A CROSS-CULTURAL AND CROSS-LINGUISTIC ANALYSIS OF DEAF READING PRACTICES IN CHINA: CASE STUDIES USING TEACHER INTERVIEWS AND CLASSROOM OBSERVATIONS

BY

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DISSERTATION

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Abstract

Longstanding beliefs about how children read accentuate the importance of phonological processing in mapping letters to sound. However, when one considers the nature of the script being read, the process can be far more complicated, particularly in the case of an alphabetic script like English (Share, 2008). Cross-cultural reading research reveals alternative modes of processing text that is not entirely phonological. Chinese is known for its non-alphabetic script and its greater reliance upon morphological processing (Anderson & Kuo, 2006), visual skills (Ho & Bryant, 1997; Huang & Hanley, 1995; McBride-Chang & Zhong, 2003), and radical awareness- all argued to be essential skills in deciphering the character-based script. Given the more visual and semantic structure of Chinese, would reading Chinese be easier for deaf students than a sound-based system like English?

Deaf readers in China are nevertheless required to learn two very different scripts- one alphabetic (Pinyin) and another non-alphabetic (Simplified Chinese characters). Furthermore, we must consider the relationship between languages in the child's environment (e.g. a tonal spoken language and a signed language) and the varying scripts (alphabetic and non-alphabetic Chinese). This study investigates how deaf teachers introduce scripts and languages within a bilingual classroom in China. Qualitative data were collected through teacher interviews and classroom observations. The data analysis approach relies upon principles incorporated from *Grounded Theory* (Bryant & Charmaz, 2007) and suggests the importance of sign language as a visual communicative strategy in teaching reading. By examining deaf children's reading practices cross-culturally, researchers and practitioners will better understand the sociocultural and sociolinguistic influences that drive and shape reading instruction. Furthermore,

investigating a context where the script is less sound based allows us to explore just how visual a deaf reader can be.

To the One who has made me and loved me since the day I was born

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Table of Contents

Preface

"You can't learn German! You are deaf!" exclaimed my French speech therapist when I expressed my desire to learn German while attending junior high school in France. Even though I spent many frustrating hours learning French pronunciation with my French speech therapist who did not use any visual cues, I was already on a bilingual path, thanks to my American mother who went ahead and taught me both English and French, a course of action discouraged by the French medical professionals who told her I was to be taught only in French. With Cued Speech, a visual system, in place, I was introduced to the world of spoken language, picked up foreign accents through the cues and lip-read so many mouth forms. The idea of bilingualism in Europe was no legend; it was everyday practice. This opportunity to become bilingual stirred a deep desire in me to explore and specialize in foreign languages at a young age, but the pursuit was not without hurdles. Many of my teachers in France joined the chorus of disbelief, scoffing at the idea that a deaf person can learn foreign languages. Though I had already been exposed to both French and English as a child and was faring quite well at school, the teachers and professionals in my life thought my deafness was an insurmountable obstacle to learning another language.

Despite the resistance, my passion for languages could not be suppressed. I took German and Russian in high school, and continued to learn languages during my college years, majoring in Russian and taking Spanish, since many suggested that it was easier to learn than German. The underlying assumption in the minds of hearing people is that one must be able to hear a foreign language – or any language, for that matter – to learn it. Is it possible for a deaf person to learn language without being able to hear? The answer is yes. Cued Speech provided me with the ability to discriminate sounds *visually* and offered me access to the spoken language. I was

phonologically aware of the sound similarities across languages, due to the visual information provided by the hand cues in combination with information from the lips. Written print was also helpful to me in language learning.

Lip-reading alone is unreliable, since on average it provides only about 27% to 57% percent of the information necessary to distinguish sounds from one another (Hyde & Power, 1992). Visual strategies such as reading script helped to fill in the missing information. It was not until I began studying dead languages, such as ancient Greek and Hebrew, that I realized that scripts not only vary in form and composition, but also are often unhelpful for determining pronunciation. Scholars who learn the written script of a dead language do not necessarily know how to speak it. This raises the question as to whether hearing individuals need phonological processing in order to read scripts.

Before describing this qualitative project, I wish to reveal to my readers where I stand, as a researcher, in initiating this study. I was born profoundly deaf into a hearing family and was raised in the South of France, learning both French and English. The task of learning two languages did not come easily, but it sharpened my meta-linguistic awareness, which shaped my linguistic competencies in other languages such as Latin, French Sign Language, German, Russian, Russian Sign Language, Spanish, Greek and Hebrew. Research has shown that the more one learns languages, the easier the transfer, in particular when dealing with cognate languages (Cummins, 1979; Jimenez, Garcia & Pearson, 1996). While I was exposed to various modalities, spoken, signed and written languages, I realized that in the list of languages that I knew, most languages I learned were either alphabetic or syllabic. I had no experience learning a morpho-syllabic script.

Chinese was one more language that I wished to explore, knowing that it would inform me as to the nature of script in the learning process. Chinese is a visual-spatial type of writing system and I wondered whether the uniqueness of its spatial script would make it easier for a d/Deaf[1] person to learn to read. However, Chinese is recognized as a tonal language, and these speech variations would be inaccessible to me auditorally. This quandary begs the question: How do d/Deaf Chinese individuals learn a tonal language with a visual-spatial script?

In order to better understand what learning Chinese involves, I decided to tackle the language myself to gain insight into what is and is not accessible via lip-reading to a deaf person. How would I make adjustments in spite of the obvious barriers? Learning a new written orthography essentially put me in the place of a first-grade student, being exposed to a foreign print for the first time. My learning as an adult, however, likely does not parallel the developmental reading stages that a Chinese first grader normally undergoes. First, as a Westerner, my extensive exposure to alphabetic script and Western educational practices also likely influences my perception of Chinese script. Furthermore, not being able to hear may provide me with a visual advantage to recognize distinguishing characteristics as far as the script is concerned.

The cross-linguistic and cross-cultural experiences I have had as I try to learn Chinese are strikingly similar to the linguistic challenges faced by my d/Deaf elementary and middle school students when I was teaching them English. English was, for many of them, their second language and their first language being American Sign Language, with a distinct lexicon,

[1] In the United States, the emphasis on capitalizing the word 'deaf' stems from the sociocultural and linguistic identification with a marginalized community known as "Deaf Communities" that share the same common sign language and cultural heritage. In this dissertation, it is important to recognize that in China the notion of Deaf communities and Deaf culture is less established. Still, the term 'deaf" will be used here to refer to the general case of reference to those with hearing loss, and "d/Deaf" will be applied when discussing the emerging voice of Deaf discourse, unique to the experience of being Deaf in signing communities.

morphology, and syntax. Sign languages do not have a written script. Deaf readers find meaningful interaction between sign language and the written language to help them extract meaning from script (Kuntze, 2003; Williams, 2004). Deaf readers who sign do not necessarily "decode" English words letter by letter, but rather search for chunks of words within words, translating these chunks into sign language (Bailes, 2001; Humphries & McDougall, 2000; Kuntze, 2003). These indirect mappings from sign to written script draw some interesting parallels between spoken Chinese and the written characters. Characters are not necessarily "decoded" by strokes, but rather are viewed as combination of radicals that carry phonetic and/or semantic information. While a more detailed analysis of Chinese and its script will be described later in this study, these findings still remain essential topics of discussion in “deciphering” orthographies.

To conclude, my own journey of learning Chinese has helped me to gain insight into the various instructional strategies and language use among at least one of the d/Deaf educational communities in China. It has helped me to engage with my research participants and collaboratively build a rich framework that hopefully provides an authentic account of this sociolinguistic phenomenon (including what works and what remains a hindrance to the learning process).

Chapter 1

Introduction

This dissertation is the second stage of a larger multi-phase study investigating cross-cultural and cross-linguistic reading practices in China. The first stage started out as an Early Research Project exploring the socio-cultural context that surrounds the school and literacy lives of d/Deaf Adults raised in China (Jones, 2011). In the initial study, eight interviews were conducted with Chinese d/Deaf bilinguals residing in the United States, but who were raised in China for most of their childhood. The findings (all retrospective narratives) from this previous study, served as the foundation for the second phase, which aims at gathering qualitative information about current reading practices within a bilingual rural deaf school in Mainland China. This present day case study involves six interviews with deaf Chinese individuals who were raised in China, but who are also currently engaged in the education of the deaf in China. As these deaf teachers talk about their own childhoods, we gain confirmation of the classroom practices of decades ago reported by the adult interviewees in Jones (2011). The new interviews also offer insight into current beliefs and practices used in classrooms in deaf education. However, most of these deaf teachers work in upper grade levels, and may not be as actively engaged in developing young deaf children's early reading skills. Therefore in order to capture some of the current approaches to reading instruction, I added interviews and video-recorded classroom observations of first, second, and third grade Chinese lessons by three additional teachers (2 hearing and 1 deaf).

This study explores d/Deaf reading practices in a Chinese cultural, linguistic and geographical region by examining the nature of the script and how teachers address its linguistic structure, how language is used to mediate script learning, and what strategies are linked to

visual learning. More and more cross-cultural research shows differing reading outcomes, particularly when a student is either bilingual or monolingual (Bialystok, Shenfield & Codd, 2000). There are monolinguals familiar with alphabetic scripts or logographic scripts, bilinguals with mono-scriptural knowledge, or bilingual with bi-scriptural experiences. Each of these contexts offers unique student learning experiences that contribute to a clearer understanding of the depth and breadth of reading behaviors and reading processing. Cross-linguistic studies offer an important perspective in regards to processing different types of orthographies. Yet, little research has focused on languages without a written script. While the populations that do not have a written system would be worthy to explore, d/Deaf readers are in a unique category because they are familiar with a visual spatial language (sign language) and also learn a written script that is used by the majority of people in a spoken language-but to d/Deaf readers this language is not always accessible auditorily. More research on the deaf population is needed to better understand the transfer interactions between language modality and written script and how teachers facilitate this transfer.

The Challenge: Learning to Read as a Deaf Child

Learning to read for a deaf child is a challenge. The inability to hear spoken language, and the fact that 90% of deaf children come from hearing families who do not sign (Mitchell, 2004), raises the question of whether deaf children possess native fluency in any language at all. A lack of adequate language exposure at a young age may precipitate cognitive and social delays, thus impeding the development of reading ability (Schick, De Villiers, DeVilliers, & Hoffmeister, 2007). For the past three decades, the demographics in the U.S. have not changed in regards to the national reading levels of deaf high school students – average performance is

reported to fall beneath a third or fourth grade level (Allen, 1986; Holt,Traxler & Allen, 1992; Qi & Mitchell, 2012). According to Traxler (2000), only 10 % of the deaf population can read at or beyond the 8th grade level. Many of the challenges faced by deaf learners have been attributed to the assumption that the key to decoding alphabetic script requires *hearing* the spoken language and deploying one's phonological awareness to support the reading process (Adams, 1990; Perfetti, 2011).

While deaf children may not fully hear the spoken language in their environment, some have argued that phonological mapping of the spoken language is still possible through alternative pathways, e.g., through Cued Speech, a phonetic representation of the spoken language through handshape cues (Alegria & Lechat, 2005; LaSasso, Crain & Leybaert, 2003), or Visual Phonics, a phonetic mapping utilizing text (Narr, 2008), or through mouthing (Leybaert & Alegria, 1995). Still, not all deaf children can process text using these phonological strategies that derive from speech (Qi & Mitchell, 2012).

Recent research has suggested that successful deaf readers may be relying on other strategies, including orthographic information, for phonological processing of alphabetic script (Izzo, 2002; Miller, 2006; 2007; Ormel, Hermans, Knoors, Hendriks, &Verhoeven, 2010; Padden & Ramsey, 2000; Treiman & Hirsh-Pasek, 1983) and other scripts (see Miller's work on Arabic and Hebrew). This orthographic awareness is also found in Olson and Carramaza's (2004) study, where unique patterns in deaf children's English spelling errors reveal their tendency to make legally orthographic but phonologically implausible errors. They posit that legal letter strings (i.e, words) come from exposure to the correct sequences based on memory rather than phonological processing per se, contradicting how Scheerer (1986) describes orthography as "the relation between script and its spoken language."

Furthermore, Mayberry and colleagues (2010) conducted a meta-analysis of 57 studies investigating the phonological coding and awareness of deaf readers, all published between 1988 to 2010, and found that it was *language ability*, whether in spoken or signed modalities, not phonological awareness, that predicted reading performance. This suggests that lack of hearing is not as critical as is the lack of language exposure in learning to read. Thus, sign language proficiency does contribute to reading development.

The ease with which deaf children acquire a visual sign language cannot go unnoticed. Grosjean (2001, 2010) advocates for the "birthright" of Deaf individuals as bilingual and bimodal individuals. American Sign Language (ASL) is a distinct linguistic entity used by the deaf community; it possesses its own phonology[2], morphology, syntax and pragmatics (Liddell, 2003). By placing d/Deaf readers in a second language-learning context, issues of first and second language proficiencies can determine the success of transfer. This bilingual scenario has caused some discussions in the field of deafness particularly as to whether Cummins's (1979) interdependence theory applies to d/Deaf bilinguals. The interdependence theory posits that proficiency in the first language and its direct mapping with its own written script provides foundational steps that lead to successful transfer when learning a second language with its own script. Deaf children learn a sign language with no script and are expected to learn English as a second language primarily through the written script. Mayer and Wells (1996) argue that since ASL does not have a written form, deaf students cannot derive the cross-linguistic transfer benefits without reading experience in their first language. They suggest that this core issue prevents the application of Cummins's (1979) cross-linguistic interdependence theory.

[2] Phonology is often described as the study of phonemes, the smallest unit of sounds. For sign language, the term refers to the smallest components within a sign, which includes handshape, location, movement and palm orientation (Liddell, 2003). Stokoe (1960) originally called these units "cheremes" to represent "cheros" which means hand, but the term is not well known and most scholars use the term phonology without regard for its literal meaning.

First and foremost, the common understanding that having a strong native language enables any reader to think abstractly and relate their experiences with the world most certainly applies to deaf readers (Harris, 2011; Kuntze, 2003). Higher-order thinking in American Sign Language provides essential metalinguistic and metacognitive awareness needed for transferring knowledge to their second language (L2) (Cummins, 1991; Harris, 2011; Kuntze, 2003). Several scholars have offered compelling data showing that proficiency in American Sign Language is associated with better reading ability or associated skills that support literacy (Padden & Ramsey, 1998, 2000; Prinz & Strong, 1998; Singleton, Morgan, DiGello, Wiles, & Rivers, 2004; Strong & Prinz, 1997, 2000). Understanding the underlying mediation process, that is, how sign language may leverage meaning access to script is an important area of exploration. This process has been observed in Deaf parents and teachers interacting with d/Deaf children (Bailes, Erting,C.J, Erting, L.C., & Thumann-Prezioso, 2009; Harris, 2011) and is compared to the kind of sophisticated or elaborated teacher discourse that has been shown to promote greater print awareness and metacognitive skills in hearing preschoolers (Dickinson & Tabors, 2001).

These existing accounts of a possible ASL-to-English mediation process that supports literacy development in young deaf readers offer an important contribution to developing a more comprehensive theoretical framework of how spoken and signed languages relate to written script. In this theory-building process, however, we must first examine the *nature of print*. Since the ingenious creation of the written script five thousand years ago, it is only in the last thousand years that children across many parts of the world are expected to learn to read. In many societies, this accomplishment has become the stamp of educational success and the key to academic, professional and social achievement. Considering the various scripts around the world, children learn the unique shapes, forms and patterns used in their immediate surroundings and

will associate the written pieces, whether they carry meaning or sound representation, with the language shared by their own community.

Role of Script in Learning to Read

Before delving into those conditions, it is necessary to examine the evolution and nature of script, how the very formation of written symbolism came to existence into civilization. Since 4000-5000 years ago, the role of print has been used, carved, manipulated, copied, passed on and transformed to meet the social, political and practical needs and functions of civilized society. The early proto-writings were carvings during the prehistoric age in the form of pictures, which eventually evolved into pictograms representing objects and ideas. The function of writing evolved into a more transactional activity (business records, marks of ownership) once the economy expanded, creating opportunities for cultural and linguistic exchange (Coulmas, 1989). Individualized writing systems began to emerge in various parts in the world using the most convenient tools such as carvings on clay, turtle shells, and oracle bones, until more and more sophisticated technologies evolved such as the creation of paper from papyrus to computers.

While those early communication systems conveyed pictographic information, it was believed that they were inadequate for communicating words (DeFrancis, 1989). The introduction of script allowed for a representation of the spoken language as opposed to pictures that could be translated into a variety of unrelated ideas. The oldest picture-to-sound representation during the Egyptian period was the invention of the rebus principle embedded in the hieroglyphs where a pictograph would be represented with either a single sound or a double consonant. Champollion, a French linguist and physicist, broke the Egyptian code by deciphering the Rosetta stone, an ancient relic that had three different types of scripts inscribed. The top

portion on the stone had demotic hieroglyphs, a cursive form of Egyptian writing, inscribed, while the middle portion's script was hieratic −more or less cursive, but more abstract− and the bottom script portrayed Greek symbols. Given that the Coptic script consisted of six demotic hieroglyphs transcribed into individual sounds in its alphabet, Champollion cracked the code and established that hieroglyphs were partially alphabetic with phonetic symbols known as phonograms. He later recognized that portions of the script had logograms as well – signs representing semantic information (Robinson, 1995). Hieroglyphs fall into the same category as Chinese characters, whereby both the phonetic and semantic information are included.

Another form of writing, cuneiforms was developed in 3300 B.C in Mesopotamia and was inscribed on clay tablets first in the form of pictures and gradually became a set of symbols widely used among the Sumerians and Akkadians. It was estimated to have about 600-700 symbols (Diringer, 1962). The nature of cuneiforms did not resemble any of the Greek, Hebrew or Arabic letters, but had triangular shapes in different positions and angles. On deciphering the script, it was found to be syllabic and highly homophonous (Robinson, 1995). Scholars found the cuneiform symbols to stand for both meaning and pronunciation (Diringer, 1962). Whether the pronunciation was phonemic or syllabic continues to be debated. The invention of what could be construed as an *alphabet* did not happen in an instant, rather it was the result of a gradual change in script. The Phoenicians' script consisted of graphemes for each consonant, but it was not until the Greeks modified the script, adding vowels, that the idea of a full alphabetic script came into existence. From Greek, many other alphabetic languages in Europe were formed.

Over time, the use of hieroglyphs and cuneiform writings ceased and only the more economic scripts have thrived. The primary types of written scripts currently in use throughout

the world are alphabetic (e.g., English, Russian), syllabic (e.g., Japanese Kana, Amharic, Cree) and morpho-syllabic (e.g., Chinese) scripts.

One's experience with print also depends on the available resources. With today's iPad, smart phone, and computer, a variety of representational systems have evolved to meet the keyboarding constraints of devices as well as adapting to the needs of users[3]. Figures 1 illustrates how keyboards and cell phones now allow the user to type in certain keystroke sequences (Wubi or Wubi Hua methods) for certain strokes in Chinese characters.

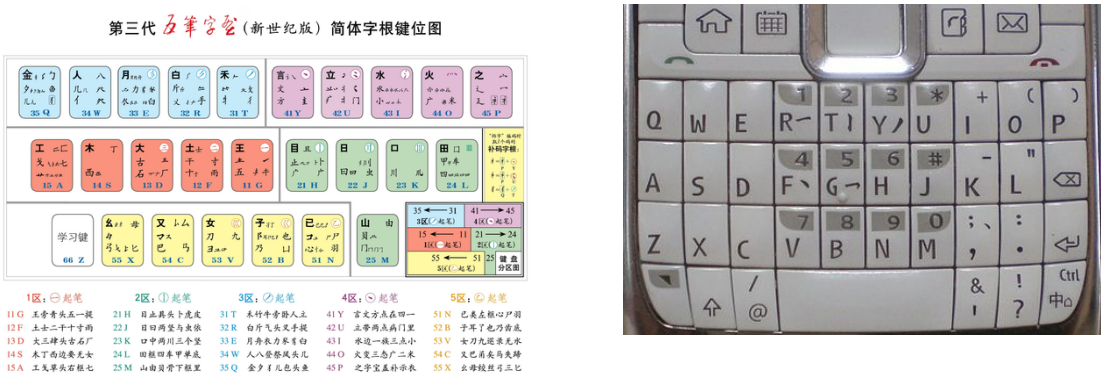


Figure 1. Wubi method input keyboard and cellphone using character stroke system .The five regions are blue, purple, red, green and yellow. Each region represents a type of stroke (1) horizontal, (2) vertical, (3) downward right to left (4) downward left to right (5) hook or another common stroke that is not in the categories above. (Source:http://en.wikipedia.org/wiki/Wubimethod)

It is interesting to note that d/Deaf individuals in China tend to prefer WUBI HUA when communicating with each other and with hearing individuals on such keyboard devices. They report this preference, as opposed to using the alphabetic (Pinyin) input option, because of their stronger knowledge of character sequence and tracing (Jones, 2011; Lin, Anderson, Ku, Christianson, & Packard, 2011).

[3] Computer keyboards in China, interestingly, have at least two different ways of creating Chinese script. One system follows the alphabetic principle using Pinyin spelling and the other is through memorization of groups of strokes for each key. WUBI HUA, or its abridged version WUBI XING, are different systems of stroke representations for keyboards.

The Nature of Script and its Relationship with Spoken Language

Three types of scripts have remained to this day: alphabetic, syllabic, and morpho-syllabic. Its written form may vary in shape, structure and size. How the script is mapped to the spoken language varies from language to language, from society to another, which in turn influences the geographical distribution of language use from region to region.

Alphabetic Scripts. Alphabetic scripts, such as English, are languages that have grapheme to phoneme representations for all vowels and consonants. The form of the alphabetic script can differ from one script to another. Indo-European languages have orthographical roots from the Greek, Roman, or Cyrillic scripts. Some languages have a combination of two different alphabetic forms. Serbo-Croatian uses both Roman and Cyrillic letters. When comparing alphabetic scripts with other languages in the world, syllables in Indo-European languages are more complex and have more phonologically permissible clusters -- English for example has 8000 syllables in its phonology compared to 1300 in Chinese (DeFrancis, 1989). Indo European languages have less homophony and more polysyllabic morphemes than Chinese and Japanese.

The letter to sound mapping is not always transparent. Some languages, such as Croatian and Finnish, possess shallow orthographies where each letter is exactly mapped out to represent the sound. Whatever sound comes out of the mouth is matched to a written letter. How you read it is how you say it and vice versa. On the other end of the transparency continuum, the more opaque languages show ambiguity wherein the direct mapping is not as obvious. English, with its inconsistent representations, is considered a language with a deep orthography (Share, 2008). In English, the letter strings for "ough" as in the following words "*cough*", "*through*", and "*although*" all have different pronunciations. These inconsistencies are pointed out and taught to novice readers.

The alphabetic scripts are not always in the Roman, Greek or Cyrillic form of scripts. One unusual alphabet, Hangul, the Korean script, is alphabetic, but written in block format. Invented by King Sejong with a group of scholars in 1418, the design of the individual letters was created to include information about the logistics of speech. Letters are arranged into syllable blocks. Twenty-four block shaped letters are positioned according to the structure of the mouth (palatal, bilabial etc…) to represent individual phonemes. These examples are summarized in Table 1.

Table 1.

Composition of Alphabetic Scripts

Alphabetic Spoken Languages	***Script shape for book***	***Type of Orthography***	***Properties of script***
Croatian	Knjiga /k-n-j-i-g-a	Shallow orthography	26 letters (Roman & Cyrillic script)
Russian	Книги /К-н-и-г-и	Moderately shallow orthography	(Cyrillic script)
English	Book /b-oo-k	Deep orthography	26 letters (Roman script)
Korean- Hangul	도서	Moderately shallow orthography	24 letters arranged in block shaped syllables

Syllabic Scripts. Syllabic scripts involve grapheme to syllable representations. Semitic languages such as Hebrew and Arabic have been considered in past research as examples of syllabic scripts due to the fact that they are commonly displayed as consonantal scripts that are un-voweled. But both Arabic and Hebrew do have vowels and therefore are considered more of an alphabetic script than a syllabic script. Arabic script has 28 letters with 25 consonants and

only three long vowels whereas Hebrew has 22 consonants and 5 vowels. Diacritics (Hebrew) and points (Arabic) represent vowels and are added for the purpose of instruction in early elementary school years. Modern written Hebrew added diacritics for fear of losing the spoken form of Hebrew.

Both languages contain consonantal roots that reflect the core word pattern. Changes to the roots are made through the addition of suffixes, prefixes and the inclusion of vowels, indicating gender, number and tense variations. The best examples of syllabic scripts are Amharic and Cree for they do not have consonants or vowels in their writing system. In Cree, the consonants are represented in shapes that are positioned in four different directions to represent vowels. These examples are summarized in Table 2.

Table 2.

Composition of Syllabic Scripts

Syllabic Spoken Languages	***Script shape for "book"***	***Consonants***	***Vowels***	***# of letters***	***Root***
Hebrew (Ancient)	ספר	22 consonants	5 vowels Diacritic marks	27	Yes
Hebrew (Modern)	סֵפֶר				
Arabic	كتاب	25 consonants	3 long vowels Point marks	28	Yes
Amharic	መጽሐፍ ~ /mäTS'häf/	32 consonants	7 vowels	39	n/a
Cree	ᒪᓯᓇᐦᐃᑲᐣ	15 consonants	Up to 7 vowels	21	n/a
Japanese Kana	ほん	15 consonants	5 vowels	20	n/a

Morpho-syllabic Scripts. Morpho-syllabic scripts are written languages that carry a combination of phonetic and semantic information in its structure. Japanese Kanji and Chinese

are examples of morpho-syllabic scripts. The Chinese written language is one of the most ingenious inventions and has lasted 5,000 years in the history of orthography. Written Traditional Chinese characters were shared among dynasties with different dialects. Just like the other scripts, it originated first with pictorial representations that were ideograms and over time, changes in strokes were incorporated so that now only five percent of the Chinese written system is considered to be iconic. Eighty percent of Chinese characters are semantic-phonetic compounds, with a phonetic radical (portion) providing some information about pronunciation and a semantic radical, conveying its meaning (Hoosain, 1991).

The Japanese script is considered one of the most complicated writing systems in the world for it consists of three or four different types of scripts within its own system (Katakana, Hiragana, Kanji, and Romaji). Originally, the Japanese did not have their own script and simply used Chinese characters and adapted them to a different type of logographic script. The inclusion of Kana, a syllabary, and of *kanji*, characters borrowed from the Chinese provides a mixture of two types of mapping systems: sound-based and semantically-based mappings**.** Japanese written script is polysyllabic with moras, which are syllable-like CV components (# of syllables fewer than 113)**.** The Japanese syllabaries katakana and hiragana are used for morphological affixes and grammatical function words, foreign loan words, and those words not covered by the Chinese. Morpho-syllabic scripts are summarized in Table 3.

Table 3

Composition of Morpho-syllabic Scripts

Morpho-syllabic Spoken Languages	*Script shape "book"*	*Type of Script*		*Script Properties*
Japanese				
Kanji	本	Morphemic or logographic or syllabic		borrowed from Chinese characters
Hiragana	ほん	syllabic		Phonetically based, both are from the Kana systems
Katakana	ホン			
Romaji Romanized Spelling	Hon	alphabetic		3 Romanized versions based on the Portuguese orthography used for computer input
Chinese				
Pinyin Romanized Spelling	Shū	Alphabetic		25 letters different sounds than English represented used for computer input
Simplified	书	Morpho	syllabic	Average 5-7 strokes
Traditional	書	Morpho	syllabic	Average 10-12 strokes

Despite the variation in shallow versus deep orthography, these alphabetic, syllabic, and morpho-syllabic mappings are robust and are used by spoken language communities all over the world. But what about sign languages used in deaf communities? To date, no indigenous written system has formed for signing communities. Deaf individuals around the world attempt to learn the written system of the spoken language in their environment, even though the spoken form is not always accessible to them. Even so, knowing sign language does bring certain insights to the relationship between a visual spatial language and script.

Nature of Script and its Relationship With Sign Language

The oldest sign language has been found to exist approximately 300 years ago (Woll, Sutten-Spence, & Elton, 2001). It is believed there are about 103 sign languages throughout the

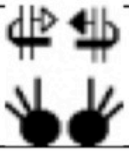
world, according to the Ethnologue database, found in http://www.ethnologue.com, but Deaf scholars maintain that the number is much higher. The categorization of sign language-based properties unveils unique phonological distinctions. Stokoe (1965) once called the smallest unit *chereme*, using a root word that signifies cheros (hand), as opposed to phoneme. While spoken language utilizes sounds as the building pieces for syllables, words, phrases, and sentences, signed language relies upon the inherent use of handshapes, movement, location, palm orientation as well as facial expressions to create a sign, a phrase, a sentence. A body of research has documented the similarities and distinctions between signed and spoken language phonologies (Battison, 1978; Brentari, 2008; 2010; Fischer & Gough, 1978; Liddell, 1984). Cross-linguistic studies across sign languages shed further light on the structure and properties of sign language phonologies. To parallel the trends of language families, sign language families have been identified amongst North American and French European Sign Languages (Stokoe, 1965; Woodward, 1993b), British and Australian Sign languages (Schembri et al., 2007), Indian Sign Languages (Vasishta, Woodward & Wilson, 1978), as well as South and East Asian sign languages (Woodward, 1993a).

While sign language does not have its own script, researchers and scholars have attempted to capture the complex three dimensional, spatial and moving sign language in symbolized written forms. As Hoffmann-Dilloway (2011) describes in her study, Sutton SignWriting is a visually iconic writing system that was originally developed by Valerie Sutton for dance writing to show movements of the body and face. In 1974, Lucinda O'Grady Batch of the Deaf Action Committee (the DAC) modified Sutton's system to include Stokoe's linguistic notations of signs. As illustrated in Table 4, Signwriting was further developed using SignPuddle

software, created by Stephen E. Slevinski, Jr., to more efficiently represent the linguistics symbols of signs through computerized codes.

Table 4

Example of SignWriting using SignPuddle software to represent American Sign Language

Actual signs	***SignWriting* example**	**Linguistic Parts**
Sign for CAT 		Circle = face Arrows= movement Circle with dot= mouth Handshape= F
Sign for SISTER 		Circle = face Arrows= movement Handshape= L Double star= contact
Sign for FAMILY 		Handshape= F Arrows= movement Lines= palm orientation

Note. Illustrations by Yiqiao Wang (2013). Symbols from Sign Writing website.

The use of *SignWriting* is emerging in some parts of the United States and around the world and has been adapted into a computerized coding input system (van Hulst & Channon, 2010). The approach to creating this computer-based script is to transcribe real-life signing into visual symbols that enable the reader to visualize all linguistic aspects (or parameters) of sign phonology (handshape, movement, location, palm orientation). As spoken language is broken down into letter-to-sound representations, likewise SignWriting is broken down into parameter-to-grapheme representations. Graphemes like those used here resemble an abstract image of signs. Some writing systems for signs are more iconic than others. In one study, educators used a

sign writing tool to enable young deaf children to express their thoughts into writing (Flood, 2002; Supalla,Wix & McKee 2001)

Recent developments by Deaf academics such as Robert Augustus, who established the company Si5s, in creating a written form of American sign language, offers new ways of thinking about this issue (see http://www.si5s.org for more information). The Si5s system consists of 80 characters based on handshape, movement, location, palm orientation configurations in American Sign Language. This system differs from *SignWriting* in that the orthographic representation is shown in a combination of layers for a two-dimensional perspective, rather than presented linearly (Augustus, Ritchie & Stecker, 2013). This innovation provides a visual mapping strategy that is unique to sign language phonology, and signers have reported, they found it easy-to-read. Further research in this emergent field will be important for enhancing our understanding of how mapping might work for sign languages.

While it would be a rich theoretical endeavor to explore how different written forms might map onto sign components, especially across different types of sign language families, it is still the case that most bilingual deaf readers have never been exposed to systems such as *SignWriting,* and are left to attain literacy in the script associated with the spoken language in their midst. However, we can still ask how signing d/Deaf readers approach spoken language-based written script without access to the spoken language. Are there unique mapping strategies afforded by mediation from a signed language to a (spoken language-based) print system?

In the case of American Sign Language and written English, several mapping representations have been found to be relevant in the bridging of sign to English (Padden, 1998; Padden & Ramsey, 1998; Prinz & Strong, 1998; Waters & Doehring, 1990) 1) word to sign meaning equivalence; 2) grapheme to handshape representations through fingerspelling; 3)

initialized signs that use a specific manual alphabet handshape to show the first letter of the written word coupled with semantic matching; and 4) lexicalized fingerspelling.

Word-sign meaning equivalence. This term simply refers to a sign that is abstractly joined to the meaning of a word (Padden, 1998). An example would be the sign for SCHOOL[4] (Fig. 2), where both hands in sign language will show flat hand shapes joined together through clapping to represent the idea of school. The teacher would simply sign SCHOOL and point to the printed word form. Thus, there is no relationship between the handshape part of the sign and the letters printed on the page except for the signifier giving meaning to the signified. Sometimes an idea can be represented with two signs such as GIRL- SAME, which means SISTER (see Fig. 2 for the two signs) and has evolved into one compound sign. These word-sign meaning equivalences vary across sign languages. Speculations regarding whole-word coding are found in various studies (Treiman & Hirsh Pasek, 1983; Waters & Doehring, 1990).

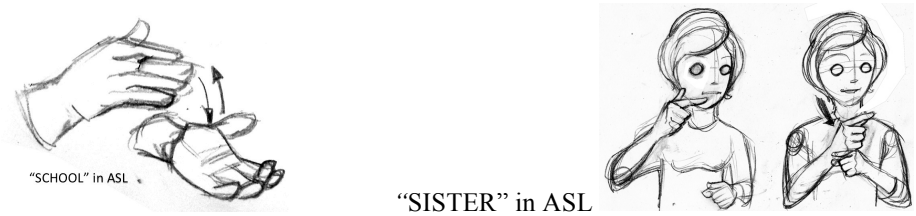


Figure 2. Sign composition - SCHOOL and SISTER. Illustration by Yiqiao Wang (2013)

Grapheme-to-handshape representation through fingerspelling. Fingerspelling, is a system designed specifically to represent each letter of the alphabet using a particular handshape. This strategy was initiated first by the monastic communities who wished to communicate with each other in silence (Padden, 2003). Handshapes were arbitrarily associated with each letter of

[4] All words in sign language will be capitalized to differentiate between the signed word and the written/spoken word. A sign example would be CAT to represent the sign for 'cat'. When two capitalized words are attached with a hyphen, this is to indicate the whole word but using two different signs (change of location, movement, or handshape). Fingerspelling will also used capitalized letters with hyphens to separate the handshapes for each letter.

the alphabet. The degree and use of fingerspelling varies in different countries (Padden, 2006), but is reported to be approximately 12% to 35% in the United States Deaf Community (Padden & Gunsauls, 2003). The manual alphabet carries very different structural properties across various sign languages. An example would be the Deaf communities in the United Kingdom, who use two hands to represent vowels and consonants, whereas in the United States signers would only use one hand for the same English alphabet. Neither of these fingerspelling systems resembles each other even though they are representing the same print form. In the case of the Manual Alphabet in American Sign Language, some handshapes are clearly iconic such as the handshapes that represent C (cupped hand), O (closed hand with a hole to show its shape), or Z (finger actually doing the tracing in the air); whereas others are arbitrary or non-iconic (e.g., S and Q (see Fig. 3); still, all of these symbols provide a bridge between a signed representation and the individual printed letter (Padden & Ramsey, 1998).

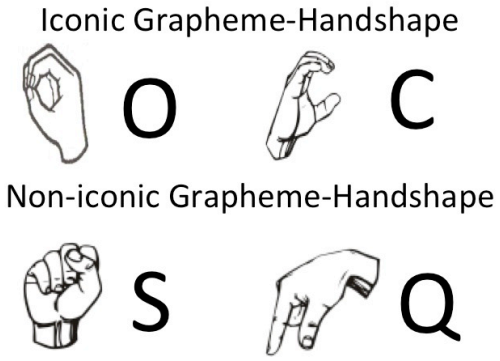


Figure 3. Iconic versus non iconic grapheme-handshapes. Chart compiled based on the evidence taken from Padden & Ramsey, 1998.

The iconicity of fingerspelling differs across languages and even within the same written language. For example, fingerspelling in the United Kingdom uses two hands for vowels and

certain consonants resulting in the same written English word being signed differently in British Sign Language vs. American Sign Language (see Fig. 4).

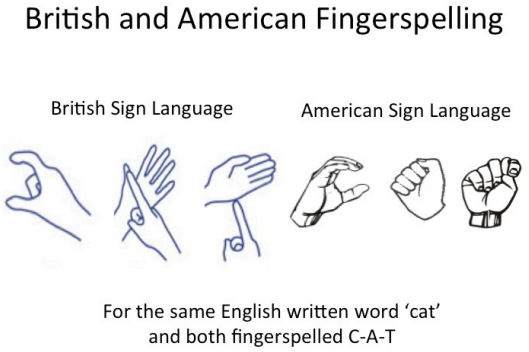


Figure 4. British and American fingerspelling for the written word "cat".

In both British and American fingerspelling, the first letter of C is graphemically similar due to its iconicity, but the rest of the letters are not (see Figure 4). Fingerspelling is done sequentially displaying each letter. Fingerspelling a word such as C-A-T will involve the three handshapes for the three corresponding graphemes. The printed word "cat" can therefore be displayed either through fingerspelling or through sign-meaning equivalence. By fingerspelling the word, the deaf person is directed to the spelling of the English word, but the actual sign used in the community most likely does not incorporate any of the fingerspelled handshapes. CAT in ASL uses the handshape "F" (not for the letter "F," but for a classifier hand configuration characterizing whiskers) followed by the action of pulling whiskers away from the face (see Figure 5). Thus, a signer could show two different mapping representations for the same object or the same idea.

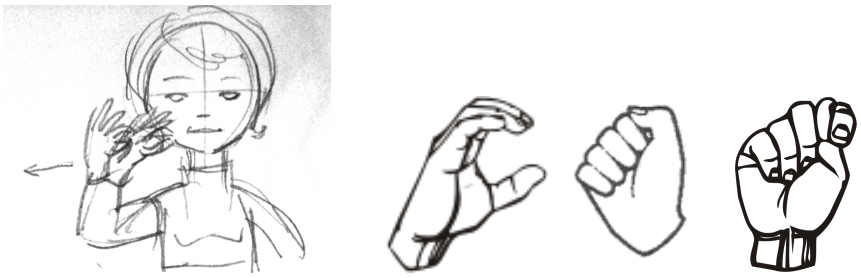


Figure 5. Sign and fingerspelling equivalence. Sign for "CAT" and fingerspelled word in sequence C-A-T. Notice how the sign "CAT" does not have any of the handshapes to cue the spelling of the English word. See Padden, 1998. Illustration by Yiqiao Wang (2013).

A combination of morphological and handshape-to-grapheme elements is found in American Sign Language. This morpho-graphemic combination is found in *initialized signs* where the handshape is borrowed from the manual alphabet and differentiates words that share a similar meaning. For example, the signs GROUP, CLASS and FAMILY are all in the same semantic category of collection of people/things together, but incorporate different manual alphabet handshapes, G, C, and F, respectively, to distinguish the three specific meanings (see Figure 6).

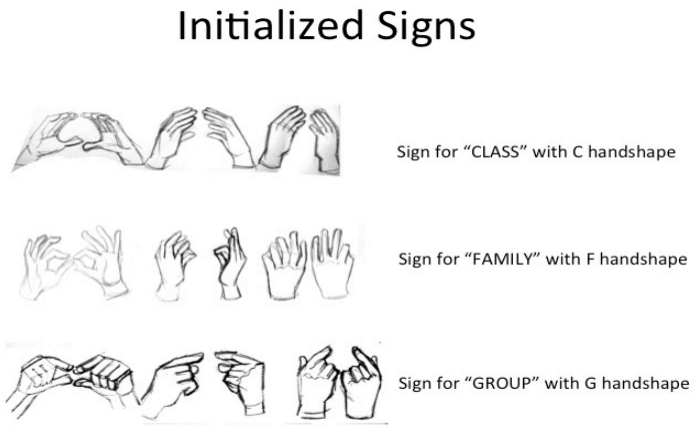


Figure 6. Initialized signs. Sign for each similar meaning (CLASS, FAMILY, and GROUP) adding differentiation through initialization, incorporating of C, F, or G handshapes into the sign. Illustration by Yiqiao Wang (2013).

Lexicalized fingerspelling is fingerspelled letters produced in a sequence that has evolved into a new form of sign. Changes in the grapheme-handshape mapping include omission of individual letters and adding unique features such as movement or turning of the palm orientation. If a signer wanted to clearly spell out the word “job”, the signer will fingerspell each letter J-O-B, if done slowly and neutrally. But if the form was used as a lexicalized fingerspelling, the sign would be at a faster pace and the O would be dropped, leaving the handshapes for J-B intact, adding a shift in palm orientation. While the meaning would remain the same, the presentation would be different.

