

Reframing Literacy from a Deaf Chinese Lens: Practice and Implications

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The study will address the cross-cultural and sociocultural analysis of Deaf reading practices in China, how Chinese reading instruction takes on a Hearing-centric approach which may not benefit all deaf children, and the visual strategies used by Deaf teachers to address pedagogical and language concerns. Using grounded theory, principles themes are extracted from qualitative data (classroom observations and deaf teacher interviews) to unravel the sociocultural context that exists in reading instruction. Implications and recommendations are discussed.

Key words: Deaf education, China, reading instruction, Deaf practices, sociocultural practices

Introduction

Learning to read is a socio-culturally based practice that involves the interplay between language and meaning making strategies. Each country has its own languages and print representation. English readers are exposed to an alphabetic script that adopts a letter to sound mapping strategy. While English is by far the most complex in the letter to sound spectrum, mapping differentiation differ across alphabetic language (Share, 1995). Chinese, however, is a morpho-syllabic language where each character represents a morpheme and a syllable. Chinese is not only a tonal language, but is represented through two written orthographies (Pinyin and characters) in elementary school. The question is, how do deaf children learn to read Chinese?

Learning to read is not typically an isolated experience. Rather, it is a task that is shared and learned within a social context. An expert reader shares skills and strategies in learning to read, guiding the novice reader into paying attention to 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 from students to students. Literacy practices, patterned literacy events or occurrences are repeated within a community or social group (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.

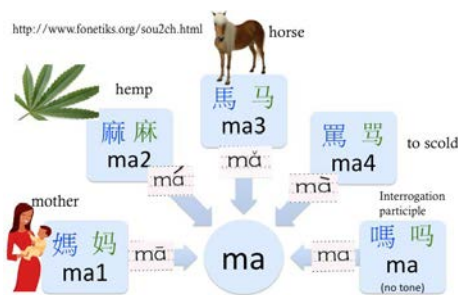
With two fundamentally different written scripts, how do deaf teachers frame reading instruction and facilitate meaning making experiences in sign language? The issues are compounded by the fact that teacher practices have been hearing based and no deaf education teacher credentialed program exist in China. By exploring cultural, linguistic and practical strategies familiar to Deaf teachers, we can begin to grasp the complexity of reading practices from a visual perspective and within the context of sign language. Further investigation between the relationship between sign language and written print in reading practices are pursued.

Context for Pinyin Usage in Reading Instruction

Throughout China, with over 500 dialects, the Chinese government selected Mandarin (Putonghua) as standard language of instruction for all Chinese schools. To facilitate literacy, romanization of Chinese characters was not to replace characters, but to teach correct pronunciation (Sheridan, 1990). Pinyin is introduced intensively within the first ten weeks of first grade and gradually dropped by third grade (Shu, Chen, Anderson, Wu, & Xuan, 2003).

Putonghua Chinese has four different tones: high pitch (tone 1), rising (tone 2), descending-rising (tone 3), descending (tone 4). The fifth one is a neutral sound with no number. Diacritic markings are also used to disambiguate tone differences, e.g. /ma/, /mā/, /má/, /mǎ/, /mà/ (see Figure 1). Tones determine the meaning of a word. In characters, these five forms of /ma/ are distinctively written in characters 吗 (question marking morpheme), 妈 (“mother”), 麻 (“hemp”), 马 (“horse”), and 骂 (“to scold”).

Figure 1 *Pinyin: Tonal Representation*



Pinyin: Tonal representation

The auditory feedback loop provides hearing Chinese a way to self-correct by making associations between the spoken word and the character. For a deaf person, however if you were to lip-read the word “ma”, the mouth movements are the same for all tones. Characters show stroke differences requiring visual skills to identify strokes (Shu, 2003; Luo, Chen, Deacon, Zhang, & Yin, 2013). Overall, Chinese students have demonstrated better visual distinction compared to American students

when identifying characters. The comparison between hearing peers with deaf peers show enhanced visual skills in writing characters (Fok et al., 1991).

In spoken Chinese, homophones are predominant where a variety of sounds are similar, but in writing mean different things. The word /mǎ/, has several characters 马, 玛, 蚂, 码, 犸, 杩. Homophony is not a challenge for deaf children in this case. Sign homophony may exist but we do not have research yet.

Learning Characters, a Visual-Spatial Script

Characters are composed of strokes stringed together to create a complete form. In each form, radicals either represent meaning or sound. Meaning is shown in the left and bottom area of the character and sound is shown at the top and right side.

