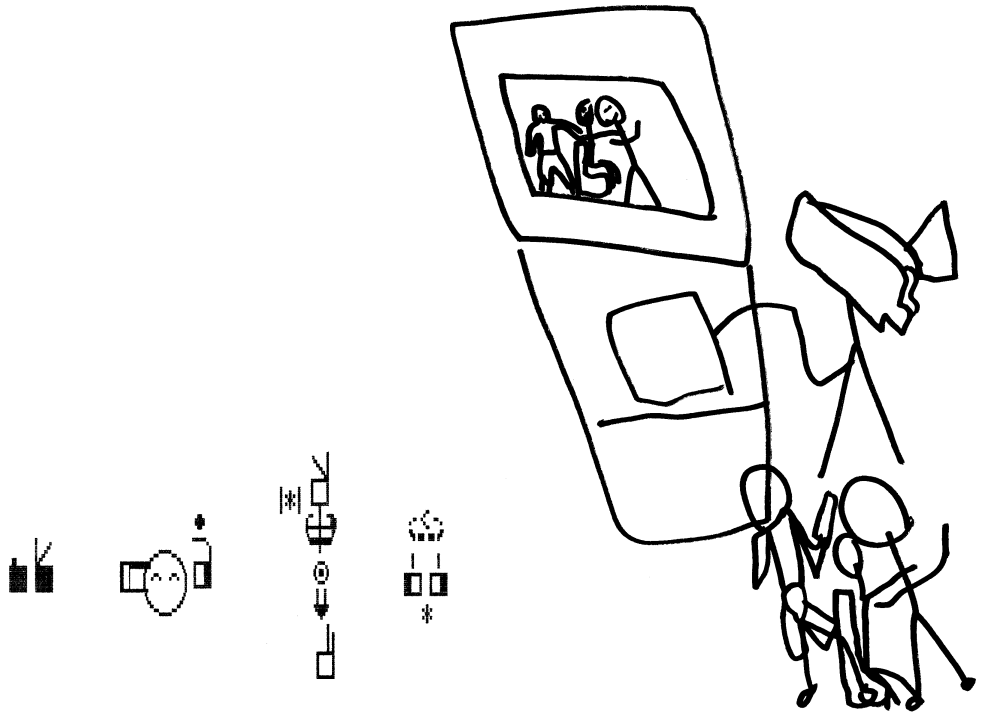


Figure 30. Bill's SignWriting Request.

Bill wanted the opportunity to view SignWriting sessions while they were happening. His preferred medium of expression, his illustration, demonstrated not only a technological *know how* to make this happen, but also a motivation to include a newly acquired means of written expression to accompany his illustrated request, the use of SignWriting. The inquiry data will provide a thick description of Bill's SignWriting *epiphany*.

Videotaped SignWriting Epiphany

Bill made an elaborate illustration of the camcorder attached to a TV monitor. He moved away from his illustration and applauded himself with a single clap. Bill had just made a new file on the SignWriting computer program menu. He hit the return key, saw the familiar document lines, and then pushed both hands and arms way up over his head and looked directly at CF with a big smile. He rubbed his hands together again, let his hands down, and looked directly into the camera with an open mouth smile. It was as if Bill had a premonition that this particular SignWriting session was going to be a significant one. He could not know at that one smiling moment, however, how publicized this particular writing literacy event would become. Within only a few days of its completion, Bill's document was posted on the SignWriting web site. His *risk taking* was later recognized and praised by the computer lab teacher, a strong supporter of literacy growth within the school environment.

Bill looked directly into the video camera, held one fist up near his mouth, pointed to the camera (as in trying to get visual attention), pointed to the monitor, and then signed "Type." With two index fingers, Bill pointed once again to the monitor. He moved one finger back to the camera, then back to the monitor, placed his fist back up to

his mouth, leaned on his elbow resting on the table, audibly commented to himself, "Hmmm, Hmmm," a vocalized musing self-talk, "What will I say?"

Bill was making it clear to the recording camera, his intention to compose a caption for his illustrated request, using the computer keyboard. Bill was given an English printed version of his sign dictated caption to be used as a *spelling* reference to access the signs from the SignWriting computer dictionary. While Bill looked at the computer monitor, he held up his left hand and signed/said, "T-V!" After reading the sign symbol as it appeared on the monitor, he promptly confirmed his find by signing/saying, "Right!" He repeated his evaluative comment three more times, then added a series of emphatic and quick affirmative head nods.

Bill leaned over toward the side of the computer monitor to give his occupational therapist (OT), who was waiting to escort him to his scheduled therapy session, a message, "Wait Pam." He moved his chair closer to the table and put his two hands together for another eager, enthusiastic, motivational rub, ending the gesture in a two handed clap. He refocused his attention toward the keyboard and continued his hunt and peck search for the letter keys that spelled, "camera."

Bill wanted to continue his typing task. He followed CF's directives to open the SignWriting dictionary for the next word search, "both." Bill shifted in his chair, clapped his hands together, rubbed them, molded his hands into a two handed clasp, released them, did a one handed "finger trill" above the keys, then struck the "b" key.

As Bill's peer began to exit the SignWriting teaching/learning area, Bill glanced away from the monitor briefly. He proceeded with a two handed finger trill warm up once again, then turned to the camera and with a start, signed/said, "Hi!" At the same time that

he returned to focus on the keys, it was announced by CF, “It’s time to go.” Bill held one hand up in a “halt” gesture, facing toward the video camera, and then said, “Wait!”

Bill clearly wanted to complete his planned writing task. At first he politely asked others to wait, then, more emphatically, insisted that he needed more time, willing to jeopardize the day’s scheduled routine. His repertoire of physical gestures, hand rubbing, clapping, finger trills above the keyboard, occasional commentary toward the video camera, supported him in fulfilling a commitment he had made, to express in writing what he already requested through his drawing, that there be a simultaneous TV viewing of the SignWriting activity.

Bill is in the process of hunting for the letter key, “V.” Looking at the keyboard, he turned both palms up, a gesture meaning, “Where is it?” He turned his attention to CF, looking for assistance. CF’s hand moved into the camera’s focus near the keyboard. With his left hand, Bill intercepted CF’s assisting hand and held it away from the keyboard.

By holding an assisting hand at bay, Bill is communicating a strong desire to be an independent writer, and in his way, wanted to claim sole ownership of his illustrated document and the accompanying written document, “a work in progress.” There were bouts of frustration with the typing task. Bill’s smiles to the camera and his self-initiated motivating techniques were not the only affective responses during his *epiphany* SignWriting experience. When pushed keys on the keyboard resulted in obvious program errors, there were a few instances of “fist banging” on the table, loud cries of frustration, “ooohhhh,” a few jabs and slaps of the table edge, rapid head shaking, “no, no, no,” and body shudders. When Bill was asked what the problem was, Bill pointed to the monitor,

his paper, vocalized two indiscernible syllables, rested his elbow on the table, placed his chin in his hand and pouted.

The inclusion of this particular portion of the SignWriting videotaped analysis description sets measurements of the epiphany experience at an even higher level especially when accounts about this specific SignWriting event from the research practitioner's journal notes are examined.

Practitioner's Notes

The researcher practitioner's journal notes begin with a description of Bill "happily settled" in front of the computer. The reflections focused primarily on overlooked affective responses--Bill's smiles--which reflected an exceptional young artist's enjoyment and pride in the detail, precision, effort, and care that he invested in his drawing and writing. This session presented two different SignWriting practices, handwriting SignWriting symbols in a workbook and composing a SignWriting document on the computer. Bill enjoyed both activities and maintained high levels of motivation and enthusiasm. Bill demonstrated an ability to recognize on the computer monitor, sign written representation of the lexical units he dictated, the signs that he strung together to make a request that he intended to use as a caption for his illustration of a recording camera hooked up to a VCR. When the sign symbol appeared on the monitor for the sign, "TV," Bill's reflective signed affirmation, "Right," was directed toward the computer. This definitive affirmation emerged only after Bill looked, recognized, smiled, and then transferred his "sign search find" to his SignWriting document. While the researcher's reflective journal notes that focused on this specific epiphany session do reinforce Bill's responsive, motivational and reflective affective

experiences with learning SignWriting, the subsequent SignWriting session's reflective notes exemplifies further Bill's literacy learning epiphany.

A week after Bill made his request, the researcher arranged the SignWriting learning environment as it had been depicted in Bill's illustrated and captioned request. The day before the session, Bill had been presented with a copy of his written document that he promptly placed into his school-to-home folder. When presented with his illustration and sign written caption once again, his "ownership" acknowledgement was modest. He simply nodded and signed, "Yes, Yes." When asked to read his sign written caption, he had difficulty remembering the sign symbols. He recognized the first, "TV," but needed coaching with the other signs. Bill needed assistance with the last two signs of his caption, "Both, together." He asked, "What is that?" Revisiting the journal accounts for these two SignWriting sessions helped to discern what seemed to be regression in Bill's enthusiasm and confidence with reading and writing signs. Bill was not able to complete the task of writing his SignWriting caption the week before, and the session ended in spite of his pleas *to wait*. The notes indicated that there had been some negotiation between Bill and the researcher, an agreement that CF would search the SignWriting dictionary for the remaining portion of his written request to be placed on his SignWriting document. The explanation offered for Bill's *less than fluent* reading of his SignWriting caption has less significance when compared with the description of the following event.

After fulfilling the request to view previously recorded SignWriting sessions, Bill's group was escorted to the school computer lab. The students' SignWriting work was featured on the SignWriting web site, including Bill's most recent illustration and

written caption. The computer teacher assisted the group in accessing the SignWriting web site and instructed the students how to select their featured photographs in order to obtain a printed copy.

After the session, this computer lab teacher offered to CF an observation that culminated the description of Bill's SignWriting literacy learning epiphany. "What you're doing is really exciting. I don't really know what you're doing. I am an outsider, but what I do see are the faces of the kids and how they light up with delight when they look at themselves and what they see themselves doing on the computer. The SignWriting they are working on has got to be good. When kids get lit up like that, there has got to be some *breakthrough* going on." Even though this person was a SignWriting experience "outsider," this teacher expressed an affirmation about the DHH students and could clearly see the positive affective response they were experiencing when learning how to read and write signs.

Teacher Interview

Bill's primary level classroom teacher, Dee, was interviewed several months after Bill's epiphany with SignWriting. One of the interview questions focused on whether the teacher believed DHH students were aware of differences in literacy achievement levels between themselves and others. Bill was one of the students the teacher identified who may not particularly *like* his present level of literacy functioning. "I don't want to say anything about SignWriting but I'm guessing, correct me if I'm wrong, that it can really help them to make the [literacy learning] connection." While the interviewer, CF, recounted to the teacher the illustration and captioned SignWriting epiphany event, the teacher periodically responded with short affirmative comments, "I bet." "Good!" "Oh

neat!" "Right!" The interviewer described Bill's frustration with the SignWriting computer program and his positive attitude to not give up. When it was mentioned that Bill enjoyed the SignWriting books, the teacher commented, "You see, I think that would really be good." The teacher used Bill's classroom writing journal to demonstrate Bill's most recent jump in writing development. Dee assessed Bill's production of three to four word strings in his journal entries as a big jump for Bill, even though "he didn't put them [the string of words] together." Dee continued, "Because up until then, he loved to draw pictures. If he can't get over the pictures, then when you ask him to write he's like, 'Look at that, look at that!'" The interviewer asked Dee to describe what Bill does when he is asked to write. "Well, he wants to keep drawing his pictures, he doesn't understand. You say to him, 'Writing, Bill, writing.'" The educational assistant (EA) in Dee's room initiated a strategy where two separate pieces of paper were used for Bill to draw his journal entry and then on the second sheet, he was to write. The teacher reflected that the strategy might have helped Bill because up until then, "This was like pulling teeth. 'Come on Bill. Write something.'" CF made note of the complexity of one of Bill's illustrations that appeared in one of his journal entries, *Bill gets Hot Wheels*. Dee replied, "Yes I know. It's incredible what he draws. It's almost scary. They are so detailed. You see he started a little more conventional, then he got into this [referring to a drawing], people climbing up here, and look at the movement. But as you can see there's very little writing except for some names like Mom and Dad."

