BILITERACY ACROSS SCRIPTS: IMPLICATIONS FOR LANGUAGE DEVELOPMENT IN SOUTHEAST ASIA

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Abstract

Many minority language communities in Southeast Asia use the segment-based Latin alphabet. In order to provide ease of literacy acquisition, national governments may encourage or require the use of the partially segmental, partially syllable-oriented Brahmi-based national syllabet in minority literacy development. Evidence from research on biliteracy in other languages and scripts suggests that alphabetic reading skills provide a strong foundation for learning to read a syllabet once a threshold of linguistic competency has been reached. Use of the mother tongue for early literacy also supports successful learning through strong home-school relationships. This study suggests that secondary orthographies based on national or dominant scripts for school-based literacy may not support and possibly even inhibit literacy acquisition due to motivational sociolinguistic factors. Research to confirm these findings specifically in the Southeast Asian context is still needed.

Keywords: Language Development, Biliteracy, Alphabetic orthographies, Syllabet

1 Language in education in Southeast Asia: Scripts, writing systems and orthographies

The recent growth of multilingual education programs in Southeast Asia has increased the number of opportunities for learners to become biliterate. Students are educated first in their mother tongue while also learning the dominant school language of their region. In these bilingual programs, learners of non-dominant languages, that is, languages considered less prominent in prestige, number of speakers, or official use (Kosonen, 2013) learn to read first in their own language, and secondly in the dominant, official language in use in their region or country. Orthographic rules are language-specific, so biliteracy means a bilingual reader learns to read more than one orthography; however, if the orthographies are based on different scripts, a biliterate reader must also learn to read multiple scripts.

In this paper, the term orthography is defined as a language-specific set of rules for the use of a particular script, whereas writing system is a taxonomic term based on functional and organizational characteristics of scripts. For a broader discussion of bilingualism and scripts, writing systems and orthographies, see Cook and Bassetti (2005).

A script is the graphic representation of a writing system (Coulmas, 2014b) or a set of characters to write a language (Unseth, 2005). For example, Thai script, Burmese script, and Latin script are examples of scripts that may be used to create an orthography. An orthography is the system of conventions developed to write a particular language; the orthographies of multiple languages may be based on a single script. For example, the English, French and Spanish orthographies or Lahu and Karen orthographies in Myanmar are all based on Latin script. In Cambodia, orthographies for non-dominant languages, such as Tampuan and Bunong, have been developed based upon the Khmer script. In Thailand, Thai script is used for languages like Akha or Lawa, with orthographies similar to but not identical with Thai orthography due to differences in the linguistic structure and synchronic phonemic, not historical spelling.

Scripts are classified into families based on related characteristics. These families are usually called writing systems, so the terms script and writing system are basically synonymous (Sebba 2007). Cook & Bassetti (2005) note that the term writing system is also being used interchangeably with orthography but chose the define it as a type of script, e.g. phoneme-based, syllable-based or morhpheme-based. This is in line with Daniels (1996) and Coulmas (1999), who refer to writing systems as sets of symbols to represent

language, not as a set of rules for how to use the symbols of a particular script or script type. Similarly, Sebba (2011) distinguishes the two terms and reviews the sociolinguistics of both writing systems and orthographies. Hence, one can refer to Latin or Roman script but English orthography (rules for using a particular set of symbols), the English alphabet (a type of segment-based script, particular type of writing system), but not English script.