The last mapping strategy to be discussed is morpho-graphic processing. In the case of English, written morphemes can be accessed and categorized by their roots and affixes. These root morphemes can help deaf children break down unknown printed words (Gaustad, 2000; Gaustad & Kelly, 2002). This is also known as chunking of words in English (Humphries & McDougall, 2000). Nevertheless, more studies across different languages are needed to determine whether morphological information in words (considered in ratio to inherent phonology) affects the processing of script.

In conclusion, the role of language, whether it is a spoken or signed language, and how it relates to script is interesting. The nature and form of print has evolved as a result of cultural change and functional habits. While originally the function of written script was created for the purpose of recording business transactions, script has become an interactive mode of communication, whereby oral narratives and stories are now written, shared and passed on from generation to generation and from culture to culture (Coulmas, 1989). Scripts have become more economical to fit the needs of a "literate culture."

The history of a writing system and how a particular language is mapped out in its various written forms (and changed throughout time to be more economical), also contributes to how we can best understand the way that deaf communities learn a writing system. Furthermore, how such individuals use their sign language to help them decode written information has significant implications for reading instruction, especially if taught by deaf teachers. And, finally, it will be important to adopt a broader view of what literacy means in the context of deaf learners and their strategies for reading. Gee (1997) defines literacy as "any set of practices that recruits one or more modalities (e.g., oral or written language, images, equations, symbols, sounds, gestures, graphs, artifacts, etc.) to communicate distinctive types of meanings." In the context of deaf communities, the role of visual language and visual learning must be afforded validity.

Role of Teaching Practices in Learning to Read

Learning to read is not typically an isolated experience. Rather, it is a task that is shared and learned within a social context. For the most part, an expert reader is present to guide and facilitate the interaction between the novice reader and the print. Vygotsky (1978) describes this learning process as a mediated activity between the expert reader and the novice reader. The expert reader shares skills and strategies in learning to read, guiding the novice reader into paying attention to particular details in the script and into making connections with what the novice already knows about the world, about the language and about the script. These skills are passed on from generation to generation, from community to community, from adults to children, and from teachers to students as well as students to students. Literacy practices are repeated or patterned literacy events or occurrences within a particular community or social

group (Reder, 1994; Scribner & Cole, 1981). Such intellectual and linguistic mediation has turned into a social practice. How those reading skills are taught inherently includes the teacher's beliefs about how print is constructed, manipulated and conveyed. This fascinating teaching process has piqued the interest of researchers for years and is an important part of the investigation into the relationship between the spoken language and the writing system.

At the linguistic level, first and foremost, the essential key to learning to read is the importance of language accessibility. In order for a rich meaningful interaction between the expert and the novice reader, the language has to be commonly shared to address a script. When language is clear and understood, tackling the reading task is not as difficult than if language was incomplete or incoherent. For a deaf child who does not hear the spoken language, using lip-reading as the mediating tool to learn to read is almost impossible for they may or may not have the language to be able to fill in the gaps if they cannot lip read. Vernon (1974) pointed out that in the pure oral method, pre-lingually deaf children are expected to learn language through a process, which presumes that they already have language skill. The distortions on the mouth can only be corrected based on the linguistic experience. Hearing people with typical language competence scored higher than deaf subjects in tests demanding understanding of language through lip-reading (DiCarlo & Kataja, 1951; Lowell, 1959). With an average of 30% of lip-reading being accessible, this avenue cannot guarantee linguistic competence or literacy leverage for deaf children.

The success of mediation with reading depends largely on the quality of linguistic interaction. Linguistic competence is what provides children the common underlying proficiencies (CUP) to identify, discriminate, use, analyze, make connections and evaluate its relationship with the world and what they read (Cummins, 1984). The teacher scaffolds those

experiences using a language the child knows to build upon knowledge, and then to expand understanding and provide opportunities to relate to new ideas and concepts. Cummins (1984) characterizes a process that involves a transition from basic interpersonal communication skills (BICS) to cognitive academic language proficiency (CALP). If the teacher uses a spoken language that a child does not understand, they will have to resort to filling in the gaps; thus, the interactions will be inconsistent. These inconsistent interactions will not foster stability, expectation, and anticipation. The burden is thus put on the child to make sense of the inconsistent input and this may hinder the additional cognitive growth that comes from natural access and furthermore, may negatively influence their participation in the learning-to-read process.

As we know, 95% of deaf children come from families with hearing parents, many of whom, do not sign. When a deaf child comes to school they are not only learning sign language, but also learning English often through the medium of writing. This process is a complicated one because deaf children without a first language are trying to learn to read, a cognitively demanding task. Thus, the prevailing reading theories developed for hearing children may not apply to deaf children. The dominant theory in reading acquisition involves the primacy of spoken language in decoding, recoding and making sense of script. Phonological processing is argued to serve a prerequisite role in learning to read (Adams, 1990; Perfetti, 2011). Yet this may only hold true if the spoken language experience is accessible and consistent. Otherwise, the top-down and bottom-up reading processes could be deleteriously affected. A top-down process establishes the context first within the larger world experience prior to tackling words and letters in the script and is what some call the whole-language approach. The bottom-up process is the breaking apart of the smallest units of script and making them accessible in chunks before being

combined into strings of letters, creating words, then sentences, and then placing it in the larger context. This approach is often called phonics instruction. Without a solid language foundation, both processes will likely not be as effective.

Another important component to this discussion is how language is conveyed. With respect to spoken language access, assistive listening devices can only provide so much. The incorporation of visual representations of the spoken language, within a bilingual context that includes the signed language to convey meaning, will enable teachers to combine both top-down and bottom-up processes. What remains less studied is exactly how a teacher incorporates these processes in their instruction to deaf students, using sign, print, and a componential analysis of both forms (see Crume, 2011, for some discussion of teacher philosophies and self-reported instructional strategies in bilingual deaf education). The model of how a teacher introduces and interacts with text becomes the blueprint of how students will approach the task when independently working with text. This is evidenced in the Read, Xhang, Nie and Ding (1986) study whereby the introduction of Pinyin to a group of students brought about particular skills related to phonemic awareness, rhymes, and syllabification, whereas a group that did not receive this strategy training did not show those skills. Even though the outcome of reading abilities was the same for both groups in this study, the results show that teachers can influence the analytical orientation of their students.

With respect to teaching English to deaf children, a number of instructional sign-based approaches have been implemented that more or less represent a bottom-up orientation. These include the Manually Coded English formats of the 1970s and 1980s (e.g., Signed English, Signed Exact English, LOVE, Pidgin Signed English) that were attempts to take natural signs from ASL, modify them or invent new signs, and put them in English word order reflecting

morphological and syntactic elements. Other systems such as Cued Speech and Visual Phonics do not use any ASL signs, but instead created their own unique handshape system as a tool to represent the "phonetic" components in the spoken language 'visually' (Koo, Crain, LaSasso, & Eden, 2008; Narr, 2008).

For deaf children, acquisition of "phonological" awareness of English likely depends on consistent exposure to phonological information. For some children, visual instructional methods such as Visual Phonics and Cued Speech may provide that access (Leybaert & Alegria, 1993), but for other children evidence of phonological processing is less clear (Koo, Crain, LaSasso & Eden, 2008; Treiman & Hirsh Pasek, 1983). However, these strategies are not typically used by all members of society, thus exposure to these systems may be limited. A further obstacle in the pursuit of such investigations is that widely accepted measures of phonological awareness (e.g., Stanford Achievement tests) are found to be inadequate for deaf children (Qi & Mitchell, 2012).

The existence in contemporary deaf education of a particular variety of code mixing, which tries to essentially combine two languages, brings its own set of challenges to effective classroom communication. *Simultaneous communication* (signing while speaking) may seem to resolve sign language and spoken language differences, but linguistically, the input a child receives is incomplete in either language when transcribed and separated (Marmor & Petitto, 1979). Neither language is displayed with the adequate grammar structure. Since a deaf child has no exposure to a full language, this type of input may be too inconsistent to support literacy instruction, especially when the child is expected to fill in the gaps.

Finally, there are a number of studies directly investigating bilingual deaf education, especially when taught by deaf instructors (Bailes, 1999; Erting, 2001). ASL-based strategies,

including chaining and sandwiching, have been identified as bridges to reading (Humphries & McDougall, 2000). Chaining is a technique that introduces a sign in ASL first, the fingerspelling of the English word using the manual alphabet, then the written word on the board.

"Sandwiching" involves signing, then fingerspelling the equivalent word, to return back to signing; this strategy ensures that students are experiencing associations between a sign and the printed word (Padden & Ramsey, 1998, 2000). Bilingual strategies have also been demonstrated in the context of story signing and story telling, where a Deaf Teacher will incorporate the nuances of facial expressions and bodily movements to enhance or restrict the actions in the story in a way that draws in the reader. This free translation is displayed without any word for word equivalence, but rather the conceptual aspects of the story. The literal translation is when the story is followed more diligently and the text is revealed in its own grammar. Literal translation would involve translating word for word to adhere as closely to the text as possible. These translation strategies are commonly used by bilingual deaf teachers and are considered culturally and linguistically frequent in the bilingual signing communities (Simms & Thumann, 2007).

The influence of the way teachers teach reading on students' reading development cannot be over emphasized. Their practices are closely intertwined with their own personal beliefs as well as their idea of what teaching should look like (Fang, 1996; Richardson, Anders, Tidwell & Lloyd, 1991). At the same time, teachers often have felt compelled to obey orders and follow the curriculum mandate established by educators and administrators who are not in the front lines of daily practice. Teacher practices and their effect has become a pressing topic in the field of educational reform (Grisham, 2000). Teachers are viewed as change agents when they are

actively involved in practice. Experiences drive teaching practices, and as a result, influence theory; similarly, practice drives theory, which in turn influences practices.

Deaf teachers are legitimate agents in the community of practice, and their experiences with deafness/deafhood and education foster awareness unique to their own journey (Ladd, 2003; Shantie & Hoffmeister, 2007). By including them in community-engaged research (Singleton, Jones, & Hanumantha, 2012 & under review), their funds of knowledge will be an asset to the creation of Deaf knowledge, which in turn will contribute to the larger scientific research enterprise and educational reform.

Just as Kucer (2005) states, "Literacy events are more than individual acts of meaning making and language use. Literacy is a social act as well. Therefore the meaning and language that are built and used are always framed by the social identity (e.g. ethnic, cultural, gender) of the individual and the social context in which the language is being employed (p.5)." A literacy event is a true event that demonstrates how literacy operates in the real world. Heath (1982) describes literacy events as "any action sequence involving one or more persons, in which the production and/or comprehension of print plays a role. The acknowledgement of the complex nature of literacy that must be viewed from multiple lenses is more than an intellectual or academic necessity; it is instructional one as well" (p.92).

Significance of the Study: Contributions to Cross-cultural and Cross-linguistic Analysis of Reading Instruction

The significance of this study lies in the need to situate reading experiences within the context of the deaf learner's sociocultural and sociolinguistic environment. Much can be learned about the reading process by examining the nature of the script, how script can be addressed

depending on which language is used, and what alternative strategies can be used to code or understand the written system.

According to Saussure (1972), the relationship between language and the spoken system is arbitrary. The human mind creates symbolism, where associations between the signifier and the signified are conjoined, spurring the formation of simple to more complex abstract representations. Those created systems become meaningful when used within the communities. Ancient writing systems such as cuneiform and hieroglyphics were developed first as iconic symbols that came to represent whole ideas. It is only when those scripts were used and exchanged on a regular basis that members of the literate society could identify those forms as meaningful units. Those identifications are transmitted from one individual to the next, creating a literate society. Even though the mappings may vary in representation, the consistent use of these mappings by literate individuals allows the preservation of that unique system. We have seen that it is not only in its shape and form that the script evolves, but also in its use. In ancient practices from record-keeping to story-telling, today's literate members continue to manipulate script to meet their own social and communal needs. Lastly, the extent to which a script is accessible to a learner depends on the means used to display and discuss the script.

Why is this history of written language relevant? While the written system is a human invention, the evolution of how written language is mapped out differs based on the practices adopted by the linguistic and cultural communities, who have been raised to make sense of the writing system. Not only does this knowledge carry over in individual lives but also to those whose aim is to teach children to read using certain strategies and resources. The conventions of how we teach reading also reveal how we have manipulated print and language to fit the needs of the common citizens. Different communities deal with the written language differently.

In conclusion, this study is based on the premise that to understand literacy development in *one community of learners*, we must examine it within a socio-historical and cultural framework. Investigating how *different deaf learners* learn different scripts (especially scripts that vary in the extent to which they are tethered to spoken phonology) enables us to powerfully and more deeply explore the role of phonological coding, the role of sign language in learning Chinese, the use of instructional strategies, and how visual learning is played out. This study explores the personal narratives and experiences of Deaf teachers who have lived in China, have learned to read Chinese, and have subsequently become teachers of the deaf. It aims to discover whether these deaf individuals rely on more *visual*, and thus inherently more accessible, strategies in teaching and learning to read Chinese.

Chapter 2

Theoretical Framework

Before examining the Chinese context in learning to read Chinese, this chapter will focus on pivotal concepts that guide the entire study. Three main concepts include the importance of 1) Sociocultural Learning theory, 2) Critical Literacy, and 3) Deaf Epistemologies. These three critical theories are interwoven into the backdrop when exploring the sociocultural and sociolinguistic analyses of Deaf reading practices in China.

Sociocultural Learning Theory

The act of learning to read is a socially, historically, linguistically and culturally situated event (Vygotsky, 1978). The creation of the written system occurred in a specific point in time with a group of individuals who exchanged those scripts, resulting in an evolution over the years to meet the functional needs of society. Sociocultural learning theory posits that individual development and the social context are inseparable entities, almost two sides of the same coin. Vygotsky (1978) argued that an individual's internal cognitive growth depends largely on social interaction, as opposed to an independent biological maturity of the intellectual mind, which Piaget (1962) advocated.

According to this theory, the context for learning to read for a child can only be mediated by a more experienced member of society (peer or adult) who consciously modifies his or her discourse based on the child's level of understanding about the world. Vygotsky's proposed a "zone of proximal development" (ZPD) that includes the child's range of intellectual abilities from what he/she already knows (independence level), to the level attained with guidance in assimilating new knowledge (instructional level), and lastly to the exposure of more advanced

information beyond the child's ability. Vygotsky characterized children as advancing cognitively through a scaffolding process structured by the more skilled others (e.g., adults). Language is considered a cultural tool for mediating (i.e., scaffolding) intellectual activity.

In the deaf education setting, this kind of scaffolding is a challenge for monolingual hearing teachers interacting with deaf children who use sign language (Shantie & Hoffmeister, 2000). All too often hearing teachers with no signing experience, or with only a few college semesters of sign language, are expected to serve as the linguistic model, raising the discourse level of their deaf students. Beyond the deaf child's limited access to spoken language, this inconsistent input to quality sign models puts at risk the deaf child's ability to attain a high level of fluency in sign language, which in turn threatens the development of higher-order thinking skills (Harris, 2010; Hoffmeister et al 1997; Kuntze, 1999, 2003). For example, metalinguistic awareness, seen to be important in bilingual development (Bialystok, 2001; Cummins, 1984), may be one such higher-order skill that fails to adequately develop.

Rogoff (1990) adopts Vygotsky's socio-cultural theory and offers a contemporary framework for learning that may be of service to a classroom where deaf children are acquiring ASL and English. Her framework reinforces the importance of individual intellectual growth within a dynamic socio-cultural event. The agent and the cultural mediation in the socio-cultural activity, varied in quality and quantity, assumes the learner is engaged through active participation and communication. Through *apprenticeship, guided participation* and *appropriation* a child can become involved as a social participant and individually contribute to the interaction. Through *apprenticeship*, the novice acts as an observer, interacting in this joint activity with either his/her peers or adults learning about a specific skill. *Guided participation* is a tailored, developmentally designed process that provides guidance within daily routines into

becoming independent. This daily structuring stands in contrast to the kind of de-contextualized or academic discourse often used in school culture. At last, the child will develop independent thinking skills as a result of his/her involvement in the scaffolded activity and internalizes this knowledge; Rogoff terms this *appropriation.*

This collective thinking within a social-cultural event is further discussed by Lave and Wenger (1991). The notion of "communities of practice" contextualizes learning development. These authors posit that a learner negotiates his/her identity as a participant in this situated learning activity within socially acceptable practices. The process of "legitimate peripheral participation" emphasizes the importance of *full* participation of a child in the socio-cultural practice. Singleton and Morgan (2006) apply this notion to deaf education classrooms and maintain that Deaf teachers see their job as fostering sociocultural knowledge and view young deaf children as legitimate participants who need opportunities to appropriate the practices of their rightful community. According to Lave and Wenger (1991):

> Learning is a process that takes place in a participation framework, not in an individual mind. This means, among other things, that it is mediated by the differences in perspective among the co-participants. It is the community, or at least those participating in the learning context, who "learn" under this definition. Learning is, as it were, distributed among co-participants, not a one-person act (pp.15-16).

This notion is appropriate for deaf individuals who participate in this world where both hearing and deaf members are involved. Through experience-based learning, learners are constantly negotiating meaning within the situated events they encounter. Sameroff (2010) further deconstructs the constant "changing" of events and discusses how it brings "multidirectional perspectives where individual behavior reciprocally changes both biological and social circumstance" (2010, p.6). On a similar note, Ceci (1996) incorporates socio-cultural factors in his bio-ecological treatise on intellectual development. He believes that individual

differences in intellectual development need to be looked at through the lens of multiple cognitive potentials, contexts that include motivational forces −social or physical − and the concept that knowledge and "aptitude" are inseparable. Contextualism, according to Ceci, is the "ever-changing socio-historical, cultural, and social milieu in which cognition unfolds" (1996, p.93). As children process those changes, they "participate in the construction of their own development by virtue of altering their contexts and being altered by them" (p. 94). Ceci argues that our surroundings, culture, families, societies, classrooms, and friends dictate *what is knowledge* and what aptitudes need to be acquired.

Children are influenced by those hidden assumptions either following what is expected or constructing their own reality. Ceci urges the scholarly community to recognize what is seen as "essential knowledge" in schools as simply a collection of cognitive tasks fueled by socio-cultural and historical events familiar to a white Western middle class way of life. Applying this to deaf learners, we can thus re-examine the status quo belief that phonological awareness is *essential* to reading development. Perhaps this knowledge is not as essential for deaf learners. With such narrow framing (or hearing-centric views) of knowledge, we likely overlook the wide range of intellectual functions that may be deployed by individuals with a biological difference.

Cultural values in the form of social expectations regarding academic behavior and performance also influence learning. Cross-cultural studies show how different countries value performance differently, which, according to Lave and Wenger (1991), gears children to be influenced as participants in the communities of practice. German homes and schools emphasize the importance of organizational skills and strategy game playing in classroom performance by focusing on looking for patterns, drawing analogies and breaking problems into steps. German children emphasize those traits at a much younger age than American children (Schneider et al.,

1986). Navajos, however, emphasize taking the time to be thoughtful and absorb the information over and over again to ensure the depth of understanding is internalized (Cazden & John, 1971). American beliefs about democracy are also manifested in the expectations of children's social competence. Children are given rights to choose and are expected to take individual leadership roles and be creative (De Zutter & Kelly, in review), whereas some have suggested that Chinese children are taught to conform themselves to the group rather than exhibit individualism or originality (Li, 2003; Markus & Kitayama, 1994).

Teaching and learning strategies are culturally laden. Mediated strategy in instructional teaching carries cultural, historical and social values, which as a result influences children's cognitive development. Even cognitive strategies are context-and value-bound. For example, Kearins (1981) found that aboriginal children of Australia outperform white children on visual spatial memory tasks and understanding of metaphor as opposed to white children, who outperform their aboriginal peers in Piagetian types of logical operations. Aboriginal children are seen to possess visual strategies due to their sensitivity to hunting ecology and long-term survival in an inhospitable area, skills that are not prominently apparent in white children, except if they lived in urban communities (Dasen, 1973). The alternative testing accommodations implemented by Kearins (1981) were done in the outdoors as opposed to the classroom, and they were able to yield different cognitive results from the aboriginals. It is not my intention to reify culture, but as a researcher engaged in cross-cultural research, it is important to consider how different cultural experiences may influence teaching and learning strategies

Sociocultural learning influences language and literacy practices. The relationship between home and school cultures and languages can influence school performance. Dickinson and Tabors (2001) found that it was not SES that predicted poor performance, but rather how

much and what type of language was used in the home that predicted reading performance at school (not just quantity of verbal language, but the quality as well). It is also suggested that even when home literacy may be poor, children who were in a rich literacy school environment were able to catch up with those who had home literacy by second grade (Van Steensel, 2006).

Predetermined beliefs about who should read may also contribute to illiteracy. Scribner and Cole (1984) found that in the Vai populations in Liberia, only males were literate in business transactions and/or religious practices. These unique sociocultural assumptions about male literacy versus female literacy influence the occurrence and management of these cognitive problem-solving experiences.

At the level of reading instruction, there are certain cultural tools, such as values that are inherent in community practices, that mediate learning, Minority children in the States may not be provided the adequate cultural tools necessary to learn. Only by creating self-generated cognitive strategies did these cultural tools facilitate faster learning. Instead of focusing on the deficiencies of students, modified strategies were aimed at children's strengths' making huge positive changes in minority children's performances (Gallimore & Au, 1997; Luster & McAdoo, 1994).

Critical Literacy Theory

When learning to read, children acquire more than just a set of skills, they are acquiring cultural ways of interacting with print. They learn the norms − the practices that are passed down as valuable components to being literate. No literacy is neutral (Dewey, 1985; Gee, 1996). Literacies are defined within the socio-cultural and sociopolitical context. Critical Literacy Theory raises concerns regarding potentially oppressive ways "in which language and literacy

are used to accomplish social ends" (Dozier, Johnston & Rogers, 2006). Analyzing the purpose of particular strategies used in teaching reading may unveil underlying social goals. For example, what languages are deemed more valuable in becoming literate?

In the context of deaf children learning to read, critical literacy theory allows us to examine the social goals (and injustices). For example, we can ask whether sign language is given equal consideration when exploring reading practices? Traditionally, deaf individuals have not been empowered to use their native sign language in the context of literacy development. Perhaps if we ask deaf teachers and deaf readers to reflect on what works and what does not (which in itself provides some validation for their deaf *ways of knowing*), we might be able to incorporate their indigenous strategies and potentially address the literacy barriers that have persisted for so long. On the other hand, we may find that deaf teachers, by habit and socialization, are compelled to propagate hearing ways of teaching and learning and resist critical reflection of their teaching practices.

Deaf Epistemologies and Visually Based Learning

Deaf Epistemology refers to the *Deaf way of knowing*. Knowing involves an understanding of what reality is and depends largely on one's own experiences, context and backgrounds. For the past century, two major paradigms − the medical/pathological view and the cultural-linguistic view− have permeated the field of deafness and as a result have influenced educational decisions, placement, and language of instruction (Padden & Humphries, 1988). The *medical view* advocates deafness as a defect, a disability that needs to be fixed, and therefore all measures are focused on oral education, which includes speech therapy, speech production, auditory verbal learning, and the use of assistive hearing devices or cochlear implants.

Observational data from the 1960s, written by a hearing professor at Gallaudet University, described deaf people from the medical, pathological perspective as:

> inferior in physical coordination, problematic, disabled, deficient, schizophrenic, maladjusted, limited, deprived, passive, belligerent, in need of admiration, subhuman, retarded, disordered, deviated, impaired, defective, poor, immature, pessimistic, remedial, delayed, emotionally disturbed, irreversible, isolated, depressed, paranoid, hypomaniacs, hypochondriacs, hysterical, psychotic, neurotic, suspicious, naïve, faulty, primitive, dependent, autistic… (Mykelbust, 1964, p. 116)

These labels, published by Myklebust in a textbook designed for specialists who would be working with deaf individuals, have unfortunately persisted in the minds of educators for many generations to follow. This pathological orientation only causes damage to the reputation of deaf individuals and has the result of disabling them (Lane, 1992).

In contrast, the *cultural and linguistic* paradigm views deafness as a difference, a fact of life that draws a community unto itself where members naturally enjoy a sign language and a rich heritage of Deaf culture. The cultural and linguistic recognition in Deaf epistemology advocates for an elimination of audism − hearing colonialism and power −, recognition of personal testimonies as funds of knowledge, and acceptance of a visual way of life in contrast to the hearing-oriented life. De Clerck (2010) argues that scientific research all along has carried an audist position where Hearing ideology dominated the field without giving any consideration to deaf people and their own indigenous heritage and knowledge. By accepting these indigenous diverse forms of knowledge, De Clerck raises critical questions that need to be recognized and addressed in the scientific community, namely, "Is there a deaf way of viewing the world? What is the scientific status of indigenous deaf knowledge? How can deaf knowers be conceptualized in science?"

Holcomb (2010) views Deaf epistemologies as a critique and alternative to the practice of science in the same way gender, sex, race, and disability are categorized. He emphasizes that the primary source of knowledge comes from personal testimonies of Deaf members. How do we know what deafness entails if one is not deaf to experience it directly? What constitutes a valid justification for the established theories and practices used in the field of education, learning, language acquisition, and literacy except hearing from the ones who have navigated those systems?

To better characterize the broader deaf population, Paul (2010) posits that there are several epistemologies to describe the range of experiences with deafness (hearing loss, cultural involvement) and beliefs about best practices. The discussion of how we define the reality of deafness thus needs to be laid out on the table as a way to recognize how our own understandings influence theory, research and practice related to the deaf population. Miller (2010) describes how the differing external influences and social pressures from home and school define one's experience and therefore one's interpretation of Deaf epistemology. She ascribes commonality to culture of common experience (Miller, 2003) where worldviews and perceptions about hearing people depend on the context. Deaf children in mainstreaming settings develop an identity unique to their own experiences, which she refers to as an individual and group constructivist process, quoting Bradie (1994), a "continuous process of evolution and adaptation to one's environment, and it is processed at the biological, psychological, and/or social levels of one's being."

Why does this all matter? Together, these socio-cultural factors permeate the life of a deaf or hard of hearing child, and issues regarding language choice, educational placement, and academic success influence how a child will learn. The deaf child in a hearing family is faced

with an ecology that requires adaptations for both parents and the deaf child. Hauser, O'Hearn, McKee, Steider, and Thew (2010) correctly point out the reality that hearing individuals' interactions with deaf individuals shape how deaf individuals acquire knowledge and how they learn. Hearing parents are often constrained to what they are capable of doing, sometimes positively mediating their own culture and language or sometimes hindering the child's growth. Lack of language access surely negatively influences cognitive development, which in turn affects academic achievement. How can we ensure that proper learning development occurs? Are parents and teachers equipped to mediate knowledge using an accessible language?

It is not uncommon for Deaf adults to report that some hearing adults oppressed them in their childhood, for example, preventing them from using their hands to express themselves. Researchers may be just as guilty—for decades, without understanding deaf people's language and culture, their reported research findings often perpetuated a negative or deficit framing of deaf people's lives (Harris, Holmes & Mertens, 2009).

Indeed, according to Yosso (2005), "the array of cultural knowledge, skills, abilities and contacts possessed by socially marginalized groups…often go unrecognized and un-acknowledged." The advantage of exploring the *cultural capita* of signing communities is that by doing so we are afforded new understandings that may suggest alternate, and more successful, ways of structuring the early experiences of deaf individuals.

Adopting an emic perspective, we may ask how do these signing communities live as visual learners? How have successful deaf readers achieved this outcome? Considerable evidence has accrued suggesting that deaf children of deaf parents, who are highly fluent in ASL, are the most likely to become successful English readers (Padden & Ramsey, 1998; 2000; Prinz & Strong, 1998; Strong & Prinz, 1997, 2000; Singleton, Supalla, Litchfield, & Schley, 1998).

Furthermore, attention studies suggest that signing communities socialize young children using unique visual engagement strategies. For example, Singleton and Crume (2010) found that preschool-aged deaf children of deaf parents exhibited greater self-regulation of their visual attention in school settings than deaf children of hearing parents. These remarkable findings serves as our warrant to further investigate this rich ecological environment in which visually oriented strategies appear to offer great benefit to the deaf learner.

Hauser et al. (2010) emphasizes that the "Deaf episteme" doesn't rely on hearing loss, but rather characterizes deaf learners, as visually oriented and who navigate life using those visual skills. Neuroscience studies reveal a number of cognitive enhancements in deaf individuals, including for example greater sensitivity in peripheral vision and greater skill at mental rotation tasks (Bavelier, Dye, & Hauser, 2006; Bavelier, Tomann, Hutton, Mitchell, Corina, & Liu, 2000).

Even so, it is not so easy to apply Deaf *ways of knowing* to young deaf children born to hearing parents. When a deaf child is unable to speak, hearing parents tend to adopt the medical perspective, likely overlooking helpful visually based cultural tools. School placements favor mainstreaming deaf children in hearing schools with the aim of integrating them with "normal" children. Antia, Jones, Luckner, Kreimeyer and Reed (2011) have shown that mainstreamed deaf students prefer to interact with similar deaf and hard of hearing peers rather than hearing peers due to communication challenges.

In today's post-modern world, deaf individuals' experiences in both the hearing and deaf communities, is no longer either or, rather it is more like a mosaic that captures what it means to be a deaf person in a predominantly hearing world. Bilingual/bicultural theories help us reconsider their experience as culturally, socially and historically situated events giving

recognition to the spoken and written language and culture of hearing members as well as acknowledging the place of sign language and visual learning in the lives of the deaf community.

Summary

This chapter began with a discussion of sociocultural learning theory, which assumes the inseparability of the individual and the social interactions within cognitively and linguistically embedded activities. To engage in research that involves deaf participants, one must acknowledge Deaf epistemologies- the Deaf way of knowing- and the biological conditions that lead to brain-based adaptations to navigate learning through vision. Within those parameters, visual language and visual learning becomes a necessary platform for the discussion of critical literacy. What does it mean for deaf children who do not have auditory capacities and are exposed solely to visual forms of languages (sign language, fingerspelling, lip-reading) and scripts? How visually accessible are those interactions? What insights can deaf experts provide to deaf novices in the act of learning to read? What are these funds of knowledge that are shared?

Future directions or considerations in research involving deaf children or deaf adults would require 1) a greater socio-cultural understanding of the population studied, 2) an awareness of the language and culture required to interact with the population, 3) the need to include the deaf community as collaborators to discuss the ramifications of the research questions and findings, 4) an understanding of the benefits of cultural tools used by the community, and finally 5) an opportunity to bring Deaf inquiry into deaf reading practices.

By including deaf researchers, deaf teachers, and the deaf community who know sign language in the discussion of literacy acquisition, language learning, and visually based strategies, the researcher gains a richer understanding of the socio-cultural context. More professionals are moving toward such models of Community Engaged Research practice (Israel,

Eng, Schulz & Parker, 2005; Israel, Schulz & Becker, 1998) by engaging in research *with* (and not "*on*") deaf individuals (Jones & Pullen, 1992; Singleton, Jones & Hanumantha, 2012). To include deaf members in investigating "Deaf knowing" reinforces Lave and Wenger's (1991) view that:

> learning is not merely situated in practice −as if it were some independently reifiable process that just happened to be located somewhere −learning is an integral part of generative social practice in the lived-in world (p. 35).

Chapter 3

Literature Review

The Chinese Context: Linguistic, Social and Pedagogical Traditions

This literature review addresses how language, social interaction and pedagogical traditions interact with the process of learning to read in the Chinese context. Given the dearth of research on Deaf Chinese reading practices, attention will be given to the overarching sociocultural, historical and political background in hearing contexts. This will help us understand the external influences that affect deaf communities in China and provide insight into what funds of knowledge might distinguish the hearing and deaf communities.

In this chapter, four sections will be addressed 1) Learning to read Chinese and its developmental stages; 2) Reading instruction in China; 3) Deaf Education in China and the role of Deaf teachers; and 4) Deaf Chinese school and literacy experiences.

Learning to Read Chinese and its Developmental Stages

There is no such thing as one Chinese language; rather there exists a myriad of spoken forms that differ in pronunciation. In Mainland China, while there are several regional dialects and spoken forms not related such as Mandarin and Cantonese, there is one common writing system shared by all, which is the most recently standardized Simplified Characters. The Chinese writing system differs greatly from the alphabetic scripts found in the West in its composition of form and symbolism. Chinese is a morpho－syllabic script, where characters carry meaningful parts shown in the left or upper semantic radical and syllable associations in the right or bottom phonetic radical (Zhou, 1978). When a Chinese person reads a character, a syllable is produced verbally for each character. The majority of the characters are semantic-phonetic compounds, a

combination of both a semantic radical and a phonetic radical, making up about 72% of the characters learned in primary school (Shu et al., 2003). In only 20% of those compounds does the phonetic component provide consistent information with regard to pronunciation. An example would be the word 垂 (to hang down or droop) /chuí/ with second tone. Its phonetic component represents the pronunciation completely for the following characters 捶 (hammer as a verb) and 锤 (hammer as a noun), both pronounced /chuí/, only partially for the following character 睡 (to sleep) pronounced /shuì / with a fourth tone, and not at all for this character 唾 (saliva) pronounced /tuò/ with the fourth tone. Furthermore, only 23% of the compounds words are regular and without homophones.

Since the characters are composed of strokes and radicals, Chinese children learn the structure of radicals within the characters (Shu & Anderson, 1997) and the number and sequence in movement of strokes (Shu et al., 2003). Identifying the characters include semantic and phonological awareness, embedded within each character (Ho, Ng & Ng, 2003). Learning to read Chinese in the early stage of reading includes the ability to visually recognize the different characters (Ho & Bryant, 1997; Siok & Fletcher, 2001). The characters can be visually similar such as “己” “已” “巳”. The first one is 己 jǐ -- 自己 (oneself), the second one 已 yǐ -- 已经 (already) and third one 巳 sì -- the hours from 9 to 11; 6th terrestrial branch. The differences are in how strokes are positioned with each other.

Thus, the complexity of learning to read Chinese requires a combination of skills (Huang & Hanley, 1995; Li, Anderson, R.C., Nagy, & Zhang, 2002; Tan et al., 2005) such as visual analysis, stroke sequence awareness, orthographic processing of the phonetic and semantic components in a character, and for hearing children the homophone analogy whereby they must think of all the possible characters for one phoneme. Not only must a reader integrate those

skills, they must also read a script that does not put spaces between words. Words in Chinese are identified as a lexicalized form where a word can be a single character, a compound character or can even have a string of characters (Lin et al., 2011). Children in second grade find it challenging in being able to identify words versus phrases. Much of the training in learning to read is to identify and write individual characters.

To help standardize the spoken language, Putonghua, based on the majority Han dialect from the North East of China, is now used throughout China. Pinyin, a Romanized written form of Chinese, was introduced to Mainland Chinese students in their early years of elementary school as an ancillary tool to support pronunciation (Sheridan, 1990). Chinese has four different tones: high pitch (tone1), rising (tone2), descending-rising (tone 3), descending (tone4). The fifth one is a neutral sound and doesn't have a number. Sometimes the tones are marked with a number to represent a tone or as shown in Figure 7, Pinyin uses diacritic markings to disambiguate tone differences, e.g. /ma/, /mā/, /má/, /mǎ/, /mà/. In characters, these five forms of /ma/ are distinctively written 吗（question marking morpheme), 妈 ("mother")， 麻 ("hemp"), 马 ("horse"), and 骂 ("to scold").

In spoken Chinese, there are many homophones, words that sound the same but mean different things. An example would be the following word /mǎ/, which has several characters 马, 玛, 蚂, 码, 犸, 杩; likewise for /mà/ there are two characters: 祃, 杩. While learning the written form of these words may be a challenge for hearing children due to the homophony, deaf children may not encounter the same effect as they are taught a sign for each character and the signs do not display the homophones in this case.

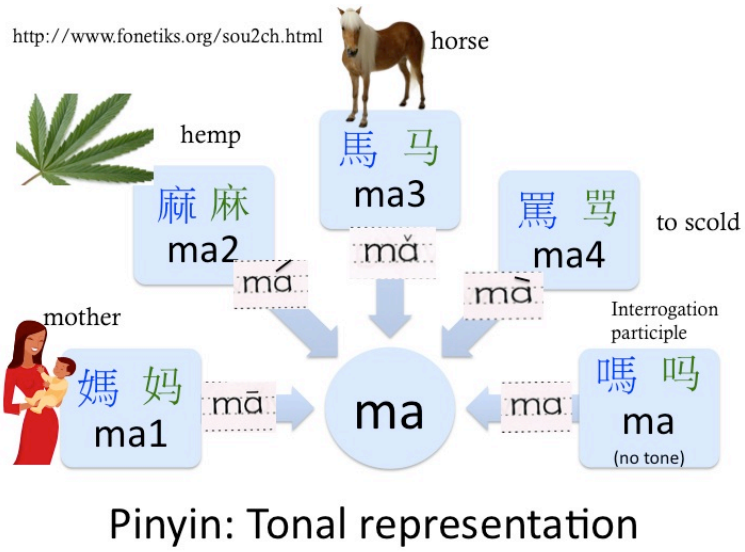


Figure 7. Pinyin tonal representation of /ma/. Adapted from textual information online http://fonetiks.org/sou2ch.html into a visual format.

Pinyin is first taught prior to characters in People's Republic of China (PRC), not in Taiwan or in Hong Kong, then it is written above new characters as part of the reading instruction requirements for the first three grades. These requirements are quite impressive given that Chinese students are dealing with two very different scripts at such a young age. Pinyin usage then decreases over subsequent grades. Thus the Romanization of Chinese characters is not intended to replace characters rather it accompanies characters as a way of teaching correct pronunciation.

The next Figure 8 illustrates how characters can also incorporate semantic information The left semantic radical for the word 'mā', which means mother, has a left radical 女 which, when standing alone, is pronounced 'nü,' and means female. The chart next illustrates five words that all share the female semantic radical; however, there are some words that share the radical, but do not represent female (e.g., strive 努, anger/rage 怒). While each of the subsequent characters in Figure 8 includes the "female" radical, the phonetic component of 'nü' is clearly

not obligatory in pronunciation. The Pinyin column provides the pronunciation and only the word for "girlfriend ("nüpengyou") contains ‘nü’; all the rest carry a completely different phonetic Pinyin representation for the entire character. In short, one cannot assume that any character with the ‘female’ semantic radical will have ‘nü’ in its pronunciation See Figure 8 for more examples (older sister, younger sister, pronoun-she).

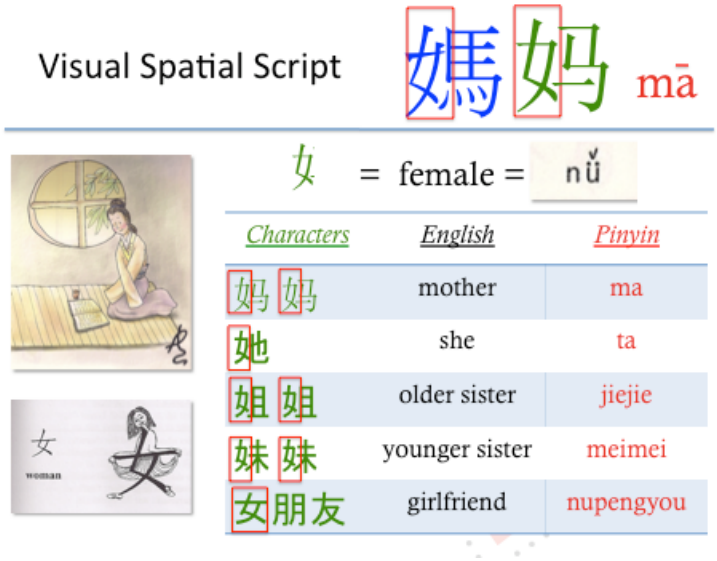


Figure 8. Chinese as visual spatial script (Jones, 2011) Upper left image is a Chinese illustration with the ancient form of Chinese writing to show how the character has evolved. Credit to Sukming Lo, (2006) with copyright permission to reprint. Lower right image is a mnemonic tool for second language learners to retain the character form. Credit to Matthews & Matthews, 2001 Picture and illustration source with copyright permission to reprint.

The phonetic radical for the word /nu/ has a list of characters with the same radical 奴 but with different tones for example we have two characters that uses rising tone ‘ nú’ one is 奴 (nú) means ‘slave’ and 驽 (nú) ‘weak’, the descending and rising tone (nǔ) is applied for all three characters: 努 (nǔ)‘ ‘strive, hard-working’, 弩(nǔ)‘ ‘cross-bow, bow’, 砮(nǔ)‘arrow-tip’ and the descending tone (nù) 怒 ‘anger, rage’. How these Pinyin words are perceived by deaf readers remain to be seen. Not only does Pinyin have multiple characters, the character can also

have multiple Pinyin representations. The characters, such as 蚂 (ant) and 杩 (insect) have more than one tone with different meanings as shown with the following example: 蚂 has three pronunciations ‘mā’, ‘mǎ’, and ‘mà’ and 杩 ‘mǎ’ and ‘mà’. These different tones may or may not be commonly used in modern Chinese. Both Pinyin and characters will have a list of multiple meaning words as well as homophones.

