Analogy-based phonics for Hong Kong ESL learners

Kwan-yee Ng, University of Cambridge.
Androula Yiakoumetti, University of Cambridge.

Ng, M.Phil., is a graduate researcher and Yiakoumetti, Ph.D., is an associate lecturer at the Faculty of Education, University of Cambridge.

Abstract
Phonics instruction in first-language education has received considerable research attention. A plethora of empirical studies demonstrates the advantages of such instruction. However, little is known about the effects of phonics on second-language reading. This study presents some initial findings regarding such effects. It demonstrates that strategic analogy-based phonics instruction can enhance ESL learners' ability to read new words which share rimes with words learners already know. The study suggests that this type of instruction deserves a place in the ESL curriculum.

Introduction
Phonics instruction as a research topic has received considerable attention from both academics and language teachers. This attention has mainly focused on instruction in word recognition and English literacy for young mainstream learners. Research studies have thus tended to concentrate on the settings of the USA, Britain and Australia. More recently, however, phonics research has embraced instruction of languages other than English, instruction for adults, instruction for children with reading disabilities, and instruction for foreign-language learners.

Our manuscript deals with the lattermost research avenue of phonics instruction for foreign-language learners. Specifically, the study deals with strategic analogy-based phonics instruction for ESL learners in Hong Kong. This type of instruction entails the teacher's explicit modeling of analogy-decoding strategies (White 2005). A relatively small number of studies has empirically evaluated strategic instruction and these studies all come from contexts of first-language (L1) learning (e.g. Santa and Hoein 1999, Walton, Walton and Felton 2001). The present study, which falls within the realm of second-language (L2) learning, aims to serve as a founding step which will encourage future research. The study's specific focus is L2 English word reading. The study builds on the accepted basis that the semantic forms of English words do not necessarily exist in ESL children's mental lexicons, as they do in the mental lexicons of native learners of English. Hong Kong ESL learners were used in a case study to explore the effects of strategic analogy-based phonics instruction.

Analogy-based phonics
The key features of phonics instruction are the teaching of grapheme-phoneme correspondences, segmentation and blending. The aim of phonics is to teach students to use known words in order to decode unknown words. There is no doubt that many researchers as well as language teachers consider phonics invaluable for reading instruction. However, teachers are often faced with a challenge regarding how exactly they should teach children to decode. This challenge is based on the number of options available to teachers: analytic phonics, synthetic phonics, spelling-based phonics and analogy-based phonics (Stahl, Duffy-Hester and Stahl 1998, White 2005).

Analogy-based phonics is also known as 'onset-rime' or 'rime-based' instruction because it deals with onsets, rimes and their orthographical representations (White 2005). The onset and the rime are units in spoken syllables that correspond to graphemes of written words. For example, 'h' in

'house' is the onset and 'ouse' is the rime. Analogy-based phonics instruction is employed when the targeted words share similar parts with words students already know by sight (e.g. reading 'mouse' by analogy to 'house').

Research studies in L1 learning that support analogy-based phonics were carried out by Goswami (1986, 1993) and suggest that young readers can employ analogies successfully before they can employ other phonological information to read words. Specifically, Goswami demonstrated that young readers are able to make analogies between the spelling patterns of unknown and clue words and that, in making these analogies, they use orthographic units such as onset and rime than other multiletter units.

The relationship between L1 and L2 orthography

The mechanisms that characterise L1 reading are not necessarily identical to those involved in L2 reading. We argue that it is essential to consciously expose L2 learners to new word-recognition strategies if their L1 orthography differs greatly from their L2 orthography. For example, one can more easily predict English letter patterns such as rimes as opposed to the sounds of Chinese characters. This is because English, which is an alphabetic language, is orthographically shallower than Chinese which is a logographic language. The representational unit of the former (i.e. alphabetic English) is the phoneme whereas the representational unit of the latter (i.e. logographic Chinese) is a word or a morpheme. This difference between the two systems of orthography is considered to affect the efficiency of L2 word recognition (Akamatsu 1999, Muljani, Koda and Moates 1998). As Akamatsu (2002) explains, ESL readers with logographic L1s (e.g. Chinese) are less efficient in processing the constituent letters of an English word than those readers with an alphabetic L1 (e.g. Spanish). Studies have shown that both positive and negative transfer of L1 word-recognition skills have been identified in L2 readers. It has also been demonstrated that, even for readers with the same logographic L1, L2 word-recognition skills vary depending on readers' exposure to alphabetic symbols when learning to read in their L1 (Huang and Hanley 1994, Read, Zhang, Nie and Ding 1986). Holm and Dodd (1996) discovered that ESL learners from mainland China who had used pinyin (an alphabetic-based written form of Chinese) in learning to read Chinese were better at English phoneme segmentation than ESL learners from Hong Kong who had not learnt pinyin. We argue that one of the targets of ESL instruction in a L1 logographic setting should be to assist learners transit from one psycholinguistic grain size to another.