The smallest units of writing systems are graphemes. Alphabets like Latin, Greek or Cyrillic are writing systems based on scripts that generally use one grapheme to represent a sound, and consonant and vowel graphemes are presented with equal graphic prominence and in linear order following the spoken units. In *alphasyllabaries*, the orthographic syllable is the basic unit represented by consonant bases with vowel symbols placed around the base (Bright 1999). The dominant language writing systems in much of Southeast Asia, including the Khmer, Thai, Lao, and Burmese Brahmi-based writing systems can be classified as alphasyllabaries. Daniels' (1996) term *abugida* refers to the same scripts but his definition includes the presence of inherent vowels that are pronounced in the absence of a vowel diacritic. This definition would exclude Lao from the other Brahmi-based scripts because modern Lao orthography no longer uses inherent vowels (Lew 2014). The term alphasyllabary is defined via the use of vowel diacritics and does not fully give account to consonant diacritics as used in Khmer, nor to the independent vowel graphemes used in Thai Khuen (Egerød 1959). This paper therefore uses the term *syllabet* for the Brahmi-based scripts in Asia, defined as a segment-based script with orthographic syllables where individual symbols do not reflect the linear order of the sounds they represent (Lew 2014).

Within a particular multilingual situation, readers may learn two or more orthographies based on a single script, or two or more orthographies based upon different scripts. For example, a Tampuan speaker learning to read first in Tampuan and then in Khmer will read two different orthographies based upon the Khmer script. By contrast, a member of the Lahu language community in Thailand or Myanmar may first learn to read the Latin script-based Lahu alphabet, followed by the Thai or Burmese syllabet. In this case, the orthographies are also based upon different writing systems; readers will learn to read an alphabet first, followed by a syllabet, and thus will become biliterate in multiple scripts. Because a significant number of non-dominant languages in Southeast Asia are written using alphabets, the question of how L1 literacy skills in an alphabet will transfer to reading an syllabet is important for program developers and policy makers.

2 Interdependence, thresholds and successful L2 reading

Reading acquisition is the task of learning how one's spoken language maps onto a particular orthography. Though some reading skills are language specific, there are also universal processes that support learning to read in any language. Those learning to read for the first time do not only learn to read that language, but also acquire cognitive skills and processes that transfer to learning to read other languages (Perfetti and Harris 2013).

Cummins' (1979) concepts of common underlying proficiency and the developmental interdependence hypothesis provide a framework for understanding how concepts and skills acquired in one of the learner's languages transfer to other known languages. The concept of common underlying proficiency describes how multilingual learners store knowledge in the brain. Information is not stored in separate areas for each language, but rather in a common knowledge base that can be accessed by learners in any other of their known languages. According to the concept of common underlying proficiency, any skill gained in one language will transfer to a subsequently learned language, provided that the learner has adequate exposure to the second language (Cummins 2000). This concept, particularly ways in which L1 reading skills support L2 reading skills, has been demonstrated in multiple studies (cf. Cummins 2000; Genesee and Geva 2006; Verhoeven 1994).

The developmental interdependence hypothesis, also developed by Cummins, further explains the way in which underlying proficiency is shared between languages. The developmental interdependence hypothesis proposes that the level of L2 competence reached by the learner is related to the oral and written language skills that have previously been developed in the L1 (2001); that is, strong L1 skills will support the development of strong L2 skills. The threshold hypothesis addresses the issue of the level of L2 proficiency needed for interdependence to function, and therefore for effective transfer of skills (Cummins 2000). The developmental interdependence hypothesis and the threshold hypothesis together indicate that L2 reading skills develop most strongly when built (a) upon a foundation of strong L1 reading skills and (b) upon a foundation of growing L2 proficiency. These relationships apply both in situations where the L1 and L2 are

related, either linguistically or orthographically, and in cases where the languages and orthographies may be unrelated (Cummins 2000; Geva and Siegel 2000; Riches and Genesee 2006).

