



BILINGUAL AND BILITERACY DEVELOPMENT IN ENGLISH AND CHINESE IN EARLY CHILDHOOD TO EARLY GRADES

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INTRODUCTION

Parents of children in Mandarin immersion programs often mention that “Chinese is a difficult language” and that “learning Chinese characters is hard.” Indeed, Chinese does not belong to the Indo-European language family and does not use an alphabet in writing. For learners, acquiring the Chinese literacy in addition to learning the language poses a set of challenges. However, as Mandarin immersion programs and other types of early childhood education programs for Chinese continue to grow nationwide ([American Councils Research Center, 2021](#); [Student Program Directory, CELIN at Asia Society](#); [Mandarin Parent Council, 2020](#)), it is critical for educators and families to understand children’s learning experiences in Mandarin immersion from the lens of bilingual (listening and speaking) and biliteracy (reading and writing) development. What are the psycholinguistic and linguistic prerequisite and requisite skills that a journey of developing the two languages requires? How can teachers and parents meaningfully foster and make use of children’s existing skills, developed in the two languages, and tap into resources in their homes, their communities, and beyond?

In this Brief, we outline the set of prerequisite and requisite skills for children’s reading development in the first language and then in the additional language; hence, biliteracy development. In the end, we offer a set of recommendations for practices and strategies for families, educators, and schools to consider. While acknowledging that the

population of students in Mandarin Immersion programs is increasingly diverse, this Brief assumes a typical child who speaks English as his/her first language and is learning Chinese as an additional language in a Mandarin Immersion program from preschool through Grade 3. The principles of learning described are applicable to other languages and conditions, if context-appropriate modifications are made.

THEORETICAL FOUNDATIONS

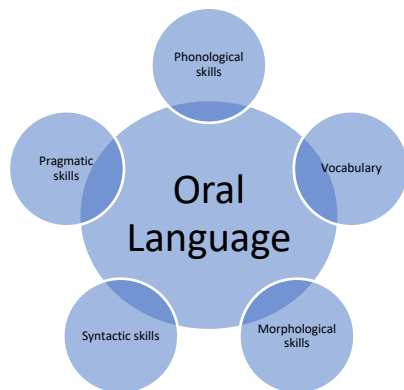
Oral Language and Reading Development

By age three, when children enter preschool, they have acquired a large and varied lexicon and can string together sentences with multiple words, participate in conversations, and sometimes make jokes. They can even begin to talk about events or objects that are not present or happening right in front of them. By age five, when children enter kindergarten, they have typically acquired a relatively sophisticated repertoire of vocabulary, use appropriate grammar, and even create imaginative stories. Unless neurologically or hearing impaired, almost all children learn to speak. Paradoxically, some of the more fluent speakers may struggle in learning to read. This is because reading skills do not develop naturally, unlike oral language. Scientists dedicate their entire career in studying reading development and reading difficulty. For all children, becoming literate means they must become conceptually aware that there is a code to be deciphered, and the deciphered message can be figured out if they understand it orally.

That is why, throughout this Brief, we emphasize the importance of oral language as the foundation of literacy and learning.

Learning to read in any language can be understood as the process of learning how one's writing system encodes one's spoken language (Perfetti, 2003). Though writing systems around the world differ greatly – alphabetic, such as English; syllabic, like Japanese Kana; or “logographic,” like Chinese – they all have at least one feature in common; all writing systems represent spoken language. For example, the English letters “c-a-t” represent the syllable [k'æt] and the notion of a cat, and the Chinese character 猫 represents the same notion, but in a different writing code and syllable *māo*.

Under this theory, oral language plays a fundamental role in learning to read. But it is crucial to keep in mind that oral language is a multidimensional system that involves making connections between sounds and meaning. Scholars (e.g., Morrow, Roskos, & Gambrell, 2016) generally agree that oral language includes at least five components of knowledge and skills, shown here.