In summary, the teacher reiterated that Bill had made a big jump just recently in *writing* and stated, "I don't know; it may be the SignWriting, I can't make a connection with it." The interview turned back to the idea of awareness that DHH may or may not

have about their reading and writing differences from other deaf or non-deaf peers. When asked specifically about Bill, Dee responded, "Well, I don't know. I don't think he cares. You have to care…to be kind of be aware." In an attempt to clarify possible distinctions between *awareness* and *caring*, CF showed Bill's SignWriting workbook to Dee. "Yes, I can see him being willing to do more. He likes to copy. He likes to do anything that takes that kind of perception and yea, I bet he loves it."

CF, the research practitioner, and Dee, the classroom teacher, shared observations of Bill's emergent writing abilities and his possible self-awareness and affective response to jumps in his literacy development. The exchange suggested there might be some connection between Bill's propensity toward visual representation of his world through his illustrations and the perceptual spatial features of SignWriting symbols that may have influenced the "strings of words" that were now appearing in his classroom writing journal. "In working with these kids, I do see the same developmental steps, especially, I think, in the writing. It just takes them a long time." When asked for a reason why it might take DHH students longer, Dee replied, "Obviously they don't have the language background and a lot of Deaf kids are afraid of taking risks."

When presented the opportunity to learn to read and write signs, Bill did demonstrate when he was *in the know*. He cared. He did take risks and he smiled.

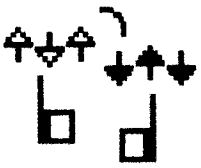
Veronica's Epiphany

Eleven-year old Veronica experienced an epiphanic transformation when she initiated a spontaneous reading review of a stack of SignWriting flashcards. She communicated a realization that the signs she used to "talk/sign" with significant others had a writing medium that she was not only familiar with, but could use to tell others

about her world. While Veronica's SignWriting epiphany event did not occur during a scheduled SignWriting session, supportive evidence taken from early SignWriting experiences contributed to the description of her empowered literacy competencies, reading and writing signs. Veronica's metaphorical figure that marched into the interior of a copied SignWriting symbol that represented a dwelling, the sign for "house," suggests that Veronica had not only found a comfortable place to develop literacy but had also made an assertive claim as a learner *in the know*.

Videotaped Epiphany

The videotaped capture of several miscued reading attempts during a one-to-one session with CF, the research practitioner, led to Veronica's acknowledgement of a newly acquired metalinguistic awareness, that signed communication could be written and shared. Veronica had a pile of small SignWriting flashcards on her lap. Most of the cards were signs for feelings or emotions. Veronica lifted cards up one at a time, read them, showed them to the camera, and then placed them back down on her lap. The reading tempo gradually built up speed, occasionally interrupted by brief conversational comments shared between Veronica and the person behind the camera (CF). Veronica lifted up a SignWriting flashcard with one hand. Her left hand began to articulate the sign, "Talk." She lifted her right hand, still holding the SignWriting flashcard, to continue the two handed pronunciation of the sign to converse, "Talk." Mid-articulation, Veronica halted the movement of both hands and then abruptly changed the stalled two-handed index handshape movement into the articulation of a different sign, "Signing."



Veronica looked down at the SignWriting flash card, paused, pointed to herself, then to CF (behind the camera) and stated, “We’ve already been doing this signing stuff. Remember? You and I both do SignWriting.” Veronica looked at the card now positioned closer to her face, pointed to the symbol, smiled, pointed to the card again, then signed, “Yes, I do this signing and writing stuff,” smiling broadly and nodding her head affirmatively. After reflecting a moment about this statement, smiling and nodding, Veronica affirmed something significant for herself and whoever else might get the opportunity to witness this epiphany event. Veronica *knows* how she *talks* and with whom she *talks* and confirms that symbols on a flashcard help tell about who she is and how she communicates.

There is more. Veronica looked down at another SignWriting flash card with the symbols that represent the sign, “SignWriting.” With the card still grasped in her right hand, Veronica began to articulate the first symbol with confidence, “Sign.” She gazed down at the card, pointed to the card with her left index finger, began to sign, “Walk,” repeating the sign several times with long elaborate SignWriting movements, her face showing intense determination. Catching some cue from behind the camera, Veronica abruptly changed her sign articulation. With her head held high, still holding the flash card in her hand, maintaining an elaborate deliberate movement of her sign pronunciation, Veronica signed, “You can write and write and write.” Veronica misread

the two-part sign symbol flashcard. She never skipped a beat, however, in the motivation and enthusiasm she brought to this impromptu review of SignWriting symbols.

Recorded Accounts of Earlier Videotaped SignWriting Sessions

Veronica had already been introduced to SignWriting symbols within the intermediate classroom literacy learning environment. Veronica's group of SignWriting learners met more frequently than the other group of focal students, twice a week for forty-five minutes. She was introduced to SignWriting symbols using a variety of mediums. SignWriting materials included books, flashcards, videotapes, and the SignWriting computer program. Journal notes from the very first session, the first month of the school year, described how Veronica read sign symbols quickly and without hesitation and expressed an early preference for the use of the SignWriting computer program. The classroom teacher, Lana, was present during most of Veronica's initial SignWriting sessions. Lana was very supportive of the SignWriting literacy project and wanted to be included as an active collaborator. "Sure, I want to see it [SignWriting] too!" The research practitioner's written reflection of these early sessions indicated that the teacher's presence would add significant and crucial insight because she would be more tuned into comparative affective responses to SignWriting and English literacy learning events.

Journal notes indicated that there was a difference between Veronica's and the teacher's approach to "reading" a SignWriting symbol. Veronica approached signs as a whole unit. The sign articulation of her volunteered sign symbol "guesses" showed enthusiasm and confidence even when the guesses were incorrect. The classroom teacher commented that she could read the movement symbols but not the handshape symbols.

The adult learner needed explanation for each symbol presented. The students' spontaneous *reading* of signs, including Veronica's reading, indicated that students looked at signs as a whole unit and had not yet inquired about the symbols that represented sign parameters.

Teacher Interview

The classroom teacher's interview confirmed that Veronica was developing reading fluency with SignWriting symbols differently than other classmates. The interviewer, CF, referred to a group viewing session of a previously recorded SignWriting session. Lana had commented about how another student was "reading" SignWriting. "Oh, she reads the English the same way. I can remember watching another student read out of the SignWriting book. But as you look at Veronica, she reads differently in SignWriting than she does English. The fluency of her signing is better in SignWriting than when she's reading written English." The teacher's comments indicated that the other classmate's *reading* did not have the same flow as Veronica's. Reading for the other student, whether it was SignWriting or English, had a word-by-word-by-word or sign-by-sign-by-sign pattern. Veronica was able to read more fluidly. After reading a sign she jumped pretty quickly to the next sign.

Practitioner's Notes

During the first month of Veronica's introduction to SignWriting, both the research practitioner's journal notes and the analysis of the video recording of one particular SignWriting activity captured a significant difference between Veronica's and other focal students' interaction with SignWriting symbols. In a unique way, sometimes DHH Students interacted with SignWriting symbols by adding either a gesture or a

written mark that extended or contributed to the meaning of the symbol or made an assertive claim to possess the symbol.

The journal notes indicated that Veronica, of all her SignWriting peers, seemed to get the most excited about the SignWriting materials. During a SignWriting symbol-copying task, Veronica was the first student to interact in a unique way with the written representation of a sign. After copying the symbols for the sign "house," Veronica added something of her own. In between the down movement arrows, Veronica added lines showing a pathway from the bottom portion of the sign up into an imaginary space, the interior of the symbol itself. Using the ASL classifier handshape for "a person walking," Veronica used that walking gesture directly on the drawn path that now led up into her copied sign symbol for *house*.

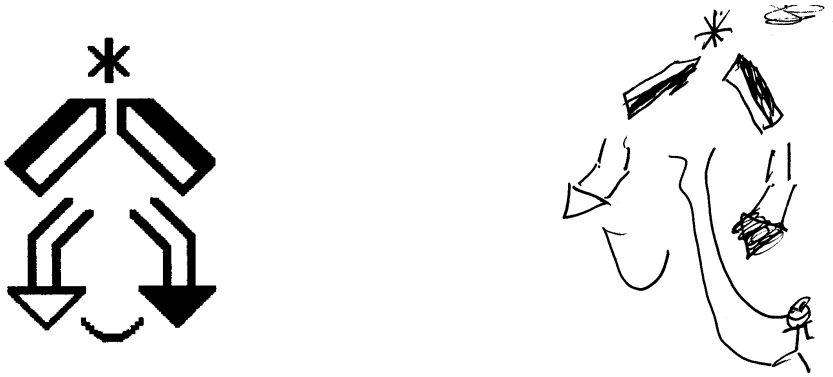


Figure 31. Veronica's Path.

Veronica showed a great deal of enthusiasm during SignWriting copying and tracing activities. Veronica and her peers were presented a stack of SignWriting flash cards that had sign symbols on one side and on the reverse side, colorful illustrations that were taken from the *Goldilocks* SignWriting reading and writing books. Veronica

repeatedly threw both arms up above her head and grinned after copying a portion of a SignWriting symbol. She frequently leaned away from her copying or tracing work to inspect her progress and then would promptly lean forward to continue her task. She would occasionally comment about her work, self-judging her copied or traced productions with comments like, "fine," "wrong," "cute." When Veronica noticed the need for a correction, she would suspend her tracing arm up in the air while her other hand erased some mistake from her white board. She made these self-corrections grinning and smiling.

Veronica's articulation of the signs represented on the SignWriting flash cards confirmed her motivation to read and write signs. Large, deliberate, flowing movements were used in pronunciation of signs such as, "walk" and "baby." Veronica accompanied many signs with gleeful head swaying. She would bounce in her chair, anxious to be in possession of a flash card to trace or copy. On one occasion, as another flash card was presented to the group, Veronica commented to one of her peers, "I am ready to copy this next one." Veronica would pause and gaze at each flash card presented. She put one hand up near her forehead, stopped, and then pointed to the card with a puzzled face. She would ask for some clue to help her read the sign symbol or she would request, "Let me see the other side of the card."

It was clear that Veronica thought about her copying and tracing task. She inspected her copy of the sign symbol for "Dad." She mouthed the English equivalent on her lips, pointed to some portion of the SignWriting flashcard then signed, "Oh I forgot this part." She returned to her *writing*, paused to look again, and referenced the SignWriting flash card before resuming to write the sign for "Dad." At another turn of

her tracing activity, Veronica stopped to reach over and get CF's attention with a shoulder tap. Veronica had a puzzled facial expression and pointed to part of a sign symbol on a card. Not understanding Veronica's request, CF responded by shadowing Veronica's pointing gesture. Veronica signed again, "What's this for?" Without waiting for a response, she turned to her whiteboard to continue copying the SignWriting symbol already in progress on her board. Reflecting again on this exchange, Veronica might have been requesting some guidance on how to copy a particular part of a SignWriting symbol.