Setting of the study

Due to the opaque nature of the Chinese orthography, drill and rote memorisation have been predominantly used in Hong Kong for teaching children to read Chinese characters. Children therefore depend on visual information for recognising unfamiliar words. However, this L1 strategy creates problems when applied for the learning of an alphabetic language such as English. Evidence for this problem comes from Holm and Dodd's (1996) study which indicated that children with logographic L1s tended to view English (L2) words as pictures that cannot be reduced into pronounceable parts, just as they view the characters of their L1. This evidence suggests that speakers with logographic L1s may benefit from a change in the learning process of L2 reading. Further evidence comes from Liow and Poon's (1998) study which compared English reading skills across three groups of Singaporean children with different language backgrounds: Chinese, English, and Bahasa Indonesian. The study indicated that speakers of Bahasa Indonesian, a language with a very shallow orthography, performed better than the other speaker groups on phonological-awareness tests. English speakers came second with Chinese speakers scoring last. Drawing from these studies, we believe that it might be particularly beneficial for ESL learners whose first language is logographic to make use of orthographic rime analogy. Hong Kong ESL classes therefore serve as ideal settings for our investigation.

197

Another reason for identifying Hong Kong classes as most suitable for our study is that phonics is already part of ESL learning. During the last decade, influenced by trends in the West, the government attempted to introduce the use of phonics into the formal ESL curriculum. However, there has not been clear and sufficient guidance on how phonics should be taught and schools are left to decide on their own approach. Understandably, the degree and approach to teaching phonics varies considerably. The most common approaches include the raising of rhyming awareness and teaching of rhyming words, instruction of letter-sound correspondences, and instruction of systematic analogy-based phonics. It is unusual to find a school that teaches children to decode English words strategically, that is, while the teacher is reading a text with the students.

In our study, we aimed to introduce strategic rime-based orthographic analogy instruction in a systematic and controlled manner. The study comes at a time when it is widely felt that ESL teaching in Hong Kong is ineffective. This feeling is illustrated by the ever-falling pass rates in English language public examinations such as HKCEE and HKALE despite the significant emphasis put on English language teaching.

Project
The project was carried out over three months in 2008 at a primary school in Hong Kong. Two grade-three classes participated in the project, with students aged eight and nine years old. The two participating classes had achieved similar results in their internal English examination just before the project commenced, a fact which indicates their comparability. To further confirm the comparability of the classes, a pre-test was carried out. A quasi-experimental non-equivalent group design was employed, with one class serving as the experimental group and the other as the control group. The experimental group included 31 students as opposed to the control group of 33 students.

The teacher of the experimental group strategically taught the pronunciation of new words (drawn from the storytelling session of the ESL class) by using rime analogy in addition to asking students to pronounce words after him. The core of strategic analogy-based phonics lies in encouraging students to actively think of words that have the same rime as the lexical item that is being introduced for the first time. The teacher therefore wrote the new word on the board, divided the word into onset and rime, and subsequently asked students to list familiar words which shared the same part as the new word he was introducing. The teacher of the control group followed the usual routine of 'teachers read and students repeat' without explicitly associating spelling patterns of orthographic rimes with pronunciation.

Data were collected in the form of pre- and post-tests. As already noted, the main aim of the pre-test was to ascertain whether the phonological awareness of the experimental and control groups was similar. Statistical similarity would validate the comparability of the two groups. To fulfill this aim, two auditory tasks were included. The first was an oddity task in which items focused on either initial consonant(s), initial vowel, final consonant(s), or on rhymes. The second task was a phoneme deletion task which required students to either delete the initial consonant(s) or the final consonant(s). These pre-test items were adapted from Bowey, Cain and Ryan (1992) and Huang and Hanley (1994). A second aim of the pre-test was to gauge students' pre-existing knowledge of the words which were to be targeted during the project. To fulfill this second aim, two oral reading tasks were included. The first was a word-reading task and the second a clue-word task. The word-reading task included words which were to be taught during the experiment, words that would not form part of the experiment but that shared rimes with words taught, and words containing rimes common to grade-three learners (e.g. –old) but which were not to be taught during the experiment. In the clue-word task, each participant was shown a known clue word and was subsequently asked to read aloud an unknown word with a similar spelling pattern. Non-words (e.g. flip, sholt) and low-frequency words (e.g. jest) for grade-three

ESL learners were used to avoid the word frequency effect and hence to enhance the validity of the test. These pre-test items were taken from Wood and Farrington-Flint (2002). The words were not presented in sentences or in a text but in a list form to prevent students from guessing the words based on the context. The last two tasks, the word-reading and the clue-word tasks, also formed the content of the post-test. This allowed for a direct comparison of students' performance before and after the intervention.

To complement the test findings, the principal investigator was present in the experimental class during the intervention. Observation notes were taken to document the way in which the teacher applied strategic analogy-based phonics instruction and the way in which students responded.

Effects of strategic analogy-based phonics instruction
The pre-test revealed no statistically significant difference in phonological awareness between the experimental and control groups prior to the intervention. This result confirmed that the two groups were comparable.