Components of Oral Language

Children's phonological skills make them aware of the sounds of the language they are learning, such as the sounds of phonemes, rhymes, and syllables. Such skills further enable children in learning to read. They need to first hear the sounds in a word, and then become able to match the sounds to the units of writing in the language they are learning to read. The importance of vocabulary

lies in the fact that it enables children to understand the meanings of words or sentences they hear, without which listening comprehension becomes impossible. Additionally, *morphological skills* support children in taking words apart (segmenting) and putting parts of words together (blending), which become especially useful when they hear or read an unfamiliar word. For example, understanding how a particular prefix (such as *un-*) or a suffix (such as *-able* or *-ity*) functions might change the meaning of a word root supports children's ability to infer the meanings of complex words (such as *unpredictability*). In fact, children's morphological awareness and reading comprehension support each other reciprocally, and the strength of such a relationship increases throughout the elementary grades (e.g., Nagy, Berninger, & Abbott, 2006). *Syntactic skills* refer to children's ability to understand grammatical rules embedded in sentences they hear and read. In many languages, word order is relatively fixed; therefore, understanding the difference between sentences like 我爱你 (*I love you*) and 你爱我 (*You love me*), composed of the same words but in different order, requires that children understand how word order affects the interpretation of the sentences. Finally, *pragmatic skills* involve children's ability to understand the social rules governing communication, such as how to talk to people who are more senior or what to say to engage a particular kind of audience. Pragmatic understanding is also important in later reading development, because reading comprehension invariably involves making meaning of a text in various contexts.

In this Brief, we focus primarily on phonological skills and oral vocabulary and their importance in reading development in a bilingual and biliterate setting, as these two components of oral language are the most crucial in early childhood. We also discuss the function and role of Pinyin and ways that it can be included in the transition to reading and writing.

Phonological skills

As mentioned earlier, phonological skills enable children's awareness of the sounds of language at different levels,

such as syllables, rhymes, phonemes, and tones. You may see the term *phonological awareness* used as an umbrella term for children's awareness of sounds, but more specifically, *phonological awareness*, *rhyme awareness*, and *syllable awareness*, among others, are also used when addressing specific units of sounds.

Why is phonological awareness important in learning to read? In learning to read any language, children need to figure out print-sound relationships. In English, in order to decode an unfamiliar word, in addition to letter knowledge, children must become aware that a spoken word is composed of individual sounds, phonemes. For example, there are three phonemes in *cat* [k'æt]), upon seeing this word, children need to know which sound each letter represents (that is, *c* represents the sound [k'], etc.), and be able to blend the individual sounds together (/k'/æ//t/, in order to figure out it is [k'æt]). That is to say, children need to learn the association between letters and phonemes, and be able to blend the sounds into a recognizable word in order to establish the relationship between the unknown printed word and the word they already know orally. In this case, phonemic awareness facilitates the process of printed word recognition. To date, there is a body of consistent, strong, and persuasive evidence showing that phonological awareness developed in early years is highly predictive of later word reading skills (Good, Simmons, & Kame'enui, 2001; Torgesen, 2004); children who possess strong phonemic awareness and decoding skills become stronger readers later on (Beck & Juel, 1995; McBride-Chang & Manis, 1996; Stanovich, 1986), and children who learn to decode early develop wider reading habits both in and out of school (Juel, 1988).

Phonological awareness is also important for learning to read non-alphabetic languages, such as Chinese. However, because the phonological structures of languages differ, and the print-sound relationships are also different, therefore, the level of phonological awareness critical to learning to read a particular language differs.

Unlike alphabetic languages, in which one letter represents one phoneme and is not associated with any meaning, a written Chinese character represents a syllable (sound) and a morpheme (meaning) at the same time. For example, the single-unit character 女 is read *nü* and means *female*; 马 is read *mǎ* and means *horse*. Therefore, syllable awareness is one of the most fundamental phonological skills for developing basic reading skills in Chinese, and it is one of the best predictors of Chinese preschoolers' character recognition (McBride-Chang et al., 2004; Shu et al., 2008) and sentence reading skills (Yin et al., 2011).

However, comparatively speaking, a syllable is a much larger phonological unit than a phoneme; therefore, it is easier for children to perceive and to grasp. That is why, for native Chinese-speaking children, the predictive power of Chinese phonological awareness in reading Chinese tends to decline after Grade 1 (Huang & Hanley, 1997). This means that there are other phonological processing skills that affect children's reading as their learning progresses.