Chinese children process script using morphological strategies (Shu et al., 2003). Within the characters are embedded meaning such as 男 nán (man), which is a combination of 田 tián (field), and 力 lì (power), indicating that a man uses force or power when working in the field. Notice how each character has a different pronunciation and when combined, a new pronunciation is provided (i.e., the pronunciation is not tian-li but nán). Studies have suggested that morphological awareness co-evolves with Chinese literacy and carries an important role in learning to read Chinese (Anderson et al., 2005; Li, Anderson, Nagy & Zhang, 2002; Ku et al., 2003). Morphological awareness has recently become an instructional strategy in understanding the structure of Chinese (Anderson, 2003; Nagy, Kuo-Koe, Wu, Li, Anderson & Chen, 2002) and strongly facilitates character word recognition (McBride-Chang, C., Shu, H., Zhou, A., Wat, C., & Wagern, R., 2003). On the other hand, Perfetti and Liu (2006) maintain that phonological processing does occur among Chinese readers who associate the spoken word with its written character.

Written Chinese and its Relation to Spoken and Sign Language

Historical changes have occurred with Chinese characters due to linguistic and political influences. China has accrued a large number of spoken dialects. In modern China, however, only eight to ten major dialects are recognized (DeFrancis, 1989). Similarly, there were once

several distinct writing systems that evolved over the centuries, one dynasty influencing the other and therefore influencing the use of particular scripts. Only a minority of those written scripts has influenced the formation of Chinese characters, as we know it today. It was not until the Han dynasty that the emperor required that all Chinese citizens would learn the common dialect of Han-Putonghua. By standardizing the spoken language, changes were also being made to Chinese characters.

However, a drastic linguistic transformation occurred in the 1950s when the simplification of characters became the subject of literacy campaigns in Communist China. The change from traditional characters, which had an average of 10 -12 strokes was cut down to an average of 5-7 strokes, found in simplified Chinese today. One analysis of this historical shift (Cheng, Li, Shu, Yeh, & Caldwell-Harris, 2009) found that in simplifying the Chinese characters, the semantic transparency and phonetic consistency had been reduced, causing more homonyms, and thus making it more challenging for the reader. This historical change is an important consideration in the reading process because the simplification has had the effect of making characters more abstract.

Spoken language representation. During the Language Reform movement, the standardization of Mandarin and the introduction of Pinyin into the National curriculum were the catalysts for the creation of the manual phonetic alphabet in 1959 by Zhou Youguan and Shen Jiaying to represent Pinyin. *Chinese Finger Syllabary* is an example of a *visual phonetic* tool designed to assist deaf Chinese children with learning spoken Chinese (see Figure 9). Its left-hand chart has 30 single handshapes to represent the 26 letters and the four double consonants (/zh/, /ch/, /sh/, /ng/). The right-hand chart in Figure 9 has a total of twenty finals found in Chinese syllables, and they would be accompanied with the initials from the left chart. Signers

have reported to me that most people drop the left-hand when using the Chinese Finger Syllabary, and even represent one letter at a time in Pinyin. To date, I have found no published research in English that describes any test of its effectiveness.

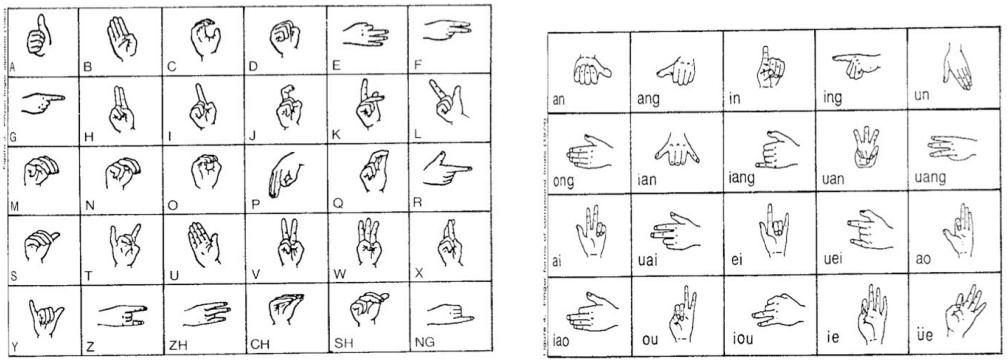


Figure 9. Chinese finger syllabary. Picture source drawn from the *International Handshape Alphabet (2004)*.

This system represents the syllabic breakdown based on initial and the final (onset and rime) combinations. Over time, the use of the 2-hand finger Syllabary using both the initial and the final were abandoned, and the left hand dropped, eliminating the rime hand shapes, and Pinyin is spelled out letter by letter as opposed to by syllable.

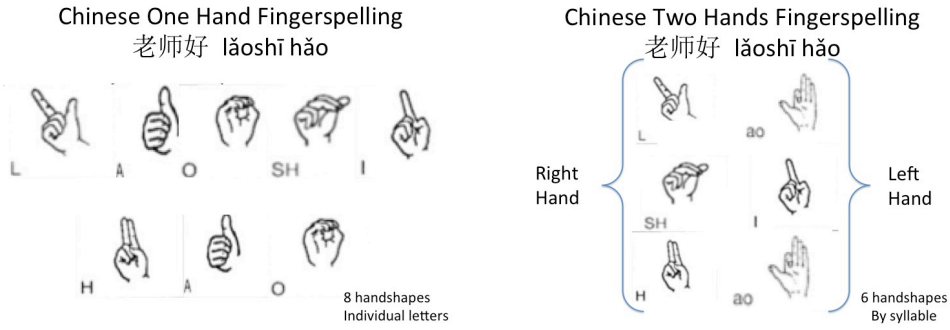
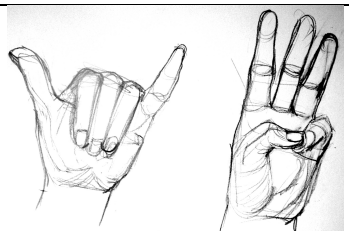


Figure 10. One-hand versus two-hand Chinese fingerspelling.

The distinction between the two fingerspelling approaches depends on the mapping strategy used (see Figure 10 for the distinction between one hand versus two hands fingerspelling). One-hand fingerspelling maps out letter to sound whereas the two-hand fingerspelling represents the onset (on the right) and final (on the left) syllables. Its representation matches that of the spoken language but does not share any formational representation with the character.

The repertoire of initialized fingerspelling remains to be explored but there are occasions with abbreviated fingerspelling where only the first letter of the syllable is used and created into a sign. On Figure 11, we see some initial use of the first fingerspelled letter "y" and "w" from /**y**i **w**ei/ in Pinyin incorporated into a sign. This is a rare occasion where the first letter is fingerspelled using Pinyin handshapes incorporated in sign.

Chinese Initialized Fingerspelling



yi wei 以为 "think/believe"

Figure 11. Chinese initialized fingerspelling. Initial handshapes incorporated from fingerspelling not often used in the Deaf community. Illustration by Yiqiao Wang (2013)

According to Yau (1977, 1988) investigations regarding the new government-created initialized signs that code Chinese words and compound signs that match Chinese characters

were not accepted in the deaf community. Its use is reportedly inconsistent in the day-to-day activities of deaf individuals yet it is heavily present in the context of deaf education.

Sign language representation. Like the spoken dialects throughout China, Chinese Sign Language (CSL) comes with regional variations and has undergone standardization efforts at the lexical level by the Deaf Sign Language Reform Committee in 1957 to facilitate communication between regions. Large cities such as Beijing, Shanghai, Nanjing and Tianjin continue to have their own sign language dialects (Dai & Wen, 2002; Yau, 1977).

During the Language Reform, a "government-sanctioned" version of CSL was promoted. In this version of CSL, all the signs were combined into a four-volume lexicon entitled "*Longyaren Tongyong Shouyu Tu*" (Standard Signs for the Deaf). In Government-CSL, its structure and construction follows what we in the West might think of as "Sign Supported Chinese," wherein each sign is matched with each syllable of the spoken language and the morpheme of the character (simultaneously articulated) (see Figure 12.) as opposed to "voices off" and following the indigenous sign language (汉语手势语言 hanyushoushiyuyan) used by the deaf communities (see Figure 13). These indigenous signed languages differ from the spoken Chinese order; rather, they follow their own natural sign language grammar (personal communication, Lin, 2011; Yang, 2008).

Figure 12. Chinese government based signs sentence structure "Mom is feeling tired"

As shown in Figure 12, in government-based Chinese Sign Language, each character is signed. 妈妈 mama the index finger is repeated twice on the mouth to show the same character is repeated (mother) 感 gan (feel) 觉 jue (think) are specifically signed by morpheme instead of either one sign for ganjue or no sign at all. 累 lei (tired) remains the same for both CSL and indigenous sign language. The indigenous sign language (see Figure 13) will show the same concept to be signed as "Mom tired". 妈妈 mama 累 lei (tired). There are syntactical differences in length, not uncommon for most sign languages around the world.

Figure 13. Indigenous signs sentence structure "Mom is feeling tired". Ma ma is repeated twice using the index finger on the mouth.

Government based signs tend to follow a morpheme by morpheme level signing each character, as seen in the example Figure 12. While Figure 13, the verb 'ganjue' (feel) is not necessary. Both mean the same thing but are represented differently. Figure 12 illustrates a literal character-by-character translation of "my mother feels tired", whereas it is interpreted equally but simply using two signs for three characters.

The linguistic composition of indigenous CSL signs and whether any formational or morphological properties are related to the written script is not fully described in the literature. It is evident, however, that there are some signs that incorporate orthographic features of the

written character (Pu & Mei, 1986). As seen in Figure 14 on the right side the word ren 人 means "person" and the left side qunzhong 众 means "people." The shape of the sign resembles the orthographic element.

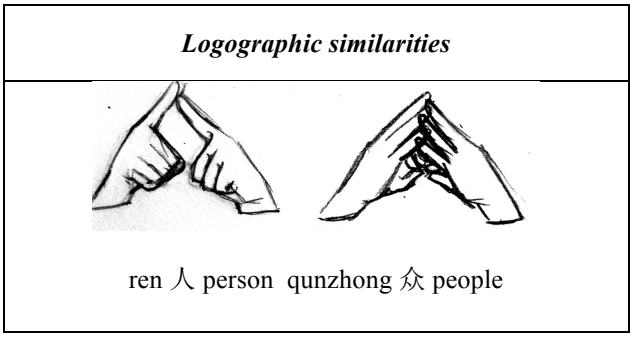


Figure 14. Logographic similarities with signs. Illustration by Yiqiao Wang, (2013).

These print-mapping examples need to be investigated further with regard to their frequency and patterns of use as they may be important in reading instruction. Today's indigenous sign languages continue to be used within deaf communities in China, while the government-sanctioned CSL is used within academic circles (Callaway 1999; Yang, 2008). In 1990, government-CSL became the official language of the deaf by the 1990 Act of the People's Republic of China for the protection of Disabled Persons. Unfortunately, the indigenous sign languages suffered the fate of being considered inferior or marginalized, similar to the outcome of many spoken dialects of minority communities in China. Even so, we must still explore relationships between the signs (indigenous or government-sanctioned) and the written print.

The Social Context of Learning to Read

Learning to read in Mainland China takes place in classrooms when children enter first grade at the age of five or six. Li and Rao (2000) conducted a cross-cultural comparison of three groups of mothers from Beijing, Hong Kong and Singapore regarding their beliefs about literacy

instruction. Hong Kong and Singapore mothers initiated literacy activities at the early age of three, whereas Beijing mothers believed that it was the responsibility of the teacher. Literacy acquisition in the People's Republic of China does not begin until the age of five. This study also showed that when the children from Hong Kong turned five, they outperformed the five year olds from Beijing in literacy activities. However, Lin and her colleagues (2009) explored the mediated activities provided by Chinese Hong Kong mothers and found certain cultural tools to be more effective than others. Interestingly, copying characters − an individual task, but heavily incorporated in Chinese instruction− did not predict reading. Instead, it was the mothers' expanded explanations of morphological and semantic information of the radicals that had the strongest influence. This meaning-making activity, guided by the mothers, is negotiated, and meaning is appropriated by young children, as they learn to write.

Parental involvement in China is highly correlated with students' academic performance. Chinese parents believe that academic achievement is their child's pursuit but, as parents, they take on the collective responsibility of monitoring, checking and helping with student's academic performance (Stevenson & Lee, 1990). The one difference, unlike children in the West or even Hong Kong or Taiwan, is that storybook reading by parents in Mainland China prior to entering school is not a common practice (Li & Rao, 2000; Shu et al, 2003). Chinese parents ascribe the responsibility of reading instruction to the elementary school teacher, but will ensure that their children follow through with the requirements of school. Parents are strong facilitators of children doing their homework, performing for the parents as if they were performing for the teacher.

For deaf children in China, the conditions are even more challenging as the majority of parents are hearing and full access to the spoken language is not likely possible from the start,

except for possible exposure to home signs (invented gestures that are used within a family at home, but typically not out in public). Parents take the responsibility of going over speech sounds with their deaf child in order to promote their speech development; again those activities are only done within the home (Callaway, 2003; Jones, 2011).

Reading Instruction in China

Reading instruction in China has roots in Confucianism, whereby the act of reading is a sacred task. "Confucianism became the orthodoxy and the main force behind the transmission of the literary tradition" (La Place, 1997, p.53). Reading is framed as a valuable process progressing through three stages "to the mind, to the eyes, to the mouth" (Rawski, 1979, p.51). The mind is actively searching for meaning of the text, not questioning it, but grasping it. The eyes channel information to the mouth. The mouth is an important part of the reading process. Chanting and humming words from text are a means of capturing the spirit of the literature of the ancients (Elman & Woodside, 1994). The voice reflects the essence of script and therefore oratory style reflects a deeper understanding of text. Traditional reading lessons involve memorizing the script, repeating over and over again the exact words of the author. Recall of words and sentences sink deeper until they spring forth as "true knowledge" (LaPlace, 1997). The goal is to internalize the ideas conveyed. As a result, oral reading became the assessment of comprehension and silent reading was not encouraged.

Being able to memorize and verbally articulate venerated texts created hundreds perhaps thousands of years ago is valorized. Repeating words in the exact same way through oral recitation, prior to comprehending text, reflects the belief in accuracy of form before acquisition of meaning. This philosophy has permeated the concept of memorization until internalized. Teachers do not expect students to understand right away, but after repeated trials, and as soon as

internalization takes place, the children are expected to remember the character's connected position, and its relationship with its surroundings (Nesbitt, 2005).

Learning to read in modern Chinese society is accomplished through a formal instruction approach. Visual and aesthetic skills, such as practicing writing characters in the air and on the palm, promotes visualization and also comes from the tradition of calligraphic art which includes tracing characters with a particular order for strokes and movement with a paintbrush (LaPlace, 1997). Learning characters nowadays involves the knowledge of stroke count and the correct stroke movement required to create a character (State Language Commission, 2000). Stroke count is classified based on difficulty of characters, but does not play a large role in instruction. Repeating the stroke order facilitates long term memory skills (Tan et al., 2005). Over time, Chinese educators emphasize "deep" reading, which is a thorough, but rather literal text comprehension approach (Wu, Li, & Anderson, 1997).

Since the Language Reform in the 1950s, the inclusion of Pinyin prior to the teaching of simplified characters was aimed at standardizing the spoken language to Putonghua, the majority language of the Han people. First grade students are taught the Pinyin alphabet and are encouraged to make the sound associations (repeating after the teacher) during the first 10 weeks of school. Students are expected to gradually move away from Pinyin by the third grade (Shu, 2003). The National Curriculum of PRC mandates that through the third grade students write both Pinyin and the corresponding character in their daily practice drills (Cheung & Ng, 2003) with the goal of transitioning out of Pinyin usage into characters alone. First graders are expected to learn about 200-300 characters in each term (Cheung & Ng, 2003). Elementary school Chinese children are expected to memorize about 2,500 characters by sixth grade (Shu, 2003).

There is scarcely any research on reading instruction in deaf education except for the discussion found in Yang's theoretical paper. What we can do, however, is to provide a brief overview of the historical, political and social context experienced by deaf citizens in China so that we may better frame the current study.

Deaf Education in China and Deaf Teachers

Several documents provide a glimpse into the socio-cultural context of being deaf in China. Dr. Alison Callaway's book *Deaf Children in China* (2003), is an in-depth ethnographic study of fourteen deaf pre-school children and their families in Nanjing, and describes deep cultural and linguistic insights into the life of young deaf Chinese. The close-knit urban family environment serves to protect the deaf person. Families will often take extra measures to seek medical help to restore their child's hearing loss regardless of the high costs that accompany these treatments. Not only do they seek medical cures, Chinese parents are actively involved in the training of speech. Callaway's accounts describe children's early years in preschool, but do not include the elementary years when reading is taught.

There are currently about 800 deaf schools in Mainland China to accommodate an estimated 20 million deaf individuals, calculated at 0.186 % of the entire Chinese population, less than 2 per 1000 persons (Callaway, 2003). Deaf people have long been viewed as burdens to society and unable to take care of themselves, a bias that still remains today. Yang's (2008) historical overview of deaf education in China provides a detailed description of the changes in language use. Sign language was not recognized as the language of the d/Deaf community until the late 1980s; notably, in 1990, when the Act of the People's Republic of China for the Protection of Disabled Persons was officially drawn (Mu, 1991; Pu & Mei, 1986; Zhao, 1999).

Depending on the political climate, Deaf education in China underwent significant shifts in language instruction throughout history. Oral education was prevalent from 1887-1929, emphasizing spoken Chinese using Lyon's phonetic signs (a system devised by an American who was exposed to the Rochester Method which fingerspells each letter of the alphabet). This method was abandoned after the 1950s when the Chinese established the Finger syllabary system to represent Pinyin.

The Milan International Congress for Deaf Education in 1880 played a large part of China's decision to adopt oralism, eliminate sign language, and restrict teaching positions to only hearing teachers. Then, from 1930-1955, a radical shift to an all-signing environment occurred, where sign language was the language of instruction and written Chinese was taught along side. After China's language reform in 1956, the national implementation of Pinyin during the first two years of elementary school was also incorporated in the field of Deaf education. In this phase, educators used signed Chinese or government-CSL (CSL), which is distinct from the indigenous sign language(s), and accompanies spoken Mandarin. Between 1986 and 1995, China witnessed a period of what we might call a hodgepodge of all possible methods to teach the spoken and signed languages to deaf students. Recently, between 1996 and 2005, bilingual and bicultural models have been implemented in a small number of preschools and primary schools in different parts of the country, incorporating what Yang (2008) considers a tri-modal-monolingual approach (spoken, written and signed Chinese).

In 1990, the law of People's Republic of China on the Protection of Disabled Persons was adopted at the National People's Congress headed by Deng Xiaopeng's son, who is disabled. This law brought about new policies that allowed disabled individuals increased participation in labor and decision-making. As a result of the 1990 law, the number of Deaf teachers in China today is

slowly increasing, although they continue to face socio-cultural obstacles: the bias of hearing administrators, and the lack of teacher training programs that will admit Deaf applicants, and the lack of funding for interpreters to provide deaf students with equal access to higher education (Johnson, 2003;Yang, 2006). Administrators tend to believe that deaf teachers are not qualified to teach (Yang, 2006). By contrast, deaf teachers maintain that clear communication is essential to teaching, and argue that hearing teachers are not fluent enough in sign language to communicate clearly with their students. Yang's survey study of 95 deaf and hard-of-hearing teachers in 52 Chinese schools provides some empirical support that administrators hold these prejudicial beliefs against deaf adults. Moreover, deaf teachers are not encouraged to complete the teacher's certification. This means deaf teachers tend to be less educated than their hearing peers, and hold lower status positions, such as teachers' assistants, even though they have richer communication with their students.

Sign language has always been a part of the lives of the deaf community. Historical records even dating back to the Tang (A.D. 618-959), Song (960-1127) and Ming (1368-1644) dynasties all referred to an existing 手语 shou一yu sign language and its use among the deaf. An interesting aspect of the evolution of sign language is its role in theatrical productions centuries ago. Performers used signs as visual representations of written Chinese. Pu and Mei (1986) investigated this relationship between signs and written characters and found that some signs still being used in the community do resemble the written character. Indigenous sign languages do not share the same grammatical structure as spoken Mandarin (Yang & Fisher, 2002; Yau, 1998; Ye, 1990). Signed Chinese/CSL was established in the 1980s to fit the syntactic structure of spoken Mandarin. It is used primarily in educational settings, and is sanctioned by the government, but is not widely accepted in the adult signing community.

Only in the last decade were bilingual programs established to reinstate CSL as part of the language of instruction, in part due to the perceptions of teachers of the deaf who saw a positive influence of CSL proficiency on the acquisition of reading (Chen, 2005; Dai & Song, 1990). Yang (2008) conducted interviews with deaf adults in Mainland China asking them about their bilingual lives. Still, very little empirical research exists describing how bilingual deaf readers interact with Chinese script and how reading instruction is implemented within deaf education. The implementation of the national curriculum and the standardization of Mandarin during the Language Reform required that deaf children memorize about 2000 characters and learn Pinyin. The role of Pinyin, according to Yang (2008), is considered an important tool for the teaching of Chinese to deaf students. A thesis on Sign Bilingual Education from 1996 to 2004 written by Samuel To provides an excellent overview of the Chinese language policies and their implementation in Deaf education, but contains no details of literacy instruction practices or student learning processes with respect to reading and writing (To, 2009).

There is emerging research on Chinese Deaf readers (Gaines & Piao, 1983; Wang, 2000; Yang, 2008). Wang (2000) observed reading comprehension delays among deaf children compared to their hearing peers; however, when the same content was conveyed visually in sign language, deaf individuals had comprehension levels as accurate as their hearing peers, who received the information aurally.

Gaines and Piao (1983) assessed 181 deaf elementary Chinese children's short-term visual memory, reading comprehension and immediate recall of stories. According to the sample description, deaf children entered first grade at 9 to 15 years old. Eighty children were from the country and 101 from the city. They categorized deaf students by their encoding strategies, and found that those who encoded either aurally or visually (or using sign) had significantly better

reading comprehension than those who mixed both visual and auditory encoding. The good readers group had a majority of visual encoders. These findings are consistent with Anderson & Chen, 2013 and Luo, Chen, Deacon, Zhang, & Yin, 2013 studies that Chinese students tend to be visually attuned to the spatial component of the characters.

In other research, Fok et al. (1991) showed that deaf Chinese children demonstrated greater sensitivity to the strokes of the characters and possessed superior visual and spatial discrimination abilities in the writing of characters, as compared to their hearing Chinese peers. When compared to American deaf readers, the Chinese participants outperformed Americans participants in their visual and spatial discrimination. American deaf participants did better than their American hearing peers in the task of visual discrimination. These findings show the uniqueness of being exposed to a visual spatial language and its influence on visual discrimination when comparing deaf readers and hearing readers; however, there is a cultural difference whereby exposure to Chinese, a visual spatial script, influences both hearing and deaf readers to become more visually attuned to its strokes.

Deaf Chinese School and Literacy Experiences

I initiated an early research project (Jones, 2011) to collect personal narratives regarding school and literacy experiences of eight Deaf adults who lived and were raised in a Chinese school environment. The results showed that learning to read Chinese, for a Deaf person living in China, is far more complicated than anticipated. The introduction of Pinyin prior to reading characters takes priority over learning to read characters. Since Pinyin embodies vowels and consonants, teachers used it to strengthen speech abilities among the deaf students. All participants in this study had hearing teachers in their early school years. The general

expectations for academic success in China depended largely on speech development, thereby delaying content learning that could have been provided through sign language. The participants shared mixed feelings regarding the usefulness of Pinyin in learning to read. Some emphasized the need for Pinyin to access dictionary and computer resources, others found ways to bypass Pinyin by using alternative strategies such as relying on sign language or using systems like Wubi Hua and stroke count for example.

Overall, the participants felt that sign language was an easier pathway to learning to read and that speech was more or less a survival skill for interacting with hearing people. The majority of participants suggested that their extensive experience with written Simplified Chinese early on at home with their hearing parents was the key to effective bilingual communication and that they preferred writing characters when interacting with the public. These results are consistent with the findings reported in Yang's (2008) study.

Can Deaf Chinese readers learn simplified Chinese characters directly from signs, bypassing the speech encoding aspect? The increased number of deaf teachers and the growth of bilingual-bicultural programs in the last 10 years certainly opens up the possibility for new investigations into this important question. How is visual learning implemented and does a visual-spatial language such as CSL facilitate students' learning of a logographic script? In the next phase of my program of research, classroom observations and teacher interviews (both deaf and hearing) will shed light on whether past instructional practices still prevail or whether innovative and visually based pathways are being exploited.

If Chinese is to be considered a visual-spatial language, a question is whether character learning would be naturally easier for deaf children who are visual learners compared to those who read an alphabetic script like Pinyin, which follows the sound representation. How are

today's deaf Chinese children taught to read? This study aims at investigating the reading practices found in deaf Chinese classrooms and listening to the perspectives of Deaf teachers who have not only experienced literacy themselves, but who are also actively involved in educating the next generation of the Chinese Deaf community. By engaging teachers in these discussions and eliciting their reflections regarding their strategies and methods in mediating Chinese literacy, we hope to gain a rich description that may further inform research in China as well as the United States on reading practices with deaf children.

The present study addresses the following research questions:

1. How does the nature of script and language influence instructional strategies used with deaf children?
2. What do deaf teachers attend to when teaching Deaf children to read Chinese script? How do Deaf Chinese teachers promote a visual spatial script-learning environment?
3. What are the sociocultural factors in China that influence deaf children's literacy? How does Chinese culture influence the education of deaf Chinese students?
4. How does deaf children's reading compare to hearing children when reading Chinese characters as opposed to reading an alphabetic script? Would it be easier for Deaf children to read Chinese characters than to read an alphabetic script given the difference in mapping strategies?

Chapter 4

Methodology

Research Framework and Researcher's Stance

Given that there is little research in the field of reading practices with Deaf Chinese students and little information from deaf individuals, it is my responsibility as an American/European Deaf researcher to recognize that to get answers on how reading instruction is done in Deaf education requires a deep understanding of the political, social, educational and economic influences over the years, and my investigation will likely only touch the tip of the iceberg. I intend to initiate a critical discussion by reporting findings based on interviewing Deaf teachers regarding their past and present experiences with literacy and to provide a phenomenological snapshot of one sign bilingual school where the community strives for collaboration between deaf and hearing teachers. By drawing on their personal experiences, it is my aim to empower them to consider and think about the nature of reading practices in a Chinese Deaf context. For the purpose of the dissertation, I chose to focus on one bilingual school that serves deaf and hard of hearing students in a rural town in China.

Based on interviews with deaf experts, researchers and students, Singleton, Jones and Hanumantha (2012, and under review) found that there continue to be problems with irresponsible or unethical conduct by researchers studying deaf communities. Areas of concern were communication barriers, lack of trust, violation of confidentiality, and lack of representation by deaf researchers in the field, which Mertens (2009) would call social inequities. By incorporating a Deaf-centered perspective at the research protocol level, and in the interpretation of findings, research engagement will more likely be transformative, fostering bonds of trust between the researcher, the deaf participants and deaf community (Mertens, 2010).

Singleton et al. (2012) recommended that research teams should initiate collaborative models that include deaf scholars and deaf experts from the beginning to the end of the research endeavor. Since deaf researchers are also a part of the Deaf community, inviting Deaf experts from the Deaf community in framing the questions or providing linguistic, cultural feedback, and the planning of the research not only allows access to the larger cultural norms, but also verifies its validity. As a Deaf American, I am faced with two challenges, the first is being Deaf and surrounded by Hearing researchers in the field of Chinese reading acquisition, knowledgeable about practices done with hearing children but not with deaf children, and secondly while I am knowledgeable about deaf practices, being an American with no Chinese background requires collaboration with Chinese individuals who have lived and resided in China. This double challenge puts me in a very similar category as a hearing and non-culturally Deaf researcher. The responsibility of this study has taken me into a long journey of learning the language in both sign language, written and trying to lip-read the spoken language, and learning about the Chinese culture and Chinese reading practices. While I know I am a long way to claiming expertise in this subject, my eagerness to search for answers from a Deaf perspective is an opportunity to raise the bar in this type of research.

Given the nature of this long term extensive doctoral study and the scarcity of Deaf Chinese researchers in the field of Chinese literacy, I have had to consistently work with both the Hearing and Deaf communities in China, as well as make the most of my communications with emerging Deaf Chinese scholars, such as Jui Hui Yang, the first Deaf Chinese person to get a PhD. in Education in 2009 in all of China. I have relied on Deaf Chinese members of the Deaf community here in the States and in China with the sole purpose of listening to the Deaf voice in a largely Hearing-controlled research environment. I have worked closely with Deaf Chinese

colleagues to obtain written translations of the signed communication in the interviews and classroom interactions. Throughout the data analysis process I asked Chinese colleagues to check the data for accuracy and provide me with feedback on my interpretation of the findings.

Member checks with participants as well as using qualified bilinguals who can translate conversations from sign into written Chinese then from Chinese to English or vice versa have strengthened the data analysis. To reduce the possible threats to validity, it is important to ensure multiple views in the coding process, and not just rely on the researcher (who was present during data collection) to translate interviews and observations (Herzig & Kumrick, 2012). Not only is it responsible conduct to include sources of cultural and linguistic expertise within the research process from the beginning to the end, it is also a right that the deaf members deserve to be part of the creation of knowledge and contribute to scientific research (Harris, Holmes, & Mertens, 2009).

Voices of deaf teachers as a way to explore d/Deaf epistemology. This study focuses on interviewing teachers, especially Deaf teachers, to better understand how Chinese reading practices are initiated with young deaf children and also to provide the necessary background information enabling me to better frame the classroom observation portion of this study. However, I soon learned that few of the early-grade teachers of the deaf are hearing themselves (Communication with principal, 2011). Because of the importance of capturing what Hauser, O'Hearn, McKee Steider and Thew (2010) term *Deaf Epistemology* (i.e., the unique patterns of visually based engagement), I interviewed and observed Deaf teachers from the later grades with the aim of learning what instructional strategies may foster learning to read.

However, in the process of interviewing the Deaf teachers, I found that the Chinese Deaf participants were not used to being asked for their professional opinion/advice and/or to being

given the opportunity to think as an expert. At first, they appeared a little awkward and self-deprecating but as soon as I explained that as a Deaf American, I needed as much information regarding how they, *as a Chinese d/Deaf person*, learned to read as a child and whether they adopt similar strategies in their current teaching. The interviewees went from being somewhat reluctant to publicly articulating their teaching strategies.

I am convinced that Chinese Deaf teachers' pedagogical approaches and their personal literacy experiences will shed light on how deaf (i.e., visual) learners engage text that is both semantically and phonologically rich.

Case Study & Participants

Case study: A rural bilingual deaf school. This school setting was selected because of its unique bilingual heritage. Located in a rural area in the Southeast part of China near the Yantze River, this school was founded in 2000 by a deaf principal, who had passionate dreams of establishing a bilingual program using sign language and written Chinese in instruction. The dialect used in this region comes from a form of Cantonese, which differs from Putonghua the common language or standard Chinese of the classroom. Not only was the principal actively involved in setting up a bilingual classroom in the rural area, he was involved in training hearing teachers to use signs and to teach deaf children. The number of students attending this school started out with 12 students in 2000 and has grown to approximately 110 students in 2011. Every summer to this day, the principal and his administrative team, including teachers, would drive hours away into the rural areas, knocking on people's doors and inviting the parents to send their deaf children to their school for free. Basically, these deaf students were found left in corners of homes with no language interaction and no education whatsoever, doing menial tasks to help the

family. As of today, about 90% of the deaf students live at the residential school, except for holidays. The principal and his family along with single teachers live on the school grounds. Teachers are assigned daily responsibilities such as monitoring homework hours, morning exercise, preparing and overseeing daily meals, washing of the dishes, water consumption, and even bedtime duties. The overall climate has been described as "a large family" by the teaching staff, especially those teachers who live on school grounds monitoring the dormitories.

Participants. The goal of this study is twofold: to capture and understand the sociocultural and sociolinguistic context that surrounds reading practices in a Chinese deaf classroom and to observe how teachers of the deaf interact with print. The interviews with Deaf teachers highlighted their past and present experiences with literacy practices. The information about their childhoods provided needed historical context and also served as a springboard for comparisons with current practices. For the literacy-related lessons in early grades, I was able to observe two hearing teachers and the one deaf teacher who taught third grade.

The first study focused on interviews with Deaf teachers, who are currently at the bilingual school teaching various subjects. The interviews are designed to learn about their own backgrounds regarding schooling, language experience, and literacy and also to find out whether they emulate their own past with their current students, or if they have adopted new ways of thinking since becoming teachers in the field.

The criteria for deaf teacher interview eligibility were the teacher had to be 1) deaf, and 2) currently teaching deaf students at the bilingual school. The deaf teachers were recruited through a face-to-face announcement during a regular teacher meeting at the school and, if interested, were invited to contact the researcher the following day. Each teacher's participation

was voluntary, and monetary compensation was provided for the school, on the teacher's behalf, to purchase school supplies.

For the interview section, a total of six interviews were conducted with five deaf and one hard of hearing teacher (see Table 5). Four females and two males participated in this study. These participants will provide the socio-historical and sociocultural context that influenced reading practices on a personal level. The six deaf teachers completed the entire interview, including the literacy demonstration chart task (to be later described). I planned to include an interview with the seventh deaf teacher, but during the interview, the plug was accidently pulled out of the socket and thus was not recorded. We completed the entire session, but given that no notes were taken, to do it out of memory was not reliable. Attempts to redo the interview via Skype with the seventh teacher were unsuccessful due to breakdowns and an inability to record. Therefore for reliability issues, the seventh teacher was excluded from the data set.

Table 5

Distribution of Deaf Teachers who participated in the interviews

	Subject	G	Age	Years Taught	Hearing Status	Parents Hearing Status	Back ground	School Placement
1	*BaoYu*	F	24	1-5	Deaf	Deaf	City	Deaf School
2	*Xian*	M	31	5-10	Deaf	Hearing	City	Deaf School
3	*Yun*	F	54	20+	Deaf	Hearing	City	Deaf School
4	*Mingxi*	M	43	10+	Deaf	Hearing	Rural	Deaf School
5	*MeiLi*	F	28	1-5	Deaf	Hearing	City	Hearing School
6	*Xiaowei*	F	26	1-5	HH	Hearing	Rural	Hearing School

All of the deaf teachers, except Yun, were enrolled in a computer science university program during their college years. The oldest teacher, Yun, majored in Chinese Pedagogy, and

was the only deaf individual in her entire cohort in that University program. Access to this kind of teacher preparation program was not available for the later generations of deaf individuals. Obtaining a teaching certificate was not possible. Three of the interviewees have had one to five years teaching experience placing them as novice teachers. One had more than five years of experience and the last two had more than ten years of teaching practice.

The second study focuses on classroom observations in the context of learning to read. Ideally, I was hoping to find deaf teachers teaching first, second and third grade but only discovered that only one deaf teacher taught third grade and the ones who taught first and second were both hearing. I inquired as to why the first two grades had hearing teachers. The prevailing notion was that hearing teachers are better models for first and second grades because of their ability to speak. This is a common belief throughout China and holds true in this school. Fortunately, the third grade teacher is deaf and thus provided the opportunity to explore how reading practices might be different between a hearing teacher versus deaf teacher.

For the classroom observations, the first three elementary grades were selected. These three teachers were also interviewed, however this was conducted through written response, rather than a signed interview, due to scheduling circumstances. The selection of classroom teachers was not random for there was only one teacher for each of these grades (first, second, and third). Three female teachers (two hearing and one deaf) participated in this classroom observation study. The two hearing teachers were considered good signers. The first grade Hearing teacher learned to sign when she arrived at the school resulting in three years total of Chinese Sign Language exposure. The older teacher in second grade had been at this focal bilingual school since the beginning of its inauguration and was trained by the deaf principal.

She was considered a better signer than the first grade teacher. A more detailed description of their background will be provided in the Classroom Observations Results section.

Table 6

Teachers who Participated in the Classroom Observations

Teacher Participant	Grade	Gender	Age	Hearing Status	Years of Teaching
Liqiu	**First**	**F**	**Late twenties**	**Hearing**	**10**
Biyu	**Second**	**F**	**Early thirties**	**Hearing**	**10**
LiHua	**Third**	**F**	**Late twenties**	**Deaf**	**1-5**

Table 6 provides the background information of the teachers who participated in the classroom observations. These teachers were not included in the first data set of interviews. Table 7 presents the student composition in each classroom. Since the goal focuses on teachers rather than the students, this description of students is secondary.

Table 7

Student Composition in Three Different Classrooms

Class	***Hearing Status of Students***	***Students with Deaf Parents?***	***Age Range***
First grade (Hearing teacher)	8 Deaf 1 Hard of hearing 1 other disability 10 Total	One deaf student with deaf parents	Youngest 6 years old Oldest 15 years old
Second grade (Hearing teacher)	10 Deaf 3 Hard of hearing 13 Total	One deaf student with deaf parents	Youngest 7 years old Oldest 15 years old
Third grade (Deaf teacher)	11 Deaf 1 Hard of hearing 12 Total	None with deaf parents	Youngest 11years old Oldest 19 years old

The composition of all three elementary classrooms (as seen in Table 7) had a very broad age range, due to the presence of deaf students from poor rural areas and these students had never had any schooling prior to entering this program. The older students in all three classrooms

come from poor rural areas. All students in all grades (except for three) live at the school during the week and weekends. They go home only during the summer holidays.

Protection of human subjects. The proposed study was reviewed by University of Illinois at Urbana-Champaign Institutional Review Board. As similar review panels in China have yet to be implemented, the principal of the school was invited to be a collaborator in the project and undergo IRB training in Chinese. He was asked to review all documents for the project. Three different informed consent documents were developed and translated into simplified Chinese (See all appendixes D). The first informed consent was for individual teacher interviews (see Appendix D1), the second was for the teacher's permission to have the researcher videotape the classrooms (see Appendix D2), and finally the third informed consent was for parents whose deaf children were in those first, second, and third grade classrooms (see Appendix D3). In order to ensure the consent forms were understood by all the Deaf participants, the information in the forms was also translated into CSL through a live English/CSL interpreter.

A bilingual PhD expert in both spoken Chinese and English assisted me with the discussion of ethical practices and the informed consent procedure prior to initiating the interviews and classroom observations. The information was then translated into CSL for all deaf teachers.

Procedures: Interviews with Deaf Teachers

All teachers in the school were given the list of questions in written Chinese prior to the interview, allowing them to consider fully whether they were interested in participation, as well as to be prepared in advance. Participants were also given time to ask questions regarding the format or content before and during the interview.

The first pilot interview was conducted with a bilingual Deaf teacher who was familiar with American Sign Language and CSL who worked at the school. As she was then knowledgeable about the content and the format of the interview, and fluent in CSL or in the rural indigenous sign language, I asked her if she would be willing to serve as the facilitator/translator for the other Deaf teacher interviews. The other teachers agreed to have her as a facilitator, because of her knowledge of ASL. Having a facilitator ensured support in case a communication breakdown occurred between me the researcher, and the interviewee. The facilitator was informed that in order to do this job, she has to let the teachers sign for themselves in CSL and then she would immediately sign their responses back to me in ASL if I needed her translation support. Based on my CSL knowledge and participation in the interviews, I felt assured that the facilitator was serving in an unbiased fashion and that the teachers were not inhibited by her presence. In fact, the teachers were given the more confidential option of writing the entire interview in simplified Chinese if they did not feel comfortable with the direct interviews. Even though all interviewees chose to be videotaped with the facilitator standing by, each participant also agreed to complete the written questions.

A follow-up interview was scheduled to clarify certain statements mentioned in the first interview as well as to conduct a literacy demonstration chart activity that would facilitate a better understanding of how they viewed the literacy steps involved in learning to read and how the process might best be described. In this task, developed by Jones (2011), the participants were given a total of fourteen cards that reflected known approaches or strategies to communicate ideas or print (see Appendix C1 for Literacy Demonstration Chart Items). Each strategy was printed out on a colored card for video identification purposes. Interviewees were asked first to put in order whatever strategies they used in their childhood (from most dominant,

to less used) and then, using those cards as prompts, describe their personal literacy experiences. The order set up by the subjects was photographed for documentation and later analysis. They subsequently rearranged the cards to characterize how they would go about teaching the reading process if they were to have a deaf child. The goal of this activity was to elicit reactions when they encountered the cards, and determine whether they would replicate personal strategies (and their order of importance) with their own hypothetical deaf child. Finally, teachers were asked whether these strategies are what they currently use in the classroom setting. Any strategy that was not part of their experience at all was put aside. Results were then categorized into four subcategories: spoken language, signed language, written forms, and visual images. A fuller description of each of these categories will be described in the next chapter.

Translation of interview data. As far as proficiency in the Chinese language is concerned, I took two years of Chinese language at the University of Illinois Urbana Champaign, and according to the Chinese instructors my level was considered intermediate. While the written and spoken Chinese are important, it was even more important for me to know CSL. Having spent a month four times in three years interacting with the same deaf members from the deaf school rural community, these opportunities provided much social interaction in signs. As a deaf researcher, it was much easier for me to acquire CSL than the spoken Chinese due to the challenges of lip-reading a tonal language, and because sign language was a visual asset that strengthened my ability to engage with the deaf subjects. To ensure reliability of those interactions, I started off the pilot interview with a fluent deaf signer familiar with both ASL and CSL and included her as a facilitator in the interviews to make sure the interviewees understood me and I them. During the interviews, I was able to comprehend what was being conveyed and

always told them to repeat if I did not. The facilitator was on standby in case I was stuck or had questions.