A description of a unique interaction with a sign written symbol follows. Veronica leaned back from her writing work, then leaned forward, commenting to herself as she pointed to her "edited" white board, "That looks just fine." She added two lines to the SignWriting symbol for "house" that designated a path. On the white board she used "walking fingers" along the path she had drawn. She leaned back again, then abruptly halted the articulation of the sign, "Walk." Veronica then signed to herself in a reflective way, "No, that's not what I meant, it's wrong." She added something to her board, repeated the motion of walking fingers directly on the board, nodded her head, and then smiled. Veronica showed the drawn path she added on her white board to CF. In reply, CF commented, "Yes, I can see what you have added." To further demonstrate to Veronica a positive affirmation of the unique addition she made to the SignWriting symbol, CF lifted the board up toward the recording video camera and added the comment, "Let's record this. It's beautiful!" Veronica agreed to accept this affirmation. She pointed to the camera with an extended arm, put her finger up to her mouth, and grinned.

Marie's Epiphany

Marie, twelve years old, faced the challenge to identify herself as a signing or talking communicator. She admitted that learning to read and write signs was both "fun" and "hard." Her epiphany occurred when she was given the opportunity to "tutor" another prospective SignWriting learner. Marie experienced a dual role, one of teacher/student and student/teacher. During one SignWriting session, three different teaching/learning SignWriting activities--reading, composing, and tutoring with SignWriting--illustrated that Marie had arrived, she was now *in the know*, she could teach someone else how to read and write signs. Until she became the "teacher," Marie seemed unaware of the proficiencies she had already acquired in decoding and generating SignWriting symbols. She knew how to explain sign symbol parts. She employed teaching techniques she obviously learned from her own, sometimes uncomfortable, experiences as a "student" It was not expected that Marie would develop a preference for this new literacy, SignWriting, because she had already developed strong competencies in English literacy. Marie did, however, develop metalinguistic awareness of some distinctive features of the language she at first resisted, ASL. She had come to realize the impact this language had on her communication with the members of her signing community.

Several videotaped SignWriting learning sessions showed that Marie, age 12, was in the process of determining her identity as a communicator, one who used two modes of communication--speaking and signing. The videotape documentation of SignWriting experiences indicated that there were high levels of frustration for Marie during the learning process of how to read and write signs. The SignWriter computer processor program in particular challenged Marie's perseverance level for both accessing signs in

the pre-loaded SignWriting Dictionary and using the program to write signs. Marie reported at the very end of the inquiry period, that when she was placed in the position to teach what she had learned about SignWriting to others, she herself began to feel more confident in her ability to read and write signs using SignWriting.

During the final month of SignWriting experiences, the research practitioner asked Marie a few questions. CF began with a question, "OK, I'm curious if you feel any difference when you start to write a story in English and when you start to write a story using SignWriting. Is there a difference for you?" Marie responded, "It's a little hard," smiling broadly. "SignWriting, sometimes I feel like I don't really understand…when you go like that or something like this…[demonstrating two different kinds of movements with arms and hands]. CF questioned further, "So you mean when you sign, you don't really understand how to put it down in SignWriting?" Marie replied, "Kind of." After a few more exchanges about the writing process in general, the discussion was brought back to SignWriting experiences. Marie was asked, "So tell me then, about SignWriting. Tell me what you think about SignWriting." Marie replied with a smile, "It's fun. It takes a long time to learn. And it's fun to teach people." Marie went on to explain how she taught one of her classmates how to use the SignWriting computer program at the very end of the school year. This particular student was not involved in the inquiry but was fortunate to have Marie as a SignWriting tutor for one day. Marie's description of the tutoring session suggested that Marie possessed intuitive instructional qualities. She recognized her "pupil's" motivation and reflection capabilities. Her classmate wanted to do the "learning" by herself, she was given the opportunity to think about what she wanted to say, she followed directions, she was asked for her own

preferences in sign selection, and she received affirmation, "And there's your answer," with an assuring smile from her "teacher."

Marie's tutoring experience had similar descriptive features to the other focal students' *epiphany* SignWriting experiences. Marie did reposition herself as someone *in the know*, progressing from a "not-really-understanding" stance to a confident, "Oh I get it," stakeholder position. Marie initiated a similar tutoring experience with an adult newcomer to weekly SignWriting sessions several months earlier, approximately the mid-year mark of the inquiry. Descriptions taken from the videotaped January SignWriting session assist in detailing Marie's SignWriting epiphany. The sequence of this session situates Marie's tutoring activity between SignWriting reading and writing activities. Marie read from one of the advanced SignWriting books, she tutored an adult using the basic level one instruction SignWriting book, and then composed a single statement about SignWriting on the computer. The description of Marie's epiphany will follow this progression of reading, writing and then tutoring. Marie engaged in decoding SignWriting symbols throughout the session.

Videotaped Epiphany - Reading

While CF was negotiating the sequence of activities for the other students, the recording video camera captured Marie reading "on her own" several pages from the level three SignWriting book, *Goldilocks and the Three Bears*. Prior to Marie's self-initiated *reading* of more advanced SignWriting material, a brief discussion between CF and Marie depicted a motivational response. As CF presented the array of possible SignWriting activities for this session to the group, Marie interrupted by asking, "What

else do you have?" When CF presented the pile of advanced SignWriting books to be distributed to the group of SignWriting learners, Marie announced, "I want to read signs."

An example of an affective response to *reading* SignWriting occurred when Marie miscoded a sign symbol for the sign "hot." Marie signed, "Mama bear, cook bad." Marie corrected herself, shook her upper body and head "no," wrinkled her face, placed her hand to cover one side of her face, then with one elbow leaning on the book, she lowered her hand held face to rest. She caught the attention of one of the adults in the room, then, pointing to the SignWriting book on her lap, she commented, "This is hard." Her smile faded into a grin, she raised her eyebrows, and then returned her eye gaze back to the book to continue reading.

After a brief interruption of her reading, Marie proceeded to read aloud to herself signing, "Mama Bear [paused], Mama…." After she attempted to articulate the next sign by first moving both arms out to the side signing area, she then commented to herself with a heart felt giggle, "Oh!" She hit her chin with one hand while the other hand stayed up near her mouth. She continued her *self-talk*, "I get mixed up." Marie's self reflection did not deter Marie from resuming her reading of the advanced SignWriting book.

Videotaped Epiphany - Composing

The writing portion of Marie's epiphany was the last SignWriting activity of the session. The videotaped "save" of the composing process of a simple declarative statement, "I love SignWriting and Cecilia Flood," provided several examples of Marie's metalinguistic knowledge about sign parts. Previous experiences with the SignWriting computer program had been frustrating for Marie. During this writing task, seated right next to Marie, CF was available to provide collaborative support.

CF checked with Marie, "Do you like '*I love signing*' or '*I love SignWriting*?'" Marie responded quickly with a big smile, "SignWriting!" Voicing and signing simultaneously had been Marie's preferred mode of communication during most SignWriting sessions. Similarly, to clarify the expression of her intended written message, Marie used two expressive modes. Marie voiced, "SignWriting" but articulated in sign, "Writing," with clear and deliberate pronunciation accentuating the circular movement feature of the sign. Another example of an affective response occurred when a SignWriting symbol that Marie was searching for appeared on the screen. Marie extended her arm toward the computer screen, pointing to the SignWriting symbol that appeared on the monitor and commented, "Ah, perfect!" When the simple sign written statement had been completed and was ready to be printed, Marie leaned forward to visually check the SignWriting document as it emerged from the printer commenting, "Cool!"

Marie wanted to add a name sign to her positive declarative statement about SignWriting. To generate a sign that represented the research practitioner's familiar name (CF) required Marie to use the computer program to assemble SignWriting symbols. Marie signed and spoke what she wanted to add, "And Cecilia Flood," using the name sign familiar to all participants, "CF." Marie turned to CF and said, "Have to make up a sign." CF responded, "OK," pronounced the name sign, the manual letters "C" and "F"' tapping the chin, then asked, "What do we need?" Marie responded, "A face," using her index finger to outline the shape of her face. She then demonstrated the "C" and "F" handshape placement on the face. Marie pointed to the row of face symbol options on the bottom of the computer screen and asked, "This one?" CF responded, "Do you like that one with the neck?" Marie turned to face CF and signed the "C" and "F" handshape on

her neck with a puzzled negative facial expression. CF mirrored Marie's pronunciation, placing the handshapes on the neck area. This demonstration then prompted Marie to comment definitively, "No!" Marie changed the pronunciation of the name sign back to the chin area. Pointing to the computer screen, Marie chose a different face symbol option commenting, "You have to make the chin." CF replied, "That shows you where." Marie replied, "Then you push the 'a' key." Marie was now familiar with the keyboard placement of sign symbols and knew which key corresponded to the desired sign symbol options. The generation of the name sign continued, focusing on the selection and palm orientation of the initial handshape symbols, "C" and "F." Marie selected a symbol for the "C" handshape oriented in a "cup-like" position. CF pointed out the error to Marie. She then commented, "No, the chin is like…" demonstrating the needed rotation of the "C" handshape from a side angle to a straight angle. Clarification of appropriate palm orientation selection continued for the next handshape, "F." CF was briefly interrupted by a request from another student, leaving Marie momentarily on her own. Marie reflected to herself about the placement of that second handshape and commented out loud, "the same place." She extended her full arm to the monitor and proceeded to tap the rotation key on the keyboard. After she successfully completed the selection and placement of the two handshape symbols for the name sign that she wanted for her sign written statement, "I love SignWriting and Cecilia Flood," Marie gave herself a single clap applause. Marie was asked, "What else do we need?" Marie touched her chin two times using the handshapes, "C" and "F," then commented, "those x's," pointing to their location on the yellow keyboard card. Marie was referring to the asterisk symbol on the keyboard used to represent a sign contact, a "touch" symbol. After composing her declaration about

SignWriting and CF, she pushed her two hands together, spread open her palms, then quickly commented, "I want a copy." She repeated the sign "copy" several times, emphasizing her assertive and enthusiastic claim of ownership by rubbing her two hands together, anxious to retrieve her document from the printer. Marie was satisfied with her sign written declarative statement, a proclamation of an epiphany experience with SignWriting.

Videotaped Epiphany - Tutoring

The next section will report the videotaped data that captured the experience categories that emerged during the "tutoring" portion of Marie's epiphany SignWriting experience. Marie had been paired with one of the assisting adults present during this particular SignWriting session. This adult was not new to sign language, though had never been introduced to SignWriting during her sign language interpreter-training program. She had just recently consented to participate in our weekly SignWriting sessions at this inquiry site and was an eager and gracious SignWriting learner.

Marie pointed out to the (adult assistant) that the illustration of the baby bear from the SignWriting text is doing something unusual. She commented, with a big smile and giggle, "He's signing." After her adult pupil agreed that the baby bear was "cute", Marie commented further, "He's my favorite one, huh!" During an earlier SignWriting session, Marie was observed leaning down toward the SignWriting workbook to give the baby bear character a gentle kiss.

Marie was comfortable instructing her pupil in what she knew about SignWriting symbols. Marie explained, "This symbol is like this," showing palm orientation in front of her body. When asked for clarification, Marie repeated a demonstration of the three

different palm orientations, “Like this, like this, like this.” At one point, Marie revealed that she still did get confused with handshape positioning. Marie was trying to explain to her pupil the separate symbols for the sign, “house.” She held up one palm positioned on a slant, but when she attempted to position the second hand, she wrinkled her face, and leaned closer to the SignWriting workbook, seeking verification for her articulation attempt. The beginning attempt to explain sign symbols and hand positions did have a confident quality; “It goes like this.” The concluding commentary, however, indicated that even when Marie sheepishly admitted, “I don’t know,” Marie did know from whom she and her new SignWriting student could get assistance. Marie called out, “Cecilia Flood, what does this say?”