Figure 2 Characters as Visual Spatial Script

Visual Spatial Script

媽媽 mā

女 = female = nǚ

Characters	English	Pinyin
媽媽	mother	ma
她	she	ta
姐姐	older sister	jiejie
妹妹	younger sister	meimei
女朋友	girlfriend	nupengyou

Figure #2 illustrates characters and Pinyin equivalence. The traditional characters are in blue with an average of 10 to 12 strokes no longer used since 1950s except for Hong Kong and Taiwan. The simplified characters are in green with 5-7 strokes on average, which is mandated by all schools.

The left semantic radical for the word ‘mā’, (mother), has a left radical 女, when standing alone, is pronounced “nǚ,” (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 includes the “female” radical, the phonetic component of “nǚ” is clearly not obligatory in pronunciation. Only the word for “girlfriend” (“nǚpéngyǒu”) contains “nǚ”; 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 “nǚ” in its pronunciation.

When learning to read, children must memorize the assigned syllable with the character. In that sense, phonological mapping becomes the auditory feedback needed to verify associations and correspondences. Identification of characters rely heavily on memorization. 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, Shu, Zhou, Wat, & Wagem, 2003). On the other hand, Perfetti and Liu (2005) maintain that phonological processing does occur among Chinese readers who associate the spoken word with its written character.

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 (Kuo & Anderson, 2010; Hoosain, 1991). The reader memorizes the compounds to recognize the word. The spaces between characters are evenly distributed throughout the text requiring young readers to identify words based on the syllable order (Lin, Anderson, Ku, Christianson, & Packard, 2011). No spacing in Chinese requires a Chinese reader to be familiar with each character and its single or compound representations (Luo, Chen, Deacon, Zhang & Yin, 2013). Young readers are to identify both the phonetic and semantic radicals within the character. Forty-seven per cent of the phonetic radicals are predictable whereas the rest are not. The tones are not shown directly in the characters.

The interplay between spoken language and print is already quite a complicated phenomenon given the large number of homophones in Chinese. How does a deaf child learn to read a tonal language that is commonly used by hearing children and what is the role of sign language in meaning making strategies? The research questions are the following:

- Does the nature of script and language influence instructional strategies used with deaf children?
- What do deaf teachers attend to when teaching Deaf children to read Chinese script?
- What are the sociocultural factors in China that influence deaf children’s literacy?

Methodology

School site and Participants

This study was conducted in a bilingual school for the deaf in a small town in the Chinese countryside. The staff were 52% hearing and 47% deaf. Two-hour interviews with six Deaf teachers (2 males and 4 females) were accomplished in Chinese Sign Language, with open ended questions about their personal experiences in school and literacy. Backgrounds regarding schooling, language experience, and literacy were addressed. To validate the interviews and explore the sociocultural context for reading instruction, three elementary classrooms were selected, two hearing teachers taught first and second grade while the one deaf teacher taught third grade.

Researcher's stance: As an American/European Deaf researcher who has learned several alphabetic languages and Chinese, the purpose of this study is to incorporate a Deaf-centered perspective at the research protocol level and, in the interpretation of findings, research engagement to bring back to the Deaf communities and build fostering bonds of trust between the researcher, the deaf participants and deaf community (Harris, Holmes & Mertens, 2009).







Results of study

Mapping strategy is dependent on the nature of script

Based on the classroom observations and teacher interviews, differentiation between alphabetic and morpho-syllabic script requires different gestural/sign output. Mapping strategy is dependent on the nature of script. When Pinyin is used in writing, the “in the air” representation is shown using the finger syllabary or fingerspelling. The way finger syllabary is constructed is based on the onset and rime of a character/morpheme/syllable (see Figure 3). Each character has a syllable and the onset is shown with an initial handshape preceding the rime handshape.

Figure 3 *Chinese One Hand Finger Syllabary with onset and rim*

TYPE 1: Chinese One Hand Fingersyllabary
using onset and rime in sequential manner

Chinese characters: 老师好 Pinyin: lǎoshī hǎo		
Literal translation in English: teacher good		
老	师	好
 L ao	 SH I	 H ao
Tone movement with index finger after syllabic construction 		

Hearing teachers use finger syllabary to follow the national standard of syllabic identification. The Chinese tones are shown using the index finger in movement to represent the diacritic after displaying the onset and rime handshapes. In the past, two hands were used to differentiate between onset and rime and now has evolved to using only one hand with sequential order. Chinese fingerspelling (see Figure 4) represents each letter of the syllable with a handshape. Deaf teachers found this to be essential to help students write the order of Pinyin letters. This visual feedback loop assures orthographic accuracy.