Tone awareness is a critical skill when learning a tonal language such as Chinese. Tones, simply put, are pitch variations at the word level which differentiate meanings (Lin, 2001). For example, the example above, *mā*, is a first tone syllable. If it is pronounced in a second, third, or fourth tone, a Chinese speaker would interpret it as a different word – *mā*, mother; *má*, numb; *mǎ*, horse; *mà*, to scold. In this case, being able to perceive the tone differences is critical in telling different words apart. Researchers have found that native Chinese-speaking children's sensitivity to Chinese syllable, onset, and rime mature in the preschool years, yet their tone awareness only shows a marked improvement in the first year of elementary school (Shu et al., 2008).

Importantly, recent studies show that dyslexic Chinese children have particularly weak tone awareness (Li & Ho, 2011). Researchers have found that though seven to ten years old Chinese dyslexic children have little difficulty performing phonological awareness tasks at the onset and

rime level, they have trouble with the tone awareness tasks (Li & Ho, 2011). Moreover, compared to those without dyslexia, dyslexic Chinese children have a much later developmental ceiling on tone awareness tasks. Thus, tone awareness can serve to distinguish children with dyslexia from typically developing children throughout the school years (Wang et al., 2017).

Oral vocabulary knowledge

If learning to read involves learning how print is mapped onto the language, then having a larger repertoire of spoken words stored in one's lexicon allows children to be able to understand better what they have just encountered in print. Beginning readers rely on the words they hear orally to make sense of the words they read in print. Those who hear more words in their home environment tend to have a larger and better vocabulary upon school entry. Research evidence shows that oral vocabulary knowledge is consistently a good predictor of children's word reading skills (e.g., Dickinson et al., 2003).

Beyond serving as the basis for language comprehension, oral language knowledge also facilitates the development of phonological awareness, the ability to hear and manipulate the sounds in spoken words, and the understanding that spoken words and syllables are made up of sequences of speech sounds (e.g., Yopp, 1992). According to the Lexical Restructuring Hypothesis (Metsala & Wally, 1998), the sounds represented in children's mental lexicon become increasingly more refined as their spoken vocabulary grows, and such growth allows them to have access to phonemes (the smallest phonological unit in an alphabetic language). Simply put, children will be able to hear and tease apart the syllables they hear as they learn more spoken words. Being able to hear and manipulate the sound structure of the language - phonological awareness - is critical in learning to read, and we discuss this more in the next section.

However, one's oral vocabulary knowledge is also multifaceted, and each facet may play a different role in predicting children's reading comprehension later on.

Receptive oral vocabulary knowledge often serves as an index of children's overall oral competence, but it is not the entire picture, especially when learning an additional language. *Expressive oral vocabulary knowledge* -- the amount of words a child can use actively -- is a much stronger predictor of children's reading comprehension, especially in a second language (e.g., Howard et al., 2014; Lü, 2019). Being able to use a vocabulary item productively indicates that the child has a higher quality word representation in his or her mental lexicon, which includes well-specified orthographic, phonological, and semantic-syntactic information. Simply put, being able to use a word productively means a child typically has mastered most of the aspects of information (phonetic, orthographic, semantic, syntactic, etc.) relevant to this word, whereas only being able to understand a word receptively means that certain aspects of the information are lacking. Having high-quality representation of the word in one's mental lexicon, in turn, serves as the basis for skilled reading (Perfetti & Hart, 2002), and high lexical quality has been found to be a significant predictor of children's reading comprehension in a first and a second language (e.g., Raudszus, Segers, & Verhoeven, 2018).

The function and role of Pinyin

In discussing early bilingual and biliteracy development in English and Chinese, a topic that one cannot bypass is the role of Pinyin. While some parents and educators firmly believe that learning Pinyin is harmful for children, fearing that they will mix up Pinyin with English, others emphasize the utility of this educational tool. Here we briefly discuss the following questions in relation to what have been discussed thus far. What is Pinyin? What are its intended purposes in early literacy learning? What does current research inform us regarding the effectiveness of Pinyin in early literacy development?