There were several instances during the tutoring session when Marie’s instruction included spoken aloud reflections that reinforced her own understanding and demonstration of sign parts. She was consistent in correlating the sign symbols from the workbook to the actual pronunciation of signs. Marie turned to one of the pages and pointed to the SignWriting symbol saying, “This is Papa. See that thing, it’s two times so you go like this, Pa-Pa. See this one on the bottom, those two, it goes, Ma-Ma.” Marie was referring to the sign contact symbol, the asterisk symbol representing a touch contact with a sign location. There are two “stars” used for the signs, “Mama” and “Papa” that indicate the touch feature and also the touch location of those signs, upper forehead and lower cheek area. [Insert illustration sign for Mother and Father]

There were portions of the workbook that presented sign symbol parts in isolation. Marie held up her spread "5" handshape in front of her body explaining, "These are like that," taking her left hand and rubbing the tips of the spread fingers and then moved her left palm down the palm side of the "5" handshape. Marie reinforced her demonstrations with words, "And like this," being sure to offer her student affirmation, "Ahum, like that!"

Marie sometimes offered referencing explanations, "It's like a…," for sign symbols. After pronouncing the sign "bear" several times to her student, Marie commented, "See those two, they're like claws or something." Marie was referring to the bent fingers of the "5" handshape used in the sign, "bear," which could be argued is an iconic representation of bear claws. [Insert SignWriting symbol for the sign 'bear']

The demonstration of the sign “porridge” included an explanation indicating that Marie had grasped the notion that signs needed more than just handshapes. After repeating the sign “porridge” to her student several times, Marie further explained, “See that thing, it’s like a fork.” [Insert SignWriting symbol for the sign ‘porridge’]

Marie did check to see if her pupil was following her explanation. Marie knew that sign movement was also important to demonstrate and explain. “That fork thing goes round and round, ‘porridge.’” Marie pointed out that the two-finger handshape could be envisioned as an eating tool, a “fork,” while “the round and round” explanation depicted that sign movement was also represented in the sign symbol.

There are many examples of collaboration between Marie and the adult participants at this inquiry site. During this particular session, Marie had another opportunity to share her growing knowledge about signs and how to read and write them with a second adult. Marie recognized that each adult had different levels of familiarity with sign and the symbols used to represent them. When she was a “tutor,” she knew to check the comprehension of her pupil’s reading sign symbols, “*Like that, see*?” She asserted her claim to be more *in the know* than her pupil was when she puckered her mouth and announced with a big smile, “If I finish all of these, I’m going to test you.”

Chapter Summary

This chapter was about empowerment. The four focal students experienced empowerment as readers and writers as they lived and learned SignWriting. The epiphanies described the decisive moments when focal students transformed their literacy learning experiences, confirming their meaning making abilities, and realizing their potential membership in the *club* of writers. Throughout this chapter, it was noted that two elements were common to each student epiphany. First, the students' had direct interaction with SignWriting materials--books, flash cards and the SignWriting computer program. Students looked at, traced, copied, assembled and manipulated SignWriting symbols during each session. The second element was the interaction *they* initiated in order to engage significant adults in their literacy accomplishments. They not only shared the SignWriting documents they produced, but took further steps that would insure that SignWriting experiences would continue. They invited adults into a literacy partnership in which they were clearly more *in the know*.

CHAPTER SEVEN

CONTEXTUALIZATION

This chapter will contextualize and advance the research practitioner's perspective, my perspective, on the collaborative descriptive account of Deaf and Hard of Hearing students' experiences learning to write using SignWriting. Participating in the inquiry as key facilitator and collaborator, I too experienced a professional and personal epiphany. The description and interpretation of this transformational moment, the witnessing of a student's metaphorical consumption of a SignWriting symbol, powerfully illustrated to me that SignWriting transcends beyond a functional medium of written expression for DHH students. SignWriting, a writing tool, enhances DHH students' self-realization as meaning makers. Using symbols that represent their natural language of communication, DHH students reposition themselves as empowered communicators by saying, "My language is me."

I will use the cyclical action research routines – look – think – act – to frame the transformation of my professional and personal perspective on literacy learning for DHH students. My intuitive predictions about DHH students' language making capabilities motivated the inquiry process. The resulting detailed collaborative account of DHH students' experiences using SignWriting transformed these intuitive predictions into a professional and personal conviction that literacy learning environments for DHH students need to be restructured. This summary chapter challenges others engaged in developing literacy learning environments for DHH students to re-examine fossilized educational mono-literate educational paradigms. The inquiry descriptive account of four focal students' experiences becoming literate using SignWriting supports consideration

of a written medium for American Sign Language. The incorporation of SignWriting into evolving bilingual bicultural education models currently being implemented across the nation would enrich other bilingual emergent DHH readers and writers. The descriptive and interpretive account of DHH students' experience using SignWriting actualizes a new respect for DHH students, repositioning them as contributory members in a biliterate club of readers and writers.

My Predictions and Conviction – A Starting Point

Prior to presenting SignWriting to small groups of DHH students, I had formulated a set of intuitive predictions based on my twenty-five years of both professional and casual observation of how DHH students approached the tasks of reading and writing. Academic literature both supported and challenged my interpretation of DHH students' struggle with traditional monolingual approaches to literacy development.

Deaf students learn to read in the same way as other emergent readers. They use similar strategies to encode and decode printed language. They follow the same prescriptive literacy developmental milestones that other readers and writers experience. These academic "common sense" literacy achievement expectations, also evident in the stated beliefs of some of my teaching colleagues, were contradictory to my cumulative experiences watching DHH students interact with print. I was impelled to reflect more on the correlation between dual language development and literacy achievement. DHH students physically, cognitively, and emotionally develop and experience their world using two languages, ASL and English. The knowledge I gleaned from the literature that addressed the sociocultural and sociopolitical considerations that influence the bilingual

individual's world--particularly experiences in and around print--led me to act on my beliefs about DHH students' language abilities and their literacy learning competencies.

Prior to formalizing my decision to introduce a biliterate component, SignWriting, into the educational environment of the DDH students with whom I worked, I needed to reflect on my own evolving definition of *literacy*. The integration of two phases of my teacher/learner training helped me reframe my understanding of literacy, both as an educator of DHH students and as a bilingual literacy learning facilitator. I have attempted to move away from literacy definitions that hold simplistic reading and writing activities (decoding and encoding) as indicators of literacy learning. I have moved toward a deeper appreciation of literacy learning as a social event shared between reading and writing collaborators. I had to acknowledge that the literacy practices to which I was accustomed needed to change. I recognized that the manner in which SignWriting symbols were introduced to DHH students could potentially result in a reinforcement of decoding and encoding practices using a script other than English--SignWriting. I was confident, however, that SignWriting symbols would motivate dialogue between and among both student and adult SignWriting learners' stimulating the emergence of joint meaning making, the emergence of literacy experiences that emphasize partnership.

English has dominated the communicative educational environment for DHH students in our nation for hundreds of years. Even with the recent inauguration of bilingual bicultural educational models within a few selected educational programs for DHH students, printed English is presumed to be the language register most DHH students will use to access the language used by our nation's educated majority. The repeated reports and documentation of plateau levels of English literacy achievement

strongly align with the premise that constant and consistent exposure to English print will advance literacy learning, consequently leaving under-investigated the intrinsic knowledge DHH students possess about their language, ASL.

I suspected written symbols that represented the articulation features of a sign language, SignWriting, would be a medium by which DHH students could successfully demonstrate their knowledge about the signs they use to communicate their ideas, their reflective thoughts, and their intentions. The linguistic knowledge DHH students have demonstrated by using SignWriting far exceeds the "slow but gradual" expectations educators have expressed regarding English literacy achievement. Allowed to manipulate written symbols for sign handshape, hand orientation, placement, and sign movement, DHH students have demonstrated knowledge about how signs work and how sign features distinguish individual signs. Given the opportunity to experiment with a written medium for their language, ASL, DHH students showed that they possess the "know how" to write and read signs.

My experiences as a second language learner of ASL led me to further speculate that DHH students would set the pace of teaching/learning literacy events related to SignWriting. They would take the lead. For most of the participating SignWriting learners, SignWriting symbols were decoded as *whole* units. My reflective notes frequently reported how quickly DHH students *read* signs with seemingly very little effort. DHH students apparently approached reading signs with heightened expectations of meaning that resulted in a reading tempo, an automaticity that frequently left the collaborative adult reading partner "in the dust." SignWriting learners were no longer in the passive learner position to which they were accustomed during English literacy

activities. Some examples of the more active SignWriting learner stance reported were, "I know how to read all of this," "I want to read this one," "It goes this way," and "That's right, just leave it that way." The descriptive account of SignWriting experiences also included instances when DHH student participants repositioned themselves as competent and confident language instructors, situating the adult participant as the "learner." For example, recall when a student directed instruction to an adult learner, "After I finish all these [signs] I am going to test you." Another example is, "Wait, let's watch the videotape. We don't know what the sign is [on the computer screen] but if we put the tape in the VCR we'll be able to see the sign." The student's redirecting of the adult participant's attention from the printed medium back to the original source of a signed narrative clearly demonstrated that this SignWriting learner had internalized her experiences of teacher-guided redirection. She obviously had also built up significant confidence during SignWriting literacy events that allowed her to utilize an internalized "learning strategy" while simultaneously assuming a newly acquired role, that of a "competent SignWriting teacher."

SignWriting learners initiated and engaged collaborating SignWriting peers and adults in descriptive dialogue about sign parts. These discussions indicated that a metalinguistic gate was opening, revealing a pathway on which DHH students could journey as knowledgeable and successful language makers. Recall Veronica's illustration, the spontaneous addition of a pathway and her playful "finger walk" into the interior portion of a copied SignWriting symbol, "house." I knew that SignWriting would make DHH kids smile. No matter how many strings of sign symbols DHH assembled

onto printed SignWriting documents, DHH students' sense of self was impacted each time they declared, "This is mine."

Unexpected Surprises and Cultural "ripples"

One expects surprises and challenges when embarking on change, especially when that change affects the sociocultural literacy practice of DHH students. During the course of the inquiry, the community's public interest in SignWriting, from educational and cultural perspectives, varied. Within the nation's signing community a small degree of curiosity was evident. In one year, two feature articles on SignWriting appeared in a major Deaf community publication. While the articles did include accurate information about SignWriting, *controversy* was the underlying theme. The first article focused on the evolutionary stages of the writing system's development, including the inventor's vision of its use by the world community of sign language communicators. The second article discussed the implementation of SignWriting into the literacy learning environment of DHH students, and featured our southwest school district's program. A few of our SignWriting learners were quoted: "It's fun." "It's my favorite thing to do." "It's easy for deaf people to learn." "I like these [SignWriting symbols], they're beautiful." My own predictions about SignWriting were also quoted, "Using a yet-to-be-tapped resource, SignWriting, DHH students will not only become better signers, but also better readers and writers." An invitation for readers to contact The Deaf Action Committee for SignWriting and to become involved in The SignWriting Literacy Project concluded the article. While SignWriting did receive a response from one publication belonging to the Deaf community, an unresolved sentiment echoed in the article's title remains, "Will it work?"

It takes courage to implement change. Another instance of surprising public interest in SignWriting occurred during a local community conference that took place during the year of our literacy inquiry project. Two teachers and I made a presentation at this conference, reporting on DHH students' earliest experiences learning to read and write using SignWriting. We engaged the SignWriting learners themselves in the preparation for this presentation, inviting them to assist conference participants to become familiar with the SignWriting computer program they had been using all year. During the course of these preparations, one SignWriting student self-initiated a writing task that ultimately added more significance to our presentation on positive SignWriting experiences than our adult descriptions could ever convey. He courageously produced at home a three page handwritten SignWriting text, "his talk," that he wanted to present at the conference. This student confidently read his SignWriting talk in front of an audience of fifty or more hearing and deaf conference attendees. There can be no greater testament that SignWriting not only works but also empowers.