Based on my interactions and my ability to understand, I translated the videorecordings of CSL directly into English print. I made a list of clarification words or signs whenever a sign was unfamiliar or I did not understand and met individually with a CSL/ASL signer to review this list for the first stage clarification purposes. Even so, to avoid bias and for reliability and validity measures, I also hired two deaf coders fluent in CSL and familiar with the indigenous sign language from deaf families, and asked them to transcribe the CSL into written Chinese to check for accuracy of translation. These written Chinese transcripts were then handed over to two hearing Chinese individuals who were studying English at the Yantai University in China, who proceeded to translate the text from written Chinese to English. Both hearing and deaf coders were required to sign a confidentiality agreement to not share the information and were asked to delete any written documents as soon as the document was sent to me. All documents are now in a secured file with me.

After those translations were completed, I compared these coder translations to my own translation to determine the extent of reliability between transcripts. There were situations where I would know the name signs of individual members that the coders did not know, which affected their comprehension of the content matter. These incidents were verified and did not impact the overall translation of the interviews. There were some translational challenges where the choice of words was influenced by cultural knowledge.

After the teacher interviews were translated into English and double-checked for translational accuracy, the data were analyzed, borrowing principles from Corbin and Strauss' *Grounded Theory Approach* (1991). This inductive approach for thematic analysis extracts the

statements of the participants verbatim, to be followed by a careful extraction of initial themes, using an initial coding system by Charmaz and Bryant (2007) to summarize statements into action statements. I was careful to preserve content and intent, aiming to describe the action implied by the participant. Based on these codes, general themes were extracted to construct individual teacher profiles. Then, profiles were subsequently cross-checked for common or core themes and noticeable differences across teachers (See Appendix B for an example of initial coding, memos and themes). Memos are defined as my own thoughts or knowledge about a particular theme that may be drawn from other sources.

Literacy demonstration charts analysis. In order to facilitate discussion about their reading practices and experiences, the Literacy Demonstration Chart was put together based on shared facts expressed by the participants in the adult Chinese Deaf interviews from Jones (2011) and from Yang's (2006, 2008) work with Deaf teachers (see Figure 15). Yang listed the following as part of the classroom communication strategy: signing CSL, making gestures, speaking and speech reading, fingerspelling, tracing in the air and on the palm, reading and writing. Yang's multimodal list of communication strategies is included in this chart with additional strategies that were not included in Yang's work, such as images and home signs. All together, these fourteen communicative approaches or strategies can be sorted into four main categories that were constructed to convey particular relationships with print.

The four strategy categories represent different modality functions: *spoken, written, sign and image-based*. Each of them represents a form of symbolism that carries meaning in context.

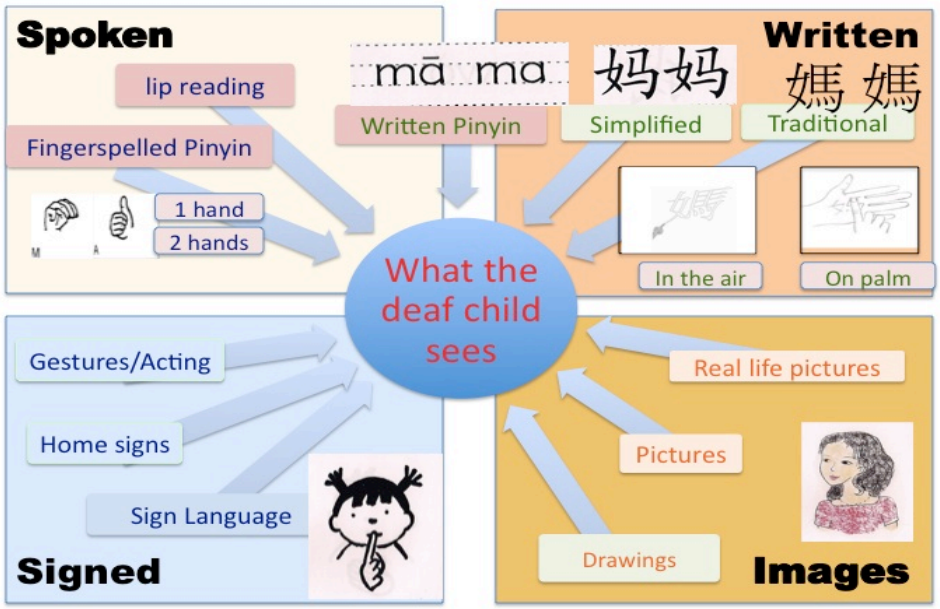


Figure 15. What the deaf Chinese child sees: Visual pathways leading to communication. Findings from Jones (2011) and Yang (2006, 2008) were categorized to represent the following modalities- signed, spoken, written and images.

The *spoken-based strategy* would generally involve auditory access, but auditory access is limited with most deaf participants. What is accessible, as far as the spoken language, is what deaf individuals *see* in the process. Lip-reading would be the direct visual representation of spoken language input, incomplete as it is. Deaf individuals either make guesses based on their ability to read lips or may not even be able to access language at all. Attempts have been made to visualize spoken language through the Chinese Finger syllabary, a kind of fingerspelled Pinyin, involving hand-shapes to represent onset and rimes. The role of fingerspelling in Chinese is an unusual phenomenon, unlike the fingerspelling used with ASL to represent English where each handshape represents each letter in a word. Fingerspelling in Chinese does not represent the strokes of characters, but rather how a word is pronounced in Chinese. It also does not fully represent each letter in the written Pinyin, but rather follows the syllabic patterns of the spoken

form. Even though the use of hands is incorporated here, its purported function is to mimic the spoken language. Written Pinyin falls in both spoken and written categories, as Pinyin is not a standardized written system, but rather a written aid to assist pronunciation. Pinyin was a transliteration of Chinese characters to a standard Mandarin pronunciation in phonetically based Romanized form of the spoken Chinese to help those who could not pronounce the characters (Ramsey, 1987).

The second strategy category is the *sign-based strategy.* Subcategories include sign language, home signs, and gestures/acting. Exposure to any sign language in the deaf community or in the classroom would be important in understanding concepts, relationships and associations. Different sign systems fit in this category, where indigenous signs may differ from the government based signs. Home signs are another subcategory. Most Chinese deaf children are born to hearing parents who are not familiar with the signs of the deaf community. In order to communicate with the deaf child, invented signs are created and used within the family. Home signs are idiosyncratic in that only a particular family would use their invented signs and, as a result, these forms are not part of the sign language repertoire of the deaf community. Gestures, however, are non-verbal forms of communication shown through the body to communicate messages. Gestures can be accompanied with speech, but generally involve hand movements (see Goldin-Meadow, 2006 for a discussion of homesigns and gestures).

The third category is *the writing-based strategy,* which involves the written script in all its forms. Chinese has both the simplified and traditional scripts as well as written Pinyin. Even though Simplified Chinese is the most common writing system today in China, I included the Traditional Chinese to see if there was any reference to it especially since the simplification has eliminated semantic and phonetic information (Cheng et al., 2009) and of the possibility that

older teachers may have been exposed to Traditional characters in their childhood. The writing systems are used to communicate pronunciation (in the case of written Pinyin), ideas, thoughts, and language. Children are exposed to scripts that symbolically represent words. Writing can be represented through pencil and paper, typing, or using the finger to trace the character on the palm or in the air. Each of those is directly visible to the deaf learner.

Lastly the *image-based strategy* includes visual material that illustrates the idea being communicated; however, the input can vary in how the image is interpreted. Drawings tend to be more primitive in that the communicator will attempt to depict the image with a pen or pencil. The drawn figure may not be as clear unless the communicator is an excellent artist. Professional illustrations are used in storybooks and comic books. Real life pictures, however, are in the form of photographs and digitalized images. As pictures, photographs and drawings are considered two-dimensional concrete representations, children will search through the image to extract information to help them make sense of what is being communicated.

The purpose of setting up individual strategies on cards was to stimulate more in-depth discussion of how they learned to read and what visual strategies did they rely upon, topics that were not always broached during the interviews. All four strategy-categories were included in the packet in a random order. Whatever was not used was passed on to me as not relevant. The interviewees were asked the following three questions:

1. What strategies did you use to learn to read growing up and why?
2. If you were to put these strategies in order and you had a deaf child of your own, what strategies would you use and why?
3. Now that you are a teacher teaching deaf children would the order of importance change? And why?

Each teacher's interview concluded with the Literacy Demonstration Chart activity. By looking at the pattern of responses regarding how they were raised versus how they would teach helps shed light on continuing approaches or changes in instructional practices in deaf education in China.

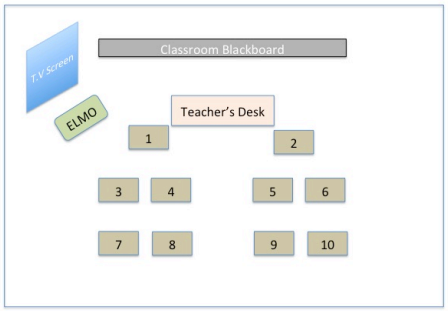
Procedures: Classroom Observations: First, Second, and Third Grades

Informed consent for classroom teachers and deaf students in first, second and third grade classes. The teachers were given instructions regarding the informed consent to be videotaped in the classrooms and were reassured that participation or refusal to participate will not affect their job performance. All three voluntarily agreed to the study. There was an initial challenge with respect to securing informed consent from parents of deaf children in the classrooms. Almost 90% of the parents live more than two hours away, some five or seven hours away from the school. These parents do not come to the school on a regular basis except to pick up their child at the end of the school year. The principal did not think that sending a form to the parents through the mail was a reliable strategy. Further discussion with the principal and the University of Illinois IRB led to an agreement made to obtain a verbal consent from each child's parent through phone calls by their child's teacher with a follow up confirmation packet to be handed out and signed when they picked up their students at the end of the year. All of the students' parents were contacted through their teacher by phone to ask for permission to allow their children to be videotaped and be part of the research. All of the parents gave oral consent at the time of the study and provided confirmation of their consent in writing at the end of the school year. Compensation for participation was a monetary gift for school supplies.

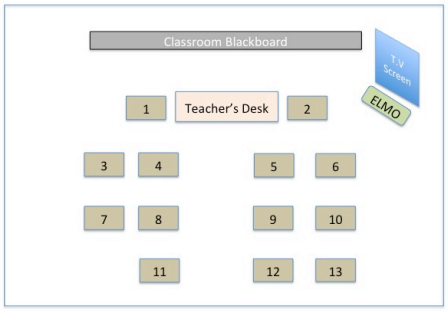
Classroom teachers were given the Assent forms for students and explained to the students that I would be coming into the classroom to videotape the teacher's lessons (see Appendix E). They conveyed to students that if they did not want to be on the camera that they could say no. A note written in Chinese for the student was translated into CSL and was signed by each of the students and turned in. The teachers shared with the researcher that all students were excited to be videotaped, and all agreed to the assent forms. Many of the teachers expressed their appreciation for the discussion of ethical procedures (e.g., the researcher explaining how the data would be protected), and mentioned that it was the first time they had ever experienced this approach.

Description of the classroom arrangement. Since the classroom arrangement provides the context of a learning environment, I will provide the layout of each classroom as well as what is available to the eye, where the teacher was positioned in relation to the students and the blackboard, where the students were in relation to each other, and the location of other relevant materials on display during reading instruction.

Classroom Arrangement. The three classrooms had the following arrangements. All classrooms had an ELMO projector attached to a television, where all materials (papers or USB format files) were projected onto the television screen. The first two classrooms (Grade 1 and Grade 2) were arranged in a traditional way where students' desks were facing the teacher and the blackboard vertically in rows of twos.



First Grade Classroom Set up Hearing Teacher

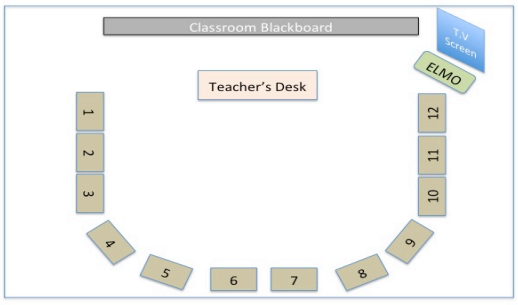


Second Grade Classroom Set up Hearing Teacher

Figure 16. Classroom arrangement by hearing teachers.

These traditional classroom arrangements (as seen in Figure 16) were aimed at helping students pay attention to the teacher and focus on the blackboard. Both hearing teachers arranged student placement where the youngest child would sit in the front while the oldest sat at the back. Restless children who tended to not pay attention were seated right next to the teacher.

The third grade deaf teacher, however, set her class up in a U-shaped fashion so the students could see each other's signing and at the same time participate in attending to the teacher's lessons on or next to the board (see Figure 17). She described this set up as providing visual access for all students.



Third Grade Classroom Set up Deaf Teacher

Figure 17. Classroom arrangement by deaf teacher.

The U-shaped set up of the classroom, while it does not replicate the traditional hearing classroom, is uniquely tailored to fit the needs of deaf students who need access to sign language. This reflects a perfect example of how deafness influences the sociocultural dynamics of a learning environment.

Classroom video-recording data. For the purpose of exploring reading practices in the early primary classes, two weeks of Chinese reading lessons were recorded. Twenty-seven hours of classroom observations of Chinese reading lessons were collected within a period of a month: first grade 7 hours, second grade 7 hours, and third grade 9 hours, respectively. For the purpose of this study, two selected video clips were used: one purposefully selected based on the nature of its lesson, which is teaching new words, and the second a randomly selected segment drawn from one of the Chinese reading lessons. Each video clip represents 40 minutes of classroom interaction rich with script and language instruction.

The goal of the video analysis was to extract teacher actions. How did the teachers mediate reading instruction when using either Pinyin or characters? The analysis provides descriptive information about a) how language and script are used during these literacy events, b) the process the teacher goes through to promote the internalization of a new word, c) how the teacher bridges language and script, and d) what visual strategies the teacher uses to facilitate this process. The analysis includes an individual classroom inventory as well as cross-grade comparisons.

In my preliminary analysis, I developed an Initial Coding Checklist to characterize observed teacher actions that facilitate reading. Those categories related to teacher actions are the following:

- Signing
- Pointing to characters, Pinyin, pictures, radicals, tone markers

- Tracing in the air, on the board, with chalk, underlining, circling
- Writing Pinyin, compound words, non character words
- Fingerspelling

I used this Teacher Actions checklist in conjunction with the video analysis software ELAN package, which helped calculate frequency and duration of particular teacher actions. Throughout the coding process, I documented the unique characteristics that facilitate bridging between print and signs. By looking at patterns within those lessons, the goal was to extract some general instructional strategies for further research. Finally, the analysis is applied to individual classrooms as well as cross-classroom comparisons to determine whether there were shared patterns of instruction. I also compare how the deaf teacher compared to the two hearing teachers in the application of different types of instruction.

Classroom videorecording data coding. For the purpose of analyzing data, the free ELAN transcription program was selected. With ELAN, classroom videotape clips can be timed, transcribed, and coded for various categories. For the purpose of this study, only one tier of coding analysis was extracted to represent Teacher Actions. This tier documents all the teacher actions within a 40-minute lesson. These transcriptions provide the frequency and time allotted to a particular modality. Two 40 minutes sessions were extracted from the larger set of videotaped data. The learning new words session was purposefully selected as a way to record the process of learning new words. A list of words would be written on the board prior to the lesson making the selection easy to find. The second 40 minutes session was a random selection of a language arts lesson.

The coding was based on the following questions: Does the teacher show Pinyin, or does she show characters? Does the teacher sign or does she talk? Does the teacher write? Circle?

Underline or trace? Does the teacher point? What does the teacher do when she points? What gets pointed at, and how long does the point last?

Summary of Data Analysis Approach

- **Profiling of Deaf teachers through individual summaries**

All teacher interviews are summarized in a profile describing their backgrounds, their literacy experience, and what they would do in their own teaching.

- **Finding common themes across teacher statements**

After all of the interviews were translated from Chinese Sign language to Chinese written language then to English, the written data was read several times. Before extracting the themes of the interviews using Grounded Theory, I went over each response by the interviewee and provided the action verb of the statement that represented what the interviewee is saying. Careful attention was given to not twist the meaning of the words. Based on those initial statements, I would include memos related to either personal or public knowledge. As a Deaf member, I would include similar or different experiences. I would reread the original statement and initial coding to draw themes. After including the theme, the themes would be compiled into a list of themes and re-categorized into larger themes. From those themes, I created an individual profile. I would reread their statements to double check whether they still fit under this theme. Excerpts from the transcript are included to illustrate the theme. As soon as I completed the profile summary for all six interviewees, I looked across individual summaries to see if there were any recurring or contrasting themes, which would appear as patterns that arise from all participants.

- **Literacy demonstration chart orders and descriptions**

Each teacher's literacy demonstration chart ordering and verbal descriptions are compared within individuals (personal experience in childhood vs. best practice for her own child and for her classroom) and across individuals.

- **Classroom descriptions and connections with interviews**

The videorecorded literacy events are described and compared across grades, including the sequence of events and a detailed description of what each teacher does during each event. The focus is on language and what script is used, as well as what the teacher does to visually connect what she is addressing. These classroom observations either support or counter the claims or philosophies expressed in the teacher interviews.

Themes addressed in the interviews are placed side by side with what is going on in the classroom. The examples found in the video clips contributed to increased understanding of what reading practices are used. The classroom observations may also yield additional strategies that were not reported in the interviews. These differences are addressed in the discussion.

Chapter 5

Results: Part I - Teachers' Interviews

This qualitative study aims at analyzing data collected from a bilingual deaf school in the Southeast of China where 95 % of the deaf students reside at the school and where half of the teaching staff is deaf. The fact that there is little discussion regarding d/Deaf reading practices in China in general, much less about *Deaf ways* of teaching, is the issue this dissertation aims to address; both from the perspective of deaf teachers and from teachers who are currently teaching reading in first, second and third grade classrooms. In order to build a solid contextual analysis of this particular deaf bilingual school, two sets of data will be described with the goal of using the findings to situate the sociocultural influences that drive reading instruction today.

It is important to note that the deaf teachers who were interviewed in this study are not the same teachers who are being observed in the classroom. The deaf teacher interviews are reported separately from the classroom observation (and the information collected from those teachers). These two studies will ultimately blend in the discussion chapter to review the overarching issues in reading practices.

The first set of findings from interviews with d/Deaf teachers will bring to the fore reading experiences drawn from their personal past and present instructional practices. These perspectives set the stage (both socio-culturally and historically) for interpreting the behaviors observed in the classroom video recordings, which is described in the second set of findings. This framing allows us to also examine reading practices through *Deaf eyes* as opposed to depending solely upon the hearing early grade teachers' approach. In summary, through individual teacher interviews and classroom observations of the first three elementary school

years in a Chinese Bilingual school for the deaf, a comprehensive overview of past and present sociocultural contexts and their pedagogical approach to reading will be presented.

Individual teacher profiles were constructed to capture individual differences with regard to background and literacy experience. All interviews were done in CSL with a fluent translator standing by. The profiles reflect deaf teachers' childhood communication practices at home, at school, and their day-to-day interactions with reading and writing. While the topics of the interactions between the interviewer and the interviewee mostly focused on their personal histories, questions were also raised to examine and compare their current thinking as teachers, and whether their childhood experiences matched or differed from the present teaching environment. Common themes related to reading practices and the relationship between languages and scripts were extracted and explored in terms of historical (i.e., teacher's childhood vs. current classroom) and cultural contexts. Lastly, individual classroom observations and comparisons were examined to capture the cultural and educational processes involved in deaf children learning to read. Challenges and realities will be described.

Individual Deaf Teachers' Profiles

Individual interviews were compiled based on teachers' personal narratives and their school and literacy experiences, as well as how their upbringing has affected their current teaching practices. Based on the transcriptions and translations, I summarized background information about each teacher's upbringing, what language was used at home and at school, and the sociocultural environment she/he was raised in including how society has treated her. I also documented her/his school and literacy experiences. Lastly information about their experiences

with teaching reading and language to deaf students was summarized. Pseudonyms are used for each teacher.

Individual Profile #1: Bao Yu 1-5 years teaching experience (teaching 5th grade)

Background information. Bao Yu is a Deaf female, in her mid-twenties, from Beijing. She commuted daily to the deaf school her entire life until college, when she then stayed in a dorm and majored in computer science. Born as the only child to deaf parents with deaf relatives, Bao Yu gained a unique bilingual language experience where both parents would initially address her only in spoken Putonghua to reinforce her speaking skills. Nevertheless, her parents used indigenous sign language with each other on a daily basis at home. Her relatives signed and rarely used fingerspelling with her. Over time, Bao Yu's parents combined both spoken and sign language, still emphasizing the importance of speech. She recalled her parents labeling everything in the house with Chinese characters and teaching her the signs and how to pronounce the words in Putonghua.

School experiences. Before elementary school, Bao Yu was sent to a speech school for two years with the hope that she would succeed in ways that her parents were not able to. There, Bao Yu shared memories regarding the tedious rote learning of vowels and consonants with the visual aid of fingerspelling and written Pinyin. She begged her parents to let her attend a hearing school near home, but was discouraged by her grandmother who said "someone will punch you in the face." Eventually, Bao Yu was enrolled in a large deaf school in the city. Bao Yu reported wearing hearing aids since she was three years old. Her first two years at the deaf school were spent learning to speak and read Pinyin using headphones. Her elementary school teachers were all hearing. Her school categorized students based on their speaking or listening abilities.

> *Growing up, we had two classrooms, one for those who could speak well and who could hear well, the second was for those who couldn't speak or hear well. Teachers in the first*

classroom would speak a lot whereas the teachers in the other classroom would sign a lot more until in fourth grade both classes were combined. (S801-4:36- 4:45)

Bao Yu was placed in the group that spoke well even though she couldn't hear well. The classroom arrangement was in a U shape so that students could see each other. Her teacher would wear a box on her chest and speak through the microphone. She described the headphone machines as being of terrible quality for she couldn't hear much through them. Throughout her elementary years, spoken Chinese was the language of instruction and sign language was considered an alternate means of communication in case of failed comprehension. The teachers would create a lot of visual displays to communicate concepts and words. One-handed fingerspelling was used and tones were conveyed with hand movements to indicate high pitch, rising, descending or descending-rising tones.

Her first exposure to a deaf teacher was when she was in 7th and 8th grade Nature class. Bao Yu took pride in her speech accomplishments and believed that good speech was important to get a job.

Literacy experiences. Bao Yu remembered how her father would take the time to show pictures pasted all over the house and he would sign and speak its meaning equivalence. She was not taught to read until she entered school where she learned Pinyin in first grade prior to characters. Bao Yu's experience followed the same curriculum pattern as hearing education whereby extensive use of Pinyin is taught in the first grade, followed by a gradual introduction of characters, and exposure to characters increased over time with less and less Pinyin however, Pinyin was still used until ninth grade for speech purposes.

Bao Yu remembered the huge amount of homework during the first few years of school. These assignments involved a lot of copying of characters and memorizing them by heart. One

character would be written out over and over again until she had reached ten lines. She recollected her reading experiences as the following:

> *The teacher would tell us to practice reading characters. We had to practice speech and if we did not know Pinyin then we had to circle the word and wait until the teacher arrived and would ask us to analyze the meaning of the word. What does it mean?* (S801-16:59-17:15)

Pleasurable reading would only happen during breaks not during class. The teacher required that all eyes watch the teacher to not miss anything important. Bao Yu complained that the "deaf books" provided were far too easy for her and she was appreciative that her parents brought her to the library quite often. Even though her parents did not read to her or explicitly teach her to read, Bao Yu was fascinated by the pictures and drawings of the books she selected from the library. She recalled being at first disinterested with the characters in the books, preferring the pictures, but as she got older the characters gradually made sense and she began to want to read.

Teaching deaf children experiences. As a relatively new teacher, she described her frustration that her students were not familiar with Pinyin nor with lip-reading skills and that her students struggled with mixing character compounds. She believed knowing Pinyin and lip-reading abilities will resolve the confusion of compound character structure. When her students use the indigenous sign language, she reported requesting that they sign properly - using governmental signs so to follow the written order.

Individual Profile #2: Xian 5-10 years teaching experience (currently teaching Math 7th and 9th grade)

Background information. Born and raised in Shanghai to hearing parents who spoke the Wu dialect with him, Xian was initially placed into a hearing school for two years until a teacher finally noticed that there was something wrong with him. Upon discovering his deafness, Xian

was immediately placed in a deaf oral school where he was taught how to speak for the first three years. His mother practiced speech with him at home and used invented signs to interact with him. Xian's interactions with his deaf peers, however, were in indigenous sign language. Teachers expected students to respond to them in government-sanctioned CSL, simultaneously signing and speaking character by character.

School experiences. The first few years of Xian's instruction at the elementary school were conducted in spoken Mandarin with the one hand finger syllabary, and the written alphabet to represent Pinyin. Xian shared how difficult it was to practice speech vowels all day, over and over again. He recalls his elementary reading lessons as starting off with "speaking" all of the words on the board, then going through individually in signs. They also were expected to look up words in the dictionary and sign the meaning. The tests were spoken aloud by the teachers and the students had to write down the characters to represent the words on the mouth. Compounds would provide some clues as to the ambiguity on the lips. The allocation of classroom language depended on how much the students could hear. If one could not hear, more signing would be added, but the goal was still to emphasize speech and phase out signs. Xian believed that if a student's speech quality was not considered good enough, enunciation of words with signs together needed to be expected. All of his teachers were hearing. Xian had some deaf teachers at the high school who taught him Chinese, Nature and World History.

Literacy experiences. Xian was not much of a reader throughout his childhood; he came to enjoy reading materials online at a later age. Exposed in early grades to standardized "deaf books," he was proud of being at the top of his class. Xian recalled having to memorize text by closing the book and "enunciating" so that when he returned to the class he could speak. He would sign what he read and "mouthed in his head at the same time." Xian claimed that knowing

how to mouth Chinese characters helps with knowing which characters to use in the written form. Xian believed that if no mouthing takes place while reading the characters, he would forget the words. He emphasized the importance of signing each syllable using governmental signs and enunciating the words at the same time.

Teaching deaf children experiences. As a teacher, Xian reported that his past experience differs greatly from the present. Students now sign without mouthing words, whereas he learned to mouth and sign simultaneously.

> *Students here know how to sign, but do not know the compounds structure. If they knew how to speak they would know many more character word combinations. By remembering how to enunciate words, they will recognize the compound structure... speaking makes memorizing possible, without speaking memorization is difficult.* (S802-46:48)

Xian described his pedagogical strategies as follows – "They often don't know the meaning of the compounds, so what I would do, I would ask the students to read the entire sentence then try to figure out what it means, if they can do that that's good." (S802-11:45). Xian notices that his students do not mix up their signs in indigenous sign language conversations, but when they face the script, "signing out loud," they tend to mix up the signs. He feels they should better follow the standardized CSL provided by the government.

Individual Profile #3: Yun 20+ years - Currently teaching 5th grade Chinese

Background information. Born to hearing parents from the Northern part of China, Yun is post-lingually deaf, losing her hearing at the age of eight. Her parents used traditional characters and finger tracing of those characters on the palm of her hand to communicate with her.

School experiences. Yun was immediately placed into an oral deaf school, where sign language was rarely used in class. She had no trouble succeeding in the area of speech and

therefore was considered the top student in her mixed age class. Her ability to "hear" however was significantly diminished and this interfered with her ability to lip-read. Lip-reading challenges contributed negatively to her speech quality as well as her academic performance and thus led her to rely primarily on written communication.

> *I had my arms on the table trying to understand, but I just couldn't you know… the teacher would be talking and I would be staring, but I just couldn't grasp what he/she was saying, but whenever she wrote on the board then I'd pay attention* (803- 38:21)

Yun was also exposed to tactile strategies where she would touch the teacher's throat and feel the vibrations while speaking. The teacher would ask each child in the U-circle to practice tactile strategies with each other. Big and little mirrors were provided for students to look at their mouths and coordinate the visual component of speech. Students were administered listening tests, in which they were asked to write down what they saw on the teacher's lips. Yun claimed that she could do it. She was a hard-working student and reports that she did well.

Literacy experiences. During first grade, Yun remembered being exposed to Pinyin and practicing the vowels, then syllable combinations, for an entire year. Signing was minimally used. It was not until the second grade that she learned characters alongside Pinyin and began to sign the meanings. Her former elementary school teachers stressed the importance of pairing up characters and providing the meaning in sign. While her hearing parents had poor literacy skills, Yun became an avid reader in fourth grade and believes that her reading experience enabled her to write stories. From fourth grade until she was in high school, Yun would go to the library on a regular basis and pick several books that she would bring to school and read in the dorms at night. During the day, in between classes, she became the storyteller by signing stories from the books to her peers. She feels she was a role model to her peers.

> *I read books at night time then would come to class and would get up on the stage before class started and I would tell them all about this one book the stories what happened and they were all mesmerized. All of the students really liked the fact that I signed the story to them. After I'd sign, I would give them the thick books to read* (803- 36:27)

Teaching deaf children experiences. As a teacher, Yun reported incorporating more visual equipment in her classroom to help students access print, using overheads, movies, and computers. She claimed that these technologies have made a huge impact in increasing students' knowledge. She did not use speech, but uses signs to provide explanations and analysis. She maintained that:

> *When they are exposed to signs, their minds just expand. With speech their minds aren't activated in the same way, they are always trying to guess.... mouthing and signing together helps with reading. Signing without mouthing is difficult.* (S803- 49:28)

Individual Profile #4: Mingxi 10+ years teaching experience (3rd grade Math and Computer Science)

Background information. Raised in a hearing family in a small town in Southeast China, Mingxi became deaf at the age of two. His parents did everything they could to provide him with speech practice; even as farmers, they took several months of their earnings to get a listening machine. He recalled being a young boy and having to carry this 'heavy' listening machine back and forth from his father's work place to the house. He would put on the headphones and would repeat the vowels over and over again with his father. Seeing Mingxi's frustration with the headphones, his parents turned to using invented homesigns and written Chinese to interact with him.

School experiences. Upon entry in the elementary deaf school, Mingxi was first exposed to fingerspelling to learn written Pinyin and further his speech practice. His first grade consisted

of older students (age 14 to 15 years old) from the countryside who had never been to school before and students about his age (5 years to 6 years old). Sign language, according to Mingxi was "so much faster and easier to learn," and he described this access as "a relief to be able to communicate and understand without being so frustrated."

In his first three years of school, Mingxi reported experiencing great frustration with lip-reading Chinese. The teachers would ask the students to look up words in the dictionary to find the meaning. Mingxi found this task to be both a relief and confusing-

> *I couldn't understand what the teacher was saying, but having her write it down on the board and me looking it up in the dictionary was like ahhh finally I understood, it helped, but I would prefer that my teacher sign and tell me the meaning of the word instead of me looking in the dictionary… Looking back, I see it was a waste of time* (805- 25:26).

Literacy experiences. Mingxi's exposure to print at home only occurred later after he began to learn to read at school. He claims that he finally could read at the age of 12 years old and began asking his parents to give him the newspaper. Not being able to communicate with his parents, he resorted to reading novels to enrich his mind. Mingxi believed his written communication improved thanks to his frequent written interactions with hearing individuals.

Teaching deaf children experiences. Mingxi expressed that his personal experience has led him to value the role of sign language in his current classroom. He teaches his own students how to use Wubi, a combination radical-based system, rather than Pinyin, when typing Chinese characters. He thought such a system "is a much faster system and works very well with our deaf students. Many of our deaf students do not know Pinyin and therefore Wubi works very well."

When Mingxi taught Math, he realized that there were some "translational" challenges when translating written Chinese to sign language. He shared,

> *I had to consciously reevaluate my signing to make sure it was visually clear, instead of the linear sequence of saying 4 + 9 = ? I realized that when I sign I use both numbers*

simultaneously using two hands then draw my hands together to show that they combine. This concept is a lot clearer than if I did it linearly. (805: 48 37)

Mingxi described how this insight forced him to reevaluate how he taught. "I had to change my style of teaching to make sure I was being conceptually accurate and use sign language to convey those thoughts." He stressed the importance of students' understanding through sign language - the more they know in sign language, the more they will be able to associate the characters with the signs and then be able to analyze word problems as a result. The introduction of "hard books," books used by the hearing classrooms, was a thrilling moment for him. He felt those books could indeed be assigned to the deaf students using sign language. In the past, so much time was spent on speech that teachers neglected to teach content knowledge, and the "easy books" were being used in part because the teachers were unable to sign to the students or be understood by the students.

Individual Profile #5: Mei li 1 to 5 years teaching experience (teaching 8th grade Chinese)

Background information. Mei Li is a female Deaf teacher who was raised by hearing parents; she also had a deaf sister. She attended speech school prior to being mainstreamed into the hearing elementary school until she attended university where she learned sign language. Her experiences at the speech school and being mainstreamed were drastically different. According to Mei Li, the learning pace was slower and repetitious in a deaf classroom as opposed to the hearing classroom. The smaller class size provided more one on one attention and even though the focus was on speech, she felt that more visual learning took place there as compared to the larger, faster paced, classroom of 80 students. Mei Li remembered that, at her speech school,

much of the information was written down by the teacher, whereas in her mainstreamed classroom she had to rely heavily on her peers' notes to follow.

Literacy experiences. Parental involvement was a huge strength in Mei Li's upbringing. Her mother would spend hours teaching her Chinese words, while her father would teach her Math. Also, her aunt, a teacher, would take Mei Li with her every weekend to practice copying characters over and over again. Even her grandmother took on an editor's role in correcting her granddaughter's letters sending them back and forth to her so she could see the mistakes and the correct grammatical structure. Much of their conversations were in the spoken form or in the written Chinese.

Mei Li learned written characters prior to Pinyin and relied on her knowledge of characters to learn Pinyin. She learned Pinyin to speak, not to read. Her exposure to sign language was not until she arrived at the university, where she learned to sign and fingerspell. She became, somewhat of a writing tutor to her deaf peers, and in exchange for writing guidance, she picked up sign language.

Teaching deaf children experiences. When Mei Li became a teacher she faced a lot of frustrations, particularly with the low literacy levels of the students as well as a lack of motivation to learn. But after a few years working with her students, she realized that the students' inadequate language background accounted for their inability to write correctly. She attributed their lack of writing to an inability to lip-read. She believed that had they known how to lip-read, that they would use the correct character in their writing. Mei Li reported encountering cross-linguistic challenges where different characters would have the same sign and the students would not understand the differences, so she would have to explain the sign homophony.

Individual Profile #6: Xiaowei 1 to 5 years teaching experience (First grade Math and Computer teacher)

Background information. Xiaowei, raised in central China near the city of Wuhan by farmers, lost her hearing at the age of 12 years old. Her sudden deafness did not influence her school placement. She stayed at her hearing school and began relying more on written information to keep up with the class. Her work habits improved as a result and she began to spend more one on one time with her teachers. She recalled her major frustrations when trying to keep up with the hearing teacher who spoke fast and she just did not hear it. It was not until college, where she majored in computer science, that she was fully immersed in an environment with many deaf signers. She learned to sign while teaching her deaf peers to write.

> *It was a huge transformation… there were so many deaf people there and they were all signing. I couldn't understand them. I noticed that many of them struggled with writing. So I taught them how to write and they taught me how to sign. We got to help each other.* (S808-13:45)

Xiaowei found university challenging because of the different dialect she was raised with (Wuhanhua) and the different regional signs from different students coming from different towns.

Literacy experiences. Her vivid recollections of learning to read in her early elementary years included her exposure in first grade to radicals and "bishun" (the order of strokes) and her extensive written exercises. Xiaowei described learning each individual radical as a *"piece of a puzzle. The more you know the pieces the more you can create characters"* and mentioned "*the more I wrote, the faster I could write.*" She found learning Pinyin to be difficult. Pinyin was only for studying and memorizing and by that she meant: "reciting (orally) text." She found the number of homophones to be a frustration.

> *I wrote [radicals] over and over again, even wrote pages and pages, and that helped me memorize quickly. With Pinyin we were expected to memorize it and study, but it was hard to stay focused because we would make mistakes- there were so many "wang" and it was hard to pronounce them and know which one. I just prefer characters. (S808-7:08)*

Xiaowei expressed interest in Pinyin when she began learning English, but still finds writing characters to be an expression of beauty. She became an avid reader even though her parents were not interested in reading

Teaching deaf children experiences. As a new teacher, Xiaomei shared her trepidation and inexperience and how she relied on her deaf peer teachers for help. She expressed the following

> *I think deaf teachers are the ones who understand the deaf students. They know what to do with them. They know what it is like to be deaf, whereas I grew up to be hearing so I don't have the same experience. Deaf teachers know what things are important to deaf students therefore they understand them. They know how to encourage them to follow instructions. It works. The Deaf community helps each other and understands each other. (S808-37:50-38:00)*

However, Xiaomei's personal view about the importance of Pinyin depends on deaf children's ability to speak. Pinyin is helpful for those who could speak otherwise she believes that Pinyin is unnecessary. Yet, she also expressed that knowing how to speak and knowing Pinyin help with the correct order of characters within compound words. Since she lost her hearing at a later age, she believes deaf teachers would know what to do about Pinyin.

Common Themes Across Deaf Teachers' Interviews

While individual Deaf teachers differ in their childhood language and education backgrounds, common themes emerged related to language use, reading experiences and instructional strategies. Recognizing the historical timeframe, the findings are divided into two

categories - past and current contexts. The interviews describing past experiences need to be contextualized in light of the political, social and environmental setting and be compared to current educational trends and societal influences. Their current views are based on the dynamics of their beliefs and the context of this bilingual program. These two timeframes provide a larger sociocultural consensus of how language and literacy interact in the education of the deaf Chinese.

Past sociocultural experiences with literacy at home and at school. All the interviewees shared common sociocultural influences unique to 1) being deaf in a hearing environment, whether at home or at school, 2) being Chinese.

Language use and priority: Home and school context. In the home context, all interview participants, even the teacher with Deaf parents, described their first experiences with language through spoken Chinese. Their parents and caregivers gave much attention to teaching their children speech since they wanted them to blend in with society and be able to speak the majority language of Mandarin. Therefore hours and hours were spent on pronunciation training. The teacher with Deaf parents also shared how much her parents wanted her to be able to function in the hearing world, and therefore they tried their best to use their own voices to teach her. Even though she knew their voices were not as clear and accurate, she agreed with their approach and believed that learning speech was important for her career.

During the literacy demonstration chart task, most participants were confused with the difference between home signs and gestures. An explanation of the difference between home signs and gestures was given to clarify. The results for gestures were somewhat mixed for past experiences. Overall, four individuals reported past high or moderate use of gestures.

The use of home signs was a strategy to resolve communication frustrations between the hearing parents and deaf child. Caregivers would invent signs often used within the home to represent an idea or a person. Since hearing parents are not familiar with the CSL signs, they resorted to creating their own individualized signs. Challenges arise in the schools where children bring invented home signs, but they are not known within the larger deaf community. Half of the interviewees were exposed to home signs very early on by their family members. Two never used home signs. One came from a deaf family who used indigenous signs from birth and the second one was hearing until the age of 12 and thus did not need home signs to communicate.

The role of speech, nevertheless, predominated their daily interactions to reinforce the idea that lip-reading or speech reading is a common expectation required of deaf individuals when encountering strangers. As shown in Appendix D2, the Literacy Demonstration Chart results reveal that lip-reading to understand spoken Chinese was seen as a prevalent strategy in their youth.

At school, the priority of speech continued for all participants. All shared similar past experiences with teachers emphasizing speech over sign language, except for the one who was hearing and already could speak. Five out of six interviewees described how their past hearing teachers required them to put their hands behind their backs in first and second grade and only speak. The teachers primarily spoke, and some used limited sign. For half the participants, the incorporation of Chinese Finger syllabary was included in the speech exercises since fingerspelling handshapes do not represent Chinese strokes, but represent the letters of Pinyin, the alphabetic version of Chinese. During the interviews, based on the two of the participants' experiences, two ways of using fingerspelling were found - one with only one - hand to represent

each letter, and the other with two hands, the right hand to represent the initial consonant of the syllable and the left hand for the final, or rime. Five out of six participants reported being exposed to the one hand fingerspelling strategy in their school years. Two used this one hand strategy very early in the process whereas three out of six reported learning it at a much later stage.

While the spoken language was the language of instruction, all participants except for Xiaowei, who was hearing, shared their frustration with lip-reading and the lack of linguistic access:

> *We had to put our arms folded on the table trying to understand, but I couldn't. The teacher would be talking and I would be staring and not grasp a single thing she was saying. … The teachers wanted us to speak a lot and to sign very little*. (S803- 7:03)

> *The teachers would sign a little and enunciate the words speaking to us. They would talk a lot and sign very little…. They would talk and I just couldn't catch it. I can't hear it. I would try lip-reading, but whoa it was impossible so when they paired the characters on the board and gave the meaning in sign then I would look it up in the dictionary and look up its broader meaning. Then I understood.* (S805 38:02)

One individual in particular mentioned how the teachers had inadequate sign language skills, thus making it difficult for students to pay attention-

> *If the teacher signs well then fine I would pay attention, but if the teacher doesn't sign well, then of course I am bored and will turn away from the teacher to chat with my peers. If she is talking, I don't even know what she is saying so obviously I would turn to my friends to chat.* (S805-15: 39)

> *Their [hearing teachers'] signing was so bad. They were stiff and not fluent. So many times they would speak and sign sometimes, but it made it difficult to follow. (S801-28:50)*

Access to language was a clear factor in learning. As students, these Deaf teachers had to find alternative visual strategies to compensate for not catching information. Some would resort

to looking at the words on the board or the dictionary to comprehend. Others who were mainstreamed would copy their peers' notes even in the early grades.