Analysis of post-tests revealed two interesting findings. Firstly, there was a statistically significant difference ($P = 0.026$) between the two groups in the ability to recognise unfamiliar words which entailed rimes shared with words taught by the teachers during the fieldwork lessons. The experimental group which was exposed to strategic analogy-based phonics instruction performed significantly better. Secondly, there was a statistically significant difference ($P = 0.044$) between the performance of the two groups in recognising non-words which shared rimes with words presented to them during the fieldwork lessons. Once again, the experimental group outperformed the control group.

Cross-tabulation of the experimental group's data was undertaken to identify influencing factors within the targeted instruction. Two factors were identified: the number of neighbourhood words that the students already know, and the word frequency of the word sharing the same rime with the new word. It should be noted that, although it has previously been commonplace to define word frequency as the frequency with which children encounter a word in their daily activities, the current study does not employ this definition because it cannot be meaningfully applied to ESL participants who hardly ever use English in their daily lives. We interpret word frequency as the familiarity of a word based on how long this word has been taught and how often it is used in the classroom by the teacher.

Orthographic neighbourhood words
The more words the students already know which contain the target rime, the greater the increase in the percentage of students recognising the word. For example, the new word 'bun' was analogised in the class with three words 'gun', 'sun' and 'run'. The percentage of experimental students who subsequently recognised the test item 'nun' rose by 32.7% in the post-test.

Word frequency
The more familiar the students were with the word that they knew already, the more likely they could successfully analogise. For example, the test item 'pump' shares the same rime with the word 'jump', a word that is very familiar to grade-three students. In fact, two students of the experimental group mistook 'jump' for 'pump', showing that they were, in fact, applying analogy. Another example is the word 'dock', which analogises with 'sock', a word that students learnt in grade one. A 25.8% rise in recognising this word was reported in the experimental group's post-test.

To summarise, our study accords well with studies carried out in the field of L1 education in presenting initial findings from within the field of L2 education. It demonstrates that strategic teaching of analogy-based phonics can effectively enhance learners' ability to read new words based on words that they already know.

199

Conclusion

Strategic analogy-based phonics instruction was introduced to assess whether it could effectively improve ESL students' word recognition. Through teacher modelling, students were urged to actively use analogy as a tool in ESL reading. Our findings demonstrated that, after being exposed to the aforementioned instruction, the experimental group significantly outperformed the control group in reading new words. The findings demonstrate that strategic analogy-based phonics instruction merits application in the ESL classroom as one of the strategies that can speed up children's development of word-recognition skills. Further research to identify how best to integrate this instruction in the formal ESL curriculum is now urgently needed. Our study suggests that, if analogy-based instruction is methodically applied, ESL learners can be freed from rote memorisation of English words. Such an achievement would be of particular benefit to learners whose first language is logographic.

References

Akamatsu, N. (1999). The effects of first language orthographic features on word recognition processing in English as a second language. Reading and Writing, 11(4), 381-403.

Akamatsu, N. (2002). A similarity in word-recognition procedures among second language readers with different first language backgrounds. Applied Psycholinguistics, 23(1), 117-133.

Bowey, J. A., Cain, M. T., & Ryan, S. M. (1992). A reading-level design study of phonological skills underlying fourth-grade children's word reading difficulties. Child Development, 63(4), 999-1011.

Goswami, U. (1986). Children's use of analogy in learning to read: a developmental study. Journal of Experimental Child Psychology, 42(1), 73-83.

Goswami, U. (1993). Toward an interactive analogy model of reading development: decoding vowel graphemes in beginning reading. Journal of Experimental Child Psychology, 56(3), 443-475.

Holm, A., & Dodd, B. (1996). The effect of first written language on the acquisition of English literacy. Cognition, 59(2), 119-147.

Huang, H. S., & Hanley, J. R. (1994). Phonological awareness and visual skills in learning to read Chinese and English. Cognition, 54(1), 73-98.

Liow, S. J. R., & Poon, K. K. L. (1998). Phonological awareness in multilingual Chinese children. Applied Psycholinguistics, 19(3), 339-362.

Muljani, D., Koda, K., & Moates, D. R. (1998). The development of word recognition in a second language. Applied Psycholinguistics, 19(1), 99-113.

Read, C., Zhang, Y-F., Nie, H-Y., & Ding, B-Q. (1986). The ability to manipulate speech sounds depends on knowing alphabetic writing. Cognition, 24(1-2), 31-44.

Santa, C. M., & Hoien, T. (1999). An assessment of early steps: a program for early intervention of reading problems. Reading Research Quarterly, 34(1), 54-79.

Stahl, S. A., Duffy-Hester, A. M., & Stahl, K. A. D. (1998). Everything you wanted to know about phonics (but were afraid to ask). Reading Research Quarterly, 33(3), 338-355.

Walton, P., Walton, L. M., & Felton, K. (2001). Teaching rime analogy or letter recoding reading strategies to prereaders: effects on prereading skills and word reading. Journal of Educational Psychology, 93(11), 160-180.

White, T. G. (2005). Effects of systematic and strategic analogy-based phonics on grade 2 students' word reading and reading comprehension. Reading Research Quarterly, 40(2), 234-255.

Wood, C., & Farrington-Flint, L. (2002). Orthographic analogy use and phonological priming effects in non-word reading. Cognitive Development 16(4), 951-963.