Pinyin literally means "spells the sound" and was designed and promoted in Mainland China as an aid for character learning and to popularize the standard speech, *putong hua* ("common speech"), known as Mandarin Chinese in the West. Pinyin uses Roman letters to represent the

sounds of Chinese systematically and transparently, although there are a few irregular letter-and-sound relationships. As an educational tool, its main functions are to help learners connect the oral language to printed symbols at the beginning of their literacy development, and to assist them in exploring reading materials containing unfamiliar characters that they would otherwise be unable to read independently (Lü, 2017). Additionally, Pinyin allows learners to express themselves more freely using words that they know how to say but may not be able to write yet (e.g., Li et al., 2016).

Let us first consider the efficacy of Pinyin for Chinese-speaking children. To date, research on Chinese-speaking children has found that explicit Pinyin instruction enhances their phonological awareness (e.g., Xu & Ren, 2004). Other studies that compared children in Mainland China and those in Hong Kong have shown that children in Mainland China who have learned Pinyin demonstrated higher levels of syllable and phoneme awareness than the children in Hong Kong, who did not study Pinyin as part of their literacy education (e.g., McBride-Chang et al., 2004; Leong et al. 2005). Others have found that Chinese kindergarteners' Pinyin reading skills contributed significantly to their word reading skills in Grade 1 and sentence reading skills in Grade 2 (Li et al., 2016; Lin, et al., 2010). The evidence from research on Chinese-speaking children suggests that Pinyin is a useful tool for them to make connections between the phonetic, semantic, and visual information for successful reading, and that Pinyin facilitates self-teaching by enabling children to learn new characters, words, and concepts without explicit instruction or adult supervision. Additionally, the learning and use of Pinyin and children's phonological awareness may be mutually facilitative, which also promotes their literacy learning in Chinese.

However, what works for native Chinese-speaking children may not work in the same way for nonnative speakers, especially when they are not only new to studying Chinese but are also learning to read in English simultaneously. For example, one of the authors' own

studies (Lü, 2017) examined the roles of Pinyin skill in Chinese word reading among a group of Grade 2 learners in a Chinese immersion program. She found that Pinyin skills measured at the beginning of Grade 2 strongly predicted children's Chinese word reading at the end of the academic year, at no cost to their English literacy learning. Although much more research is needed on how learning Pinyin may affect children's biliteracy learning in two languages, it is reasonable to suggest at this point that, when done right, Pinyin is a highly useful tool for young Chinese learners as well. We discuss further in the next section how Pinyin can be used appropriately so that its benefits are maximized.

Summary

Learning to read involves learning how the written and spoken language connect with each other. Therefore, components of oral language - vocabulary, phonological, morphological, syntactic, and pragmatic skills - all play a crucial role in children's reading development. Based on what we have discussed thus far, below we provide a few guidelines, suggestions, and examples for supporting early language and literacy development, especially in Chinese. The same set of guidelines can apply to English language and literacy learning at home and in school.

GUIDE FOR EARLY LANGUAGE AND LITERACY DEVELOPMENT

First, keep talking with children to help them develop strong oral language as the foundation for literacy and learning in later years. This may seem a commonplace practice and thus, too trivial to bear in mind. But often, in practice, we witness teachers or parents who wish to drill character knowledge at an early age without realizing that their children do not have the necessary oral competence to meaningfully understand what they have just read. Parents are recommended to familiarize themselves with the language developmental milestones, for example, by reading [this short article](#) from Reading Rockets (Reading Rockets, 2021) or [the guidelines](#) from the American Speech Language Hearing Association (ASHA, 2021). Bilingual children who are exposed to more than one

language since birth have the same developmental trajectory as children who are exposed to one language. Most bilingual children, for example, will utter their first word by age one, and will reach a two-word phrase by age two. Parents and educators should not be overly concerned about bilingual children mixing words or grammar rules from time to time. This does not mean they are confused. It is just a normal phenomenon of being bilingual!

For parents who do not speak Chinese, it is critical that you apply the same principle in “talking with” your children in your home language, be it English or another language. As we explain above, talking and making sense of what is being talked about in relation to the world of the children is key for helping them build a strong oral language foundation that leads to biliteracy development. By constantly engaging children in talking about what is being seen, heard, and read in the environment, they build a larger vocabulary repertoire and will have the opportunity to turn their receptive vocabulary into an expressive one. The stronger a child is in his/her first language, the more solid the language foundation will be. Much of these underlying skills in processing one language will be transferred in learning a second language (e.g., Kim & Piper, 2019). Teachers in your children’s Chinese immersion program will serve as a bridge to help children connect learning in the two languages.