Juxtaposed with the unexpected surprises of public interest and courageous student initiatives that emerged during the inquiry, expressions of doubt, fear, and resistance to SignWriting continue to be communicated by the community of sign language users, particularly community members in our own country. Quoted in a more nationally known publication, one representative from the academic community at Gallaudet suggests that there are many deaf adults raised with Sign Language who have learned to navigate between two languages. They have learned to read and write English fluently without the need to write their signs down. Huge dark clouds of doubt continue to envelop any consideration or exploration of a possible need for ASL written

expression. Additional examples of this doubt come from my personal communication with adult members of the signing Deaf community: “It’s not natural,” “It makes me feel uncomfortable.” Aligned with doubts are expressions of fear, “If you write ASL, it will become obvious to others who look at it that there are gaps in our language, there are things missing.” Outside the inner circle of Deaf community sign language users are other linguistic and cultural supporters, parents of deaf children and their hearing teachers. Their views reflect similar sentiments about SignWriting. “But there aren’t enough community members who use it.” “The poor kids, it’s another language for them to learn.”

It takes courage to implement change. Tension is expected when positive surprises meet up with negative resistance. Tension is a matter of degree. Participants in a conflicting situation determine for themselves the intensity of tension while collective communal responses tend to intensify mounting tensions. A descriptor frequently heard regarding our national literacy development programs is “crisis.” This perception impacts and magnifies the dismal accounts of DHH students’ development of English reading and writing skills. A friend relayed to me an Asian interpretation for the term *crisis*. *A crisis can be either a dangerous wind or an opportunity for change.* My response to this controversial crisis regarding the addition of a writing medium in the literacy lives of DHH students is to recount an epiphany, the transformational moment that marked my life as a teacher/learner. This experience compels me to examine more closely the *noise*, the disquiet that results when inquiry surprises collide with a community’s resistance that is embedded in doubt and fear.

The Research Practitioner's Epiphany - My Epiphany

Reflections taken from my notes assist in describing the teaching/learning context in which my professional and personal epiphany took place. I commented about a mid-year SignWriting session in which two SignWriting learners had a good session. Paired with a more accepting and encouraging peer learner, I note how Veronica's use of technology, an old MS-DOS computer program, did not seem to baffle her during SignWriting sessions. Veronica exhibited more confidence generating new SignWriting spelling of signs than the other SignWriting learners did. I cite an example: Veronica re-wrote one sign used in the SignWriting version of *Goldilocks*, the whole body representation of Goldilocks "sinking into Mama bear's soft chair." Veronica wrote the sign using the yellow keyboard card to locate the symbols for a single handshape, a classifier that represented the stationary chair. She then added a double stemmed curved line to indicate the downward *sinking* movement of the person who decided to occupy that *soft* chair. The notes also indicate that Veronica was very motivated during this session and wanted to continue her writing work on the computer even though her peer partner decided to transition to a different SignWriting task. During this session, Veronica initiated a new strategy to reference English words and to access pre-written signs in the SignWriting computer dictionary. Veronica would page through the SignWriting storybooks looking at the illustrations, the signs, and the English words before deciding which lexical items she would search for and use in her fourth SignWriting document. She wrote a comment about her Dad, then after being prompted by CF, she accepted redirection and added comments about another very important person in her life, her Mom. Veronica clearly indicated that she did not want to stop her

writing work on the computer. She wanted to accomplish what she set out to do--type three rows of SignWriting symbols on the computer screen.

Notes on Veronica's last SignWriting session at the end of the year significantly contribute to the contextualization of my epiphany: "Veronica enjoys her time using the SignWriting program on the computer. Coming from Veronica is an undeniable feeling of confidence and experienced success with 'writing.' Veronica types on a keyboard that locates SignWriting symbols that she can not only recognize but can also read back rapidly." My notes indicate that Veronica had very poor school attendance. School records document pervasive cognitive delay and long-term memory deficiencies. I continue to comment that, "in spite of frequent interruptions in her school experience, it is amazing that Veronica can resume SignWriting activities whenever she returns to school, managing to sustain within herself high levels of motivation and confidence that contribute to her reading and writing success using SignWriting."

As I had indicated in earlier notes, Veronica was one student who was always eager to generate signs that were not located in the SignWriting dictionary. Veronica was willing to take risks. She would make selections from displayed handshape positions and movement options that appeared at the bottom of the computer screen. Her comments about her work reflected a confident attitude, "That one is close enough for me," "I can read it," "That's just fine." She always seemed to be in such a hurry *to get on with it*, to keep doing a school activity in which she experienced success. Observations of Veronica during other classroom activities indicated she functioned very differently. When directed to begin a class assignment, Veronica moved very slowly. She was easily distracted by her other classmates' discussions and movements. These distractions positioned Veronica

in the perpetual state of "catch up," always behind in her class work, never able to function at the same pace as her peers. These observations were consistent with the classroom teacher's report. Veronica's stance as a group learner was very passive. She was very reluctant to contribute to large or small group classroom activities. The teacher was therefore very anxious to share the significant breakthrough that had occurred with SignWriting. Veronica had generated a SignWriting document that described her Dad's birthday party at home. Veronica volunteered for the very first time to take her turn in the classroom's "author's chair," wanting to read to her classmates her SignWriting document. My final reflective journal comment suggested that SignWriting seemed to have *opened* literacy learning potential that Veronica had not yet experienced during her five sequential years in school.

Any number of interactional human experiences can mark people's lives and transform their views of the world. An ethnographic student practitioner suggested that epiphanies can stem from the unlikeliest of sources--a book, a conversation, a click of a telephone, or in my case, a six-second videotape clip that captured one DHH student's unique interaction with a SignWriting symbol.

Veronica Consumes the SignWriting Symbol for "house"

There were two recording video cameras that captured Veronica's unique interaction with SignWriting that changed forever my perspective on writing and reading signs. The written analysis for the first "take" follows.

Veronica engaged CF and a SignWriting peer in a brief discussion about the next lexical item that she wanted to include in her SignWriting document that was in progress. Veronica had just located the signs for "house" and "eat" in the SignWriting dictionary.

While CF was attending to Veronica's peer, the video camera captured Veronica signing, amusing herself with a playful extension on the sign "to eat." She signed, "house want eat." She then put both hands on the computer monitor where the SignWriting symbols for house were located. She pretended to grab the sign and with both hands brought the captured sign to her mouth, slowing moving her hands downward toward her stomach. Veronica metaphorically devoured the sign for "house."

A second camera captured the same scenario, Veronica's playful "feasting" on a SignWriting symbol. Veronica's peer had just made a comment about the SignWriting sentence that appeared on Veronica's computer monitor. He read the sign symbols Veronica had assembled, "house eat food." He added a facial expression, a wrinkled nose that communicated a comical interpretation, "The house is food?" In response, Veronica laughed out loud then signed "eat" with an open mouth smile. She extended and elaborated on her peer's idea of "eating." She first repeated the sign for "house," then moved her hands closer toward the monitor. In front of the computer, Veronica signed, "house want eat." Using both of her hands as receptacles, she reached for the sign symbol on the screen then carried the SignWriting symbol for "house" from the screen to her mouth. Veronica acted out the full digestive process of her *consumption* or *devouring* of a sign symbol, moving both her hands from her mouth then downward toward her belly.

Even though the remaining portion of the videotape indicated there was no further elaboration or evidence of social response to Veronica's metaphorical play with the sign "house," reflective interpretation of this interaction reveals numerous underlying implications. First, SignWriting symbols shimmering on a computer monitor prompted two SignWriting learners to engage in a communicative exchange, playful reciprocal

meaning making, a joint extension and embellishment of symbol meaning. Second, Veronica was not only amused by her peer's playful interpretation of her SignWriting comment; she elaborated on the proposed interpretation further with her own imaginative contribution. She communicated her intention, "I want to eat this," followed by a spontaneous enactment of that expressed desire. Third, a significant amount of the SignWriting teaching/learning experience descriptive account clearly demonstrated that Veronica exceedingly enjoyed her interaction with SignWriting symbols. This evidence is further supported by Veronica's mother's observations of her daughter's enthusiasm for SignWriting, "She just loves that stuff." Fourth, when Veronica metaphorically *ate* the SignWriting symbol for "house," she did so not by taking a small bite, or just a simple taste, she devoured the whole of it. She had her own intimate agape with SignWriting. She consumed, with gusto, something that she loved and had an insatiable appetite for *more*. Fifth, the most significant implication of Veronica's *feast* was the profound realization that written signs did indeed have power. SignWriting symbols placed in the hands of learners who hunger "to read the word - read the world," did empower DHH learners to transform shimmering images on a computer screen into *food*, a sustenance that defines who they are, "I am what I eat." "My language is me."

Re-examination of a Routine – Look – Think – Act

The cyclical routine associated with action research, look – think – act, guides my reflection on how this turning point moment has transformed my view of an empowered literacy learning environment for DHH students.

-Look-

While I continue to observe DHH students interact with printed mediums that represent the two languages in their world, a re-examination of *how* I look impels me toward further investigation. Whose perspective do I use when I query, "Does it [SignWriting] work?" "Whose language is being considered?" "Whose literacy do we value?"

The first step I took toward my transformed understanding of the literacy learning experiences of DHH students was to acknowledge that there are various and different lenses used to formulate perspectives. Educational, linguistic, and cultural factors all collectively impact the current picture that portrays DHH students' literacy learning contexts, development, and achievement. While this inquiry incorporated both adult and student perspectives, one of my major objectives was to assure that the view of the *learner* would be critically examined. This necessitated an adjustment in focus, altering our previous view of DHH learners as language receptacles into which competent language adults poured potential language proficiencies. A transformed ethnographic view reveals DHH learners not as *passive* individuals but rather as *active participants in language,* simultaneously bringing into focus the question of language ownership. "Whose language?" Previous discussions and debates concerning literacy learning for DHH students centered on one language, English. For many involved in establishing literacy learning environments for DHH emergent readers and writers, learning language means learning English. Literacy development means developing skills in reading and writing printed English words.

To some extent, educational forums, including the site of this inquiry, have begun to attend to the social and cultural validation of the language DHH students acquire

naturally, ASL. Checking the view through a literacy "lens" that acknowledges the existence of sign in the DHH students' communicative world allows the perspective to deepen and widen. A changed picture emerges in which literacy considerations now include active investigation of the linguistic and cultural contributions that a writing tool, such as *SignWriting*, extends to DHH students' further development of the language they claim as their own, ASL.

When we take the time to ask DHH learners about their English literacy learning experiences, what do we make of their comments, "It's too hard" and "It's too long"? How much risk taking do we invest in altering those struggling sentiments when we continue advocating for monolingual literacy paradigms with sentiments such as, "But I want reading to be fun" and "I don't want them dreading reading."

DHH students' recorded responses to SignWriting, the detailed observations of what they did with SignWriting symbols, and their eagerness to show what they knew about writing and reading signs, surely warrants re-examination. As practitioners we need to take a second look at a biliterate framework that includes two writing systems in order to meet the communicative and educational needs of bilingual DHH students.

-Think-

Dialogue is key. My colleagues often share their observations of my communicative approach during heated discussions. "You ask so many questions." "You answer my question with another question." "Your questions make me think." Some have concluded that my propensity to ask so many questions has to do with my training as a counselor. Questioning has always played an important role in my reflective learning.