3 Transfer of L1 Reading Sub-Skills to L2 reading

People learning to read a second language have already mastered the major underlying literacy principle that symbols represent sounds in their language, and are already adept at linking the spoken and orthographic systems. This principle does not need to be re-learned when acquiring literacy in a second language (Bassetti 2013). The process of reading skills transfer has been explained by the transfer facilitation model (Koda 2005). The model states that as first language literacy skills develop, learners increase the automaticity by which they map the sounds of their language to the written system. The transfer facilitation model assumes that transfer is based upon the existence of solid L1 skills, which are then shaped by the specific orthographic features of the L2 writing system as they are encountered (Koda 2005). The model also predicts that skills developed in one language are sharable with any other languages that require the use of similar skills (Nakamura, Koda, and Joshi 2013). This is true even if the two languages are linguistically and orthographically unrelated. With the exception of orthography specific skills, such as decoding the graphemes in the writing system, reading sub-skills developed in the L1 have been shown to facilitate L2 reading development (Dressler and Kamil 2006). Thus, literacy skills developed in the learner's first language serve to support and facilitate later literacy development in other languages. Hornberger (2003) suggests that transfer in biliteracy development is a global process, involving skills and strategies used in the reading process. Transfer is facilitated by metalinguistic knowledge developed by bilingual learners and transfer of reading sub-skills between languages, which will be examined in the following two sections.

3.1 Metalinguistic knowledge

The awareness that individuals have about the way that language works is called metalinguistic knowledge. Bilingualism provides learners with a particularly rich foundation of metalinguistic awareness, as developing multiple languages allows learners, even young children, to develop an understanding of the structural aspects of language as they compare and contrast the languages they know. This metalinguistic knowledge of language structure, particularly syntactic and pragmatic structures, facilitates reading comprehension (Lesaux et al. 2006).

Metalinguistic knowledge gained during the acquisition of first language literacy enables learners to detect regularities in sound-symbol correspondences of other writing systems. This knowledge furthers L2 reading acquisition, as learners use this already mastered skill of determining the relationships between sound and print (Koda 2005). Metalinguistic knowledge also extends to the specific characteristics of different orthographic systems. Even very young biliterate children are able to differentiate between the orthographies they have learned and to describe how they work. Furthermore, learning any orthographic system expands the metalinguistic knowledge of new readers which can be applied to subsequently learned languages, even prior to literacy acquisition in that language (Bassetti 2013).

When all of the learner's languages are harnessed within a classroom environment, biliterate learners employ a range of literacy strategies that are not available to monolingual learners. One such strategy, oral and written code switching, allows learners to draw upon their linguistic and knowledge bases in either language; children in bilingual programs that successfully attain biliteracy have been shown to rely on these strategies when composing texts in either language (Gort 2012). When bilingualism and biliteracy are used as strategic resources in the classroom, literacy skills in all of the learners' languages are strengthened.

In summary, bilingual learners have the opportunity to develop strong metalinguistic skills, which are applied to all learned language and orthographic systems. The breadth of metalinguistic knowledge developed when learning multiple languages facilitates the development of reading sub-skills, promoting L1 and L2 literacy development.

3.2 Transfer of phonological sub-skills

Developing phonological awareness is a key part of literacy acquisition. Phonological awareness includes familiarity with phonemes, syllables, stress, and other features of the language's sound system. Phonological sub-skills develop as learners increase their knowledge of the sound units of language and how they map onto graphemes. The transfer of sub-skills between languages is possible because knowledge about the sub-

lexical components of language, once learned, can be shared with other languages (Koda 2005; 2007). The skill of hearing small components of language is shared between all languages the learner knows (Durgunoglu, Nagy, and Hancin-Bhatt 1993). In bilingual children, all aspects of phonological awareness are correlated between their two languages (Koda 2007). Common underlying linguistic proficiency, which supports transfer, includes the knowledge of a package of sub-lexical phonological skills. Learners who gain awareness of these skills in their L1 transfer these to an L2, even if the two languages are unrelated. Research on Korean-English bilinguals revealed significant phonological transfer between the L1 and L2, despite the differing orthographic organizing principles of the segment-based orthographic syllable system of Korean script and the segment-based alphabet of English (Wang, Park, and Lee 2006). Likewise, significant transfer of phonological skills has been observed in Chinese-English bilingual readers (Keung and Ho 2009; Wang, Yang, and Cheng, 2009). Similarly, a study of Arabic-French bilingual children showed that L1 Arabic language literacy skills were a significant predictor of French L2 reading, despite the fact that the orthographies are based upon different scripts and the languages are unrelated (Cummins 2000).