Second, engage in interactive reading with children. As is the case for learning any language, book reading is crucial for supporting language and literacy development in both the first and additional languages. While many parents realize the importance of acquiring age-appropriate books in Chinese for their children, it is also crucial to know that how we read to our children is as important, and one may not even need the book to be in Chinese! The key here is to make sure that parent-child shared reading is interactive, and children are not passive listeners to their parents or caregivers but are active tellers of the story with the support of adults. In this case, the adults are the listener, the questioner, and the audience. The PEER sequence, the fundamental reading technique of *dialogic*

reading (e.g., Reading Rockets, 2009) can be easily adapted and used in Chinese.

- P: Prompt the child to say something about the book;
- E: Evaluate the child’s response;
- E: Expand the child’s response by rephrasing and adding information to it, and
- R: Repeat the prompt to make sure the child has learned from the expansion.

Here is an example of using the PEER sequence in Chinese, using one of the pages from Eric Carle’s picture book, *The Very Hungry Caterpillar*.

- P: Prompt the child to say something about the book:
Point to the page, and ask “这是什么？” (“What is this?”)
- E: Evaluate the child’s response:
“对了！是毛毛虫！” (“You are right! It is indeed a caterpillar!”)
- E: Expand the child’s response by rephrasing and adding information to it:
“这是一只长长的毛毛虫，对不对？我们昨天在公园里也看到了一只毛毛虫，对不对？”
 (“This is a very long caterpillar, right? We saw a very long caterpillar in the park yesterday, right?”)
- R: Repeat the prompt to make sure the child has learned from the expansion:
“你可以跟我说，一只长长的毛毛虫？” (“Can you say ‘a very long caterpillar’ with me?”)

Each time this book is read, the expanded vocabulary “一只长长的毛毛虫” can be repeated so the child will internalize it.

Of course, parents and educators do not need to use the PEER method on every page of a picture book. Just keep in mind that reading should be interactive, and such interactivity can be used to support your children’s oral language development and later reading development. Keep reading interactive also engages the children more,

which in turn will make reading a more enjoyable activity for the children. It also helps children make stronger connections between book knowledge with their personal life experiences.

Third, assist children to build a strong oral vocabulary knowledge that enables them to acquire knowledge for content learning in school and for lifelong development. For young children, it is rarely a good idea to use flashcards to drill vocabulary. Parents and educators should create opportunities for them to hear a word repeatedly and to hear words that are highly useful in *their lives* (e.g., *father, mother, siblings, sleep, eat, play*, etc.), and always use those words in meaningful contexts. For example, during a car ride, parents can encourage their children to call out colors of cars they see; at an art museum, parents can engage in a discussion with their children asking them to describe the shapes they see in a particular piece of artwork. When hearing an “error” in your child’s speech, don’t rush to correct it, but recast or rephrase the error by asking a clarifying question. For example, it is very common for a child to use the Chinese measure words wrong. When a child says “我看见了一个花/I saw a flower” (but the underlined measure word for flower is incorrect) when describing what he/she sees in a piece of artwork, instead of correcting the measure word 个 directly, which would undoubtedly interrupt the conversation and dampen the enthusiasm, the parent or educator can simply respond with “噢，你看见的那朵花是什么颜色的？/Oh, what is the color of the flower you saw?”, with a slight emphasis on 朵 *duǒ*, the appropriate measure word. Don’t be surprised or frustrated if the child does not pick it up right away, since the goal is to draw his/her attention to the small error without obstructing the conversation.

More importantly, Chinese-competent parents should try to model more complex vocabulary and sentence structures, which creates more opportunities for the children to hear and learn from their interactions with the parents. If a young child says “我看见了很多高高的房子/I see lots of tall buildings!”, a parent perhaps may ask “哦，你看见

了很多高楼大厦啊？ Oh, did you see many skyscrapers?” Given such opportunities, children can then map the words they just used (“高高的房子/tall buildings”) with a novel word they have just heard (“高楼大厦/skyscrapers”), with the same concept. This principle is equally applicable in the first language, especially for parents who worry about not knowing Chinese to help children build vocabulary or learn content knowledge.