Now that SignWriting has been introduced to DHH students at a very micro contextual level, how has my thinking about the implementation of biliterate educational environments for DHH students changed? First, I think introducing SignWriting has not only generated more discussion among teachers at our school about DHH students' literacy learning, SignWriting has uncovered *accepted as ordinary* literacy practices that the teachers themselves acknowledge to have associated inherent problems. For example, teachers have described supportive language development activities including lists of memorized spelling words, daily journal entries and reading strategies that encourage phonetic sound-letter decoding. All of these activities are targeted to develop literacy skill in a language for which DHH students have limited to non-existent auditory access, English. The teachers catch themselves saying, "Oh, they will be signing ASL when they grow up," without giving serious consideration to how that casual comment holds hostage that language's development and its critical implementation into DHH students' school life. Second, watching DHH students manipulate SignWriting symbols confirmed my belief that DHH students have language-making capabilities in the natural sign language they comfortably acquire and use. I can no longer think about literacy development for DHH students without including the writing medium that these students were so readily drawn to and successfully used to talk about their world. Third, while taking on this controversial approach to literacy, as key facilitator of this small group of DHH students' SignWriting experiences, there were many instances of frustration and disappointment and feelings of isolation and professional abandonment. Observing DHH students recruit other peers and the significant signing adults in their life into their

SignWriting experiences justified for me all the effort and care taken that assured they would have literacy learning experience in their own language, ASL.

-Act-

The recorded experiences of DHH students' learning and teaching of SignWriting have been encapsulated in both real time and in the resultant descriptive and interpreted collaborative written account. The ethnographic inquiry took place during one school year. While this one time experience with SignWriting did generate a multi-voiced collaborative account, my own perspective on how to proceed begins with yet another conviction: "A year is not enough." SignWriting experiences continued into the next school year as well as into subsequent years, right up to the current school year. I rely on the emic voices of DHH students that I have interpreted and recorded to sustain my involvement in promoting biliteracy development for the population of DHH students with whom I continue to work. "I like this [SignWriting]." "I know how to read all of this [a full page in a SignWriting story book]." "I want to do more of this [arranging SignWriting symbols on a computer screen]." "I want to eat this [a SignWriting symbol]." I no longer just listen to the dismissive and contrastive "ripple" of voices that still emanate from the signing community: "It's a waste of time," "Does it really work?" I respond now with a new obligation to educate and keep the dialogic process active. As SignWriting experiences continue at our public school program for DHH elementary students, the number of practitioners, students and teachers is growing. With this support I have gradually relinquished my role as primary facilitator of SignWriting activities in the school, witnessing the reciprocal transmission of empowerment flow between classroom teachers and new DHH student SignWriting learners.

Community based action research is a search for meaning and a way to come closer to the reality of other people's lives (Stringer, 1996). As I re-examine the relationships that strengthened during the time of the inquiry, I consider myself exceedingly privileged and grateful for the opportunity I had to seek a deeper understanding of the literacy lives of DHH students. I blush with self-conscious joy when I recall student's comments, " I know this [SignWriting], I'm smart." On those occasions when I was not present to facilitate SignWriting sessions, classroom teachers communicated to me the SignWriting learner's disappointed reactions, "Where is my CF?" A colleague observed, "Your relationship with students is like a magnet." A classroom teacher relayed an affirming response from a student when she was asked, "How do you feel about your SignWriting work?" The student replied, "It makes me feel happy."

With privilege comes obligation. The trust that grew out of my relationships with both students and teachers sensitized me to a power differential. The inquiry did attend to instances of power redistribution among participants. There were descriptive accounts of students' motivation, SignWriting learner assertions, and student epiphanies that clearly illustrated empowerment, the neutralization of literacy events in which the DHH students were positioned more *in the know*.

I suspect that power is at the center of the SignWriting controversy. A common phrase that emerges in sociocultural investigation of ideologies is *gatekeeping*. I had the opportunity to attend a lecture given by a prominent Deaf advocate for bilingual bicultural education for Deaf students that focused on the unequal literacy learning situation Deaf students are presented. The lecture was entitled, "Whose literacy?" To

illustrate her point, that there was indeed literacy learning inequality for Deaf students, the presenter used a metaphorical *gate*. It was explained that Deaf children position this gate near their head and assume a gatekeeper's duty, that is, to manipulate the flow of comprehensible input. The presenter described how English words approach the closed gate, hit the gate's surface then bounce back from where they came. The presenter pointed out that, on the other side of the gate, there are language competencies, ASL language competencies. The presenter proposed a literacy learning situation that acknowledged the linguistic competencies Deaf students do have in ASL. This acknowledgement would signal to the gatekeeper that they could use what they knew on one side of the gate to configure meaning to the English words that were constantly bombarding their gate portal. Once this was understood by the Deaf child, the presenter assured the audience that the metaphorical gate would then be in constant motion, swinging in both directions, allowing the flow of comprehensible input, equalizing and validating the two languages in Deaf students' literacy learning lives.

As I sat and reflected on this metaphor, I imagined a metaphorical *latched key*. I would present this key to the student gatekeeper. The key would be SignWriting symbols that represent the language currently being barricaded by a metaphorical gate. Printed English words would no longer bounce off the gate's surface but would float gracefully through a permanently opened portal, an opened space that allowed writing systems of two languages to be in constant and complementary motion, energizing the literacy potential DHH students can achieve in two languages.

Future Considerations

The challenge I see, therefore, is that those involved in designing and implementing educational programs for DHH students have an obligation to not only acknowledge the dual languages in the educational and social worlds of DHH students, English and ASL, but an obligation to also extend to DHH emergent readers and writers, the possibility of becoming literate in two languages. DHH students, given the opportunity to learn to read and write their natural language, ASL, using SignWriting, transforms them as competent and confident readers and writers and positions them as empowered bilingual bicultural communicators.

APPENDICES

APPENDIX A

NATIONAL ASSOCIATION OF THE DEAF (NAD) PROCLAMATION

National Association of the Deaf
Position Paper on ASL and Bilingual Education

- American Sign Language must be the primary language of instruction for academic subjects [and]

- Instruction in English as the national language shall occur in parallel, based on pedagogical and linguistic principles used in bilingual/multilingual educational programs for other languages. ("ASL Position Paper Approved by NAD," *The NAD Broadcaster* March, 1994: 39. In S. Livingston*, Rethinking the education of deaf students: Theory and practice from a teacher's perspective* (p. 8). Portsmouth, NH: Heinemann.

APPENDIX B

CONSENT FORM FOR ADULT PARTICIPANTS

Teacher for the Deaf and Hard of Hearing
Albuquerque Public Schools

Dear Teacher Participant:

You know me as one of your colleagues working with Deaf and Hard Hearing (DHH) students in APS schools, Cecilia Flood. I am a Ph.D. candidate at the University of New Mexico working on my dissertation in Educational Linguistics. You are invited to participate in a study that will describe how DHH students experience learning to write using SignWriting, a way to read and write signs. In collaboration with the DHH students at APS, we will co-construct a description of a sign literacy learning experience. We are interested in students' affective response to learning how to write the signs they use for everyday communication. You were selected to participate in this study because you already create a literacy learning environment for DHH students in your classroom.

If you decide to participate, I will describe to you the stages of the study. The study will last seven months, two months at the end of this school year and five months next school year ending in December 1999. As an active participant you will be asked to be present during SignWriting lessons, position camcorder equipment to videotape the lessons, supplement observation notes on a form we co-develop, and participate in two interviews conducted mid-way and at the conclusion of the study. Your participation will not require any additional preparation on your part in the teaching/learning of SignWriting. You will be invited to, but **not** required to, alternate between teacher and learner roles during these literacy events.

The videotaped SignWriting lessons and the audio-recorded interviews will be used exclusively for data collection purposes and will not be used in any other context without notification and written consent from you.

If you decide to participate you are free to withdraw your consent and to stop participation at any time. There will be no penalty for withdrawing from the study.

Any information obtained from the study where you can be identified will be kept confidential and will only be disclosed with your permission.

If you have any questions, you can call me at 881-9390 (wk). Any other questions concerning the research project can be directed to Jose Rivera, Chair of the Institutional Review Board at UNM 277-6128 or Sherman Wilcox, chair of the dissertation committee at UNM, the Department of Linguistics, 277-6353.

Having read the information provided, your signature indicates that you have decided to participate in the study. By signing the form below you do not waive any of your legal rights.

_____ _____
Date Signature of Participant

_____ _____
Date Signature of Investigator

APPENDIX C

CONSENT FORM FOR PARENT PARTICIPANTS

To the Parent of _____
Deaf and Hard of Hearing Program
Albuquerque Public Schools

Dear Parent Participant:

My name is Cecilia Flood. I have been a school counselor/teacher for Deaf and Hard of Hearing (DHH) students for six years in three APS schools, Chaparral Elementary, Mark Twain Elementary, and McKinley Middle School.

I am a Ph.D. candidate working on my dissertation at the University of New Mexico in Educational Linguistics. I am doing research on how DHH students experience learning how to write using SignWriting, a way to read and write signs. Your child is invited to participate in this study because your son/daughter can help describe what it is like to learn how to write the language they use for everyday communication and interaction American Sign Language. Your child was selected to participate because he/she is enrolled in one of the above school program sites for DHH students. Your son/daughter's classroom teacher will also be an active participant in this SignWriting literacy project.

If you decide to allow your son/daughter to participate in the study, I will describe the research procedures to you. The study will last for seven months. It will begin the last two months of this school year. Beginning again in August, the study will continue for the next five months ending in December 1999. SignWriting lessons will take place during your son/daughter's regular reading and writing class periods. Students' regular classroom schedules will not be interrupted. SignWriting activities will be videotaped for interpretive analysis. Your son/daughter may be interviewed. They will be asked questions about their sign literacy learning experience. You as parent will be invited to participate in an interview also. Observations of your child's writing at home will be a valuable contribution to research outcomes.

Learning how to write signs will not pose any risk to your son/daughter's literacy learning development. Learning SignWriting may make DHH students better signers and perhaps better readers and writers of two languages, English and ASL. While I believe there are many benefits in learning to write signs, I cannot guarantee or promise that your son/daughter will receive benefits from this study.

If you decide to allow your child to participate, you and your child are free to withdraw your consent and stop participation at any time. There will be no penalty for withdrawing from the study.

Information that is collected in connection with the study will remain confidential. Any disclosure of information that may identify your son/daughter will require written permission from you.

If you have any questions about the research, please call me at 881-9390. Any other questions or concerns about research procedures can be directed to Jose Rivera, Chair of the Institutional Review Board at UNM at 277-6128, or Sherman Wilcox, Chair of my dissertation committee, at the Department of Linguistics at UNM, 277-6353.

After receiving all the information provided, your signature indicates that you have decided to permit your child to participate in the study. By signing this form you do not waive any of your legal rights.

_____ _____
Date Signature of Participant

_____ _____
Date Signature of Investigator

APPENDIX D

CONSENT FORM FOR STUDENT PARTICIPANTS

Deaf and Hard of Hearing Program
Albuquerque Public Schools

Dear student _____:

My name is Cecilia Flood. You already know me as your school counselor. I am a student at UNM and am studying how DHH students learn to write signs. I am asking you to participate in this study because you can describe how you learn new things. We want to help DHH students learn how to read and write two languages, English and American Sign Language. We think that learning to write signs will make DHH students smile more and be happy about reading and writing in school.

You decide if you want to be part of this study. You will be asked to learn and maybe teach other students how to write signs by hand and by using the computer. We will use a video camera to help us remember what happened during SignWriting lessons. You will be asked to set up the camera sometimes and make sure it is focused on important people and places in the classroom. After we start learning SignWriting in April and again at the end of next December 1999, you will be asked some questions during an interview. We might use drawings, toys, and puppets to help us talk about what happened during SignWriting class. We will videotape the interviews. Later we can look at the videotapes together. We want to make sure that I wrote down your answers to the interview questions the right way. You can decide not to be part of the study at any time. If you decide to stop you will not be in trouble

The videotapes will not be shown to anyone else besides you, your parents, your teachers, and me without your permission. When we write out what you said or how you acted during SignWriting lessons, we will not use your name. No one will know who you are unless you want him or her to know.

If you have any questions you can call me 881-9390. You might have questions that you want to ask somebody else besides me. You can call Jose Rivera at UNM 277-1960, or Sherman Wilcox at UNM, 277-6353.