Figure 4 *Chinese one hand fingerspelling no onset and rime*

**TYPE 2: Chinese One Hand Fingerspelling
no onset and rime & sequential manner**

Chinese characters: 老师好 Pinyin: lǎoshī hǎo Literal translation in English: teacher good								
老			师			好		
L	A	O	SH	I	H	A	O	
Tone movement following the handshape								
U			—			U		

When pointing to the Chinese characters, the output was in signs. Signed Chinese was used to follow the syllable order but were not conceptually accurate. Indigenous signs would provide the accurate concept representation. The former comes from the approved Sign Chinese that is now being 80% revised.

Deaf teacher practices in vocabulary instruction

The vocabulary instruction embeds a multi-sequential process combining both Pinyin and characters. These expectations are established to follow through with the stipulations of Chinese curriculum (Anderson, Ku, Li, Chen, Wu, & Shu, 2013; Wang & Andrews, 2017). The written order starts with the root of the character, which does not always have meaning. The root can be spoken as a syllable but no sign equivalent is given. Deaf students are requested to simply memorize its structure by tracing the character in the air and recognize the semantic radicals, not the phonetic radical, and then translate the embedded root in the compound in sign language. Two different compounds are provided where the character is shown at the beginning or end of the compound construction.

Textbooks carry both Pinyin and characters in the early elementary school years. Chaining activities occur with pointing to the Pinyin using fingerspelling/fingersyllabary with tone movement, then pointing to the characters to

sign its meaning equivalence, then lastly pointing to the character. This chaining is more prolonged than the alphabetic script in the US (Humphries & MacDougall, 1999). The unspaced text allow Deaf teachers to use two fingers to bracket the compounds when pointing to a “word” to help deaf students identify concepts. Underlining compound words is often used to provide the translation into sign.

What are the sociocultural factors in China that influence deaf children’s literacy?

The sociocultural context in China emphasizes speech over sign to belong in Chinese society (Jones, 2018 in press). The emphasis on spoken language and Pinyin in the education of deaf children continues to this day (Wang & Andrews, 2017). The ideology of spoken language puts Deaf teachers at a disadvantage creating an inequitable environment where they are not seen as valuable contributors to academic discourse (Yang, 2006; 2008). All but one Deaf teacher is credentialed, the rest graduated with computer science majors. No formal Deaf education programs to train Deaf teachers exist (Jones, 2013). When asked about what they would change to improve reading instruction for deaf children, all but two out of six referred to hearing credentialed teachers for recommendations. This fact reinforces the common belief that hearing people know better in determining what’s best for deaf children and the belief that their contribution is not valued. The two deaf teachers recommended that content be taught in indigenous sign language of the deaf community to provide the groundwork for cognitive development to analyze scripts.

Indigenous sign language has been a topic of dismissal, considered inferior compared to Signed Chinese and this heated debate continues to dominate Chinese deaf education.

Implications and Recommendations

The complexities of language and literacy learning for deaf children in China require the Deaf teacher community to evaluate the effectiveness of teaching practices. The instruction of Pinyin to reinforce spoken language, when not used within the Chinese Deaf community raises concerns. The usefulness of Pinyin in reading instruction for d/Deaf students may help with the syllable identification in the order of the compound words. This is a challenge for deaf students, as they often reverse the compound order sequence.

The question is why? What can we learn from those errors? Is it the lack of consistency of language exposure that prevents them to self-correct or could this be remedied through morphological and visual skills instruction in sign language? With the importance of visual skills development (Zhou, McBride-Chang, & Wong, 2014), visual discrimination, visual spatial skills, visual form constancy and visual memory are all relevant in reading acquisition. The arbitrary visual verbal paired associate learning could very well function in the same way for spoken language with sign language. Sign

language provides meaning to characters fostering students' morphology and orthographic structure awareness. More research is needed to explore this area.

The reading process is clearly one that is embedded in linguistic, cultural and educational systems that reflects the greater society's values and traditions. Does intensive training on word morphology and orthographic structure awareness suffice in reading acquisition through indigenous sign language? This can only be answered through a team culturally and linguistically aware of researchers and Deaf Chinese teachers.

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