Asking open-ended questions is another excellent way to encourage your children to engage in an extended conversation with you. Imagine you are in an art museum looking at a piece of art by Andy Warhol. If “Do you like this piece?” is asked, the only answer you may hear from the child is simply *yes* or *no*, or maybe *I don’t know*. On the other hand, consider asking them “你看见了什么颜色？/What colors do you see here?” or “你看见了什么形状？/What shapes do you see in this picture?” or “这张画里面有几个人？/How many people are there in this picture?” etc., you are going to involve your young child in a much more engaged conversation with you and with the artwork, in Chinese!

Fourth, focus on expanding children’s oral competence, especially their expressive language competence. Too often, teachers in an immersion classroom are overly eager to provide students with an immersive environment by doing most of the talking, but neglect the fact that children’s productive use of the target language is crucial in helping them develop. Or, we may hear a Chinese-speaking parent speaking to the child in the language while allowing the child to respond in English. If the goal is to build up your children’s proficiency in Chinese, then you must push for output – use of the language. Passive understanding does not equal one’s ability to use the language. It is fine if a child responds in English because he/she does not know how to say that in Chinese. When that happens, say (recast or model) it in Chinese and ask the child to repeat and express their meaning.

We encourage families in which both parents speak Chinese to consistently speak Chinese with their young

children from birth. Keep in mind that outside of the home, children have few opportunities to hear and use the language. One common concern that parents may have is that by exclusively speaking Chinese at home, their children will face challenges when they start school (if they go to an English monolingual school). It is important to keep in mind that normally developing children who grew up in a minority-language-speaking family may face challenges in school, but the challenges are temporary. While bilingual children starting school may face initial challenges if they don't speak English, national data have shown, at Grades 4, 8, and 12, that students who are Asian and Asian/Pacific Islanders are well above other race/ethnic groups on the National Report Cards (National Center for Education Statistics, 2021). Therefore, it is important for parents to understand that being bilingual does not cause delays in a child's speech/language development, nor affecting their academic performance at school. Offering them a Chinese-speaking environment from birth is probably one of the easiest and best gifts you can give to your child.

For parents who do not speak the same languages, there are other methods to consider. One is the common "one parent, one language" (OPOL) method. Regardless of which method the bilingual family decides to adopt, it is important to keep in mind the relative status of a language in the broader society. Chinese is a minority language spoken mostly at home and communities in the United States, while French is not just a home language spoken by Francophone parents in Quebec, Canada. As a result, Canadian children have much more access to French outside of the home. There are some constraints that parents should be aware of when adopting the OPOL method. For instance, children, even exposed to two languages since birth in an OPOL household, will not develop equal or balanced language skills in the two languages, because exposure to the languages and opportunities to use the languages are rarely equal. Additionally, research has repeatedly shown that in some OPOL families, one of the languages, typically the non-societal language, becomes much more passive. This is fine, because the goal of bilingualism or biliteracy is not for everyone to achieve the

same proficiency or literacy levels in both languages concurrently. Children already reap additional social-emotional, cultural, and cognitive benefits of developing bilingualism and biliteracy in the process. Returning to our point of which method to adopt, the key to remember is to implement the guidelines we have discussed thus far, which include creating meaningful and plentiful opportunities for the children to *use* the language productively, to actively *make meaning*, and to *engage* in meaningful conversations in the language.

There are two other important factors to keep in mind in practicing the OPOL method. First, when it comes to which language(s) to use at home, *family buy-in* is crucial. It is extremely important for family members to discuss the issue of language use at home, make a plan, and act accordingly. Second, once a method is identified, it is important to be consistent. Children are learning rules around them, and constant violation of rules only confuses them. For example, if by family consensus the mother is the Chinese speaker, then the mother should be using the language most, if not all, of the time, in engaging with the children. However, it is also a good idea to constantly evaluate the situation when there is a temporary revision to the agreed-upon method at home. For instance, if a Chinese-only household is hosting non-Chinese speaking guests, it is only reasonable for the family to be using the common language. It may be sensible to explain to the children why a different language is used for the time being. Interested parents might consult resource books on the topic, such as Colin Baker's *A Parents' and Teachers' Guide to Bilingualism* (2014).