Your signature will mean that you have decided to participate in the study about learning to write signs. Signing your name on the line below does not mean you waive any of your legal rights.

_____ _____
Date Signature of Participant

_____ _____
Date Signature of Investigator

APPENDIX E

SIGNWRITING CONSENT FORM FOR STUDENT PARTICIPANTS

APPENDIX F

PARENT NEWSLETTER

SignWriting Parent Newsletter

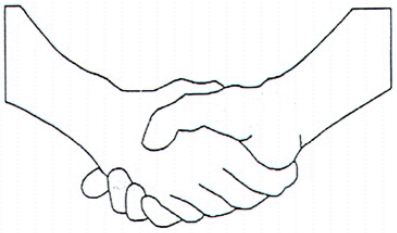
NEWSLETTER

APS Deaf & Hard of Hearing Program
Volume No. 2 Issue No. 2 Date Nov. 22, 1999

We're Famous!

As some of our families have already noticed, we have been made "famous" in a popular Deaf Community publication called the *Silent News*. In the November issue there was a feature article about our participation in the SignWriting literacy project supported by the DAC (Deaf Action Committee for SignWriting).The article included some photographs of our students and some of their initial evaluative comments about SignWriting 'in their own words'. The office manager at the *Silent News* gratiously responded to our request for complimentary copies of this issue for our students' families. There are many features of this publication that would benefit our students' enculturation into the wider national Deaf Community. Some of you might want to think about subscribing to this publication as it is a reliable source of information about the activities of the community to which your son or daughter may eventually assume membership. One of our fifth grader's wanted to know if this paper, including ***his*** picture, was 'spread out', that is, distributed all over to many people. The affirmative response brought a smile and 'raised eyebrows' reflecting perhaps his awareness that there may be some Deaf and Hard of Hearing adults who will read about our learning to read and write signs and be ***'wow-ed'.***

Congratulations to Us!



Valerie Sutton, the creator of the SignWriting system and coordinator of the SignWriting Literacy Project, called me from California the very evening she received her copy of the *Silent News*. She wanted to express her gratitude to our students, staff, and supportive families for our historical contribution to the development and evolution of

APPENDIX G

INTERVIEW QUESTIONS FOR PARENTS AND TEACHERS

Interview questions with parent stakeholders [Spradley, (1979)]

A. Project explanation

As you know the teachers who work with the DDH students in (identified school district) and I are teaching and learning SignWriting with your son/daughter at school. This interview will add to what DHH students have told us about what it is like for them to learn to read and write signs. I'd like to talk to you about your son/daughter's learning to write in general then talk specifically about your son/daughter's learning to write using SignWriting as well.

B. Recording explanation

Before we begin, I would like to record our conversation so I can remember what we talked about. Will that be OK? I might write some notes down while we talk if that would be OK too? I hope we will be able to get back together at some other time so you can check to see if what I wrote down really matches what we talk about here today. Will that be all right?

C. Native language explanation

- If you were talking with your DHH son/daughter, what would you tell them about learning to read and write?
- If you were talking with your DHH son/daughter's siblings, what would you tell them about their brother/sister's learning to read and write?
- If you were talking with a relative of yours, what would you tell them about your son/daughter's learning to read and write?
- If you were talking with a neighbor, would you tell them about your son/daughter's learning to read and write in the same way? Would you add or leave out information?
- If you were talking with your son/daughter's teacher about your child's reading and writing progress, are there concerns or questions you would discuss with the teacher?

D. Interview explanation

We might change how we continue with this interview. We are interested in the affective response DHH students show when it is time for writing work in school or at home. We have asked the students to draw pictures of their school environment showing where they write. You might want to draw a diagram or pictures of the places at home where you see writing activities take place. We can also look at some video clips of the SignWriting sessions that we have had so far. You could help us look for your son/daughter's non-verbal responses or reactions to writing that might help us interpret possible differences between writing words or signs for them.

E. Question explanation (Ethnography)

Just a few more questions that might help when it comes time to write a description of how DHH students here (identified school district) experience learning to write using SignWriting.

(a) Descriptive

- Could you tell me how you see your DHH son/daughter learn to read and write?
- Could you describe how you think your DHH son/daughter feels when it is time to write either in school or at home?
- Could you tell me how you think your son/daughter is learning to read and write signs? Have you seen them use SignWriting at home?
- Could you describe how you think your DHH son/daughter feels about learning to read and write signs? Have they talked to you about that?

(b) Structural

- What are the different kinds of writing your DHH son/daughter has done at school and brought home?
- What are the different kinds of writing you have seen your DHH son/daughter do at home?
- What are the different kinds of writing your DHH son/daughter might see being done by you or another family member at home?
- What are some of the things your DHH son/daughter might do before they start or after they finish their writing homework?
- Have you thought about how your DHH son/daughter might become or have become more confidence about their writing?

(c) Contrast

- What are the differences you have seen between the written work of your DHH son/daughter and with your other children's written work?
- Do you think your DHH son/daughter is aware of any differences between the kind of writing they do and the kind of writing that other members of your family do?
- Have you noticed any differences between your DHH son/daughter's hand written writing assignments and writing assignments done on the computer?
- Have you seen any differences between your DHH son/daughter's written work using English words and written work using SignWriting?
- Have you noticed any differences between your DHH son/daughter's affective response to English writing assignments and SignWriting assignments?

Interview questions with classroom teacher stakeholders [Spradly (1979)]

A. Project Explanation

As you know, we are teaching and learning SignWriting with our Deaf and Hard of Hearing students (DHH). This interview will add to the description the DHH students give us regarding their experiences learning to write using SignWriting. I'd like to talk to you about DHH students' learning to write in general and then we can talk specifically about how the students are learning to write signs using SignWriting.

B. Recording Explanation

Before we begin, is it OK if we record this interview? Will it also be OK for me to write some brief notes while we talk? Both the notes and the recording will help with the transcription process. I will need to check with you later to make sure that I did understand what we discussed. The written transcript will help us both remember and confirm our discussion.

Why don't we begin with a brief description of your background. I'm referring to your academic and professional experiences with Deaf and Hard of Hearing students. I mean what degrees you have and how many years of teaching experiences you have had, things like that.

C. Native language explanation

- If you were talking with another teacher who never worked with DHH students before, what would you tell them about how DHH students learn to read and write?
- If you were talking with another teacher who has worked with DHH students before, are there parts of the above description you would change, parts that you would leave out or add?
- If you were talking with a new teacher that was just starting out teaching DHH students, what things would you tell that person to prepare them or caution them regarding the teaching of reading and writing to DHH students?
- If you were talking to parents of DHH students about how DHH students learn to read and write, are there things you would tell them that would be different from what you would tell teachers?

D. Interview explanation

I would rather this interview be more like a conversation. We have been videotaping our SignWriting sessions. I would like to watch portions of the videotapes together so we could share observations and make comments on what we notice. I am interested in DHH students' affective response to learning SignWriting. You can help me look for those 'smiles' and other facial expressions that might appear. We could talk about

who, what, where, when, and maybe why and how some of those responses happened.

E. Question explanations (Ethnographic)

(a) Descriptive

- Could you tell me how DHH students learn to read and write?
- Could you describe how you think they feel when it is time to write in school?
- Could you tell me how DHH students are learning to read and write signs?
- Could you describe how you think DHH students feel about learning to read and write signs?

(b) Structural

- What are the different kinds of writing activities that DHH students do in school?
- What are the different kinds of writing DHH students are expected to do at home?
- What are the stages of writing that DHH students need to learn and experience?
- What are the different practice strategies that DHH students use to become better writers?
- Can you think of the ways that DHH students have become more confident as writers?
- Can you talk about the kinds of writing that DHH students will need to know how to do when they leave school?

(c) Contrast

- Are there differences between the written work of young DHH students and older DHH students?
- Do you think that DHH students are aware of the differences between their writing and the written work of other students?
- Have you observed differences between DHH students' written work using English words and their written work using SignWriting symbols?
- Have you observed differences between DHH students' hand written work using English and using SignWriting?
- Have you observed differences between DHH students' written work using the computer?
- Have you observed differences between DHH students' computer generated English texts and their computer generated SignWriting texts?
- Have you observed any differences between DHH students' affective response to English writing assignments and SignWriting assignments?

REFERENCES

Adams, M. J. (1994). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

Allen, T. (1986). Patterns of academic achievement among hearing impaired students: 1974-1983. In A. Schildroth & M. Karchmer (Eds.), *Deaf children in America* (pp. 161-205). San Diego, CA: College-Hill Press.

Basso, E., & Kuntze, M. (1994). Literacy for deaf students: Freire and Macedo's model. In B. Snider (Ed*.), Post Milan ASL and English literacy issues, trends and research* (pp. 37-44). Washington, DC: Gallaudet University College for Continuing Education.

Biber, D. (1986). Spoken and written textual dimensions in English: Resolving the contradictory findings. *Language*, *62*(2), 394-414.

Bonvillian, J., Orlansky, M., & Novack, L. (1983). Developmental milestones: Sign language acquisition and motor development. *Child Development*, *54*, 1435-1445.

Casanova, U. (1995). Bilingual education: politics or pedagogy? In O. Garcia & C. Baker (Eds.), *Policy and practice in bilingual education: Extending the foundations* (pp. 15-23). Bristol, PA: Multilingual Matter, Ltd.

Chafe, W. (1992). Information flow in speaking and writing. In P. Downing, S. D. Lima, & M. Noonan (Eds.), *The linguistics of literacy* (pp. 17-30). Philadelphia, PA: John Benjamins North America.

Chall, J. (1990). Policy implications of literacy definitions. In R. Venezky, D. A. Wagner, & B. S. Ciliberti (Eds.), *Toward defining literacy* (pp. 54-62). International Reading Association, Inc.

Coulmas, F. (1989). *The writing systems of the world*. Cambridge, MA: Basil Blackwell, Inc.

Crawford, J. (1991). *Bilingual education: History politics theory and practice*. Trenton, NJ: Crane Publishing Company.

Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*, *49*(2), 222-251.

Cummins, J. (1988). Language proficiency bilingualism and academic achievement. In P. A. Richard-Amato (Ed.), *Making it happen - Interaction in the second language classroom: From theory to practice* (pp. 382-395). White Plains, NY: Langman, Inc.

Dawn Sign Press (1984). *The American Sign Language Hand Shape Game Cards.*

Edelsky, C., & Jilbert, K. (1985). Bilingual Children and writing: Lessons for all of us. *Volta Review*, *87*(5), 57-72.

Erting, C. (1992). Deafness and literacy: Why can't Sam read? *Sign Language Studies, 75*, 97-112.

Ewoldt, C. (1985). A descriptive study of the developing literacy of young hearing impaired children. *Volta Review, 87*(5), 109-126

Ewoldt, C. (1990). The early literary development of deaf children. In D. F. Moores & K. P. Meadow-Orlans (Eds.), *Educational and developmental aspects of deafness* (pp. 85-113). Washington, DC: Gallaudet University Press.

Fairclough, N. (1989). *Language and power*. New York, NY: Longman, Inc.

Freire, P., & Macedo, D. (1987). *Reading the word and the world*. Hadley, MA: Bergin & Garvey Publishers, Inc.

Frishberg, N. (1988). Signers of tales: the case of literary status of an unwritten language. *Sign Language Studies, 59*, 149-170.

Goetz, J. P., & LeCompte, M. D. (1984). *Ethnography and qualitative design in educational research.* Orlando, FL: Academic Press, Inc.

Goodman, K. S., & Goodman, Y. (1979). Learning to read is natural. In L. Resnick & C. Weaver (Eds.), *Theory and practice in beginning reading* (Volume 1). Hillsdale, NJ: Erlbaum.

Goody, J. (1982). Alternative paths to knowledge in oral and literate cultures. In D. Tannen, (Ed.), *Spoken and written languages: Exploring orality and literacy* (pp. 201-215). Norwood, NJ: Ablex Publishing Corporation.