In China, learning to read starts at school not at home: Chinese hearing families tend not to participate in story reading at home, and the same was true for all Deaf participants in that they did not have parents read books to them as toddlers prior to school entry. Three had recollections of learning how to write numbers and their name, but expressed that learning to read was the responsibility of the teacher not the parents. Home literacy only began after they learned to read and write. Especially as a form of communication with the parents, four out of six interviewees write consistently with their parents.

All interviewees described their exposure to Pinyin during their first grade and were taught Mandarin, the standardized speech dialect. They remember repeating sounds from looking at the lips of the teacher and looking at the Pinyin letters while trying to speak. They all described it to be tedious and frustrating. In order to compensate for the challenges of lip-reading, all, but one, Yun, were exposed to one-handed fingerspelling. Yun was exposed to two-handed and later one-handed fingerspelling. The use of both hands simultaneously indicated the syllabic construction of the onset and rime. Tones were represented using either by moving the handshape to represent the vowel in the "direction of the tone" (upward to show rising tone, downward for descending tone etc…) or with the index finger showing similar movement. The last way to represent tone is by using the number ascribed to the tone.

The deaf teachers described the allocation of spoken language and sign language change over the early three years of school. All conveyed that Pinyin was taught during the entire first grade along side lip-reading and fingerspelling, in contrast for only ten weeks with hearing Chinese students. It took an entire year because of the challenge of learning to speak.

Most have characterized Pinyin as a facilitator of speech not reading. They recall repeating over and over again each vowel and consonant to tune their speech skills. They had to memorize how to associate the pronunciation of the Pinyin and put their books down and repeat the spoken word. During second grade, however, their teachers introduced signing and characters alongside the speech and Pinyin. Fingerspelling and tone movement were always accompanied with the Pinyin, while sign language was tied with reading characters. This script change was also aligned with language shifts. Four out of five said more signing was required by second and third grade. By third grade, speaking was less and less important whereas signing become more and more relevant.

Exposure to deaf books in contrast to hearing books. All interviewees except those who were mainstreamed (Mei Li and Xiaowei) were given "deaf books." Interviewees described them as thin books compared to hearing books that are thick. As far as the content in the Deaf books, the interviewees said they were "easy" and "boring." A lot less material was included on the pages, e.g., shorter paragraphs. Some expressed pride in mastering those deaf books.

One teacher, Mingxi, attributed the use of deaf books to a lack of d/Deaf teachers –

> *You see back then we all had deaf books, but we did not have any deaf teachers. Now that our school has hired many deaf teachers, they are able to take the materials [from the hearing books] analyze them by using sign language and we see the students enjoying watching us sign and they learn so much from their deaf teachers. The students find it so much more interesting that they will pay attention. Back then there was no signing so we had to do everything ourselves, trying to figure out what the teacher was saying and when we did not understand we would look it up in the dictionary. But you see now students ask the deaf teacher and the teacher will describe, explain and analyze and the students are like "ohh I see, I understand".* (S805, 19:18)

Deaf teachers' current pedagogical beliefs. During the interviews and Literacy Demonstration Chart, each teacher was asked about the language/literacy strategies that they use in their current classroom practice. What follows are the themes that emerged across the

interviews with the teachers as well as what they shared during the literacy demonstration chart. These themes will relate to the current historical timeframe. The Literacy Demonstration Chart results are summarized in Appendix C2 for reference.

Sign language promotes cognitive development. Language access was a concern for all of the interviewees. According to the Literacy Demonstration Chart results, participants would clearly use sign language with their own deaf children, contrary to what they have been exposed to in the past by their hearing parents. Most indicated they would be unlikely to use gestures with their own deaf child or student because, simply put, sign language provides the answer. For hearing parents however, the teachers suggest they continue to use gestures and would encourage them to learn sign language. The majority of hearing parents in this study did not learn to sign or may have developed a small repertoire of basic signs. All except for the one with Deaf parents reported that their parents know only a few basic signs related to food and to basic actions.

While two teachers suggest that both the indigenous signs and government CSL signs are adequate for learning compound words, there is no common consensus about what is best for deaf children. An example would be "daxue " 大学 where one sign in indigenous signing may be provided to describe "university" for both characters in the compound as opposed to the two signs derived from each individual characters, "da" 大 which means "big" and "xue" 学, which means "study," wherein the sign sequence would be "study + big" but this would not be conceptually accurate. This is an interesting element because in Chinese each character provides a morpheme so when they use the government CSL they also provide the semantic element of the character. Da xue would thus be signed as two individual parts to distinguish it from other words such as 小学 xiao (small) xue (study) (elementary school) and zhong (middle/central) xue (study) 中学 (middle school).

Exposure to natural indigenous sign language, the teachers argued, maintains students' attention and gives students the opportunity to be engaged intellectually. Their ability to make sense of the context, and fill in the missing gaps, requires cognitive thinking that sign language provides.

> *Why do I think we should not spend too much time with speech? Well first of all they are deaf and they can't hear, but when they sign, their minds expand so much more. When they speak, they are paying attention, but they aren't getting as much information than when exposed to sign. So their minds are progressing slowly when exposed to speech. When you have a lot of signing and use all the resources then the students' minds open up. When you speak only, they will spend time wondering what did you say, and will stay there in a daze and fall asleep. As a teacher, I don't like that. The more we sign, the more active they are, the more they will pay attention to what the teacher has to say and will enjoy it. Their hearing is bad, but their sight is good.* (S803-34:18)

The role of Pinyin: Should it be used in the deaf classroom? There are mixed results regarding the teacher's beliefs about the importance of Pinyin in their current instructional practice. The Literacy Demonstration Chart results for both past and future use indicated that written Pinyin remains a fairly important aspect in the lives of the participants. While all agree that sign language provides the meaning of the characters, there is some uncertainty about Pinyin. Half have suggested that Pinyin was unnecessary and that learning characters directly would be better (See 803- 39:12; 805- 22:14; 808- 47:53)

The other half described the challenge of reconciling two different grammars -- signed and spoken. Two participants even expressed the notion that when one speaks, one remembers how it is written. "If you can't speak Chinese then putting the characters in the correct sequence is challenging, and often when deaf people write it down it just doesn't work." They are ascribing the spoken language as a tool for correct written grammar, since the character writing is based on syllables but given the exposure of sign language, which differs in syntactic structure, deaf students face linguistic challenges.

However, when the question about whether mouthing alongside signing would be used with their "deaf child," a higher response to the use of finger syllabary was recommended. Five out of six teachers said they would use the one hand finger syllabary with their deaf child to facilitate recognition of Pinyin and to help with speech. All participants preferred the one hand system, where each letter in Pinyin is fingerspelled as opposed to the syllabic kind, where a second hand would be included to represent rimes. This finding suggests a preference for linear sequencing of letters as opposed to syllabic chunking.

Three out of six participants rated lip-reading as one of the primary strategies to communicate ideas and learn words in the classroom setting, whereas the other half did not consider it to be of importance at all. Yet, only one participant would consider this a primary strategy if they were to use it for his/her own deaf child. Two even strongly stated that lip-reading should not be used at all with their child.

The role of mouthing: An encoding strategy or a blending of two languages? While the deaf teachers' past experiences have taught them the importance of speech, even though they faced struggles and frustrations, five out of six emphasized the importance of mouthing along side the use of signing. The speech component, while it is encouraged, is not a priority because of the students' inability to hear. The reasons the teachers gave for the mouthing was to ensure the matching of characters. Mei Li, while she too thinks the mouthing will facilitate the recognition of characters, she recognizes that those who cannot speak well still mouth well and do not know Pinyin. She suggested that deaf students who cannot speak are still able to read and write characters at a university level.

As teachers of the deaf, all interviewees shared their frustrations with their students mixing compound characters when writing simplified Chinese. Not only do they mix within

compound words, but also within a sentence. The teachers of the deaf faced the challenge by providing different solutions. Three of the interviewees believed that the spoken language helps with correct compound word matching. While they are not necessarily stating that the students need to speak, they do need to mouth so that it matches the syllable representation provided by the character. This suggests that they need to be familiar with the spoken language. By providing the sign and the spoken word for it, the students would match the mouthed word with the correct character.

The two veteran teachers, who have taught more than ten years, describe this issue as the teacher's responsibility to explain and show the compounds words are constructed on a regular basis using sign language. Through constant instruction, they believe this issue would be resolved.

Role of written strategies and their influence on reading practice. Written-based strategies involve the inclusion of Simplified Chinese, Traditional and Pinyin the Romanized version of Chinese. The results from the Literacy Demonstration Chart (shown in Appendix C2) are consistent with the political and historical trend that Simplified Chinese has taken precedence over traditional characters in schools and at home. Simplified Chinese is the standardized written language in both past and present experiences of all interviewees except for one. The one teacher with 20 years of teaching experienced the Language Reform shift as a child and therefore recalling the use of both traditional and simplified writing on a daily basis. Her parents continue to use traditional characters when communicating with her, but she learned Simplified Chinese at school. All interviewees recall learning to read Pinyin prior to reading Simplified Chinese, which is required by the National Standards Curriculum. Pinyin takes an important role along side Simplified Chinese in the early exposure to literacy. Traditional characters in both past

experiences and present use were considered very low or even non-existent on the priority list in learning to read. Only two out of six participants were exposed to traditional characters, albeit infrequently, and only one would consider using it with her own deaf child.

Visual tools for instruction. All teachers emphasized the importance of writing everything down on the board for students to see and memorize. Their personal past experience of writing back and forth with teachers, parents and strangers appears to have led them to incorporate writing in the classroom. Writing on the board is a popular visual strategy that helps deaf students to learn content and to guide and direct their thinking to the written word. Regardless of language used in the classroom- oral, signed or both- the written text provides support and consistency. Modeling of the written language is an important aspect of feedback.

Image-based instructional strategies are not intended to replace the written form; however, images do convey concepts, which elicit connections with language, and they play a critical role in deaf children's educational experiences. The input of images is fairly straightforward; however, how the child translates that thought could either be in sign language or in the spoken language. According to the Literacy Demonstration Chart results, half of the teachers were exposed to drawings extensively in their past, compared to real life pictures or photos. Interestingly, they conveyed that they would rely more now on photographs and digitalized images with their students and deaf child.

The accessibility of the technology also allows deaf teachers to be able to use their hands freely and engage in discussions. A deaf teacher reflects the following:

> *Back then there was no equipment; now I can sign and use technology. We can teach more using the technology we have now. The students grow more intellectually. Back then, the students were passive, but now they are enlightened. They can tackle complicated situations because of the access to TV, projectors, and the Internet. Many students now look up on the Internet and access to computers has increased thinking skills. (*S803- 37:41)

Four out of six interviewees mentioned that current technological resources, such as ELMO and Internet access, make life easier for deaf teachers and deaf students. The access of pictures and text on a frozen screen makes life easier for teachers who in the past had to use their drawing skills to create ideas or concepts. This technological strategy is an economical approach and provides ample opportunity to use more sign language to discuss content. The accessibility of computers and online information stimulates deaf students' interactions with each other and with teachers.

Classroom attitudes and school climate. In order for students to be successful, the teachers believe that students need to be assertive and take ownership of their learning. This approach is consistent with a Confucianist principle, and teachers want students to keep that motivation to learn. Still, the teachers also describe their frustration with their deaf students who appear not to be motivated to learn academic content, even though they are acquiring sign language in the school.

> *Now we have a problem, our students now absorb all this information in sign, but they are lazy and don't take the habits of hard work to do self-study. They enjoy the teaching, but the evidence doesn't seem to show that they are putting it in paper. Back then we were required to do everything ourselves, we had a lot of homework, we had to look up in the dictionary, we had to study ourselves and memorize. These skills provide strength in learning as an adult. (S805 42:04)*

One teacher attributes this lack of student motivation to the family-like environment of the school where teachers are more like friends or family members and interact with them in all hours of their day. This fact, coupled with the fact that none of the teachers have had formal teacher training and thus may lack classroom behavior management techniques, perhaps contributes to some breakdowns in student engagement. On the other hand, the teachers found great value in being deaf role models to these deaf students who do not have any at home.

The Literacy Demonstration Chart activity along side the interviews provided a greater understanding of the common strategies important to the d/Deaf participants in their past experience and how those strategies come to play in their current teaching as well as their perspectives. Results show that d/Deaf individuals have been exposed to certain strategies such as lip-reading but found them to be of secondary importance compared to how they viewed sign language. The importance of written simplified characters has remained intact. The participants' view of Pinyin revealed the preference for it to be maintained. The use of visual images for reinforcing concepts has shown to be a valuable asset in fostering discussion and learning.

This sociocultural finding regarding d/Deaf teachers past and present experiences provide the backdrop for the current analysis of what goes on in today's bilingual classroom. By bringing in these Deaf perspectives, in light of the current practices, we can better understand reading practices and how language and literacy interact. Having the voices of d/Deaf teachers included here demonstrates the wide range of visual experiences they encounter. It is important to note that the deaf teachers have not necessarily had opportunities to evaluate or discuss reading practices from the vantage point of visual learning. Even so, as d/Deaf adults, their childhood experiences and current practices are worthy of recognition.

Chapter 6

Results: Part II - Classroom Observations

While the interviews provided background information on the teachers' past experiences and their current practices, the classroom observations display a real life experience that supplements, confirms, or contradicts the narratives provided by the teachers. Given the long history of Chinese education, the traditional approach is considered by many to be valuable. The rich surroundings of the observed deaf classrooms provide a glimpse into the sociocultural dynamics and the reading practices typically found in Chinese education. By tradition, the first three years of elementary school are considered the foundational years, and thus are my focus. Initially, I had hoped to find three deaf teachers in the early elementary years, but found that given the general consensus throughout Chinese deaf schools that the first two years are considered critical for learning how to speak, only hearing teachers are assigned these positions. I was able to include a deaf third-year teacher. Importantly, all three teachers believe in the bilingual model of using sign language as the mode of instruction and Chinese as the written language.

Classroom observations were drawn from 22 hours of videorecording collected over a two-week period in first, second and third grade Chinese lessons. Not all 22 hours are used in this study; one new words lesson (40 minutes) and one random language-arts lesson (40 minutes) were chosen to display a typical Chinese reading lesson. Each of the teachers observed completed written responses to the same interview questions posed in the earlier Interview Study (see Appendix A for a list of questions).

Classroom Background

Teacher written interview profiles. These teachers did a written interview as opposed to a signed interview. They answered all of the questions found in Appendix A. The written interviews were not as extensive as the signed interviews due to the nature of the back and forth interactions that a face to face interview provides.

First grade teacher Liqiu is a hearing teacher, born and raised in the rural area, majored in Special Education and has taught for more than five years prior to teaching deaf children. Having been there for just over three years, she is considered a fairly new teacher. She learned to sign upon arrival at the school. Her signing skills increased over a period of three years. Looking back at her own experience as a young child, she did not enter preschool so when she arrived in first grade, Pinyin was taught and she fell behind her peers who already had Pinyin instruction during preschool. She shared her preference towards characters and believes that it is through memorization and copying that she managed to learn to read characters. Her approach to teaching deaf children is to play games and use pictures to make sure students understand the meaning of the pictures before they can understand characters.

Second grade teacher Biyu is a hearing veteran teacher. She was one of the first teachers who joined in the early years of the school's inauguration. She has taught for about ten years. Her signing skills were considered good according to the principal. Biyu described her love for reading books, starting this herself at the age of five years old. She mastered the use of a dictionary to help her understand words she did not know. She learned Pinyin in first grade and both Pinyin and characters in second grade, then only characters in third grade. Writing stories only started in fourth grade once enough words were in her vocabulary. She maintains that repetition and memorization are the best strategies for producing text in characters.

Third grade teacher LiHua is a new Deaf teacher at the school. She graduated from University of Tianjin with a Computer Science degree. She was born and raised in the city and mainstreamed in a hearing environment, she described her schooling experiences as learning to lip-read and sitting up close to the board so she could copy words down. She relied on her peers' notes to follow. She was always a hard-working student and loved to study. She learned to sign at a later age, but uses it frequently with her deaf students and with her colleagues.

Chinese classroom culture. For both first and second grade, the Chinese classroom resembles traditional classrooms where rows of tables are facing the blackboard. The teacher has a desk right in front of the blackboard, facing her students. All eyes are on the teacher who is the center of attention. Typically, at the beginning of class, the teacher expects all students to rise at the teacher's command and they will greet each other in sign language: ("Tongxuemen hao" "同学们好" translated as "good morning classmates"). As soon as they are told to sit down, students are expected to hold their arms and hands folded on the table ready to "listen" to the teacher. She introduces the lesson either in sign language or in writing. This traditional seating arrangement was not replicated in the third grade classroom, led by the deaf teacher. Here, the seats were positioned in a U-shape so that students could see each other and see their answers when the teacher asked them to respond. I was informed that this new approach was a result of an interaction with Dr. Richard Lytle, the co-director of the school and an American educator from Gallaudet University who encouraged the Deaf teacher to try this model.

Classroom materials. According to the principal, the school used the same curriculum materials that are used throughout China. Their goal was to provide equal access to the material using sign language and to raise their level of education. Historically, deaf schools have followed a curriculum specifically designed for the Deaf, including the use of "Deaf Books," which were

created by the Shanghai Department of Special Education, but are no longer being published. Recently, schools for the deaf in Beijing have taken on the initiative to publish such books again. The principal expressed that he might use the new Deaf books as a supplement to the curriculum, but not to replace the materials in current use. The Deaf books were not used in any of the three classrooms observed.

First grade context. The national standardized first grade reading book contains everything first in Pinyin. Then after ten weeks of lessons, characters are gradually introduced until both Pinyin and characters are displayed in full on the page. Each character has a syllable in Pinyin above it. Words were not separated by space in Chinese text. To be able to determine what characters comprise a word usually requires linguistic knowledge (Lin et al., 2011). The teacher facilitated the learning of those words by adding written markers to the page to indicate its place in a sentence and whether the individual character belongs to a compound word or not. Single characters are underlined as a single unit. Compound words with two characters or three characters are bound together with a single underline. By using the overhead projector, the text is visible for the entire class to see. While students were watching, the teacher added the underlines to the text, as well as circling unknown compounds for the students to look up in the dictionary. This marking strategy was continued in second and third grade, except that Pinyin is no longer visible. It is assumed that the students already know the "pronounced word." Pictures generally accompanied the text and this allows young readers to draw upon their background knowledge.

Second grade context. Second grade classroom materials tend to include a mixture of both Pinyin and characters. The characters are predominantly used throughout the lessons, and new words are introduced with Pinyin above the character to facilitate pronunciation. Like all

first grade materials, no space is shown between characters. Pictures are widely used in second grade books.

Third grade context. As per the school's policy, this deaf teacher also used materials from mainstream schools. The use of Pinyin is even more rare in text compared to the second grade books. Text is smaller in font and laden with character print. The third grade teacher used the overhead projector not only to display the written text from the book, but also to "freeze" the page so that her hands could be freed up to sign. She also used Powerpoint slides with pictures to represent the new words to be learned alongside sentences that contain the new words.

In the next section, a full analysis of what the observed reading lessons look like, when teaching new words, will be provided. Outline descriptions of each classroom are followed by transcripts of the lessons, and summaries of observations of teacher actions related to language and script.

Individual Classrooms Observations: New Words and Language Arts Lessons

Classroom observations included both a learning to read Chinese lesson in first, second, and third grade and a language arts lesson that was randomly picked for the purpose of analysis. Before launching into the lessons, learning to read Chinese in China is a very systematic process that follows a bottom-up reading approach whereby the teacher first provides the smallest component in sound to be associated with the Pinyin (alphabetic) print to standardize the Mandarin dialect. Then the teacher provides the corresponding radical form to be associated with each character in the sequence.

A typical "new words" lesson takes place every two weeks, whereby the teacher writes on the blackboard a list of new words for the students to copy into their notebooks as soon as

class begins. Generally in first grade, the teacher provides a list of about 10 new words (for first graders), 14 (for second graders), and 17 (for third graders). What is provided on the blackboard is slightly different between the first three grades.

To better characterize the process of teaching reading, a detailed transcript of each grade lesson illustrates the teacher's interactions, from what she does to draw the students in to pay attention, to language choice, to inclusion of written forms. For the purpose of this study, one randomly selected sample of a 40-minute new word lesson was selected for each of the three grades to look at the pattern and approach to teaching reading. The use of different modalities such as signing, speaking, writing, tracing, and fingerspelling are discussed after each classroom reading lesson description.

First grade classroom: Learning new words lesson. The first grade teacher used for the most part, sign language as the mode of communication. Once in a while, she voiced words or phrases, but rather sporadically. When that happened, her combination of voice and sign reflected an inconsistent simultaneous communication strategy, but mostly resulted in mixed language code-switching, where parts of a phrase is in speech then finished off in sign language.

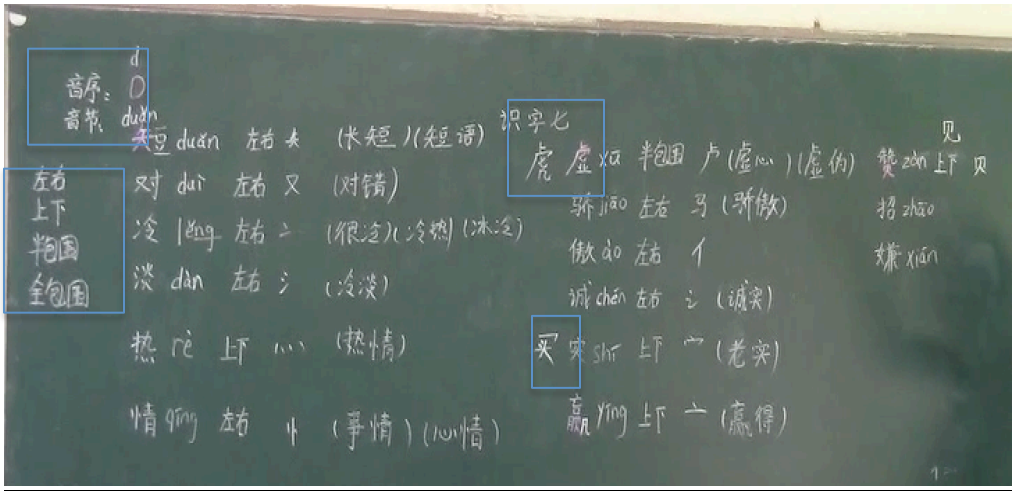


Figure 18. First Grade blackboard display: New words lesson

The information on the board (shown in Figure 19) prior to the lesson only covered the single character and the Pinyin word. The first grade teacher used color coding to differentiate between scripts. White chalk was for single characters, Pinyin in blue. After the students have responded to the question the teacher asked, the teacher wrote the position and the radical in white. Compound words are discussed first then written in white chalk. For example, the single character for 短 would be in white, the Pinyin "duǎn" blue, the position -左右 Then the radical 矢 the two words "长短- length" and "短语- phrase" in white. For emphasis regarding remembering the distinct strokes that define the character, the first grade teacher used the red chalk to differentiate between 矢 and another non-character that has a slight stroke differences to emphasize to students that this is important to remember the differences in strokes.

Table 8 provides the entire list of new words on the black board. The order is as follows: basic morpheme, pinyin, position, radical then the compound word.

Table 8

First Grade Classroom: New Words List with Translation and Notes

Teacher notes on blackboard	**Basic Morpheme/ Character**	**Pinyin**	**Position**	**Radical**	**Compound Word that includes basic characters**
音序（yin xu) 音节 (yin jie) syllable	短 (short)	duan	左右 left/right	矢（arrow）	长短 (chang duan) length (long and short) 短语 (duan yu) phrase
半包围 （ban bao wei) 全包围 (quan bao wei)	对 (correct)	Dui	左右 left/right	又（and)	对（dui) correct 对错 right and wrong
左右 zuoyou left/right	冷 cold	Leng	左右 left/right	冫(ice)	冷热（leng re)cold hot 冰冷 (bing leng) very cold
上下 shang xia up/down	淡	Dan	左右 left/right	氵(water)	淡漠（dan mo) indifferent
	热 (hot/warm)	Re	上下 up/down	灬(heat)	热情 (re qing) hospitable
	情	Qing	左右 left/right	忄(heart)	事情 (she qing) things 心情 (xin qing) mood
识字化 (shizihua) 虎 (hu) tiger	虚	Xu	上下 Up/down	虍(tiger)	虚心(xu xin) modest 虚伪 (xu wei) fake
	骄	Jiao	左右 left/right	马(horse)	骄傲
	傲 （proud）	Ao	左右 left/right	亻(person)	骄傲 (jiao ao) pride 傲慢 (ao man) arrogant
	诚	cheng	左右 left/right	讠(speech, word,talk)	诚实（cheng shi)honest
实 （实）honest	室 (room)	Shi	上下 up/down	宀(roof)	教室 (jiao shi) classroom
	赢 (win)	ying	上下 up/down	亠(head)	赢得 (ying de) obtain
	赞（praise)	Zan	上下 up/down	贝（sea shell)	赞赏 (zan shang) appreciate
	招(enlist)	zhao	左右 Left/right	扌（hand)	招聘(zhao pin)recruit
	嫌 suspicion	xian	左右 Left/right	女 (female)	嫌犯(xian fan) suspect
	实	(shi)	Up/down	宀(roof)	老实 （lao shi)honest

Table 9

Transcript of First Grade Classroom: Teaching New Words

Transcript of First Grade Classroom: Teaching New Words
Teacher: Okay let's continue with learning. Let's start with the Pinyin. *(Pointing at the Pinyin word ying with two fingers)* How do you pronounce it? *(fingerspelling)* Y-I (*the handshape goes upward to follow the tone up*) N- G. (*pointing to the Pinyin, carrying over her two fingers to the upper side of the blackboard and pointing at the word 音序（yinxu）[*which means sequencing of strokes]音节 yinjie [which means syllable]. They had just gone over how to use the dictionary and use the syllable concept*) (signing in Governmental signs- Signed Exact Chinese yinjie , but this word is unknown in the deaf community-communication with Deaf teacher of Deaf parents.)* What is the first letter of the word? *(yinxu)* Who wants to volunteer? Student: Y- Teacher: Is that correct? Student: Yes, it is correct. Teacher: Yes, that's correct. Now what is the syllable? (Yinjie) Student: Y-I-N-G Teacher: Good. What does it mean? *(waiting for the student to respond)* it means win. Remember yesterday we learned how to use the dictionary using the first letter and the syllable and you went over the paper right? Student: Yes. Teacher: If you don't know the word we can look it up in the dictionary and you can either use the first letter of the word or the syllable to help you find the word. If you do, you will become fast. If you can't do the Pinyin you can always use the order of the strokes. *(pointing to the Pinyin)* Do you understand? *(pointing at the single character)* It is important to remember this, you don't want your brain to be weak. What is the structure of the character? Jiegou 结构 Student: Up and down Teacher: That's right up and down. What is the radical here? Student: (Tracing the radical in the air) 亡 (the radical means "die", but she did not mention that.) Teacher: (Tracing the radical in the air for bihua). Good. Student: 笔画 Bǐhuà (copying the teacher by tracing in the air) Teacher: (*writing down the up and down, the radical and brackets with two underlined blanks*) Student: Can you read the components now? [shizi 识字]

Teacher: (*asking a student to come and volunteer*) Come here (*gesturing- come*)… you run--go ahead (*gesturing- go*)… (*teacher acting with student and lagging behind him, he passes her*) How is he doing?
Student: He is first
Teacher: He is first. How did he do?
Student: He lost.
Teacher: You mean he lost?!? (*pointing at the student*)
Student: No… he won!
Teacher: (*asking the student to come back to the starting line…acting out again and he runs faster than the teacher*) How did he do? He won! (points to the single character 贏)

Table 9 presents the transcript of one portion of the lesson. The teacher used a combination of speech and sign when introducing Pinyin and uses a great deal of pointing to focus students on the content of the lesson. She emphasized the components of Pinyin such as its letter sequences (with fingerspelling) - knowing the first letter of the word and then the entire syllable -- that matches the single character. These skills are intended to build knowledge required for using the dictionary. After they have covered the Pinyin, the first grade teacher asked the students about the structure of the internal character, whether the radical can be found up or bottom or left or right. Then the subcomponent of the radical was traced in the air. Once done with the process of word analysis, she wrote down on the board what was just mentioned in sign. Then prior to writing down the compound word, she set the stage for the word by providing a scenario and to see whether the students can identify the word within the context. She acted out the meaning of the target word, engaging the students in the process, and then proceeded to write down the compound word. Throughout, she iteratively reviewed the compound word with an explanation, signaled a particular student's name to participate, and referred to the compound word through pointing. The first grade teacher took an average of five minutes and three seconds to cover each new word on the blackboard. She covered eleven words within a period of 40 minutes. The instructional sequence is summarized in Table 10.

Table 10

First Grade Classroom: Instructional Process of New Word Learning

First Grade Classroom: Instructional Process of New Word Learning
• Fingerspelled & spoke the Pinyin word with movement attached to handshape of the vowel using the corresponding tone • Asked for the first letter of the Pinyin word, which is fingerspelled • Asked for the syllable of the Pinyin word, which is fingerspelled • Asked for the position of radical in sign language • Asked for the radical • Traced of the main radical • Wrote the position • Wrote the sub-componential radical • Showed through tracing over the word/writing over the stroke in red • Introduced the meaning of the character through sign language or acts out • Wrote the compound character • Acted out to understand the concept • Labeled the compound character • Put the word in context in a sentence • Included the word into a sentence in sign language • Explained the concept before labeling • Showed similar but different with known words based on the slight differences in stroke formation • Used sandwiching by signing then pointing to the character then signs it again • Contrasted with negation • Stated a sentence with affirmation

The information that is on the blackboard prior to the start of the lesson contains the single character and the Pinyin with tone marker. She asks the students about the initial letter of the Pinyin then asks about the syllable of the single character using fingerspelling. Then she asked students about of the position of the semantic radical in the character. After the students have traced the radical and have shared its structure (right/left or up/down position) the teacher fills in the list. Students will copy them down in their vocabulary book.

Table 11

First Grade Classroom: Observed Teacher Behavior -New Words

First Grade Classroom: Observed Teacher Behaviors -New Words
• Checked on comprehension by asking the question- did you understand? • Wrote the mechanics of characters and the semantic radical after she asked the students (the students will trace in the air the semantic radical) • Wrote another character that looks like the semantic radical and ask the students whether they are the same or not • Traced in the air the differences between radicals that are similar • Did not ask for the meaning of the single character. • Pointed with signs (on the board, in a direction) carrying the sign over to the board. • Signed over to the student, then moves to another student - reference point • Pointed to a student to refer as an example then providing a sentence with the student's name to include the new word • Used students' names to include in their personal experiences as examples. • Asked students to write down the sequence of strokes in their books as part of the requirement when copying words down even though the teacher did not do it on the board.

Table 11 provides an overview of the observed behaviors of the first grade teacher. The teacher behaviors show interesting aspects of how language is used to convey a concept. The teacher uses a combination of acting out a concept, describing a concept by providing contextual information, includes the students name in a sentence to draw them into visualizing a concept. The teacher uses signs produced on the board instead of near her body, which would be the normal way to communicate using signs. By using location and space, the teacher is helping students visually connect the text information with the meaning (in sign).

First grade classroom: Language arts lesson. Description of the lesson: The topic is about the Motherland. The teacher proceeded to describe the different parts of the nation first by

addressing the North, South, East and West and expands on what each part has regarding natural geographic features. Northern China is known for all the mountains and the south for the islands.

多么 (duo me) 广大 (guang da) wide or vast
风景（landscape) 气候（weather）
雪花 （xue hua) snow flowers
飞舞 （fei wu) dance in the air...
长江 （chang jiang) the Yangtse River
柳枝 （liu zhi) willow branch
发芽 （fa ya) sprouting 已经 （yi jing) already
海南岛 （hai nan dao) 盛开 (sheng kai) be in full bloom
鲜花 （xian hua) fresh flower or flower
南 (nan) south, 北 (bei) North, 西 (xi) West, 东(dong) East
中 （zhong) middle 大兴安岭（da xing an ling)
国家(guo jia) nation, 中国（zhongguo) China,
美国 （meiguo) America

Figure 19. First grade blackboard display- Language arts

In the randomly selected Language Arts lesson, the first grade teacher is introducing the topic of geography and uses the blackboard for drawings, her labeling, and underlining (see Figure 19 for the photo and transcript). Much of the lesson was in sign language with many yes/no questions posed to the students. (e.g, “you ma 有吗?”(does it or not?) “shi ma 是吗?”(Is that the case?). In her signing, I noticed a lot of comprehension checks and evaluating the truth-value of statements (mostly posed as the negative), a practice that Sue Livingston has found in US deaf bilingual classrooms (Livingston, 1997)

Table 12

First Grade Classroom: Observed Teacher Behavior - Language Arts Lesson

First Grade: Observed Teacher Behavior - Language Arts Lesson
• wrote characters for all of the words • did not use any fingerspelling at all in this reading lesson • used a lot of question-answer format (typical of Chinese instruction) • used pointing to show pictures, characters and sentences • described how some characters cannot be split (case of two compounds they are "bound" together- describes analogy of how we can't split a person it is a whole, and therefore the words are bound by the meaning) See Grade 1A - 00:34:40 • had the students sign the text first together as a class with the teacher signing and pointing at the words on the overhead projector • had students practice on their own signing and tracing in the air. • Throughout the lesson, the teacher checked for comprehension by asking "Do you understand? • used stating and asking for confirmation and uses a lot of statement and negation • taught the students how to use the dictionary at a first grade even though according to the national standards it is introduced in the second grade (Wu et al., 1999)

Overall, the first grade teacher demonstrates a traditional classroom environment where an IRE discourse model takes place: teacher Initiation, student Response and teacher Evaluation (see Table 12 for observations of teacher behavior). This question-answer format is conducted in sign language. Elaborations on concepts are displayed using signs, illustrations and acting out. Whenever she writes words on the blackboard, she would point to the characters to help students focus, pay attention, and identify the characters.

Second grade classroom: Learning new words lesson. Before the start of the lesson, eleven new words (listed in Table 13) were written down on the blackboard. The Second Grade Teacher used color-coded categories. She wrote in white the single character, blue for the Pinyin, and Red for the compound character and for the second compound, she wrote it in white (see Figure 20 for image of blackboard).

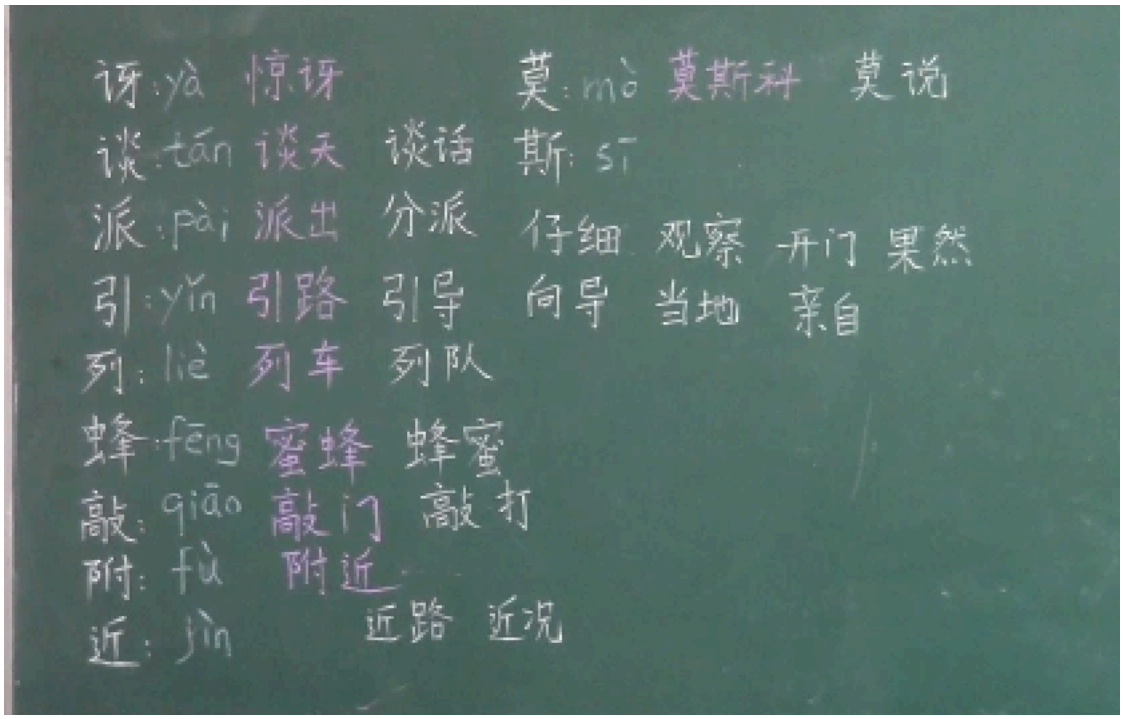


Figure 20. Second grade blackboard display-New words

All eleven words were to be copied down in their notebooks (see Figure 20 for the list of words or Table 13). The students had to copy the character words ten times at home for homework. They had to practice fingerspelling the Pinyin at home. After this, the students were expected to write a sentence to include the compound word (for both the red one and white one.

Table 13

Second Grade Classroom: New Words List with Translation and Notes

Basic Morpheme Character	**Pinyin**	**Compound Words** ***(includes the basic morpheme)***	**Note about the compound word**
讶	Ya	惊讶 （jing ya）surprise	Left radical has “speech or word or talk”
谈	Tan	谈话（tan hua） chat	Left radical has “speech or word or talk”
派	Pai	派出（pai chu） send 分派 （fen pai） dispatch	Left radical has “water”
引	Yin	引路 （yin lu） give directions 引导（yin dao） direct	Are they both verbs?
列	Lie	列车（train) 列队（lineup)	right radical “knife”
蜂	Feng	蜜蜂 （mi feng） bee 蜂蜜 （feng mi） honey	left radical “insect”
敲	Qiao	敲门（qiao men）knock on door 敲打（qiao da）hit	right radical “ tap lightly”
附	Fu	附近 （fu jin） nearby	left radical “ place”
近	Jin	近路 （jin lu ）shortcut 近况 （jin kuang）current status	left radical “ walking”
莫	Mo	莫斯科 （mo si ke） Moscow 莫说 （mo shuo）needless to say	top radical grass
斯	Si （this）	莫斯科 （mo si ke) Moscow	right radical “an axe or a catty or keen”

In the bottom right of the blackboard the following words were found:

仔细 zi xi (careful) 观察 guan cha (observe) 开门 kai men (Open the door) 果然 guo ran (really) 向导 xiang dao (guide) 当地 dang di (Local) 亲自 qin zi (in person)

In this second grade classroom, the language of instruction is a combination of two languages sometimes used simultaneously. The hearing teacher used both signing and talking at the same time in the lesson. On occasions she will talk only and not sign, but then switched to signing only. Language separation between the two is not clear. The average time the second grade teacher took to go over a word in the list of words is 06:47.7 minutes.

Prior to starting the new words lesson, she initiates the pattern of writing the single character, the Pinyin, and two compound characters for each new word. A total of 10 words are written prior to the start of the lesson. The notes I added on the right column in Table 13 provide supplemental information to convey the morphemic information that comes from the left or top radical. Throughout the lesson, none of these radicals were mentioned or discussed.

Table 14

Transcript from Second Grade Classroom: New Words Lesson

Transcript from Second Grade Classroom: New Words Lesson
Teacher: (*goes to the blackboard and writes the following 蜜蜂 on the blackboard in characters) (pointing at the character asking the students in sign) What is this?* Student: A bee Teacher: (*signing*) a bee. What does the bee do? Student: (can't see what the student is saying) Teacher: Yes, the bee absorbs the nectar of the flower and then produces honey. They produce honey. We tend to pour in honey for our hot water glass, stir it and drink from it. Also during the summer when you have a heartburn, we take the honey, drink it to appease the pain. Student: why? Teacher: Honey helps restore the right circulation in our body. When you drink with honey, it helps get rid of pimples from your face. So honey helps with the body. What else does a bee do? What is the function of a bee? Student: I saw a bee nest and when we poked it all the bees came rushing out. I was scared I ran off. Teacher: What's the word for it? Student: (No one is answering) Teacher: You know that the bees can guide you on the streets. They guide the way. *(going to the blackboard and writes the following:* Bees lead the way) Bees can help look. People can look for bees to find the way. Do you understand? How do they do it? First people studied bees and explored the way of life for bees. They followed the bees and understood that they lead the way. First we will learn the vocabulary then we can use this information to explore the text and learn about bees. Let's learn. Teacher: (*going the board and pointing to the Pinyin*) ya ya (*using her index finger during the enunciation of the sound to do the downward movement*) ya ya (*repeating the process for all ten Pinyin words)* Student: *[Follow the teacher by speaking and tracing all characters.]* Teacher (*tracing over a radical with a red chalk)* Make sure you remember these strokes and memorize. (*pointing to the character lie 列*) How many strokes do you need here? (*looking around for students answer)* That's right one. *(tracing the stroke in 列 then turns to the next character on the list qiao 敲)*What is this? *(tracing the stroke on the top right radical*

within the single character) Do you understand? *(tracing with her finger on the blackboard) (writing a character with the wrong stroke)* Is that right or wrong? *(tracing an additional stroke on it) does it have this kind of stroke? No it does not.*

Student: it is wrong…there is another stroke that is wrong, it is like a cross it need to move the stick to the right perpendicular to the vertical stroke …

Teacher: Good job you visually captured the differences! Good job. You are smart. People do make that mistake… *(Writing the strokes (a cross) on the character)* Is that right or wrong?