Regardless of their proficiency in a second language, we suggest that parents seek or create opportunities for their children to associate the use of one language with a special occasion that is rich in meaning in that culture. For example, encourage children to participate in and use Chinese in activities associated with Chinese New Year and use English for Thanksgiving, or any given U.S. holiday. Families can also consult with teachers or collaborate with other families to hold birthday parties with the food,

drinks, and activities commonly used in the Chinese culture, and alternate the practice by creating a birthday party in American or other cultures. By intentionally engaging children in culturally meaningful activities, parents and caregivers help them create memories and connections with that language and culture. English-only or bilingual parents can do this, which also shows respect for the language and culture. The more parents show appreciation for and understanding of the language and culture that their children are learning, the more motivated the children will become to be immersed in it.

Fifth, use fun ways to promote children’s phonological awareness in Chinese on a daily basis. We mentioned earlier that phonological awareness in English and in Chinese are both crucial in early literacy development in the two languages. However, this is not to say that parents and educators need to drill phonological awareness into their children, especially before literacy instruction formally begins. In fact, as children’s oral language grows, they also become sensitized to the sounds in their languages naturally. Parents and educators can use language games to foster such a skill. For example, for younger children, phoneme alliteration can be made into a game easily played in Chinese; the goal would be to strengthen their phonological awareness. Traditional language games, such as tongue twisters or 绕口令, would be great for this purpose. A verse like 四是四，十是十，十四是十四，四十是四十(sì shì sì, shí shì shí, shí sì shì shì sì, sì shí shì sì shí; four is four, ten is ten, fourteen is fourteen, forty is forty) is a great way to train children’s ears and tongues when it comes to the differences between the alveolar fricative [s] (s) and retroflex fricative [ʃ] (sh) as well as the different tones. Another one to try is the classic “接龙” game. In this game, players are required to say a word which begins with the final syllable of the word offered by the previous player. For instance, if a parent said “水果 /shuǐguǒ”, a child should find a word that begins with the syllable “guǒ” (which means fruit). Adults can adjust the strictness of the rule according to the age or proficiency of the child. In this case, 果园 guǒyuán, fruit garden, is an acceptable answer, or the rules can be slightly looser to

allow for an answer, as long as the syllables sound the same or even have slightly different tones. In sum, parents and educators can adjust according to their own needs, but the rule of thumb is to make the game fun while training a specific aspect of the children’s language skills.

Finally, introduce and use Pinyin logically. As previously pointed out, one important aspect of Pinyin is that it helps build connections between sounds and meaning with the printed word. However, the connection between when to introduce and use Pinyin for learners of Chinese is not straightforward. It depends on multiple factors, such as the age of the learners, their language proficiency in English and Chinese, and instructional contexts in which they learn Chinese. For immersion elementary schools, unless one conducts a randomized controlled trial, it would be hard to pinpoint the most advantageous timing for the introduction of Pinyin in a school’s curriculum.

Based on our discussion, nonetheless, it is sensible to consider the age of learners as the key factor concerning when to introduce Pinyin as a tool. For learners who have already built a solid phonological awareness in their first language, in this case, English, Pinyin can be introduced and used effectively as a tool to help them map sound-print relationships. It is also useful that learners can use Pinyin to keyboard sounds to access Chinese characters on the computer. That is why many older elementary, middle, high school, and college Chinese courses introduce Pinyin early on, so learners can tap into their phonological skills developed in English and oral Chinese knowledge to decode Chinese characters. For children who are learning Chinese language while simultaneously developing initial literacy in English, the use of Pinyin may require more careful consideration. It might be worthwhile to wait until Grade 2 or Grade 3 to introduce the learning of Pinyin. This is a practice commonly adopted by many well-established Chinese immersion programs (see [CELIN Chinese Program Profiles at Asia Society](#)).