Green, G. M., & Morgan, J. L. (1981). Writing ability as a function of the appreciation of differences between oral and written communication. In C. H. Frederiksen & J. F. Dominic (Eds.), *Writing: The nature, development and teaching of written communication* (Volume 2). (pp. 177-188). Hillsdale, NJ: Lawrence Erlbaum Association, Inc.

Guba, E. & Lincoln, Y. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications.

Hansen-Strain, L. (1994). Orality/literacy and group difference in second-language acquisition. In A. H. Cummings (Ed.), *Bilingual performance in reading and writing* (pp. 283-305). Ann Arbor, MI: Research club in Language Learning. Philadelphia, PA: John Benjamins North America.

Hanson, V. (1985). Cognitive processes in reading: where deaf readers succeed and where they have difficulty. In D. S. Martin (Ed.), *Cognition, education and deafness: Directions for research and instruction* (pp. 108-110). Washington, DC: Gallaudet University Press.

Hanson, V. (1991). Phonological processing without sound. In S. A. Brady & D. P. Shankweiler (Eds.), *Phonological processes in literacy: A tribute to Isabelle Y. Liberman* (pp. 153-161). Hillsdale, NJ: Lawrence Erlbaum Associates.

Harris, R. (1995). *Signs of Writing*. New York, NY: Routledge.

Heath, B. S. (1983). *Ways with words language, life and work in communities and classrooms.* NY: Cambridge University Press.

Hoffmeister, R. (1994). Metalinguistic skills in deaf children: knowledge of synonyms and antonyms in ASL. In G. Mann (Ed.), *Proceedings of Post Milan conference* (pp. 151-175). Washington, DC: Gallaudet University Press.

Hornberger, N. (1989). Continua of biliteracy. *Review of Educational Research, 39*(3), 271-296.

Hornberger, N. (1995). Creating successful learning contexts for bilingual literacy. In O. Garcia & C. Baker (Eds.), *Policy and practice in bilingual education extending the foundations* (pp. 176-188). Bristol, PA: Multilingual Matters, Ltd.

Humphries, T., Padden, C., & O'Rourke, T. (2nd Edition). (1989). *A basic course in ASL*. Silver Spring, MD: T. J. Publishers, Inc.

Johnson, R., Liddell, S., & Erting, C. (1989). *Unlocking the curriculum: Principles for achieving access in deaf education* (working paper 89-3) Washington, DC: Gallaudet University Research Institute.

Kalmar, T. M. (1994). ?Guariyusei? Adult biliteracy in its normal habitat. In D. Spencer (Ed.), *Adult biliteracy in the United States* (pp. 123-146). McHenry, IL: Delte Systems Co., Inc. Center for Applied Linguistics.

Kannapell, B. (1980). Personal awareness and advocacy in the deaf community. In C. Baker & R. Battison (Eds.), *Sign language and the deaf community essays in honor of William C. Stokoe* (pp. 105-116). Silver Spring, MD: National Association of the Deaf.

Krashen, S. (1982). *Principles and practice in second language acquisition*. London: Pergamon.

Krashen, S. (1984). *Writing research: Theory and applications*. Trowbridge, England: Redwood Burn, Ltd.

Lakoff, R. T. (1982). Some of my favorite writers are literate: The mingling of oral and literate strategies in written communication. In D. Tannen (Ed.), *Spoken and written communication: Exploring orality and literacy* (pp. 239-260). Norwood, NJ: Ablex Publishing Corporation.

Lane, H. (1984). *When the mind hears: A history of the deaf.* New York: Random House.

Leybaert, J. (1993). Reading in the deaf: the roles of phonological codes. In M. Marschark & M. D. Clark (Eds.), *Psychological perspectives of deafness* (pp. 269-309). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Livingston, S. (1997). *Rethinking the education of deaf students: Theory and practice from a teacher's perspective.* Portsmouth, NH: Heinemann.

London, C. B. G. (1994). Linking cultures through literacy: a perspective for the future. In N. J. Ellsworth, C. N. Heley, & A. N. Baratta (Eds.), *Literacy: A redefinition* (pp. 159-185). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Maestas y Moores, J. (1980). Early linguistic environment: interactions of deaf parents with their infants. *Sign Language Studies, 26*, 105-117.

Mahshie, S. (1995). *Educating deaf children bilingually*. Washington, DC: Pre-College Programs, Gallaudet University.

Mangelsdorf, K. (1989). Parallels between speaking and writing in second language acquisition. In D. M. Johnson & D. H. Roen (Eds.), *Richness in writing* (pp. 134-145). White Plains, NY: Longman, Inc.

Martin, J. (2000). *A Linguistic comparison, two notation systems for signed languages, Stokoe Notation and Sutton SignWriting.* Western Oregon University.

Martin-Jones, M. & Romaine, S. (1985). Semilingualism: A half- baked theory of communication competence. *Applied Linguistics, 7*, 26-38.

Masataka, W. (1992). Motherese in a signed language. *Infant Behavior and Development, 15*(4), 453-460.

Mayer, C. & Wells, G. (1996). Can the linguistic interdependence theory support a bilingual-bicultural model of literacy education for deaf students? *Journal of Deaf Studies and Deaf Education, 1*(2), 93-107.

Miller, C. (1994). A note on notation. *Signpost, 7*(3), 191-202.

McIntire, M. (Ed.). (1994). *The acquisition of American Sign Language by deaf children.* Burtonsville, MD: Linstock Press.

McIntire, M., Newkirk, D., Hutchins, S., & Poizner, H. (1987). Hands and faces: A preliminary inventory for written ASL. *Sign Language Studies, 56*, 197-241.

McLaughlin, B. (1978). *Second language acquisition in childhood*. Hillsdale, NJ: Lawrence Erlbaum Associates.

New London Group (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Education Review, 66*(1), 60-92.

Newport, E., & Meier, R. P. (1985). The acquisition of American Sign Language. In D. Slobin (Ed.), *The crosslinguistic study of language acquisition Volume I: The data* (pp. 881-938). Hillsdale, NJ: Lawrence Erlbaum Associates.

Nover, S. & Andrews, J. (1998). *Critical pedagogy in deaf education: Bilingual methodology and staff development.* Santa Fe, NM: New Mexico School for the Deaf.

Nover, S., Christensen, K. & Cheng, L. (1998). Development of ASL and English competency for learners who are deaf. *Topics in Language Disorders*. pp. 65-75.

Ong, W. J., & Ong, S. J. (1992). Writing is a technology that restructures thoughts. In P. Downing, S. Lima, & M. Noonan (Eds.), *The linguistics of literacy* (pp. 293-319). Philadelphia, PA: John Benjamins North America.

O'Rourke, T. (1978). *A basic vocabulary – American Sign Language for parents and children.* Silver Spring, MD: T. J. Publishers, Inc.

Padden, C. (1998). Grammatical theory and signed languages. In F. Newmeyer (Ed.), *Linguistics: The cambridge survey*. Cambridge, England: Cambridge University Press.

Petitto, L. (1994). On the equipotentiality of signed and spoken language in early language ontogeny. In D. D. Snider, *Post Milan ASL and English literacy: Issues, trends and research* (pp. 195-215). Washington, DC: Gallaudet University College of Continuing Education.

Polanyi, L. (1982). Literacy complexity in everyday storytelling. In D. Tannen (Ed.), *Spoken and written language: Exploring orality and literacy* (pp. 155-169). Norwood, NJ: Ablex Publishers Corporation.

Ramsey, C. L. (1993). *A description of classroom discourse and literacy learning among deaf elementary students in a mainstreaming program.* Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Reynolds, D. (1994). The spirit of BiBi: Two languages and two cultures. In *Parallel views: Education and access for deaf people in France and the United States.* The French-American Foundation. Washington, DC: Gallaudet University Press.

Sampson, G. (1985). *Writing systems*: *A linguistic introduction*. Stanford, CA: Stanford University Press.

Schleper, D. (1992). When "F" spells "cat": spelling in a whole language program. *Perspectives in Education and Deafness* (pp. 11-14). Washington, DC: Pre-college Program, Gallaudet University.

Slobin, D. (1985). Crosslinguistic evidence for language making capacity. In D. I. Slobin (Ed.), *The crosslinguistic study of language acquisition: Volume 2. Theoretical issues* (pp. 1157-1256). Hillsdale, NJ: Lawrence Erlbaum Associates.

Smith, F. (1983). Reading like a writer. *Language Arts, 60*, 558-567.

Smith, L. W. (1994). An interactionist approach to the analysis of similarities and differences between spoken and written language. In V. John-Steiner, C. P. Panofsky, & L. W. Smith (Eds.), *Sociocultural approaches to language and literacy: An interactionist perspective* (pp. 43-81). New York, NY: Cambridge University Press.

Spindler, G., & Spindler, L. (1982). Roger Harker and Schonhausen: From the familiar to the strange and back. In G. Spindler (Ed.), *Doing the ethnography of schooling*. New York, NY: Holt, Rinehart & Winston.

Spradley, J. P. (1979). *The ethnographic interview*. New York, NY: Holt, Rinehart & Winston.

Stokoe, W. (1960). Sign language structure: an outline of the visual communication system of the American Deaf. *Studies in Linguistics Occasional Papers No. 8.*

Stokoe, W. (1993). Review article unabridged-two recent dictionaries. *Sign Language Studies, 78*, 63-72.

Stokoe, W. (1994). Discovering a neglected language. *Sign Language Studies, 85*, 377-382.

Stringer, E. T. (1996). *Action research: A handbook for practitioners*. Thousand Oaks, CA: Sage Publications.

Stringer, E. T. (1997). *Community based ethnography: Breaking traditional boundaries of research, teaching and learning.* Malwah, NJ: Lawrence Erlbaum Associates.

Street, B. Y. (1995). *Social literacies: Critical approaches to literacy in development, ethnography and education.* Essex, England: Longman Group, Ltd.

Strong, M., & Prinz, P. (1997). A study of the relationship between ASL and English literacy. *Journal of Deaf Studies and Deaf Education, 2*(1), 37-46.

Supalla, T. (1982). *Structure and acquisition of verbs and motion and location in ASL.* Unpublished doctoral dissertation, University of California, San Diego.

Sutton, V. (1998). History of SignWriting [on line]. Available: http://www.SignWriting.org/sw40.html

Swisher, M. V. (1988). Similarities and differences between spoken languages and natural sign languages. *Applied Linguistics, 9,* 343-356.

Tannen, D. (1982). The oral/literate continuum in discourse. In D. Tannen (Ed.), *Spoken and written language: Exploring orality and literacy* (pp. 1-16). Norwood, NJ: Ablex Publishing Corporation.

Van Cleve, J. V., & Crouch, B. (1989). *A place of their own: Creating the deaf community in America.* Washington, DC: Gallaudet University Press.

Venesky, R., Wagner, D. A., & Ciliberti, B. S. (1990). *Toward defining literacy.* International Reading Association, Inc.

Wilbur, R. B. (1987). *American Sign Language linguistic and applied dimensions*. Boston MA: College-Hill Press.

Wilcox, P. P. (1993). *Metaphorical mapping in American Sign Language*. Unpublished doctoral dissertation, University of New Mexico, Albuquerque.

Figure 4 and Figure 5 reprinted with permission from *A Basic Course in American Sign Language, 2nd Edition,* 1994, T. J. Publishers, Inc., Silver Spring, Maryland 20910, U.S.A.

Figure 24 printed with permission from *A Basic Vocabulary: American Sign Language for Parents and Children,* 1978, T. J. Publishers, Inc., Silver Spring, Maryland 20910, U.S.A.

Figures 4, 5, and 24 also printed with permission from Dawn Sign Press, 1984, San Diego, CA 92121-3223.