Student: It is wrong.

Teacher: *(writing a cross on the board near the false character)*. The cross is wrong so don't make that mistake. Whatever is red is wrong so remember that.

Teacher: (*pointing to the single character 斯)* How many strokes does it have? Yes, it has two strokes. (*Tracing on the radical two strokes)* Follow the writing.

Teacher: We are going to go over the sequence of the strokes for all the characters. *(using the ruler to go through each stroke of the single character)*.

The students follow the teacher with the strokes. *[The process of going over the strokes for each character is repeated for all ten words.]*

Teacher: Remember to memorize the order of the strokes (bi hua 壁画). After we've analyzed all of this, let's look at compounds. What does it mean? Surprised. If someone unexpectedly show up, I would be surprised. I wouldn't know he was here and he unexpectedly shows up my reaction would be that I would be surprised. Do you understand?

Student: Mom came unexpectedly and I was surprised.

Teacher: Right… right, Sometimes I am surprised when students give me many things. I am surprised.

As per the transcript in Table 14, the second grade teacher took the time to provide an explanation of the topic and includes real life contextual hook ups to help students personalize the concepts and draw from their background knowledge. After they've covered the topic, she proceeded to practice speech first by pointing at the Pinyin and students were to repeat after her. Three times, the students repeated each word in spoken Chinese. She moved on to the tracing of characters to make sure students have

memorized the order of the strokes and to practice visual and spatial memory of the character.

Table 15

Second Grade Classroom: Instructional Process of New Word Learning

Second Grade Classroom: Instructional Process of New Word Learning
• Used speech when pointing to the Pinyin word- rarely uses hand to show tone (repeats three times and enunciates so that she could be understood- lip-reading practice). The titling of the head was noticed when emphasizing tones • went over all ten words in Pinyin using speech only. • traced over the character using a red chalk to emphasize stroke components and asking how many strokes are within a character after practicing speech (only selects a few that are important to remember) • Pointed to the radical with unique stroke features. • Wrote of non-character words to display the differences between what is a correct character and what is not using pointing to show the stroke differences • Traced all new ten words with a ruler together while the class practices the stroke sequence. She reminds them to remember the sequence of strokes • went over the meaning of the compound character not the single character on the board • Labeled the compound character and repeats its label in sign at least twice • Used a lot of question-answer format (typical of Chinese instruction) • Used statement and negation or contrast with negation • Asked the students what the word means even though the sign is given. • Used expansion and description of new compound words to help students grasp the depth of meaning and affirms the possibilities with the sign keyi- • Used pointing to show characters (single and compound) • Pointed to the compound words using two fingers to indicate the two characters make up a word. • Asked the students to provide an example that incorporates the word learned. • Provided another equivalent written word and sign to expand the vocabulary lexicon. • Wrote a sentence to include the new word for all the students to copy in their notebooks.

Tables 14 provided the transcript of how the second grade teacher introduces new words and Table 15 showed how she introduces the various modalities. The second grade

teacher used the spoken language when addressing Pinyin and only used her index finger to help students identify the tone but otherwise, the teacher expected the students to either lip-read or "hear" her spoken model of the Pinyin. The second grade teacher exhibited a very calm demeanor and engaged with the students with a smile. She drew students into conversation and helped them recall personal experiences related to the new words. She had them come up with sentences in sign language to include the word or concept. She wrote them down as sentences for them to copy. She also had students come up to form a sentence with a new word.

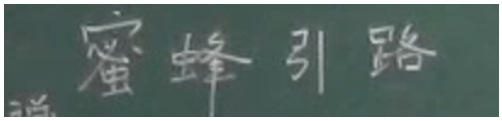


Figure 21. Second grade: Title of the New Words Lesson- mi feng yin lu (Bees lead the way).

The Second Grade Teacher wrote the title on the board (Figure 21) (Bees lead the way) and while going over the list of vocabulary words, she has the students come up with a sentence to include the vocabulary word.

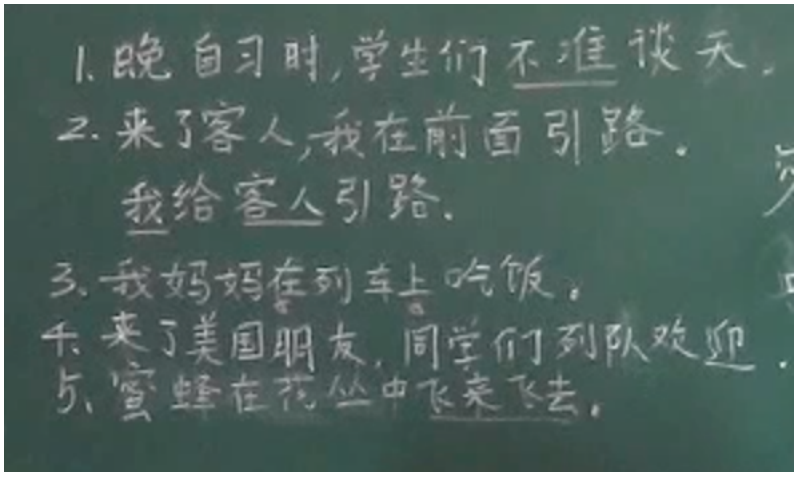


Figure 22. Second grade teacher modeling written sentence to include new words.

The following sentences were created by the students, who signed them first then the teacher wrote them on the board (see Figure 22) out in Simplified Chinese underlining the new words.

1. wan zi xi shi, xue sheng men **bu zhun** tan tian (The students are **not allowed** to chat during a night class).
2. lai le ke ren ,wo zai **qian mian** yin lu. (The guests arrive, I **lead** the way)
3. wo gei ke ren yin lu. (I guide the guests).
4. wo ma ma zai lie che shang chi fan. (My mom eats on the train).
5. Lai le mei guo peng you, tong xue men lie dui huan ying. (American friends arrived, classmates welcomed them in a lineup).

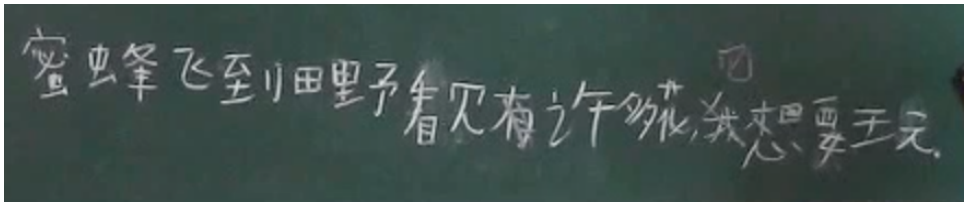


Figure 23. Second grade student writing a sentence with new word. (Mi feng zai hua cong zhong **fei lai fei qu**. "Bees fly in flowers")

A student went up to the board to write a sentence in characters incorporating the new words (See Figure 23). The student wrote "mi feng fei dao tian li kan jian you xu duo hua, ta xiang yao wan" (A bee flew into the field to see many flowers, and it wants to play.) The teacher corrected a few stroke errors without saying anything.

Second grade classroom: Language arts lesson. This Language Arts Lesson is a traditional lesson where she introduces the topic of the moral story she is about to read. When she introduces the topic she writes it down on the board. She expanded the topic by providing an explanation of art. She showed the picture on the ELMO projector and discusses the setting of the story. She drew in the students by asking them about their experiences with painting. The text was already circled and underlined the information described in the dialogue. She explained about quotation marks and provides real life

contextual clues such as someone saying something means they own the words. She summarized the gist of the story in indigenous sign language. After she completed the background analysis of the text with the students, she translated the entire story into CSL using continuous pointing where she would point moving in a horizontal position going through the entire phrase or sentence. She asked comprehension questions related to the text using the IRE model. After she reviewed the entire text in CSL, she asked all the students to stand up and read aloud each sentence with her. The signing in the sentence by sentence is different from the read aloud she first signed when she used indigenous signs. This may be in part due to the translation aspect of reading. The entire class stood up and repeated after her in sign language, sentence by sentence. After she completed the read aloud, she asked comprehension questions for the students to respond.

Table 16

Second Grade Classroom: Observed Teacher Behavior - Language Arts Lesson

Second Grade Classroom: Observed Teacher Behavior- Language Arts Lesson
• Teacher writes the title- characters for all of the words • Does not use any fingerspelling at all in this reading lesson • Uses speech only for practicing Pinyin and occasionally uses finger index movement to represent tones. • Uses a lot of question-answer format (typical of Chinese instruction) • Uses a variety of pointing to show pictures, characters and sentences- continuous pointing for phrases and sentences. • Teacher summarizes the story first then has the students discuss thinking strategies to predict what will happen next. • After the story was explained, the teacher goes directly to the screen to read with the students each word on the page. • Teacher asked comprehension questions about the text. • After the teacher and the students have gone over the comprehension questions, , the entire class must read the text together (chorale reading), pointing at the words on the overhead projector then students were to practice on their own. • Throughout the lesson, the teacher checks for comprehension by asking "do you understand? Stating and asking for confirmation and uses a lot of statement and negation

Third grade classroom: Learning new words lesson. The third grade teacher wrote down all vocabulary words (see Figure 24) on the board following the same pattern prior to the start of class. Words are color-coded; single character-white, Pinyin-blue, compound characters- yellow. Some of the compound characters are in red to indicate an important word to remember. Students copy them down in their notebooks.

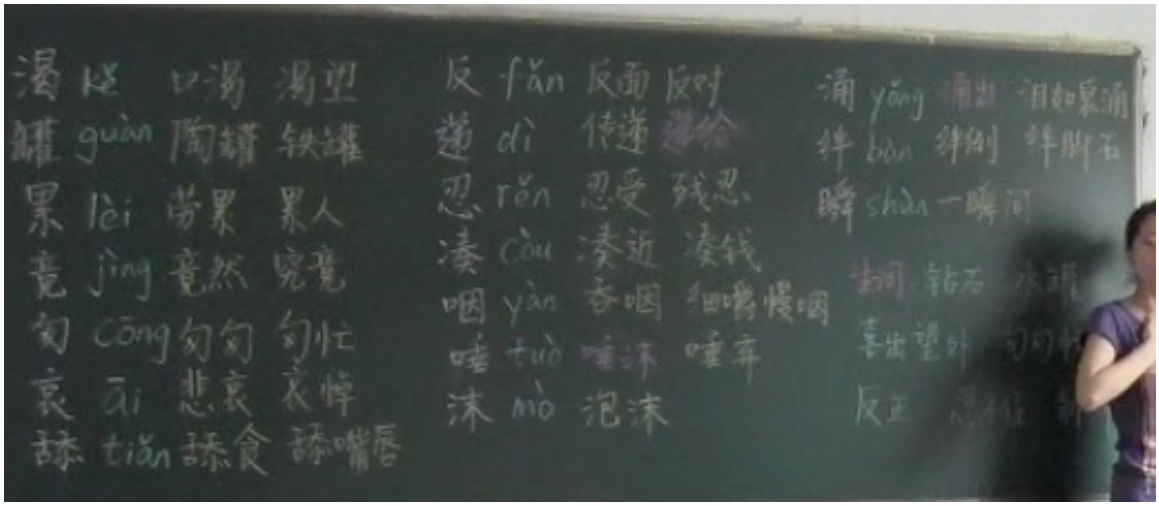


Figure 24. Third grade blackboard display- New words

Homework for third graders is the same as for the second graders where they have to copy the words from the list provided in Figure 24 ten times and memorize the fingerspelling of the Pinyin word. They also need to create a sentence with the new words and be ready to share with the class.

Table 17

Third Grade Classroom: New Words List with Translation and Notes

Basic morpheme Character	Pinyin	Compound Words (includes basic morpheme)	Note about compound word
*喝 渴	ke	口渴 kou ke thirsty 渴望 ke wang thirsty for something	Left radical has “mouth” Left radical water, person & mouth
罐	guan	陶罐 tao guan pottery 铁罐 tie guan iron tin	Left radical “earthen crock”
*累	lei	劳累 lao lei tired 累人 lei ren tiring	Top radical has “field”
竟	jing	竟然 jing ran all of a sudden 究竟 jiu jing on earth	Top radical “stand”
匆	cong	匆匆 cong cong quickly 匆忙 cong mang hastly	Wrap
*哀	ai	悲哀 beiai sorrow 哀祷 aidao sad	Top radical house
*舔	tian	舔食 tianshi lick (lap) 舔嘴唇 tian zui chun lick the lips	left radical “tongue”
*反	fan	反正 fan zheng whatsoever (anyway)	
递	di	传递(chuan di)deliver 递给（di gei)give	down radical “walking”
忍	ren	忍受 ren shou bear (suffer) 残忍 can ren cruel	down radical heart
凑	cou	凑钱 cou qian gather small amount of money (make a raise)	
咽	yan	吞咽 tun yan swallow 细嚼慢咽 xi jiao man yan eat slowly	Left radical mouth
唾	tuo	唾液 tuo ye spittle 唾弃 tuo qi spit	Left radical of first compound mouth
沫	mo	泡沫 pao mo foam	Left radical water
涌	yong	涌出 yong chu emerge 泪如泉涌 lei ru quan yong tears come out of the eyes suddenly	Left radical water
绊	ban	绊倒 ban dao tripover 绊脚石 ban jiao shi obstacle	Left radical silk
瞬	shun	一瞬间（yi shun jian)one moment	Left radical moon

This list of new words for the third grade consists of a basic character, its Pinyin form, and two compound characters with its basic character either on the right or the left side in the compound. The final right column is the additional information about the possible semantic radical from my analysis that exists in the basic character. This list of semantic information was not addressed consistently. The third grade teacher only covered the semantic radical of the first word and did not apply this to the rest of the characters, which shows that the teacher did not maximize morphological processing when situations could have been helpful.

In this third grade class new words lesson of 40 minutes, the teacher covered 10 words. The right first radical provided in the initial column does not necessarily have meaning on its own, only compounds have meaning. The characters in Table 17 with the asterisk were pointed to by the teacher and asked students for its meaning in sign language. As shown in Table 18, the transcript includes a lot of pointing to various components within the character, but mostly to show its semantic component.

Table 18

Transcript of a Third Grade Classroom Teaching New Words

Transcript of a Third Grade Classroom Teaching New Words
Teacher: First *(pointing at the Pinyin word on the board, then fingerspelling it)* K-E [marks the tone by adding the finger index movement descending and rising to indicate the third tone] K-E [marks the tone by adding the finger index movement descending and rising to indicate the third tone] K-E [marks the tone by adding the finger index movement descending and rising to indicate the third tone]
All students: *(repeat after her the same thing using both voice and fingerspelling)* K-E [marks the tone by adding the finger index movement descending and rising to indicate the third tone]
Teacher: *(pointing at the main character 渴)* What does this mean?
Students: drink
Teacher: Drink?
Students: yes it is drink…
Teacher: You think it is drink? *(she points to the main character 渴)* no it is not. It is thirsty. What is the left position for drink? *(she points to the left radical within the main character)* then she writes the word 喝 next to the main character 渴 and points to both characters) They are different. You said this was drink *(pointing to the character 喝 then pointing to the next character 渴)* this is thirsty… do you understand? (pointing to 喝) there is a mouth here and this one (pointing to 渴 and tracing the radical "water" with three strokes) They are different. You see the radical 人 [人 means person] *(she is signing the radical the sign is iconically similar to the written character) (points to the bottom radical that has the 人 she picks up a red chalk to trace the 人 on the character)* do you understand the person [sign is exactly the same as the written character 人] is thirsty (*pointing to the Pinyin ke and moving towards the compound characters*) (*pointing at the first compound character*) what is this?
Student: kou ke
Teacher: [*signs using syllables and speech kou index circling around the mouth, then says ke touching the throat*] During the summer it is very hot, one doesn't drink and your throat gets dry, one is thirsty. That's the name for it. (*she points to the first compound then moves to the next compound waiting for the students to give the meaning of it*)

This lesson documented how the third grade teacher is incorporating various modalities (signing, fingerspelling, tracing, writing and speaking) to teach one main character (see Summary of strategies in Table 19). She asked students to repeat the Pinyin three times, used fingerspelling and the tone movement with the index finger, and gave them an opportunity to embody a visual and kinesthetic experience. She provided the visual experience of recognizing the different left radical positions to help the students understand the meaning within those radicals and pay attention to its position by pointing it out. This task reflects a morphological analysis of words, highlighting the radical positions within the character. After she analyzed the character, she proceeded to explain how the character can be used in a compound word using an example and setting a scenario that would put the word into context. For a third grade new words lesson, an average of 04:27.5 minutes is spent on analyzing each word. A total of 17 words were covered in this lesson.

Table 19

Third Grade Clasroom: Instructional Process of New Word Learning

Third Grade Classroom: Instructional Process of New Word Learning
• Pointed to Pinyin, fingerspelled and indicated tone movement afterwards-Repeated 3x • Went over the single character and asks for its meaning • Wrote characters that are similar and not similar on the board • Reviewed the stroke sequence by focusing on the areas of challenge does not do the entire character only the ones that need to be differentiated by something that looks similar • Traced over the stroke to emphasize its uniqueness and traces it in the air • Went over the compound characters • Covered the left to show the right phonetic using Pinyin and fingerspelling • Covered the right to show the left radical and focus on the meaning • Repeated the meaning 2 to 3 times • Included the word in a sentence in sign • Had the students come up with an example in sign language using the word • Explained opposites and similar signs or words • Showed the word in a sentence using the overhead projector • Showed pictures to show a concept of a word

Third grade: Language arts lesson. For the Language Arts lesson, the third grade teacher was going over the exercises in the book. Since the book is used widely in mainstream classes, there was one section where it brought out a small twist and she made the accommodations to make it accessible to the deaf students. In the exercise, the students were supposed to identify similar characters, but having different pronunciations and meaning. Instead of having the students sound out the word, she went ahead and put those characters on the board and wrote down its equivalence in Pinyin so that the students could see the slight difference in spelling. She initiated the concept that words can look alike on the lips, but have different meanings.

Table 20

Third Grade Classroom: Observed Teacher Behavior

Third Grade Classroom: Observed Teacher Behavior
• Student noticed "similarity" between the letters of the Pinyin and he assumed the sign is the same, but the teacher pointed out that the tone movements were different and therefore the meaning is different. • Teacher wrote the word in characters then she fingerspelled with tone movement once then pointed at the compound, providing the sign for it. (doesn't happen often- first time in this lesson) • Interacted a lot with pictures- signing on the board (also happened in first grade) • went through the text explaining, describing and asking students for the meaning • had the students read together with the teacher the entire text in indigenous signs. • used continuous pointing to direct where they are in the reading process and to show which sentence they will be going over. • Once, wrote Pinyin word to show its similarity in mouth movement, but different characters

From the observations, the third grade teacher was actively involved in trying to cover all aspects of the written script. She did a lot of pointing to various parts of the character- left, right and whole compound as well as whole sentence, and corresponding picture (See Table 20). She listened to students who provided an example of the word in a sentence. She emphasized the phonetic aspect by showing the Pinyin and its similarity and the morphemic resemblance of the left character within the compound. She also pushed students to pay attention to the structure of the compound by covering up the semantic radical or the left character from there she proceeds to explain its phonetic or morphological representation.

Summary of Classroom Observations

Overall, the observations of the two lessons showed the unique succession of steps required in teaching new words. We find that in first grade, the lesson placed emphasis first on Pinyin: fingerspelling the first letter of the word, or in the case of compounds, the first letter of each syllable, then secondly, the teacher focused on the character: its radical position, the sequence of strokes, and word compounds that include the single character. The second and third grade teachers followed the same order as the first grade teacher focusing on the Pinyin first then the character. The one exception found in both upper grades is that they did not cover the structure of the character, whether it is left/right or up/down, but they did focus on stroke count and making sure they identified the areas where characters may look the same if the strokes are used inappropriately.

Given this information, Chinese teachers appeared to emphasize the importance of understanding the radical in question, its pronunciation and its placement within a character. In order to represent the tone found in the written Pinyin, the movement of the index finger will either go in a horizontal position to indicate the high pitch and the first tone, upward to indicate the rising of the second tone, downward-upward to show the dip in the third tone, then lastly the fourth tone by dropping the finger downward. These visual manifestations seem to help students to recognize the tone, but whether it also helps them to "hear themselves" and correct their own speech remains to be seen or tested.

Common Visual Strategies Across All Three Classrooms - Shared Teacher Actions

Summarizing the information gathered from the three separate classrooms, we find common visual strategies that enhance bridging relationships between what is said and what is written. Different modalities are used in making this connection evident to the student, such as signing, pointing, writing, fingerspelling, using dramatic representation. Since this is a qualitative study, no statistics have been calculated, but these frequent common patterns are certainly worthy of future examination with a larger set of data.

Deafness brings about the reliance on visual information to make sense of the world. Deaf individuals use sight to capture information and since capturing visually requires "sequential looking" among targets, the visual bridging strategies become all the more important. Table 21 provides an inventory of the visual strategies in reading instruction found in first, second and third grade deaf bilingual classrooms.

Table 21

Inventory of Visual Strategies in Reading Instruction

Inventory of Visual Strategies in reading instruction
1. Signing 2. Fingerspelling 3. Gestures with finger to indicate tones 4. Dramatic Representation 5. Writing 6. Tracing 7. Pointing 8. Covering up 9. Underlining/circling 10. Color Coding 11. Displaying pictures

Each of these visual strategies will be explained based on the findings from videorecorded classroom observations and field notes.

1. Signing

Signing provides students with visual access to language whether the signs come from the deaf communities (*Indigenous sign language)* or the governmental sign dictionary *(Chinese Sign Dictionary)*. Differences between conceptual signs versus the syllabic sign for each character are included in the discourse. In the *ke-wang* example from the Third Grade Lesson, the teacher signs each character (based on the syllable) rather than a single sign to represent its compound meaning.

A more detailed analysis of the type of signing incorporated within these lessons will be reserved for the next study. Not only there are differences in form, but the varying function of signing may be determined by how information is processed. All three teachers engaged in the following discourse structures in sign language: labeling, explaining, describing, comparing, contrasting with negation, expanding, and commenting.

2. Fingerspelling

The teachers used fingerspelling to associate handshape with the sound of the Pinyin letter. Based on the current observations, teachers no longer use the two-handed fingerspelling to form the initial and final syllables of a compound character; only one handed fingerspelling was observed in first grade and third grade classrooms. Vowels are distinct handshapes, while double consonants are blended into one handshape (e.g., zh, sh).

3. Gestures to indicate tone

Gestures are used to indicate tone in different ways. The third grade Deaf teacher *after having fingerspelled the word* indicated the tone using the index finger moving either in a continuous straight line to represent the first tone, or in an upward movement to show its rising vowel, or falling downwards then dipping upwards to demonstrate the descending and rising third tone, or lastly the descending movement of the falling tone. In contrast, the first grade hearing teacher used the handshape of the vowel and simultaneously moved her handshape in the direction of the tonal movement.

4. Dramatic representation

Acting out the meaning of a word is a way for children to visualize and revisit the context that is tied to the meaning of the word. The teacher takes on a character or acts out a verb or an idea to create the context. The first grade teacher would literally get physically involved in the performing and included the students in the acting to help her create a more vivid picture. In the example of the word *win* (贏), she would have students race with her across the room, while she slowed down and the student passed her, then she would ask the students what had happened. Once the concept of win was set, she then introduced the idea of winning an award.

5. Writing

Writing comes in a variety of forms. Pinyin is an alphabetic script and is used to associate expose children to the syllable associated with a single character. Simplified Chinese is a logographic script, commonly used by the general population. Teachers use writing to translate a signed phrase or sentence. Sometimes writing down the character

equivalent of a sign helps the student distinguish between signs and characters. Homonyms in sign are resolved through writing it out in characters.

6. Tracing

Tracing characters is done through the air or on the blackboard to illustrate either the entire single character or parts of the character. Teachers will trace the character for students to see as model. Students observe the shape of the trace and then match that pattern to their mental lexicon of radicals and possible character combinations.

7. Pointing

Pointing takes on a variety of functions such as using it as a place-holder, to pair text with a matching sign or fingerspelled word, and as a referent marker in space. The following pointing strategies are described below:

Index Pointing (HOLD). The co-occurrence of index-pointing appears to "hold" the written form as the focus of attention while the teacher simultaneously provides its meaning or an explanation of that word in sign. Teachers used Pointing when indicating Pinyin (alphabetic) and character (logographic) words.

Index Pointing (PAIRING). Teachers explicitly pointed to features of characters and paired the pointing with a connected sign. For example, the pointing highlighted the left radical or the right radical, or "tapped" the order of the strokes. Teachers also used two fingers of one hand to pair the two components of a compound character. This approach facilitates compound character recognition because spacing cues are typically not present on the page to help the child identify which characters go together.

Continuous Pointing. Continuous pointing (without simultaneous signing) refers to the teacher tracking the print by moving their fingers across the line of

print. Once the teacher has done this, the teacher either translates the text in sign language, gives students the time to read it, or uses this strategy as reference to indicate to the students that whatever is discussed in sign refers to this tracked sentence or phrase. This gives the student time to actually look at the sentence before looking back at the teacher. These techniques are incorporated as indicators of where students should focus their attention, and shows that the teachers are sensitive to the deaf student's need to shift their attention between the board and the teacher, something hearing students do not need to do as they can look and listen simultaneously.

Signing in a spatial location: This type of referencing is not actually a point, but serves that function. Here, the teacher signs the meaning equivalent of the written form right on the board, localizing the sign *directly on the text* effectively is pointing out the correspondence. These signs tend to be either objects or names.

8. Covering up

Covering up a part of a Pinyin word or character facilitates the teacher's goal to get students to focus specifically on a feature within the character (e.g., particular radical, remaining strokes). This strategy elicits attention to details of form and meaning.

9. Underlining/circling

Underlining words to indicate its structure as a single character or a compound helps students to see them in relation to other characters. Underlining is often done using the overhead projector displaying a book page that does not have distinguishing spaces

(see sample book page in Figure 25). The teacher would underline while the students would follow suit in their own books.

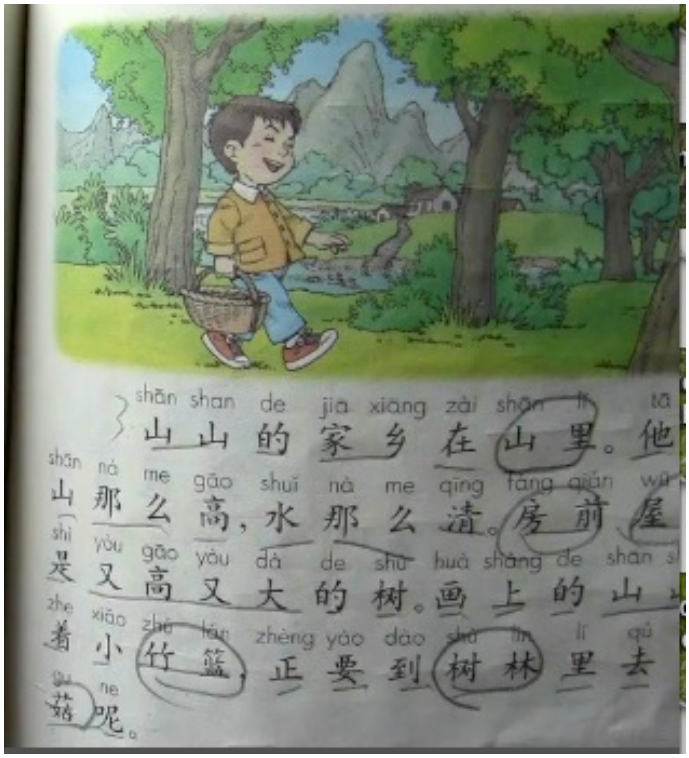


Figure 25. Example of underlining and circling an un-spaced Chinese text

10. Displaying pictures

Drawing pictures on the board has been the traditional teaching strategy used for many years by teachers of deaf children with deaf children. First and third grade teachers often took advantage of this drawing strategy. More elaborate pictures from online resources were displayed on the overhead that enabled more complete access to shape, form, and context. The advantage of having an ELMO overhead projector is that it not only can display and freeze text or picture, but the ELMO slide can be swapped with the teacher's PowerPoint slide. The overhead-projected image permits the teacher to keep the page from the book visible and have her hands free to sign. The teacher prepared these

pictures in advance to show to the class. The visual media seem to help students recall the object in question, give them context, and associate its meaning with the teacher-provided label (printed word or sign). Newly learned words are also put into context either through a picture to represent the idea or in a sentence for students to see. The teacher creates those sentences to show on display how a word can be used.

11. Color coding

Color-coded text sections provide an image on the blackboard that shows specific segments through visual contrasts. In the case of the Second and Third grade teachers, color-coding follows the order: Pinyin is in blue, the basic character is in white, and the compound word is in red. Color coding separates the written content into particular categories. All three teachers used the red chalk to trace over the white basic character to either emphasize the number of strokes or to add an adjacent non-character (to show a "wrong" example).

Table 22 provides a summary of the instructional strategies documented in the First, Second, and Third grade Chinese classrooms. The strategies appear to convey relevant language and literacy information through visually accessible means. The fact that all three teachers consistently used these strategies within their classrooms, suggests that this pedagogy may be a common approach adopted by teachers of the deaf. Furthermore, these findings are important as we consider how instruction can exploit visual learning, especially in the context of sign language, spoken language, and multiple literacy practices.

Table 22.

A Summary of Common Visual Instructional Strategies in First, Second, and Third Grade Classrooms

Visual Strategies	Characters	Pinyin/ Spoken	Sign/Discourse
First grade	• Basic and compound words are underlined and unknown words are circled • Characters- tracing in the air • Shown in white chalk	• Pinyin- fingerspelled each letter with speech accompanied with movement to indicate tone • Shown in blue chalk	• Labeling • Questioning • Repeating • Acting Out • Explaining • Expanding/Describing • Contrasting with negation • Checks for comprehension
Second grade	• Characters- tracing in the air • Underlining single and compound characters • Covering a radical of character to pay attention to the other radical	• Mouthed and pointing for tone movement	• Labeling • Questioning • Repeating • Explaining • Expanding/Describing • Contrasting with negation • Checks for comprehension
Third grade	• Hand covering to show left/right radical • Both meaning and sound • Tracing in the air to emphasize relevant strokes of radical	• Pinyin fingerspelled each letter with mouthing and moving index finger in the air to indicate tone after the word	• Labeling • Questioning • Repeating • Acting Out • Explaining • Expanding/Describing • Contrasting with negation • Informing

Other Aspects of Pedagogy

Visual strategies-Bridging connections to print. While visual strategies are being incorporated within the classroom, there are also different pedagogical elements that reinforce reading strategies. Considering the way Chinese is taught in a bilingual deaf classroom, deaf elementary students use two different scripts and two visual modalities to represent the sign and the spoken language. How do deaf teachers facilitate the bridging between two languages and what visual strategies do they use to help children learn to read? Three main techniques were found to reflect language to script associations: repetition, sandwiching, and chaining, the use of pointing, and *similar-but-different* analogy.

Repetition. All three teachers emphasized repetition throughout their lessons. If teachers read Pinyin, repetition would occur through speaking and fingerspelling (with tone movement). If providing the meaning of the basic character or a compound word, the sign label would be repeated two or three times as well.

Sandwiching and chaining technique. *"Sandwiching"* refers to teachers using one modality then switching to another modality, then back again; such as, signing-pointing to the word - signing. All of the teachers did this as well as the following sandwiching sequence: pointing to the character, label with a sign, then back to pointing for emphasis. There was no fingerspelling sandwiching observed. Also a "*chaining technique*" was observed—this is a term that describes how deaf teachers illustrate the same "concept" of a word by chaining representations in different modalities such as signing, fingerspelling and pointing to written print (Humphries & MacDougall, 2001).

The purpose of chaining techniques is to bridge one language (sign language) to another (English print). In the deaf Chinese classroom, for the most part, I observed associations between signing and characters or fingerspelling and Pinyin. Even so, when learning new words, I did find a unique chaining sequence that involved five steps, especially in the introduction of new words: 1) pointing to the written Pinyin word, 2) speaking while fingerspelling it with the tone movement, 3) pointing to the single character, 4) signing the meaning of the character, and sometimes 5) signing it by "syllable" where government signs are incorporated. This five step multimodal instruction appears to be used only when teaching new words (and not in the typical Language Arts class), whereas chaining in the States tends to be used across a variety of contexts - from new word introduction to the conversation level, all with the purpose of emphasizing certain characteristics of a word.

Similar – but – different strategy. This strategy, illustrated in Figure 26, only occurred a few times (it occurred four times throughout all six lessons). All three teachers displayed a *faux-character* and explicitly reminded the students that this is an incorrect character. This strategy was the only way for students to *visually* compare the stroke distinctions, discerning similar and different strokes. The lesson is that even one stroke can disrupt the entire meaning of the character or may simply be not be a character.

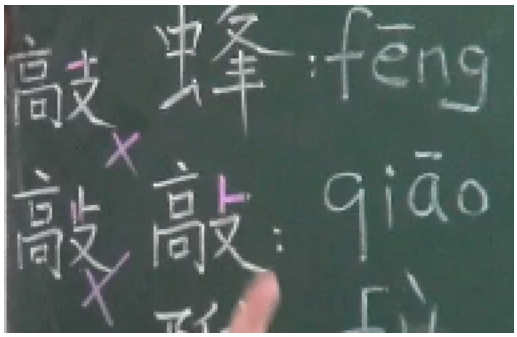


Figure 26. *Similar-but-different strategy*. The teacher provides non-characters to show parts of the strokes that could be seen in different constructions but in this case are not words. The non-characters look similar to the actual word. By pointing out the errors, the teacher shows the dangers of confusion.

On the other hand, teachers frequently wrote a *similar* character, i.e., one with a slightly different stroke, which influences the meaning of the character. Contrasts of similar characters were observed 8 times throughout the three lessons on learning new words, but not in the language arts lesson.

Metalinguistic strategies. While both languages are used, the teacher maximizes metalinguistic skills to enable students to draw meaning from the words in sign. These opportunities are found in the discourse strategies as well as in the analysis of orthographic structure and word morphology.

Real life context connections. After the chaining activity, the teacher points at the first part of the compound asking students for the meaning. Then they ask students to contextualize the component by providing an example in real life. The process is repeated with the second component of the compound. The meaning of the compound differs depending on whether the component is on the left or the right. The teacher will provide both versions of the compound to expose children to the morphological differences when the single character is placed on the right or on the left. The position of the character also

influences the grammatical category of the component. The right hand character in a two-character Chinese compound word is the *head* when the compound is a noun. The left hand character is [usually] the head when the compound is a verb. So, for instance, soap dish is a type of dish while dish soap is a type of soap. The principle is a little less clear with verbs. To fingerspell is spelling done with the fingers.

Promoting orthographic structure awareness and word morphology. In the classroom interactions, I documented several occasions where components of the character were explicitly taken apart by the teacher to show sub-lexical similarities either in strokes, in "sound" or in meaning. This is an example of orthographic structure awareness where students are being asked about its phonetic and semantic components. For example, in the Third grade classroom, the textbook had a sample exercise where the spoken words are identical, but the characters are different. The teacher analyzed the Pinyin with the students to illustrate the differences and similarities. Similarly, I observed the teacher highlighting how the same character could have different pronunciations, especially depending on the position of the character in a compound. Figure 27 shows an image of the blackboard at the time the teacher discussed how the main character is pronounced 'jiào/' when used in the initial position within the compound, whereas it is pronounced 'jiǎo' in the final position. It is important to point out that from a deaf person's perspective, these pronunciations are very similar especially if relying solely upon lip reading. It is difficult for deaf children to discern visually the differences indicated through tone markers and consonants.

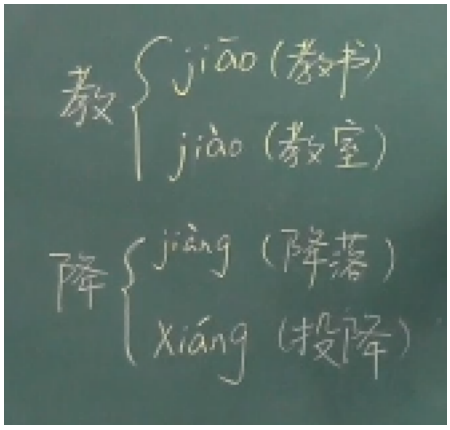


Figure 27. Third grade display of homophones.

As for word morphology, the third grade teacher would often point to the word that included the one character morpheme and ask the students what it meant. By having the students consider the meaning of the word, the teacher is fostering word analysis after the students have had the chance to understand the one morpheme character. She did not ask for other words that include this morpheme, which would have been an extension of that knowledge of word morphology, as described in Packard, Chen, Li, Wu, Gaffney, Li and Anderson (2006).

Discourse strategies. When teachers are signing, they strengthen contextual information and build students' thinking through discourse strategies such as identifying, explaining, expanding, contrasting with negation, and informing. Much of the discourse level in signing situates the word in a context and help students see the big picture. Using sign language, the teachers took the time to describe, explain and elaborate upon words that were not familiar. Contextual clues were very much evident in the discussions.

Overview of Developmental Progression

In order to gain a clearer picture of the frequency of teacher actions related to reading instruction, we can examine the patterns across the first three grades. I recognize that teachers will have different styles and different ways of interacting with students, but it is of interest to consider the overall patterns of how print is presented visually, whether through writing, pointing, acting, signing, lip-reading (mouthing), across the classrooms observed, both New Words and Language Arts lessons. By looking at the frequency data of instructional strategies allocated to each modality, we gain a better understanding of their relative priority for the teacher in her reading instruction. Given that two of the teachers are hearing and one is deaf, the findings also reveal distinctions regarding the natural tendency of incorporating visual learning. For this analysis, a single Teacher Action (TA) is defined as one occurrence of a reading instruction strategy (as outlined above).

Table 23

Total Number of Teacher Actions (TA) of Reading Instruction across First, Second, and Third Grades

Classroom	New words (40 mins)	Language Arts (40 mins)	Average
First Grade	573	669	621
Second Grade	563	414	488
Third Grade	708	707	707

Looking at Table 23, we see that in a 40-minute period of classroom teaching, the second grade teacher has the lowest average of Teacher Reading Instruction Actions

(n=488). By comparison, the first grade teacher produced an average of 621 Teacher Actions. It is noteworthy that the teacher with the most Reading Instruction Actions was the third grade Deaf teacher. While this analysis only involved two comparable lessons per teacher, the results give us a sense of how often the teacher initiates an action that highlights the relationship between language and print.

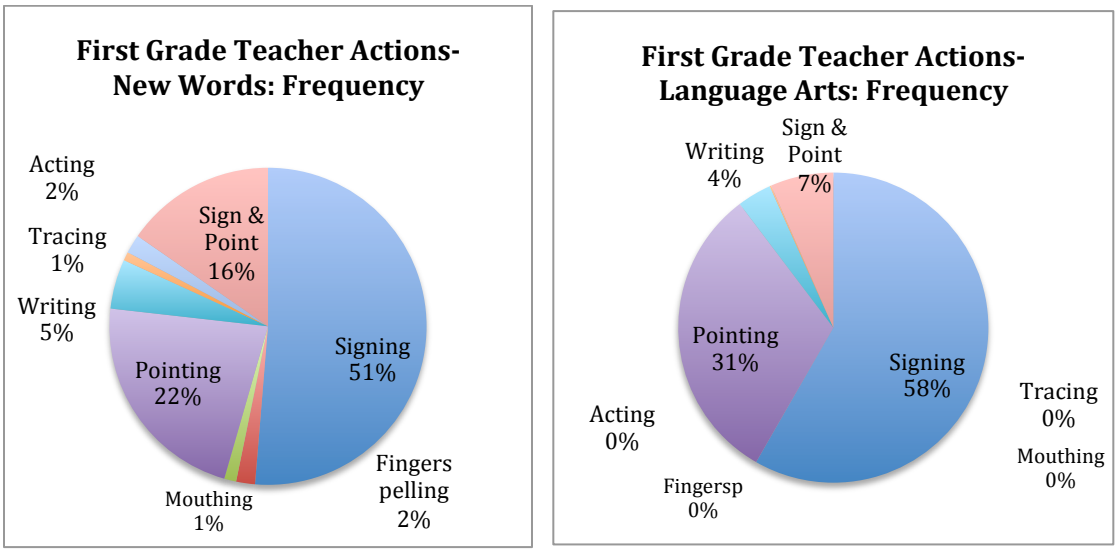


Figure 28. Distribution of teacher actions- First grade teacher

Breaking down the results by each teacher, we see that the first grade teacher (see Figure 28) relies on sign language to a large extent as a strategy to label, describe, explain, summarize and provide real life examples in Reading Instruction (51% and 58% respectively). The first grade teacher did not produce much mouthing or speaking alone, although she does voice while she signs. She did not expect students to vocalize in their responses, but to sign. Interestingly, 22% and 31% of the time she points to characters, Pinyin, or pictures as a way to visually associate what she is referring to and to help students focus on the word being discussed. Signing and pointing simultaneously occur around 16% and 7%. Fingerspelling only takes 2% of the Reading instruction moves.