A related discussion is about what kinds of commercially available reading materials can be produced for young

learners of Chinese in order for the effort of teaching Pinyin to be worthwhile. In contexts where Chinese is taught and learned as an additional language (such as in non-Chinese-speaking countries and in countries like Singapore), there need to be sufficient Chinese materials with Pinyin annotations for children to consume. The materials need to be satisfying enough to attract children's attention and appropriate for their language levels. One of the authors has personally purchased books labeled as children's books, annotated in Pinyin, but the language is so archaic that her Pinyin-fluent son just cannot figure out what he just read. Another important factor is for book authors to carefully consider phasing out Pinyin in a book when words are repeated. Perhaps consider taking the Pinyin out at the tenth appearance of the word in the book, which would serve as a hint to the reader that this word has appeared previously, and the reader should be able to recall it. This suggestion is based on the extensive research on incidental vocabulary learning, which reveals that a word needs to be encountered at least 10 times before substantial learning occurs, although there are many other conditions that complicate this matter (Uchihara, Webb, & Yanagisawa, 2019).

ADDITIONAL ADVICE FOR PARENTS WHO DO NOT KNOW CHINESE

Without sounding condescending, we would like to commend you for having the vision to send your child to a Chinese immersion program. As Elizabeth Weise, the author of the book, *A Parent's Guide to Mandarin Immersion* (2014), said, bilingualism is the best gift you can give to your child for life. Here, we offer some more suggestions and resources.

First, in addition to Weise' book, parents can get started by reading the CELIN Brief, [Parents as Partners in their Children's Chinese Immersion Education: Making Decisions and Providing Support](#) by Maquita Alexander and Elizabeth Weise (2018), which has many helpful suggestions regarding how parents can provide support for their children.

Second, learn how to learn with your children. This does not mean you have to learn all of the school materials your

children come home with, or be a master of Chinese tones. But, equipped with the basic knowledge of how the language and its writing system work, parents can assist their children in "figuring out" how to learn. For example, when confronted with a list of characters children have learned, parents can ask their children which characters look similar, or which characters have the same radicals, and how the meanings of the characters are related because of the radicals. The purpose is not to get a 100% accurate answer, but to help children become sensitized to how Chinese orthography works, and eventually, to help them become more reflective of what they are learning (that is, to help promote their metalinguistic awareness as we have discussed above). The CELIN Brief, *Developing Initial Literacy in Chinese*, by Michael Everson, Kevin Chang, and Claudia Ross (2016) is an excellent paper to get you started.

Third, expose your children to the language and print from your community as much as possible and empower them by making good use of their growing skills. This does not mean you have to take them abroad, because in many places in the United States, there are Chinese businesses or communities where the language is spoken and print in Chinese is available – menus, food packages, banners, and other signs. When in a Chinese restaurant, for example, you can try to figure out the meaning of a menu item with your children – and, let them be the "expert"! Don't worry if your children do not know all the characters, because there are always contextual clues to be used (pictures, English translations, etc. in the menu itself), and refrain from asking your children to translate, as Alexander and Weise (2018) also caution against ("Just because your child can't translate everything they're doing into English doesn't mean they don't understand it when it's happening in Chinese."). Rather, co-construct the meaning with your children. The importance of this small practice is to be a problem-solver with your children, and show them that you are also there for them and that their growing skills are relevant and useful. Children are also empowered this way.

CONCLUSION

Becoming bilingual and biliterate is a desirable goal for individuals as well as for societies, yet the journey may not be easy or the same for different families. Yet, the guidelines we provide here -- promote oral language, especially expressive language competence, engage children in interactive reading, and use fun language games -- are all low-tech and low-cost ways to help facilitate early bilingual and biliteracy learning in the home and school contexts. Parents and educators are also recommended to consult other available resources for developing bilingualism and biliteracy in early childhood. For example, [CELIN at Asia Society](#) provides a lot of useful resources on this topic. Other language-general publications we find useful as researchers and as a parent/grandparent include Colin Baker's book (mentioned above); Barbara Zurer Pearson (2008), *Raising a Bilingual Child: A Step-by-Step Guide for Parents*; and Eowyn Crisfield (2001), *Bilingual Families: A Practical Language Planning Guide*.

As psychologist François Grosjean wrote, "Bilingualism is not the burden or the problem it has been made out to be by some, but neither is it the complete bliss that others would have us believe." (Grosjean, 2010, p. xvi) The journey of helping our children become bilingual and biliterate is also full of ups and downs as well as moments of joy and frustration. We encourage fellow educators and parents to normalize practices of bilingualism and biliteracy as a life-long journey with determination, courage, and positivity.

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