Significantly, even the mastery of sub-lexical phonological skills that are not shared between the L1 and L2 can predict reading success in the L2. A study of Chinese L1 children demonstrates that their level of tone awareness, in addition to onset awareness, predicted English phonological awareness (Wang, Perfetti, and Liu 2005). Thus, even a measure of phonological awareness, in this case tone, which is not relevant for the L2 can contribute to L2 phonological awareness. The process of gaining phonological awareness through L1 literacy appears to support the development of L2 phonological skills, even in unrelated languages. Common underlying proficiency, which supports transfer, includes the knowledge of a package of sub-lexical phonological skills. Learners who gain awareness of these skills in their L1 transfer these to an L2, even if the two writing systems are unrelated.

Particular patterns of transfer of phonological sub-skills have also been observed in readers who learn both an alphabetic script and a syllabet. Script type shapes reading strategy: reading syllabets relies strongly on both the syllable and phonemic levels of phonological awareness, while alphabetic reading relies more strongly on phonemic awareness (Ziegler and Goswami 2005; Ziegler and Goswami 2006; Halderman, Ashby, and Perfetti 2012). Despite these differences, phonological sub-skills in Kannada, an syllabet, were found to predict decoding skills in English, the learners' L2 (Nakamura, Koda, and Joshi 2013). Furthermore, reading skills developed in a segment-based alphabetic script can also positively transfer to reading a segment-plus-syllable based syllabet; individuals who are literate in both an alphabet and a syllabet demonstrate stronger phonemic awareness skills than those literate in only a syllabet (Bassetti 2013; Genesee and Geva 2006; Mishra and Stainthorp 2007). Though readers of syllabets employ a greater degree of syllable processing in their early reading (Nag, Caravolas, and Snowling 2011), phonemic awareness is also a predictor of successful reading in the later stages of reading development (Karanth 2002; Nag 2013; Nag and Snowling 2011; Wijayathilake and Parrila 2013). Thus, the phonological awareness skills developed in learning to read either a segment-based alphabetic script or a syllabet support one another and can be transferred to reading a different script system.

3.2.1 Transfer of other reading skills
Skills in reading comprehension, text approach strategies and writing also transfer between languages, based on the dual foundation of L1 literacy and L2 proficiency. A study of native Spanish speakers learning English in a school context showed that their first language reading ability was the strongest predictor of later success in L2 reading (Riches and Genesee 2006). A study of Kannada-English bilingual readers also provides evidence that L1 reading comprehension is a predictor of later L2 reading comprehension, though L2 ability also plays a role (Nakamura, Koda, and Joshi 2013). Learners with well-developed L1 literacy skills are most likely to be efficient and successful in their literacy development in subsequent languages (Riches and Genesee 2006). However, transfer of skills in each of these domains is evident even when L2 proficiency is still emerging (Dressler and Kamil 2006). Thus, a well-developed foundation of first language reading skills provides the strongest foundation for transfer of reading sub-skills to second language reading.

4 The role of L1 reading proficiency and L2 Oral proficiency in L2 reading
Learners can apply their strategies for gaining meaning from text from one language to another; however, the level of speaking and listening ability in the L2 is also significant in predicting successful reading comprehension. The successful transfer of L1 reading comprehension abilities, then, is seen most strongly