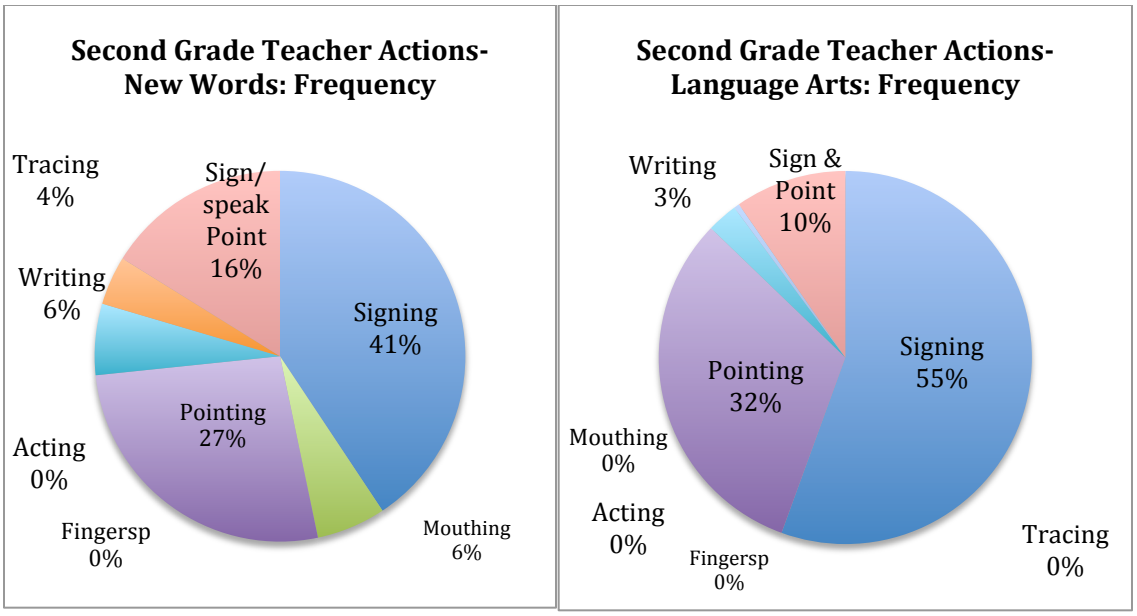


Figure 29. Distribution of teacher actions: second grade teacher.

This second grade teacher (Figure 29) within the 40 minutes in teaching new words and the language arts lesson, spent about half of the time signing (labeling, explaining, describing, expanding, questioning and commenting) and 27% and 32% of the total strategies is dedicated to pointing at various objects (characters, Pinyin, compound words). Since she speaks and points at the Pinyin and does sign and point to the character, the combination amounted to 16% and 10% of the strategies. She traces in the air (4%), and writes on the board (6%), but does no acting. Writing only accounts for 6% of her instructional actions.

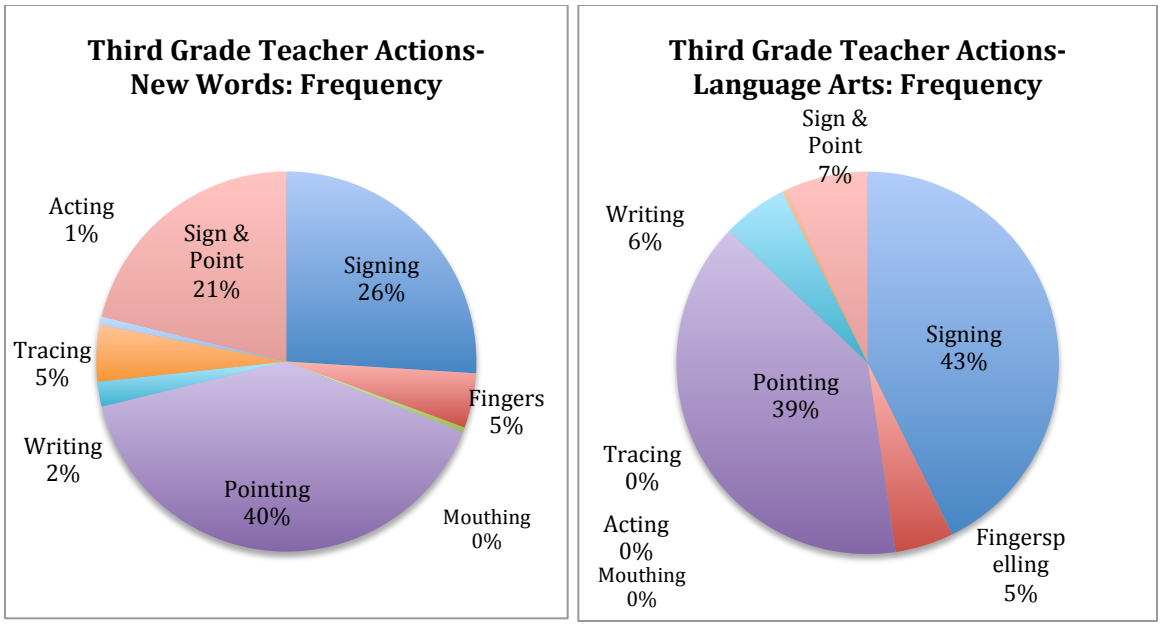


Figure 30. Distribution of teacher actions: third grade teacher

In contrast to the first grade teacher, the third grade teacher only spends 26% and 43% of the reading instruction actions signing, whereas she spends about 40% and 39% of the strategies pointing to characters (see Figure 30). Some of the pointing coincides with the signing for she will point with one hand and sign with the other. She used a lot more signing and pointing simultaneously during the new words lesson as opposed to the language arts lesson. Fingerspelling (about 5.5%) seems to occur in both classes, not just in the new words (where it would be expected given the nature of the sequential process of going over the Pinyin). In the language arts class, the third grade teacher included the written Pinyin for the purpose reminding the students of the differences in sound and characters. When referring to the Pinyin, she would automatically fingerspell instead of sign. The writing component is not often used during the lesson. During the new words lesson, a detailed list of words would already be written on the board prior to the beginning of class and does not leave much space on the blackboard for additional

writing. The type of words written in language arts would generally refer to the title of the lesson, words to help grasp the concept of the lesson, or words that look alike based on the reading a text projected on ELMO. I expected more writing in all of the classes, particularly in the language arts lessons. This raises the question of whether writing is only for clarification as opposed to taking advantage of exposing students to the words discussed in class or reinforce what was discussed into written form. The writing section needs more analysis especially given that as the students get older the requirements may change.

How do teacher actions compare across classrooms? A cross-grade analysis of all three teachers will help understand the differences in frequency.

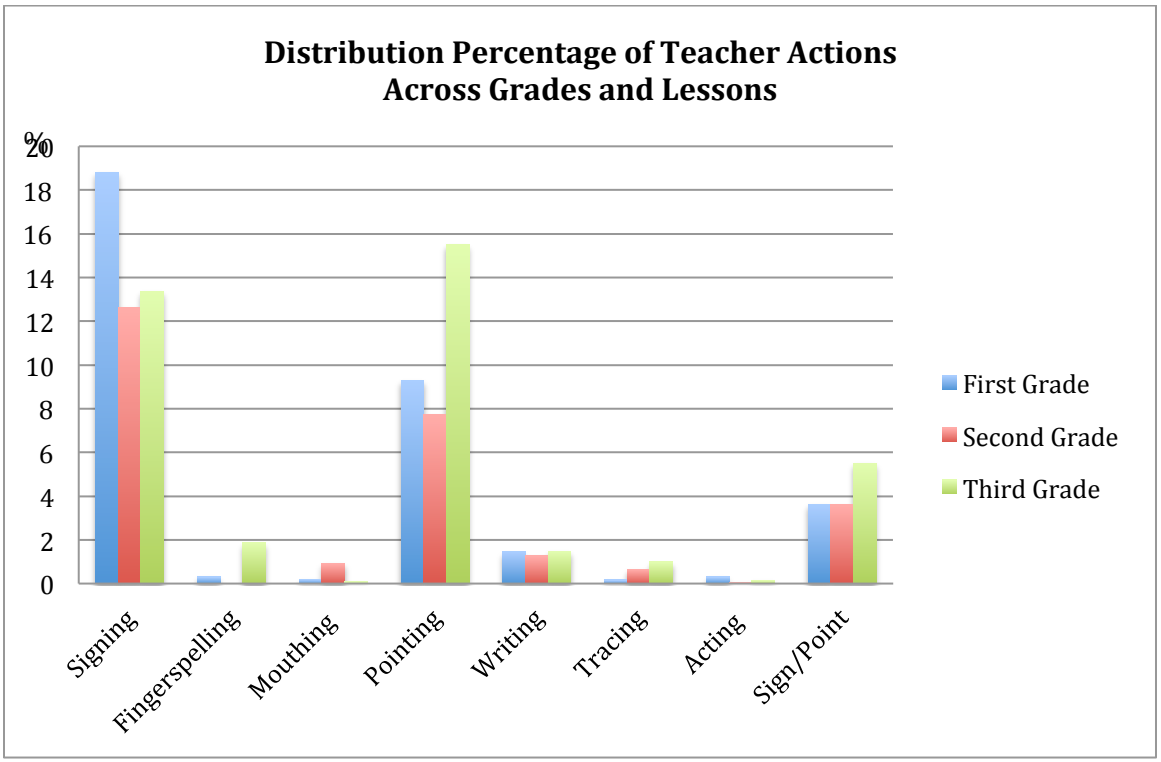


Figure 31. Teacher reading instruction actions summarized across grades

In Figure 31, when comparing the three teachers and the frequency distribution of teacher actions within two 40-minute lessons we find, from the total of all teacher reading instruction actions (N= 3634), that a lot of time has been devoted to signing as opposed to mouthing/speaking only. Pointing to the written script or to pictures is a common strategy used by all three teachers, with the Deaf teacher using more compared to the first and second grade teacher. Fingerspelling was not critical in any of the three grades. The third grade teacher used more fingerspelling compared to the first grade teacher who uses it occasionally, and the second grade teacher does not use it at all. Notably, when fingerspelling was used, it was associated with Pinyin print, not character-based print.

In summary, across all three grades, a high proportion of reading instruction time is spent on making sure students are making meaning of text through sign language. The average time spent on one word was First Grade 5:02.6; Second Grade 06:47.7 and Third Grade 04:27.5 minutes, respectively. The physical act of writing (with students observing the teacher) was relatively infrequent because the text was mostly on the board before the lesson started (which may account for the considerable amount of pointing and merits further analysis). Nevertheless, because of its relative frequency, pointing seems to imply an important *bridging* strategy through which students receive emphasis on the internal structure and combination of characters. Continuous pointing to text, while signing, conveyed the signed equivalence of the written form. Further analysis of continuous pointing will help determine whether the sign equivalence follows the Chinese syntax or indigenous sign language syntax.

Chapter 7

Discussion & Future Considerations

Is it easier for deaf Chinese children to learn to read characters than it is for deaf Americans to read the alphabetic script? Deaf Chinese individuals are typically exposed to two different types of scripts, but whether learning to read characters is easier than the alphabetic script remains unexplored. The answer is far more complicated than anticipated. The sociocultural influences in the education of deaf individuals in China are deeply embedded within pedagogical traditions held in all Chinese classrooms. Deaf Chinese must learn to navigate through the complexities of two writing systems that are intertwined with the spoken language of the country and the sign language of the d/Deaf communities. Teachers of the deaf in this bilingual school recognize these challenges, value bilingual education, and appear to make accommodations that place emphasis on the visual structure of spoken/written language, while at the same time, use sign language as the language of instruction.

This qualitative study of one bilingual school for the deaf in China provides a glimpse into reading instruction practices as well as how teaching the deaf is situated within the broader socio-cultural, socio-political and socio-historical context that surround teaching and learning to read Chinese.

Two Scripts For Different Purposes

All Chinese children in elementary school are in fact exposed to two different types of writing systems -- an alphabetic script and a morpho-syllabic script. While Pinyin is viewed as a temporary and transitional tool to standardize the spoken

Putonghua, hearing children learn it, map it out with the spoken language and move on to learning characters by third grade (Shu et al., 2003). This approach is aligned with national standards (Elementary Education Teaching and Research Center, 1996).

The national curriculum was written based on the premise that hearing children will associate the *heard* word with the written Pinyin, and combine this spoken knowledge of syllables with characters. Since each character consists of a morpheme, transitioning out of Pinyin requires matching a spoken syllable to the character. This association of the spoken syllable with the character is a cognitive process involving auditory memory, a process that Perfetti, Zhang, and Berent (1992) refer to as the *Universal Phonological Principle*. Because a hearing person is able to see the character and hear the word simultaneously, phonological activation is likely to occur.

This national approach to teaching reading appears to be carried over in the education of the deaf in China; however, it comes with different implications, especially with respect to whether Pinyin enhances learning to read. While the materials used in this bilingual school are aligned with curriculum guidelines, I have observed that in class the modality affects instruction in significant ways. The universal phonological principle is perhaps less applicable to deaf education since the spoken language is not easily accessible. Whatever is visually presented in reading instruction, then, becomes the source of information; and because multiple sources are inherent in the visually based pedagogical approach, deaf students will have to shift their attention amongst the visual cues. This attention-shifting behavior has been noticed in US deaf education classrooms (Crume & Singleton, 2008; Mather, 1989). In the Chinese classrooms observed here,

similar patterns occurred and the teachers used strategies that were aligned with this expectation.

To compensate for not hearing language while attending to text, deaf individuals must take it all in visually. The unreliability of lip-reading as the avenue to access spoken language is due to *invisible* tones and articulatory similarities on the mouth. To compensate, teachers have made spoken language *visual* by using fingerspelling handshapes to represent individual or clustered letters. Tones are represented through movement of the handshape or by following the fingerspelled word with the index finger moving in the direction of the sound: (1) high continuous pitch, (2) rising, (3) falling and rising, and lastly (4) falling. Does the visual movement of the hand facilitate a child's development of accurate speech patterns? This remains a good question; while it is helpful to have the visual representation of tones, the corresponding speech production is entirely a different matter. Based on my observations, students attempt to repeat the tone, but since they cannot hear their own productions they appeared less able to self-correct. The "lip-reading" associated with fingerspelling and the inclusion of tone movement at the end of the word does not replicate what a hearing student would hear simultaneously when reading a word in Pinyin. Deaf students must memorize the fingerspelling patterns through much repetition as well as the accompanying tone (represented visually). The instruction of Pinyin, at this point, seems to only be an additional tool to understand the dynamics of spoken language. Furthermore, no research has yet shown that Pinyin facilitates reading for the deaf students and since it represents the spoken language, teaching characters directly at an early age through sign language would seem to be most advantageous to deaf children's reading development.

According to the interviews and classroom observations, teachers of the deaf appear to follow the same general instructional sequence that is required in teaching hearing children (Pinyin first with gradual introduction of characters); however, the striking difference is that in the hearing population, Pinyin is dropped by the third grade, whereas the third grade teacher continues to expose her deaf students to Pinyin during the new words and language arts lesson. Why might this be the case?

Teachers appear to continue the Pinyin exposure with the intention that it will teach deaf children how the spoken language is constructed. Teacher interviews revealed a shared premise (whether teachers were deaf or hearing) that speech is a priority (over signing). This premise reflects the broader social goal of fitting into and succeeding in the hearing world -- speech proficiency is viewed as the ticket into the work force. Importantly, the continued speech training (through Pinyin/fingerspelling) does not preclude the significant exposure to sign language in the classroom. The dual language experience at this bilingual school is reinforced by instruction that highlights *how spoken word represents Pinyin and the signed word represents characters***.**

Furthermore, characters are assemblies of a variety of components (phonetic and semantic), with unique positions and strokes that confer differences in meanings and in pronunciation. As in American Sign Language, Chinese signs also carry a variety of handshapes that could be seen either as phonetic or semantic. Some signs incorporate "initialized" handshapes resembling the finger syllabary of Pinyin and other signs incorporate location and movement to reflect meaning (morphemes). This analysis of Chinese sign language warrants further investigation into how much of the sign represents the semantic versus phonetic component and how do they match with the

Chinese characters. One unique feature of CSL is that some signs replicate the form of the written character. In ASL, by contrast, signs do not incorporate features of the alphabetic script – instead, its iconicity is drawn from imagery and meaning (Ormel, Hermans, Knoors & Verhoeven, 2012). Alternatively, in ASL we can incorporate the fingerspelled handshape representation the written letter into a sign (i.e. initialized signs like WATER or GROUP). It is indeed possible that the nature of alphabetic script creates obstacles to incorporation into signs. This question deserves further attention.

The development of government-sanctioned signs was intended to fill in a gap by reorganizing the structure of the signs within sign language to create new individual signs to match the morpheme-by-morpheme structure of the spoken language. In some ways, this approach to re-inventing sign language is akin to manipulating the Chinese character to fit the Pinyin. Even with its complexity, the characters have remained a cohesive system of writing for thousands of years, regardless of the spoken language changes and dialects in its midst. In other sign language communities, a created sign system (e.g., Manually Coded English) to reflect spoken structure has typically not been taken up by the deaf signing community. According to a CSL researcher (Yang, personal communication, November, 2011), the character-based invented signs are not prevalent outside of school settings. The imposition of such a model is a sociopolitical and sociolinguistic move at best.

Moreover, from the interviews with deaf teachers, it is clear that the indigenous sign language of the Deaf community does not occupy a highly valued position as an academic language in the school, even though the Deaf teachers continue to use it themselves in both contexts inside and outside the classroom. Without a firm

understanding of its unique linguistic structure with its own phonology, morphology and syntax, and its potential to legitimately occupy one half of a dual language (bilingual) curriculum, the tendency for teachers is to rely heavily on the majority language, which is the Chinese spoken language, in classroom instruction.

In all of the classroom observations from first to third grade, the usage of Pinyin was incorporated in the very first steps of learning new words, but once demonstrated, the use of Pinyin is hardly ever or never shown in a different context in the classroom by the first and second grade teacher. The third grade teacher faced a scenario where the assignment required knowledge of Pinyin in order to complete it and therefore she brought it to light by writing down the Pinyin for deaf students to see the difference and similarities. Again this particular use of Pinyin was tied specifically with knowledge of speech. Since this current study does not evaluate students' speech or signed productions, we cannot determine whether students use Pinyin in their own conversations. Whenever the teacher refers to a printed word, it is generally in the character form accompanied with sign language. As per the interviews and the demonstration in the classrooms, the high use of sign language in interacting with print and the limited use of Pinyin (only aimed at teaching pronunciation and speech skills) signals that Pinyin is not deemed as critical to reading characters.

The implication of using two different scripts raises some very interesting questions. We know from Morford et al.'s (2011) psycholinguistic processing studies that American bilingual deaf signers keep active their first language—sign language—when reading English words. American deaf readers only have one alphabetic script and yet the reading process is still influenced by the phonology of the sign language. With

two scripts in use, the facilitation or interference during lexical processing during the first three years of elementary school needs to be explored in relation to how Pinyin and signing influences the processing of characters.

The implications for further psycholinguistic research are clear. Do deaf Chinese readers activate their signs (over Pinyin) when reading characters? Are characters with "matching signs" (e.g., a sign that incorporates a visual element of the character) more quickly processed? Sign to character matching is when the orthographic element of the characters resembles the sign the way "ren" 人 is displayed by using both index fingers touching at its tips (see Figure 15). While the orthography of the print resembles the sign, we also find that words activate pictures that resemble the signs. An example would be "ball" where the sign is having all tips of the fingers touch the other open hand as if catching the ball. This imagery activates other signs that are visually similar. Ormel and colleagues (2012) have found that words with pictures can activate sign iconicity.

We have yet to explore the nature of sign semantics in relation to the characters. By gaining information from the semantic portion, how much does this resemble the image and how transparent is this image with the sign? We can also compare how deaf children process those matching characters versus Pinyin. What effect does Pinyin have on word identification? Does the sign-per-syllable method established by the government facilitate the syllable-to-character matching or does it foster only Pinyin identification? Furthermore, it would be interesting to analyze reading comprehension of Chinese deaf children when the text is presented in Chinese characters as opposed to Pinyin only.

From the classroom observations, it is evident that teachers used a lot of pointing to the characters, highlighting their internal structure. Pointing appears to be an important

asset in bridging the concept of the sign with the written word. What is interesting here is that I found that whenever a teacher points to the Pinyin text on the board, it is never signed, rather it is only fingerspelled. Theoretically, the Pinyin could be signed, but this did not occur in the first or second grade classes. Two-fingered swoop together pointing also conveyed to students which characters formed a compound. I found that all three teachers used this strategy to help demonstrate compounds within the un-spaced text. Whether hearing teachers use this gesturing strategy remains to be explored. The skill of identifying compound words within a text is a learned skill (Lin et al., 2011).

Learning to Read Challenges: Interplay Between Modality and Print

The Chinese language is replete with homophones, which either hinders or slows down Chinese children reading if they are not morphologically aware. According to Yin and Rohsenow (1994), within a corpus of 21 million spoken Chinese words, a total of 5,265 characters, is narrowed down as commonly used corpus. There is an average of eleven characters that share one pronunciation. The inclusion of a tone will disambiguate some pronunciations, however, even when tone is accounted for, ambiguity still remains for an average of about four characters with identical pronunciation (Language and Teaching Institute of Beijing Linguistic College, 1986). When children hear these homophones, they will likely have trouble identifying which character the person may be referring to (Perfetti & Zhang, 1995; Zhang, Perfetti & Yang, 1999; Perfetti, Liu & Tan, 2002). When reading,spoken words with the same pronunciation are differentiated by their graphic form and when the same character is used but has multiple pronuniciations,

the reader has to figure out its meaning by the context. In some cases, the orthographic form help students reach meaning and reduce ambiguity.

For Deaf children; however, this challenge is twofold. Instead of sounding the same, deaf students face words that look the same for both signing and lip-reading. Linguistically speaking, sign language has its own homophony. Instead of words sounding the same, for deaf children the concept of signs looking the same can interfere with their processing of information. The same signs can be used for different written characters. Teachers in this study shared their frustrations when their students would be perplexed when given the same signs, which are accompanied by different mouth movements and different characters. Half of the deaf teachers suggested emphasizing the use of "mouthing" along with signing to help differentiate such sign homonyms. When they refer to mouthing, deaf teachers in the study do not mean "speaking" per se because of the known challenges of not being able to hear oneself. Rather, they are referring to moving of the lips to help deaf children see the differences. Teachers also valued this strategy as a way to map out the syllabic association of the single character order in the written compound words.

On the other hand, the mouth movement may look the same even though the spoken words share distinct sounds. Sounds such as "zh, ch, j" or "x, s" may be heard differently but look the same on the lips. Tones are impossible to identify just from reading lips. Interestingly, in the second grade classroom, the teacher would sometimes use her head to make slight tilts to show the tone or sound differences, but such movements are not prominent in the day to day living of Chinese individuals. Deaf children are not left without solutions, as accompanying signs that demonstrate meaning

will disambiguate the words and simplify the learning process. These scenarios suggest that homophone encounters are different for deaf and hearing children and that teachers and students rely on multiple modalities, including mouthing, writing, and signing, to convey and interpret meaning.

Instruction in orthographic structure awareness and word morphology. Chinese reading research shows that learning the structure of Chinese will facilitate a greater understanding of the written language (Packard et al., 2006). Current efforts in Chinese reading instruction are geared toward eliminating the emphasis on memorization and replacing it with orthographic structure awareness and word morphology. To resolve the issue of "homophony," the teaching of morphological processing of characters supports meaning differentiation (McBride-Chang, Shu, Zhou, Wat & Wagner, 2003; Packard, Chen, Li, Wu, Gaffney, Li & Anderson, 2006; Shu, McBride-Chang, Wu & Liu, 2006; Wu et al, 2009).

Deaf Chinese children would also benefit from this approach. When reading characters, could deaf Chinese children be depending more on the morphological information (relying upon the semantic radical) given their lack of auditory input and exposure to indigenous signs? With respect to hearing children, Anderson, Li, Ku, Shu & Wu (2003) found that hearing second and fourth graders were more likely to identify frequent characters that had clearer *phonetic* information in the sub-characters. Might we predict the opposite result for deaf children? Would they be more likely to identify frequent characters that possessed clearer *semantic* information? Deaf Chinese do not face the same issue of spoken homophony given that a sign provides the meaning of each

morpheme or each word? The only challenge will be when there is sign homophony when reading Chinese words.

Given the findings from the instructional reading practices in this study of elementary classroom observations, only the third grade teacher took advantage of asking students for the meaning of the basic character, which indicated that she expected deaf children to "analyze" its components prior to facing the full compound word that has the basic character, either on the right or the left. The morphemic radicals provided in the right column of the new words lists I analyzed, they were not used to help students internalize the structure. Both the first and second grade hearing teachers would only provide meaning when dealing with the compound word. This observation may have been due to the deaf students being older and being in a third grade classroom compared to a first or second grade classroom, as opposed to a difference between Deaf and hearing teachers. This issue needs to be explored, especially to see if other deaf teachers would replicate this pattern if given the opportunity to teach those younger students.

Visual processing of characters. Learning Chinese characters for deaf children involves recognizing the various components within a character. Just as Luo et al. (2013) suggested, there are two different kinds of character configuration processing-discrimination of strokes within combinations and the ability to recognize one-character morphemes as well as radicals as wholes. Deaf children are encouraged to visually discriminate characters by the similar-but-different strategy, highlighting of non-character words, as well as recognizing slight stroke differences within real character words.

Similar-but-Different Comparison Technique. A second technique was found in the classroom observations that I will refer to as the *Similar-but-different* comparison. As noted in the second grade classroom, the teacher wrote down on the blackboard two non-word characters that were slightly different visual orthographic patterns to show the similarities in strokes, but in fact these characters were non-words. This corroborates the results found in the Pak et al. (2005) study where students were asked to produce unfamiliar compound characters with familiar radicals. Since characters contain combinations of radicals, students created pseudo-words without realizing that they were not words. For teachers to explicitly show that certain combinations do not fit together is an interesting pedagogical approach. By asking students to evaluate non-words, deaf students are being exposed to both the incorrect and correct forms. Perhaps this approach facilitates character discrimination?

Visual distinctions are emphasized in both the second and the third grade classroom where the teacher used real characters that looked similar, but with a few different strokes influencing the meaning of the character. This display of similar characters provides the teacher the opportunity to point out their morphology.

Nevertheless, it appears that the teachers have not yet fully maximized morphological instruction as only four examples were found throughout the entire six classroom videorecordings. In these cases, the third grade teacher would cover up a portion of a character to elicit focusing on either the phonetic or semantic radical. As I described in the second grade new words, while many of the characters have an underlying morpheme, the teacher did not take the time to highlight the visually accessible meaning component to facilitate future recall – a skill that likely would

enhance the understanding of character structure (Packard, Chen, Li, Gaffney & Anderson, 2006).

Possible Bridging Strategies

Considering the bridging of two different languages, sign to print, the notion of chaining appears to be a robust process, perhaps universal, given the various modalities and the two languages**.**

Chaining strategies. Examining chaining through a cross-cultural lens permits us to investigate whether this kind of strategy may be universal in deaf education for bridging signed language to written script. It is noteworthy, however, that the role of fingerspelling, which is included in the chaining technique, differs in China. In the States, fingerspelling along with the written form represents the English orthography and constitutes approximately 30% of the total vocabulary in ASL narratives (Padden & Gunsauls, 2003). Fingerspelling is also viewed as a method of teaching English by both parents and teachers (Padden, 2006). While at first children may not register the mapping of handshape to letters, they will subconsciously see fingerspelled words as wholes instead of individual parts. It is only during the process of learning to read that deaf children begin to associate fingerspelled handshapes with the each letter of the English word (Padden, 2006). Fingerspelling in English has been found to be correlated with vocabulary skills and reading comprehension (Emmorey & Petrich, 2012); therefore with the constant exposure to the written alphabet, teachers and parents see the benefit of incorporating fingerspelling within the chaining technique.

Chinese fingerspelling, however, is not often used in the daily conversations of signing communities and does not represent the orthography of characters. Chinese fingerspelling is intended to map handshapes with a letter or cluster of letters of the Pinyin word, but has no relationship with the written character-based writing system. It provides the syllabic "pronunciation" of the spoken word associated with the character. Given this distinction, the question of its role in learning to read does not carry the same implications as the role of fingerspelling in learning English. The only tangible evidence from the data is that Chinese fingerspelling appears to support the reading of Pinyin, but not the reading of characters.

With this in mind, what role does Chinese fingerspelling play in learning new words or learning to read in general? If it supports the speech component then it fosters the mouthing element. Half of the deaf teachers believed in the importance of Pinyin in reading to ensure the correct syllabic formation of compounds. Deaf teachers noticed deaf children tend to mix compound characters and half of them felt that if they were to "mouth the corresponding syllables" students would be better able to identify their own mistakes. The other half believes that instruction needs to emphasize memorization of the character order within compounds. Whether deaf students would receive consistent exposure to the mouthing component outside of the educational setting remains an open question. There are no current studies that compare deaf classrooms that use Chinese fingerspelling and those that do not. Thus there is no way to determine whether mouthing benefits reading instruction. Is mouthing a form of encoding or is it an additional linguistic component that comes from knowing the spoken language to differentiate the sign homophony?

Pointing and tracing. The prevalent use of pointing is evident in all three classrooms. Almost 20% of reading instruction is incorporates pointing, either while signing or not. The analysis of pointing within a reading instruction classroom is of particular interest because of the nature of the Chinese writing system. A word in Chinese may not be as distinguishable as in English particularly because the Chinese script is not spaced and therefore knowledge of the co-occurrence patterns of character sequences is an essential skill to develop. This un-spaced text is argued to pose cognitive challenges to all young Chinese children learning to read (Lin et al., 2011). Children have been found to not always know whether a string of characters are words or whether they are part of a phrase since single characters are evenly spread out on the page and could exist as a compound character or as part of a phrase string. To be able to identify those "words" may require constant exposure. Un-spaced text requires younger students to have an understanding of the concept of a word while parsing Chinese text, otherwise comprehension will be hindered (Lin et al., 2011).

Given that a large proportion of words in Chinese are compounds, made up of character sequences, it is interesting to note that all three teachers were seen to use pointing with two fingers when pointing at a compound word. Could this type of pointing using two fingers be a way to resolve the challenges of an un-spaced text found in written materials? Studies such as Bai et al. (2008) have shown that no spacing between words slows down reading, but this does not interfere with their eventual ability to identify words with considerable reading experience. This dual pointing strategy (using two fingers to emphasize a compound word) is also reinforced by the visual strategy of underlining and circling new words. All three Deaf teachers in the elementary classrooms

spent much of the time using color-coded underlining to identify single characters and compound words as well as circling new words to help young deaf children identify the corresponding character combinations.

Given the constant need to direct students' attention to look at the teacher, the print on the board, and then back to the teacher to get the sign for meaning and the time spent on underlining and circling words, would introducing spacing of characters in text help build deaf children's concept of words as well as offer more efficient solutions for language learning? One might ask, whether auditory experience facilitates the segmentation of un-spaced words? If that were the case, then challenges does this bring to a deaf Chinese reader who is visual and cannot rely on auditory cues to parse the un-spaced text? The pointing with two fingers may be one visual way that teachers use to remind students of character sequence patterns and would be interesting to further examine its role in the learning process.

In fact, the use of gestures (including pointing) has been found to support learning for both deaf and hearing students in the US (Goldin-Meadow, Shield, Lenzen, Herzig & Padden, 2012). When pointing to the blackboard even as a placeholder, the Chinese teachers were very much engaging students with language, signing while pointing. In some cases the teachers would position their signs to a different location. For example, in the case of the first grade teacher, she would produce the sign SNOWING right on the board where the character *north* was written, to represent that snow only happens in the North. When she referred to the written character *south*, she would position the sign for SUN touching the written word on the board. This is an interesting cognitive strategy that that helps students to associate a thought to a character. Another example was found

where instead of signing near her body the teacher would sign near where the student was sitting to help students connect her sign to the text she was referring to. It was not a pointing action with the index finger, but the sign being located on the person. Since language is visually based it would appear that the deaf and hearing teachers of the deaf, in this study, are adjusting their signing to help students know where to look and narrow their focus in order to draw the connections. Comparisons between deaf and hearing teachers in how they monitor student eye gaze within their reading instructional practice would help clarify whether being deaf provides the "visual" intuitiveness that may be required in visual learning.

While pointing facilitates the redirection of the eyes, the action of tracing to memorize the character strokes is a kinesthetic as well as a visual exercise that requires the ability to see the strokes and physically perform its correct stroke sequence. Tracing reinforces writing as well as reading (Tan et al., 2005). The assumption here would be that deaf children would certainly benefit from this approach, yet only the second grade teacher took the time to trace all the single characters one by one in her list of ten words. Investigating the act of tracing on a broader national scale would shed light to whether this activity in fact helps deaf children to read and write.

Bilingual strategies. The classroom observations provided an in depth analysis of the instructional strategies. The strategies involved the following *language related strategies*:

- signing using both indigenous and government based signs,
- fingerspelling of Pinyin with one hand, and gestures to show tone when referring to Pinyin,

- *contextualized learning;* through dramatic representations to visualize learning, and using pictures and sentences for context building,
- *visual skills for word analysis strategies*; through writing on the board for clarification and introducing ideas, tracing characters in the air, covering up portions of a character to focus on a specific component, underlining, circling words in un-spaced text and color coding to differentiate Pinyin and characters, and important words.

Academic Language as a Way to Analyze Script

Given that visual learning is a growing field of research exploring how the nature of visual attention is an important factor in language development (Brooks & Meltzoff, 2002). We find evidence of d/Deaf Chinese teachers feeling the relief in being able to use sign language to expand students' thinking. Deaf teachers' childhood experiences with hearing teachers, who were not good enough in sign language, reiterate the need for accessible and academic language. Once the language is accessible, the focus is no longer on whether students can speak or whether they are following the words through lip-reading, but rather ensures they are learning content knowledge. Conveying knowledge in an accessible language, and furthermore one that is used by the deaf community, represents a *normal* language acquisition and cognitive development process that is characteristic of bilingual learners. According to second language learning theories, the foundation in a first language is critical in learning a second language (Cummins, 1984). It was evident from the classroom observations that sign language was the language of

instruction and the language the students considered as their primary mode of communication.

From the interviews, it was evident that some teachers did not view the indigenous signing of the deaf community as "academic" and assumed that signing morpheme by morpheme as in Signed Chinese was more appropriate for the classroom. The use of this government sanctioned CSL versus indigenous sign languages in the classroom still has to be further understood. When do teachers use government-based CSL and why do they choose this mode if the indigenous sign language adequately provides the meaning? Research in the West has already shown that combining signs with spoken language comes at a syntactical and semantic cost (Marmor & Pettito, 1979). While scholars in the field of sign language argue that deaf community sign languages can be the academic language, there is still work to be done regarding how to implement a bilingual instructional model in deaf education. Many scholars have addressed the critical need for academic language and a higher level of discourse in deaf education classrooms (Harris, 2011; Kuntze, 2001). Especially important will be studies of student learning processes and reading outcomes as a function of different pedagogical approaches.

Analyzing discourse strategies would be the next step. Deaf Chinese teachers shared a lot of similarities with U.S. Deaf educators with respect to the type of discourse used in deaf education (Livingston, 1997). For example, how they use language to elicit deeper thinking such as contrasting with a negative or incorrect example to see if students are responding to inaccurate information, and making meaning explicit by adding more information than the text provides as a way to expand children's world knowledge.

It is important to elaborate on what enables deaf children to expand their thinking. When the instruction is provided in sign language, we can examine whether teachers use scaffolding to support students' learning of the structure of the Chinese language. Indeed, the classroom observations indicated that teachers spent a lot of time going over words, putting them into context, and allowing the students to construct their own examples. Recall that only one of the deaf teachers at this school had any formal training in teaching (all were trained in computer science). It is striking that intuitively all the teachers used scaffolding techniques in their reading instruction. The one teacher with training also reported incorporating her knowledge of the history of the formation of Chinese characters into her teaching. Even so, the interviews revealed that while tapping into some intuitive strategies, far too many hearing teachers in the past were unable to sign at a higher academic level and possibly lost the opportunity to develop the students' more complex thinking skills.

This school has fairly successfully incorporated both signed and spoken languages in instruction (see Garate, 2009, for a discussion of bilingual deaf education). Both deaf and hearing teachers are finding these bilingual strategies to be key in fostering identity and pride. Deaf teachers, being the ones who experienced learning to read the same written language and facing all the frustrations, can perhaps now be considered ambassadors to reading,. Through reflection on their past experience and current practice, Deaf teachers contribute to this discussion and in fact are agents for change. Their insights are valuable in understanding what makes visual sense to deaf learners as opposed to narrowly focusing on only the spoken language which students experience as an incomplete form.

Deaf teachers intuitively offer students intellectual interaction, but due to a lack of pedagogical training in curriculum and instruction, a lack of community-engaged research, and a lack of trust from administrators in the field of education, many teachers may feel as though their contributions are not important or valued. It is also important to recognize that the sample of deaf teachers is small and the teaching experience varied, which makes it difficult to generalize. Novice teachers may not have accrued enough experience to reflect deeply on their practice and the observed patterns in their classes. Regardless, the insights of all teachers are valued especially as some are closer to their own childhoods, learning to read.

Early Literacy Interventions Strategies and Training Opportunities

As a European American researcher, my role is not to change Chinese traditions; however, I may suggest some ideas that might be not only beneficial to society, but also to deaf Chinese students. Culturally, the responsibility of teaching literacy has always been delegated to school teachers, who are trained professionally in their fields, but as discussed earlier, many deaf teachers have not been trained in the field of pedagogy (and, in fact, there really are no formal teacher training programs specific to teaching the deaf using the bilingual approach). Thus, to ask deaf teachers to reflect on their practices and possibly implement new solutions to problems may not be an approach they have previously experienced. Many of these deaf teachers are teaching based on their intuition and perhaps based on how they have been taught themselves. If teachers were given the opportunity to attend workshops on teaching reading and engage in reflective practice, we may see greater promotion of bilingual strategies and possibly improvements in

student dual language learning outcomes. With the current research findings of the importance of teaching word morphology and orthographic structure awareness, deaf teachers would benefit from this explicit and enriching training.

Another prevalent cultural belief is that parents view the teacher as the primary instructor for literacy activities. Perhaps if parents engaged in storybook sharing at an early age, deaf children may develop a motivation to read stories and be more adequately prepared for school entry. McBride-Chang and her colleagues (2007) demonstrated that when parents were involved in dialogic reading activity with their deaf and hard of hearing children, they improved their comprehension. With sign language in the home, greater chances of being understood by deaf children will also increase comprehension as opposed to oral only book sharing. Books, seen as sacred texts, often contain moral stories, but few are designed for facilitating literacy in young children. Books need to be seen as meaningful texts that can help deaf children use literacy for their own purposes, especially to write back and forth with hearing strangers when their voices cannot be heard.

The growing number of books that are more appropriate for younger children may also offer significant literacy implications among the deaf. Parents are clearly willing to dedicate many hours at home for training their deaf child's speech. If parents were as willing to spend time sharing books (visually based print) and practicing strokes, their child may enter school with a more solid foundation for learning and hopefully reduce their risk of language delay. Book sharing of children's stories will indeed facilitate reading development and character identification. In recent years, children's books have

now reached Chinese bookstores throughout Mainland China. Will literacy instruction responsibilities gradually be shifting from teacher to parent?

Future Implications

This study clearly displays the complexities of language and literacy learning for deaf children in China. Learning to read involves knowing two languages – one that is spoken and one that is signed. Pinyin is associated with the spoken language, but deaf children are still taught to read this system. Whether Pinyin proficiency helps deaf children read Chinese characters remains open to question -- particularly when much of the Pinyin instruction appears to focus on pronunciation purposes while character instruction focuses on making meaning in the reading process. Some Deaf teachers think that knowing Pinyin will help with the syllable identification, which is associated with the order of the characters in compound words. Compound words appear to be a challenge for deaf students as they often reversed the order sequence. The question is why? What can we learn from those errors in their learning process? One way to investigate this question is to have deaf teachers gather together and initiate focus group discussions. Practice informs theory and theory informs practice. Deaf teachers are experienced informants who may offer critical insights. Still, taking the chance to explore alternative pedagogies (especially those based on deaf teacher's own CSL), and possibly departing from the national standards curriculum, is a great risk.

To conclude, even though this study only looks at one bilingual school, the results may or may not reflect the wider school population in Mainland China. With the strong standardization of educational practices imposed by the centralized government, we can

perhaps surmise that there may be common experiences in Chinese instruction with deaf children. Deaf children in China do have the opportunity to learn a written system that inherently is more *visual,* but the reading process is clearly one that is embedded in linguistic, cultural and educational systems that reflects the greater society's values and traditions.