when a threshold of L2 knowledge is reached; when the learner has sufficient lexical and syntactic knowledge of the L2 orally, their L1 literacy skills will transfer to the L2. Strong reading comprehension skills, therefore, are built upon a dual foundation of L1 reading comprehension proficiency and L2 knowledge. Variation in learners' L2 reading ability is explained by both L1 reading skills and L2 language ability: one study attributes 20% of variance in skills to L1 reading skills, and 30% to L2 knowledge (Bernhardt and Kamil 1995). Though students can begin reading their L2 with limited oral proficiency, strong higher-order reading skills only develop when a significant foundation of L2 proficiency is achieved. It is possible that limited L2 proficiency does not greatly affect word reading skills (Koda 2007); however, a lack of vocabulary knowledge in the L2 greatly impedes reading comprehension (Riches and Genesee 2006). A broad foundation of oral proficiency, including both expressive and receptive skills, and comprehensively covering vocabulary, syntax, discourse, and pragmatics is a necessary foundation for L2 literacy. Research demonstrates that students with high levels of L2 proficiency are able to apply their L1 reading comprehension skills to L2 reading. By contrast, learners with lower L2 proficiency are less able to transfer their comprehension skills from their L1 (Lesaux and Geva 2006). It is clear, then, that a threshold level of L2 proficiency is necessary for successful L2 reading. Reading proficiency that is developed in the L1 provides the foundational reading skills, which emerge in the L2 once the necessary level of language proficiency has been reached.

5 Relationship between home and school as a support for reading proficiency

Early literacy experiences in any language provide a strong foundation for later literacy. Family literacy, even if not in the dominant school language, was found to be a strong predictor of later L2 reading ability in the school context (Riches and Genesee 2006). The use of the home language and writing system in the school also supports student learning. The belief of parents that they have the knowledge and tools to support their child's educational development predicts their overall level of involvement in the educational process (Garcia and Kleifgen 2010). Parents are also more likely to be involved in helping children with schoolwork when L1 literacy is maintained (Cummins 2000). The use of the L1 writing system supports parent involvement and encourages family literacy, thus providing a good foundation for the development of L1 reading skills and subsequent L2 literacy.

6 Application to Mainland Southeast Asian multilingual contexts

In the Southeast Asian multilingual context, such as in Thailand and Myanmar, learners whose L1 is a non-dominant language may speak a language that is written with an alphabetic script such as Lahu or Hmong. Often, these scripts are highly valued by the communities as a reflection of their cultural and linguistic identities (Tan 2012). Apart from Vietnam, the dominant language learned in school most often uses an syllabet. Bilingual programs for these learners would then involve first learning the alphabetic script of the L1 before transitioning to the syllabet of the L2, and likely then on to English as the L3. In some cases, such as for the Hmong in Thailand, an orthography based on the script of the national language of education is created for the non-dominant L1 for school purposes, based on the assumption that the students will learn more easily if the L1 and school language orthographies use the same script. This orthography, however, is not typically the orthography used by the literate adults in the non-dominant L1 language community. In such cases, the challenges and benefits of biliteracy involving both an alphabetic script and a syllabet may be considered as an alternative to the creation of special school-based orthographies.

It is true that some reading skills are script specific; learners reading two different types of orthographies must learn to use the processing strategies required by each orthography and acquire script processing skills specific to each writing system (e.g. Reddy and Koda 2012; Wang, Perfetti, and Liu 2005). However, even when script-specific skills are required, it is clear that reading sub-skills learned in one script can also facilitate the development of these skills in another script. Reading syllabets such as Thai and Burmese requires both syllable level and phoneme level awareness. For early readers of syllabet scripts, syllable level awareness generally emerges developmentally in the reading process before phoneme level awareness is acquired (Karanth 2006; Nag, Caravolas, and Snowling 2011; Nag 2007; Patel 2004). Learning to read an alphabetic script, by contrast, is associated with the early emergence of phonemic awareness; this is particularly evident if the orthography is relatively shallow, with simple phoneme-grapheme correspondences. Biliterate readers of syllabets and alphabets demonstrate phonemic awareness as a result of their exposure to alphabetic scripts (Bassetti 2013; Bhide et al. 2013; Genesee and Geva 2006). Exposure to

reading an alphabet with simple grapheme-phoneme correspondences is also associated with increased phonemic awareness and reading skill in readers with more complex orthographies