The emphasis on using sign language as the language of instruction provides bridging opportunities to text and enhances students' metalinguistic awareness, specifically by pointing out word morphology and orthographic structure awareness. Chaining techniques appear to be language dependent. For example, Pinyin chaining connects the alphabetic text to Chinese fingerspelling, whereas character chaining utilizes signs, not fingerspelling. While much of the classroom dynamics facilitates a rich language environment, the Chinese bilingual deaf education context also incorporated multilayered instructional sequences that illustrate multiple pathways to bridging signed and spoken languages. Questions regarding the role of mouthing and its influence on learning to read characters still need to be explored.

Finally, based on the teacher interviews and observations of classroom practices, we are also left with the question of the usefulness of Pinyin in reading instruction for d/Deaf students. Similarly, does the intensive training on word morphology and orthographic structure awareness benefit or enhance reading performance of Deaf Chinese students through the academic use of indigenous sign language? Only Deaf Chinese teachers and a team of culturally and linguistically aware researchers can answer such questions.

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Appendix A

Interview Questions

Interview Questions 面试问题

The interview will address literacy and school experiences, exposure to different Chinese scripts, linguistic or social influences- see questions used in the interview below:
面试将会对付读写能力和学校经验，受到不同的汉字，语言学或者社会影响：见下面的问题使用如下：(The interviewee will be provided breaks unless otherwise. 除非另外规定将会让被面试者休息。)

Section A: Schooling experiences (Deaf teachers) 第一：学校经验（聋教师）

1. Can you describe your school experiences? 你能不能描述你的学校经验吗？
    a. What type of school environment you were in (mainstream, deaf program in a larger hearing school district, deaf school)
    你的学校环境主要是什么形式（将残障学生纳入学习的主流，正规学校其中有制定聋课程计划，聋校）
    b. Which languages were you using in the classroom, in the schoolyard, at home
    在教室，校园，在家，你正在使用哪种语言？
    c. Did you face any language and educational challenges? Explain.
    你遇到语言和教育的挑战吗？解释。
    d. How did you overcome these challenges?
    你如何克服这些挑战吗？
    e. Did you feel challenged academically?
    在学业上，你感觉挑战吗？
    f. What kinds of frustrating experiences did you have?
    你有没有感受什么样的沮丧吗？
2. Describe the school culture.
    描述学校文化
    a. What did the classroom look like?
    看来什么样的教室？
    b. What kinds of expectations did your teachers have of you?
    你的老师期望你持有什么样的经验吗？
    c. Number of students in the classroom, student of mixed ages in the same class,
    同学们在教堂上，混合年龄的同学在一个同班吗？
    d. What did the schedule look like?
    时间表是个什么样？

e. How did you learn materials?
你是怎么学习素材？

3. Describe the learning materials you used at school.
描述你在学校学习素材使用。
4. How did the people around you view your deafness? What expectations did they have of you?
你周围的人观看你的耳聋（听障）？他们对你有什么期望吗？
   a. Society/Neighbors/Community 社会／邻居／社区
   b. Family 家庭
   c. Class peers 同辈人等级
5. What was the extent of interaction with hearing peers and deaf peers you had growing up?
你在成长中和健听和聋同等人互动交流是什么？
6. Upon graduation, were you given choices in what you majored in? Describe the choices you had.
毕业后，你选择的专业是什么？描述你已经选择了这个专业。

Section B: Literacy and Schooling experiences (both Deaf and hearing teachers of the deaf)第二： 读写和学校经验（两者聋教室和健听教师）

   a. Can you describe your literacy experiences at home as a very young child? 你能不能描述当你小时候在家，你的读写经验。
   b. Experiences with books (what kind of books, materials)
使用书方面的经验 （什么种类的书，素材）
      i. How often were you exposed to these materials?
你怎样经常接触这些素材吗？
      ii. How old were you when you started to read?
你几岁时开始读书？
      iii. What challenges did you face with reading as a young child?
当你小时候，你什么面对阅读挑战？
   c. Experiences with writing for different purposes
写作经验与不同的用途
      i. What kinds of writing activities would you do and for what purpose?
请问你写作文目标时什么？
      ii. How early did you start writing?
你最早如何开始写作？
      iii. What challenges did you face with writing as a young child?
当你小时候，你面对写作挑战是什么？

2. Can you describe a typical reading lesson in a first grade classroom from your past experiences? Give examples and feel free to elaborate.
你能不能描述当你在一年级的课堂上阅读课经验？举例说明与随便阐述。
   a. What would the teacher do in the lesson?
请问教师在课堂上做什么？

b. What would the students do?
请问学生们做什么？
c. What kinds of homework would be given after this type of lesson?
课后留下什么样的作业？

3. Which literacy activities were the most influential and why?
哪种文学活动大部分是最有影响的？ 为什么？
4. Can you share with us who had the most influence on your literacy experiences (reading and writing experiences)? Explain what this person did and why you found it to be influential.
你能和我们分享谁在文学经验种最有影响的（阅读和写作经验）？解释这个人做到了和你为什么找到了最有影响的的用途？
5. Describe your literacy experiences with various scripts (traditional, simplified, Pinyin)
描述你的文学经验使用不同的字体（繁体字，简体字，拼音）
6. What Chinese script is most helpful to you and why?
什么是汉字是对你最有帮助的？为什么？
7. Do you use writing as a way of interacting with other members?
你是否使用写作方式互相影响其他成员吗？
a. What makes you decide to use writing instead of the spoken language or sign language?
什么让你决定使用写作替作讲话（口头语言）或者手语？
b. Which scripts do you most commonly use on a daily basis?
平时你大部分通常使用哪种字体？
8. What instructional strategies did you find helpful in your past schooling experiences that helped you with learning how to read Chinese scripts and why?
在你以前的学校教育经验中学习如何阅读汉字，你找到了对教学策略最有帮助是什么？为什么？

Section C: Now that you are a teacher for the deaf, 第三： 现在你是为聋生担任教师

1. Do you see yourself teaching in the same manner as you were taught? Explain how and what you past instructional strategies do you use now.
你看到自己在教学中以同样的方式教书？解释说明如何自己过去的教学策略，和目前使用的。
2. Does a bilingual classroom (Chinese and CSL) affect how you teach reading?
当一个双语教育课堂（汉字和中国手语）影响你教如何阅读吗？
3. What do you think is the best teaching practice
你认为最好的教学实线是什么？

What challenges do you face with your students as far as literacy skills? How do you go about resolving those issues? 你怎样面对你的学生们的文学技能挑战？你如何处理解决这些问题？

Appendix B

Grounded Theory Coding Sheet: Initial Coding, Memos & Themes

	COMMENTS		Initial Coding	Memos	Themes
193		Do you teach your students the same way you were taught?			
194	yes it is the same.		believing her teaching practices is the same as past teaching practices	From reading about confucianism, it is not surprising that instruction is a valuable and sacred component. Teachers are valued	Instruction as a value to be passed on
195		the same or did you make changes?			
196	I took what she gave me and I teach the ones I have.		takingwhat was given and passing it on to her students	In traditional education- knowledge is something we pass on from generation to generation	Knowledge Transfer
197		What changes in particular do you notice now that you teach them?			
198	Critical Point	well I sign and I use the equipment we have now. Back then we didn't have anything. We would sign write it down it was tiring but now that we can display on the wall, now that we have movies, we have scanners etc... we can teach more the students will be able to grow more intellectually back then the students weren't very good, now they are. The students are now enlightened back then xxx 2:39:24 something about complicated? the studying seems tedious, the mind wasn't as good but now the students today are enlightened and they are exposed to TV, the projectors and that is what teaches them too, computer access has increased their thinking skills. Back then we didn't have any of those...	signing to her students, using technological equipment.comparing the past with the present, stating that instruction can be accompanied with technology, believing that students are more enlightened	describing the richness of access today compared to the past- lack of resources, lack of signing now those resources are available then the possibility of growing minds exist	Sign language as the medium of instruction Use of technology to show visual resources
199		so how would you teach your students? Would you speak or sign?			
200		I think we should teach a little speaking and a lot of signing. Instruction should be in sign language and a little speech but few. A lot of signing is important	emphasizing the importance of sign language as the medium of instruction	She was brought up with speech and thinks speech as a valuable supplement	Language allocation
201		why not so much speech? Were you taught to speak as a child?			
202	Critical Point	speech well first of all they are deaf they can't hear but when they sign their minds expand so much more. When they speak, they are paying attention but they aren't getting as much information than in signs. Therefore their minds are progressing slowly when exposed to speech. When you have a lot of signing and use all the resources possible, all of the students are exposed to so much more and their minds open up. when you speak only, the students will just stay there wondering what you said...they fall asleep. I dont like that. The more you sign the more active they are, the more they will pay attention to what the teacher has to say and will enjoy it. Their hearing is bad so they use sight to see what's going on... They see signing xxx 2:40:25- 2:40:30 mouth movement with sign is good. combined.	emphasizing that deaf people can't hear and do not have access to spoken information stating that sign language information is accessible and provides opportunities to expand the mind	Seeing language expands the mind- access to resources and language enhances thinking She adds that both speaking and signing at the same time is good	Language accessibility provides cognitive growth and interactive dialogues Speechreading as hindering intellectual growth
203		Is it possible to learn to read without having Pinyin?			
204		you mean no pinyin? Yes you can.. They can... Without Pinyin and read they can do that. But if the teacher uses both the mouth and signs, but if they sign without moving their lips, they don't understand, but if the teacher signs and uses her lips, both at the same time then they can see xxx 2:41:06	stating that there are students who can read without Pinyin	Needs clarification regarding what she meant by the students when they don't move their lips they don't understand- what don't they understand?	Reading without Pinyin
213		What do students struggle with when learning characters?			
214		mixing up the characters switching them so you would have a series of characters and they would put it in the wrong sections	identifying students errors with characters	Students mix characters- What are the reasons for such mixing? This will help better understand the processing of characters	Processing compound characters
215		How do you show them how do you analyze the problems to explain them			
216	2:43:21	I just teach them and warn them those two characters are the same and see the four in its order. To switch it is wrong or move it around is not correct, you have to see it all four together the correct way, when one puts it in the wrong order, I teach them that. Same of them they are like ohh I understand. there are some who improve a little bit.	teaching them the differences between characters. Showing them the wrong and correct characters	Teachable moments- how generalizable can this strategy be across words Here she is giving non words and words examples to show what is permissible and what is not	Instructional strategies related to Character identification

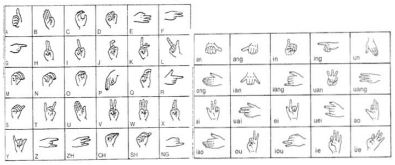
Appendix C1

Literacy Demonstration Chart Items

Speech Based Strategies

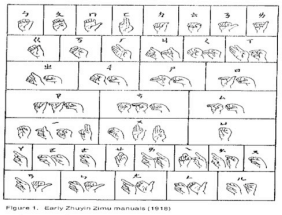
Lipreading

Chinese Finger Syllabary (Pinyin)



One hand Two hands

Zhuyin Fingerspelling

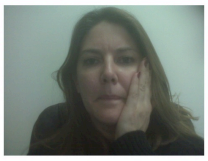


One hand Two hands

Chinese Finger Syllabary has all phonemes of Putongua. Syllabic representations with Chinese finger syllabary -use of either one or two hands. With 2 hands, the R hand is the onset (k-), the L hand the final syllable (uang) ="kuang". If one hand is used, then the phonemes are used consecutively. Zhuyin is the hand alphabet used in Taiwan stroke based.

Sign Based Strategies

Home signs



Sign Language

Gestures

Gestures are hand movements used by everyone (can be during speech) using hands and the body to communicate messages. Home signs are invented hand signs not used in the standard CSL lexicon, brings consistency of communication in the home.

Written Based Strategies

Simplified Characters

妈妈

Traditional Characters

媽 媽

Written Pinyin

mā ma

Writing on the palm

Tracing in the air

Image Based Strategies

Pictures

Real Life Pictures

Appendix C2

Literacy Demonstration Chart Results

	Speech Based Strategy						Sign Based Strategy					
	Lipreading		Fingersyllabary		Written Pinyin		Home signs		Gestures		Sign Language	
Participant	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*
801	3	3	2	2	2	2	0	0	0	0	3	3
802	2	0	3	3	3	3	3	0	0	0	2	3
803	2	3	3	2	3	2	0	0	1	0	2	3
805	3	0	3	2	2	2	2	0	3	0	1	3
807	3	3	0	0	2	2	2	2	1	1	2	3
808	0	3	0	2	3	2	0	0	2	0	0	3

	Written Based Strategy						Image Based Strategy					
	Simplified		Traditional		Pinyin		Drawings		Real Life pictures		Pictures	
Participant	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*	*Past*	*Present*
801	2	2	1	1	2	2	3	3	0	0	0	3
802	2	2	0	0	3	3	3	3	0	3	0	3
803	2	2	1	0	3	2	3	3	3	3	0	3
805	2	2	0	0	2	2	2	1	0	1	0	1
807	3	3	0	0	2	2	0	0	0	3	0	3
808	3	2	0	0	3	2	1	0	0	0	1	3

Note: Ratings 0- no priority at all, 1- low priority use, 2- mid priority use, 3- high priority use

Appendix D1

Informed Consent Documents – Teachers' Interviews

UNIVERSITY OF ILLINOIS RESEARCH PROJECT

PHASE 2 A: Teachers of the Deaf: School and Literacy Experiences in China: Interviews

Dear Teacher of the deaf,

I, Gabrielle Jones, am currently a PhD student at the University of Illinois Urbana-Champaign. As a Pre-doctoral Fellow for the Visual Language and Visual Learning (VL2) Center, based at Gallaudet University. I would like to extend an invitation to you to participate in this interview research project called: Teachers of the Deaf: School and Literacy Experiences in China. Since you have had the benefit of living and experiencing school life in China and learned the Chinese writing system, we would like to know more about your overall school and literacy experiences as a child.

This research will help us understand the various ways that hearing and deaf individuals learn to read print particularly in Chinese, a different language than English. Dr. Jenny Singleton from the University of Illinois Urbana-Champaign will assist me as supervisor and mentor in this research endeavor.

You have the freedom to use whatever communication mode. You can do the interview with a translator and use Chinese sign language or read the questions and respond in written Chinese. The purpose of this interview is NOT to evaluate your skills but to learn from your experiences as a reader and writer in school and your experiences as a teacher of the deaf. If you do not feel comfortable, you can stop and not complete the interview. If you want to use sign language, I will ask you for permission to videotape the interview with you. If you prefer no videotaping, that is fine, I can take notes during the interview.

What you need to know:

- Your identity will be kept confidential in all published materials or presentations related to the research project. All of our videotapes, transcripts, and consent forms are kept secure and are locked in laboratory facilities at the University of Illinois. If you decide presently or in the future to allow the researcher to use any part of the videotape in a research or educational presentation, there will be possible risks that you may be identifiable within the audience due to the small size of the Deaf community (See risks for more details). All videotapes will be destroyed after 10 years.
- Participation in this research project is voluntary. You have the right to withdraw from this research project at any time. If you choose not to participate, it will not affect your future relationship with XXX School for the deaf, or the researcher, or the University of Illinois.

- This project is not an evaluation of you. We value your school and literacy experience as a Teacher of the deaf and we recognize that every person's experience is different and we respect the cultural and linguistic differences that may exist.

PROCEDURE:

I plan to initiate an hour and a half interview session with you. During the first hour, I will show you some questions in written Chinese and you can feel free to either respond in written Chinese or in Chinese Sign language. During the last half hour, I will also provide some visual aids to help you explain more in detail about your early language and literacy experience. Both sessions will be videotaped, unless you prefer to conduct the entire interview in written Chinese.

RISKS

For you, we do not anticipate any risks for participation beyond those risks that exist in everyday life and the possible feelings of sadness or distress concerning memories when discussing your school and literacy experiences. If a question makes you feel uncomfortable, we can certainly skip to the next question. We do our best to make these questions as broad as possible. Specific information about people and places will be kept confidential, so no identifiable information would be used in any research presentation.

If you choose to give permission to the researchers to use the videotapes for educational or research presentation purposes, you will be given the opportunity to review the video first. Still, it is possible that your face will be identifiable on the videotape and someone in the audience may recognize you. We always explain to our audiences the importance of respecting your confidentiality. You have the right to request at any time that the researcher stops showing any video of you in an educational/research audience.

BENEFITS

It is our aim to better understand reading practices across various written forms and the cultural and linguistic influences on reading practices along with problems that may interfere with the learning process. We hope to better understand, from a Chinese perspective, what practices and strategies were helpful in learning to read. This research will benefit all researchers/educators and parents by enhancing our understanding of deaf children's needs, and helping us to improve reading education and language support services.

COMPENSATION

To thank you for participating in our research project, you will be given the choice of school supplies or text materials for participating up to two hours in this interviews If you begin participation in the study but decide to discontinue participation at some point, you will be still be given the choice of school supplies or text materials.

Thank you for participating. You will be given a copy of this consent form.

If you have any further questions, please feel free to contact Principal xxx at xxx or directly to the Primary Research Investigator Dr. Jenny Singleton (+0-11 217-244-1098; E-mail: singletn@illinois.edu) or myself, Gabrielle Jones E-MAIL: jones44@illinois.edu).

If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Illinois Institutional Review Board at +011 217- 333-2670 (collect calls will be accepted if you identify yourself as a research participant) or via email at irb@illnois.edu.

Consent to Participate in the Interview

_____**YES**, I agree to participate in the research project described in the attached letter. The project involves one videotaped interview of an hour and 30 minutes. I understand that I can withdraw at any time.

_____**YES**, I agree to let the researcher, Gabrielle Jones, contact me again through email, Skype, iChat, or whatever means, that best suits me.

The best way the researcher can contact me is via :

❑ email _____ ❑ iChat screename : _____

❑ Skype _____ ❑ in person in my office _____

_____ **NO**, I do not want to be videotaped. I understand that I can do the interview without being videotaped.

Video Viewing Approval (choose all that apply)

_____ **YES**, I give my permission for Gabrielle Jones, and her faculty research supervisors at University of Illinois at Urbana-Champaign, to view my interview videotape. These researchers are trained to keep all data confidential.

_____ **YES**, I give my permission for my interview videotape to be viewed by other members of the Singleton research group at University of Illinois during discussions. The researchers are trained to keep all data confidential.

_____ **NO**, I do not want anyone to see my interview videotape. Please destroy the videotape after the interview is done.

Video Display at Research and Educational Presentations

_____ **YES**, I agree that Gabrielle Jones or Dr. Jenny Singleton can contact me again in the future to show me a part of my interview videotape to ask my permission to use it for a presentation or educational lecture. If YES, please enter preferred contact information on other side of this page	_____ **NO**, I do not want any of my interview videotape to be shown at a research conference or to an educational audience. Please do not contact me about this in the future.

_____ _____

Signature Date

伊利诺伊大学研究项目 阶段 2A：聋哑学生的老师：中国的学校生活和识字经历：采访

尊敬的聋哑学生的老师：

我的名字是 Gabrielle Jones. 我现在是美国伊利诺伊大学香槟分校教育心理学系的博士生。作为高立德大学（Gallaudet University）的视觉语言与视觉学习中心（VL2）的学者，我想邀请您参加这次采访。这次采访活动的题目是“聋哑学生的老师：中国的学校生活和识字经历”。由于您有在中国生活和体验学校生活、学习汉字的经历，我们想了解您童年时期的学校生活和学习读写汉字的经历。

本次研究会帮助我们了解聋哑人学习认读中文的各种方式，了解他们如何学习这种与英文完全不同的语言。在本次研究项目中，来自伊利诺伊大学香槟分校的 Jenny Singleton 博士会作为我的指导老师。

您有选择您喜欢的交流方式的权力。在采访中，您可以通过译员的帮助、使用中文手语，也可以通过书面的方式回答问题。本次采访的目的不是测试您的技能，而是了解您在学校的读写经历以及您作为一位聋哑学生的老师的经历。如果采访中的任何部分让您感到不适，您可以随时退出采访。如果您希望使用手语，我想请您允许我对这次采访进行录像。如果您不愿意被录像，也是完全可以的，我将在采访中记录一些笔记。

您所应该了解的

- 您的身份不会在任何与本次研究相关的公开发表材料或者报告中被透露。我们会在伊利诺伊大学的实验室中妥善保管所有的录像带、笔录、同意书。如果您现在或者将来同意我们在一些研究性或者教育性的报告中使用录像的部分片段，那么您将有可能会被观众认出来（因为聋哑人的圈子很小）。所有的录像都会在 10 年后被销毁。
- 您参加本次研究项目是出于自愿的。您随时有权利从本次研究项目中退出。如果您选择不参加本次研究项目，您与 xxx 聋哑学校的关系、与调查者本人的关系、与伊利诺伊大学的关系都不会受到任何影响。
- 本次研究项目不是一次对您的测评。我们重视您作为聋哑学生的老师的经历，我们也认识到每个人的经历都是独特的。我们尊重可能存在的文化、语言差异

。

步骤

我计划进行为时一个半小时的采访。首先，我将会以书面的方式问您一些问题。您可以用汉字或者拼音回答，也可以使用手语回答。在后半个小时中，我将提供一些教具帮助您更详细地解释您早期学习语言和文字的经历。这两个部分都将会被拍摄。如果您愿意以书面的方式进行所有的采访环节，我们将不会进行录像。

风险

您来说，没有任何除了日常生活中所会遇到的风险以外的风险。您在叙述您的学校生活和学习读写的经历时可能会触发一些感伤或者痛苦的回忆。如果您不方便回答某一个问题，我们可以跳过那个问题。我们会尽力提一些较为笼统的问题。关于人名、地名的具体细节都将会被保密。我们不会在研究报告中使用任何可以认证您身份的信息。

如果您同意调查者在教育性或者研究性的报告中使用录像，您将会有预览录像的权力。不过，您的脸还是有可能会被观众认出来。我们会对观众强调尊重您的隐私的重要性。您也有权力随时请调查者停止向观众播放您的录像。

益处

我们的目标是更好地了解不同的书写符号的学习过程，以及文化因素和语言因素在阅读教学中所起的作用。我们希望能更好地从中国的视角了解什么策略是对学习阅读有帮助的。这次研究将帮助研究者、教育者以及家长了解聋哑儿童的需求，并帮助我们改善阅读教育和语言服务。

报酬

为了感谢您抽出两小时参与我们的研究项目，我们将赠送文具或者书籍给您。如果您同意参加我们的研究项目，但是决定中途退出，您仍然可以得到我们提供的赠品。

感谢您的参与。我们将提供一份同意书的副本给您。

如果您有任何问题，请与 xxx 联系（电话：xxx）或者直接与研究项目负责人 Jenny Singleton 博士联系（电话：+0-11 217-244-1098; 电子邮件：

singletn@illinois.edu），或者与我本人 Gabrielle Jones 联系（电子邮件：jones44@illinois.edu）。

如果您就您作为被试的权力有任何问题、顾虑，或者不满，请与伊利诺伊大学机构审查会联系（电话：+011 217- 333-2670，电子邮件：irb@illnois.edu）

同意参加采访

_____是，我同意参加上述研究项目。本次研究项目涉及一个半小时的采访录像。我明白，我随时有退出的权力。

_____是，我同意调查者 Gabrielle Jones 通过电子邮件、Skype、iChat 或者其他任何我方便的方式跟我联系。对我来说，最方便的方式是：

❑ 电子邮件 _____ ❑ iChat 用户名: _____

❑ Skype _____ ❑ 在办公室面谈 _____

_____不，我不愿意被录像。我明白，在采访过程中可以选择不被录像。

观影许可（请选择所有符合您的情况的）

_____是，我同意伊利诺伊大学香槟分校的 Gabrielle Jones 和她的指导老师观看录像带。他们将确保录像带的保密性。

_____ 是，我同意伊利诺伊大学香槟分校的 Singleton 研究小组观看我的采访录像。他们将确保录像带的保密性。

_____不，我不希望任何人观看我的采访录像。请在采访结束后将录像带销毁。

在研究性和教育性报告中的录像播放

_____是，Gabrielle Jones 和 Jenny Singleton 博士可以在将来继续联系我，并在经过我的允许之后在教育性的讲座中播放录像的片段。如果您选择了“是“，请在反面填写联系信息。	_____不，我不希望我的录像带在研究会议或者教育性的场合中被播放。请不要在在将来询问我关于公开播放录像带的事宜。

签名 _____ 日期 _____

Appendix D2

Informed Consent Documents – Classroom Observations

UNIVERSITY OF ILLINOIS RESEARCH PROJECT
PHASE 2 A: Teachers of the Deaf: School and Literacy Experiences in China: Classroom Observations

Dear Teacher of the deaf,

I, Gabrielle Jones, am currently a PhD student at the University of Illinois Urbana-Champaign. As a Pre-doctoral Fellow for the Visual Language and Visual Learning (VL2) Center, based at Gallaudet University. I would like to extend an invitation to you to participate in this research project called: Teachers of the Deaf: School and Literacy Experiences in China. Since you are presently teaching deaf children and you have agreed to Principal XXX's invitation to allow me to observe your classroom.

This research will help us understand the various ways that deaf individuals learn to read print particularly in Chinese, a different language than English. Dr. Jenny Singleton from the University of Illinois Urbana-Champaign will assist me as supervisor and mentor in this research endeavor.

A camera will be placed in the back of the room and please provide suggestions or recommendations for where you wish the camera to be to avoid any interference with your classroom. The researcher will arrive in the timeframe you want her to arrive. The researcher will be taking notes and may have some questions to ask after the lesson is over.

What you need to know:

- **Your identity will be kept confidential** in all published materials or presentations related to the research project. All of our videotapes, transcripts, and consent forms are kept secure and are locked in laboratory facilities at the University of Illinois. If you decide presently or in the future to allow the researcher to use any part of the videotape in a research or educational presentation, there will be possible risks that you may be identifiable within the audience due to the small size of the Deaf community (See risks for more details). All videotapes will be destroyed after 10 years.

- **Participation in this research project is voluntary**. You have the right to withdraw from this research project at any time. If you choose not to participate, it will not affect your future relationship with xxx School for the deaf, or the researcher, or the University of Illinois.

- **This project is not an evaluation of you**. We value your school and literacy experience as a Teacher of the deaf and we recognize that every person's experience is different and we respect the cultural and linguistic differences that may exist. If you do not feel comfortable, you are free to inform the Principal that you wish the researcher not to be present or film the classroom.

RISKS
For you, we do not anticipate any risks for participation beyond those risks that exist in feelings of nervousness and awkwardness at being videotaped. These feelings may affect how you perform and if they interfere with your daily performance, please inform the researcher right away. We do our best to make the camera as far away as possible to not disrupt your classroom, but if circumstances make you unable to function normally, the filming will stop. Specific information about your students will be kept confidential, so no identifiable information would be used in any research presentation.

If you choose to give permission to the researchers to use the videotapes for educational or research presentation purposes, you give permission to the Principal to review the video first. Still, it is possible that your face will be identifiable on the videotape and someone in the audience may recognize you. We always explain to our audiences the importance of respecting your confidentiality. You have the right to request at any time that the researcher stops showing any video of you in an educational/research audience.

BENEFITS
It is our aim to better understand reading practices across various written forms and the cultural and linguistic influences on reading practices along with problems that may interfere with the learning process. We hope to better understand, from a Chinese perspective, what practices and strategies were helpful in learning to read. This research will benefit all researchers/educators and parents by enhancing our understanding of deaf children's needs, and helping us to improve reading education and language support services.

COMPENSATION
To thank you for participating in our research project, your school will receive monetary funds to purchase books and supplies for your classrooms.

Thank you for participating. You will be given a copy of this consent form.

If you have any further questions, please feel free to contact Principal xxx at xxx or directly to the Primary Research Investigator Dr. Jenny Singleton (+0-11 217-244-1098; E-mail: singletn@illinois.edu) or myself, Gabrielle Jones E-MAIL: jones44@illinois.edu).

Should you have any questions concerning research subject's rights, you can contact Anne Robertson (arobertsn@illinois.edu; +0-11 217-244-0515 or the University of Illinois Institutional Review Board at the University of Illinois at Urbana-Champaign +011 217-333-2670 or E-mail: irb@ illnois.edu.

Consent to Participate in the Interview

_____**YES**, I agree to participate in the research project described in the attached letter. The project involves the researcher taking notes and videotaping my classroom. I understand that I can inform the researcher to stop filming at any time.
_____**YES**, I agree to let the researcher, Gabrielle Jones, contact me and the Principal to review the video through email, iChat, or videophone or whatever is the best means. The best way the researcher can contact me is:
❑ email _____ ❑ iChat screename : _____
❑ VP # _____ ❑ in person in my office _____

Video Viewing Approval (choose all that apply)

_____ **YES**, I give my permission for Gabrielle Jones, and her faculty research supervisors at University of Illinois at Urbana-Champaign, to view my classroom videotapes. These researchers are trained to keep all data confidential.

_____ **YES**, I give my permission for my classroom videotapes to be viewed by other members of the Singleton research group at University of Illinois during discussions. The researchers are trained to keep all data confidential.

_____ **NO**, I do not want anyone to see my classroom videotapes. Please destroy the videotape after the classroom observation is done.

Video Display at Research and Educational Presentations

_____ **YES**, I agree that Gabrielle Jones or Dr. Jenny Singleton can contact me and my principal in the future to review parts of my classroom videotape for a presentation or educational lecture use. If YES, please enter preferred contact information on other side of this page	_____ **NO**, I do not want any of my classroom videotape to be shown at a research conference or to an educational audience. Please do not contact me or the principal about this in the future.

_____ _____
Signature Date

Appendix D3

Informed Consent Documents – Parents

UNIVERSITY OF ILLINOIS RESEARCH PROJECT
Research PHASE 2A: School and Literacy Experiences of Deaf Chinese Students: Classroom Observations

Dear Parent,

My name is Gabrielle Jones. I am currently a PhD student from the Department of Educational Psychology at the University of Illinois Urbana-Champaign in America. I am also a pre doctoral fellow with Visual Language and Visual Learning (VL2) located at Gallaudet University. My advisor Dr. Jenny Singleton (who has deaf parents herself) and I would like to include your child along with his or her classmates at XXX School for the deaf in a study of how reading is taught in a deaf classroom.

Since deaf children around the world are learning different writing systems, our goal is to better understand the unique Chinese culture within the classroom and how deaf children learn Chinese. This research will help us understand the various ways that deaf individuals learn to read print particularly in Chinese, a different language than English. Dr. Jenny Singleton from the University of Illinois Urbana-Champaign will assist me as supervisor and mentor in this research endeavor.

If you child takes part in this study, he or she will be videotaped and observed in a normal day classroom starting from May 9th to May 30th 2011. Your child's face will appear in the videotape. This informed consent is to let you know that your child's participation is completely voluntary.

What you need to know:

- Your child's identity will be kept confidential in all published materials or presentations related to the research project. Your child's real name will not appear in any of our videotapes, images, and transcripts, but we will use a pseudonym. All research materials including consent forms are kept secure and are locked in laboratory facilities at the University of Illinois. If you decide presently or in the future to allow the researcher to use any part of the videotape with your child present in a research or educational presentation, there will be possible risks that your child may be identifiable within the audience due to the small size of the Deaf community (See risks for more details). To maintain your child's confidentiality, videotapes will be destroyed after 10 years from the time this project has been initiated.
- Participation in this research project is voluntary. You have the right to withdraw your child's participation from this research project at any time. We do not anticipate any risks associated with participating. If you choose not to participate, it will not affect your relationship with XXX School for the Deaf.

- <u>This project is not an evaluation of your child</u>. We value your child's school and literacy experiences and we recognize that every child's experience is different and we respect the cultural and linguistic differences that may exist.

We will have a Parent meeting so you can meet me and ask me questions about the research and at the end of the meeting, if you agree to participate, I will ask you to please fill out the form below if you agree to participate in this study and return to your teacher or the principal at XXX School for the Deaf.

RISKS

For your child, we do not anticipate any risks for participation beyond those risks that exist in everyday life and the possible feelings of overexcitement or anxiety in being videotaped. We do our best to keep the camera at a distance to not interfere with the work being done in class.

If you choose to give permission to the researchers to use the videotapes for educational or research presentation purposes, you will be asked to give permission to Principal He to be contacted and for him to review the video clip with your child present first. It is possible that your child's face will be identifiable on the videotape and someone in the audience may recognize your child. We always explain to our audiences the importance of respecting your child's confidentiality.

BENEFITS

It is our aim to better understand reading practices across various written forms and the cultural and linguistic influences on reading practices along with problems that may interfere with the learning process. We hope to better understand, from a Deaf perspective, what practices and strategies were helpful in learning to read.

The observations of Deaf classrooms in China and literacy events using CSL will benefit all researchers/educators, and parents around the world by enhancing our understanding of deaf children's needs, and helping us to improve reading education and language support services.

COMPENSATION

To thank you for participating in our research project, a $200 monetary donation to XXX School for the Deaf will be given to teachers for purchase educational materials and or school supplies.

This project has been approved by the Institutional Review Board, at the University of Illinois. Dr. XXX and Principal XXX also gave me approval. If you have any questions or concerns about your participation rights, please contact the Institutional Review Board at the University of Illinois at +001 (217) 333-2670 or contact Anne Robertson, Bureau of Educational research at +011 (217) 333-3023, or arobrtsn@uiuc.edu.

If you have any further questions, please feel free to contact the Primary Research Investigator Dr. Jenny Singleton (217-689-0291 VP; E-mail: singletn@illinois.edu) or myself, Gabrielle Jones (217-365-0340 VP or 217-689-0291 VP; E-MAIL: jones44@illinois.edu).

Consent to Participate in the Interview

_____**YES**, I agree to participate in the research project described in the attached letter. The project involves my child being videotaped and observed. I understand that I can withdraw my child's participation at any time.

_____**YES**, I agree to let the researcher, Gabrielle Jones, contact me through email, iChat, or phone or whatever means best suits me, for future questions.

The best way the researcher can contact me is via:

❑ email _____ ❑ iChat screename : _____

❑ Phone # _____ ❑ in person _____

Video Viewing Approval (choose all that apply)

_____ **YES**, I give my permission for Gabrielle Jones, and her faculty research supervisors at University of Illinois at Urbana-Champaign, to videotape my child in the classroom. These researchers are trained to keep all data confidential.

_____**YES**, I give my permission to have my child videotaped to be viewed by other members of the Singleton research group at University of Illinois during discussions. The researchers are trained to keep all data confidential.

_____ **NO**, I do not want anyone to see my child in the videotape. Please do not videotape when my child is present in the room.

Video Display at Research and Educational Presentations

_____ **YES**, I agree that Gabrielle Jones or Dr. Jenny Singleton may use the videoclip and will contact the principal to review videotape clip before she be allowed to use it in any educational or research presentation. If YES, please enter preferred contact information on other side of this page	_____ **NO**, I do not want any of my child's presence to be in the videotape to be shown at a research conference or to an educational audience. Please do not contact me about this in the future.

_____ _____

Signature Date

伊利诺伊大学研究项目

2A阶段：学校和中国聋学生们的读写经历：课堂观察

亲爱的父母：

我的名字叫加布里埃尔·琼斯。目前，我是位美国伊利诺伊大学香槟分校的教育心理学博士生。我也在加劳德特大学攻读视觉语言和视觉学习（VL2) 的博士学位。我和我的导师珍妮·辛格尔顿博士（她的父母都是聋人）想要研究如何在一个聋课堂上教阅读，所以想让在 xxx 聋人学校就读的您的孩子和他（她）的同班同学参加。由于世界各地的聋儿学习不同的书写系统，我们的目标是为了更好地了解在课堂上独特的中国文化以及聋儿如何学习中文。这项研究将会帮助我们了解听障个体学习阅读印刷字体的各种各样的方法，特别是中文——有别于英语的一种语言。来自伊利诺伊大学香槟分校的珍妮·辛格尔顿博士将会作为上级和导师尽力协助我的这个研究。

机构审查委员会（IRB）是一个确保参与研究的志愿者被保护的委员会。例如：他们确保研究人员尊重您的隐私，您的保密性和您的权利。如果你对您的权利或者您的孩子的权益有任何问题，请和安妮· 罗伯逊或者美国伊利诺伊大学的机构审查委员会（IRB）联系。这个表格提供了电话号码和电子邮件。他们会乐意和您交换信息，用中文或者英文随你愿意。

如果您的孩子参加这个研究，他（她）将会在一个正常的课堂上被录像和观察。您孩子的脸会出现在录像带上。此信的目的是征得您的准可，让我给您的孩子拍摄。您孩子的参与是完全出于自愿的。

您所应该了解的：

- 您孩子的身份将会被保密于所有与这个研究项目相关的出版物中。您孩子的真实姓名不会出现在我们任何的录像带、图像和笔录中，但是我们会用一个假名代替。 我们会在伊利诺伊伊大学的实验室中妥善保管所有的录像带、笔录、同意书。如果您现在或者将来同意我们在一些研究或者教育性的演示中使用录像的部分片段，那么您的孩子将有可能会被观众认出来（因为聋哑人的圈子很小

）（更多信息请参见“风险”）。为了保持您孩子的保密性，所有的录像带都会在 10 年后被销毁。

- 您参加本次研究项目是出于自愿的。您随时有权利从本次研究项目中退出。如果您选择不参加本次研究项目，您与 xxx 聋人学校的关系、与调查者本人的关系、与伊利诺伊伊大学的关系都不会受到任何影响。
- 这个项目不是一次对您孩子的测评。我们重视您孩子的学校和读写经历，我们也认识到每个孩子的经历都是独特的。我们尊重可能存在的文化、语言差异。

风险

对您的孩子来说，我们不期望参与的风险超出日常生活所遇到的风险，也不期望在录像的过程中可能给您带来过于兴奋或不安的感觉。我们将尽力把摄像机放置在一个较远的位置以不打扰正常的课程。

如果您选择同意调查者在教育性或者研究性的演示中使用录像，您会被要求同意 xxx 被联系并回顾您孩子的录像剪辑。您孩子的脸会有可能会在录像中被识别并被某位观众认出来。我们会一直对我们的观众解释尊重您孩子的隐私的重要性。

益处

我们的目标是更好地了解各种各样书面形式的阅读实践，文化因素和语言因素在阅读实践中所起的作用，以及随之而来的在学习过程中产生的问题。我们希望能更好地从聋人的视角了解什么样的实践和策略是对学习阅读有帮助的。

观察到在中国的聋课堂上以及读写事项上使用中国手语，这将有利于研究者、教育者以及全世界的家长加强了解聋哑儿童的需求，并帮助我们改善阅读教育和语言支持服务。

报酬

为了感谢您抽出两小时参与我们的研究项目，给 xxx 聋人学校的 200 美元的财政捐助将分给老师去购买教学物品或者学校补给。您的孩子将收到一份小礼物，如一只铅笔或款待。

这个项目已经得到了伊利诺伊大学的机构审查委员会（IRB）的授权。莱特尔博士和 xxx 也给了我授权。如果您有任何关于您或您孩子作为这个项目的参与

者的权利问题、顾虑或不满，请与伊利诺伊大学机构审查委员会（IRB）联系（电话：+011 217- 333-2670，电子邮件：irb@illnois.edu）

如果您还有更进一步的问题，请与 xxx 联系（电话：xxx）或者直接与研究项目负责人珍妮 • 辛格尔顿博士联系（电话：+0-11 217-244-1098; 电子邮件：singletn@illinois.edu），或者与我本人加布里埃尔 • 琼斯联系（电子邮件：jones44@illinois.edu）。

同意我的孩子参加研究项目

_____**是的**, 我同意让我的孩子参加上述研究项目。 这个项目涉及到我的孩子被录像和被观察。我明白，我随时有退出的权力。

_____**是的**, 我同意调查者加布里埃尔 • 琼斯就我孩子进一步的问题通过电子邮件、Skype、ichat 或者其他任何方便的方式联系 xxx。

_____**不,** 我不愿意让我的孩子参与这个研究项目。

观影许可（请选择所有符合您情况的）

_____ **是的**, 我同意伊利诺伊大学香槟分校的加布里埃尔 • 琼斯和她的导师在教室中给我的孩子录像。他们将确保录像带的保密性。

_____ **是的**, 我同意伊利诺伊大学的辛格尔顿研究小组的其他成员在讨论中观看我孩子的录像。他们将确保录像带的保密性。

_____ **不**, 我不希望任何人在录像带中看到我的孩子。请不要对我孩子在教室里的表现进行录像。请让我的孩子处在教室中不被录像的位置。

在研究性和教育性的演示中播放录像

_____ **是的**, 我同意加布里埃尔·琼斯或珍妮·辛格尔顿博士使用录像剪辑。在使用之 xxx 以复查授权。 如果您选择了“是的”，请在反面填写联系信息。	_____ **不**, 我不希望任何关于我孩子的影像在研讨会或教育性的场合中被展示。将来请不要再关于这件事联系我。

_____ _____

签名 日期

Appendix E

Child's Assent Form

姜和想在你的课堂为你录像
她想看你学什么。

☐ 我同意把姜和在我的课堂为我录像。

☐ 我不同意把姜和在我的课堂为我录像.

孩子的名字: _____

我的名字是_____.