Furthermore, mapping phonemes to graphemes aids fluent reading of syllabets in later literacy development. For example, in Karanth's (2002; 2006) studies, readers of Kannada, a Brahmi-based syllabet, first develop strong syllable-level phonological awareness. They then appear to suddenly acquire more robust phonemic awareness during about the third year of reading instruction, adding information about the alphabetic principle present in their orthography to their already present syllable level knowledge. In Patel's (2004) study of children in Gujarati medium schools learning to read an syllabetic script, students began to segment orthographic syllables into phonemes in their fourth year of reading instruction. Thus, the skill of mapping phonemes to graphemes is needed for reading a syllabet; readers of non-dominant languages written alphabetically will have mastered this skill before learning to read their L2, and therefore may have an advantage over readers only exposed to a syllabet. Thus, it is possible to conclude, based on these studies, that despite some differences in script-specific reading strategies, the phoneme related reading sub-skills learned while reading a Southeast Asian language written alphabetically are likely to create a strong foundation for early phonemic awareness, which supports acquisition of advanced literacy skills in a syllabet.

In addition, Southeast Asian languages written using alphabetic scripts, such as Lahu, Akha, and Lisu still strongly reflect the role of the syllable unit in the orthographic system, with visually salient orthographic syllable units. Though these languages are written using Latin script, syllable spacing, rather than word spacing is used. Along with syllable-final tone marks, the syllable spacing creates significant visual syllable salience. Awareness of syllable units is particularly important for learning to read a syllabet. Patel (2004) argues that for readers of syllabets, the most important sublexical phonological unit is the spoken syllable, which corresponds to the visually salient orthographic syllable; preliterate readers rely on their knowledge of the phonological syllable and apply it to orthographic syllables. Though languages such as Lahu and Akha are written alphabetically, the visual salience of the syllable remains a key unit in reading, and thus syllable-level phonological knowledge is likely to transfer easily to reading syllabets. Thus, though similarity between scripts is not necessary for literacy skills to transfer, the phonological subskills that support reading the alphabets of many non-dominant Southeast Asian languages and the dominant language syllabets complement one another in several important ways that provide a foundation for early phonemic awareness, which supports acquisition of advanced literacy skills in a syllabet.

Besides the transfer of phonological sub-skills, developing first language literacy in the orthography most often used in the language community is likely to enhance home-school relationships, and provide increased opportunities for literacy skills to be introduced and reinforced in a community setting. Learners who learn to read their L1 in the script most often used will have a greater likelihood of accessing a wide range of print materials, allowing them to build a stronger foundation of L1 fluency upon which they can build their L2 reading skills.

In summary, research suggests that exposure to two orthographies based on different scripts will not create an impediment to biliteracy for early readers. Early phonological awareness developed as L1 literacy is acquired transfers to the L2, despite differences in language or script family. A foundation of L1 literacy, where the full range of reading skills, including comprehension, is strongly developed, provides a strong basis for literacy in subsequent languages. Biliterate students acquire metalinguistic skills in both languages that support their reading and writing, particularly if they are encouraged to use all of their linguistic resources as they develop literacy in all of their languages. The development of solid L2 speaking and listening proficiency allows learners to cross the threshold needed to transfer their L1 reading proficiency to their L2, allowing for strong literacy in both languages. Therefore, once L2 knowledge reaches the threshold for successful transfer of L1 literacy skills, a range of cognitive skills, from phonological awareness to comprehension strategies, transfers between languages, regardless of differences in language family or script. More research to confirm findings on positive L1 reading proficiency transfer in L2 literacy acquisition across scripts in the Southeast Asian context is still needed. To date, most formal multilingual education programs in the region, for example, those in Cambodia, have involved biliteracy in two languages using the same script. However, a growing number of language communities are beginning formal school-based L1 reading instruction in an alphabetic script in contexts where students will transfer their skills to reading an L2 written with a syllabetic script. This will provide increased opportunities for research in this area.

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