Incidental Learning of Chinese Vocabulary Via English Context Reading

Kay-Ann Linton
Florida International University

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Miami, Florida

INCIDENTAL LEARNING OF CHINESE VOCABULARY VIA ENGLISH CONTEXT READING

A MA Project submitted in partial fulfillment of the requirements for the degree of
MASTER OF ARTS
in
LINGUISTICS
by
Kay-Ann Linton

2017
To: Director, Linguistics Program  
College of Arts, Sciences and Education

This MA Project, written by Kay-Ann Nadine Linton, and entitled Incidental Learning of Chinese Vocabulary via English Context Reading, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this MA Project and recommend that it be approved.

_______________________________________  
Ellen Thompson

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Virginia Mueller Gathercole

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Melissa Baralt, Major Professor

Date of Defense: April 12, 2017

The MA Project of Kay-Ann Nadine Linton is approved.

_________________________________________  
Prof. Virginia C. Mueller Gathercole  
Director, Linguistics  
College of Arts, Sciences, and Education

Florida International University, 2017
ABSTRACT OF THE MA PROJECT

INCIDENTAL LEARNING OF CHINESE VOCABULARY

VIA ENGLISH CONTEXT READING

by

Kay-Ann Linton

Florida International University, 2017

Miami, Florida

Professor Melissa Baralt, Major Professor

Two research questions were posed to assess the potential of a new pedagogical tool, L1-context reading, for learning Chinese as a second language: 1) Can an alphabetic text context be used to facilitate incidental learning of logographic vocabulary? 2) Is there a difference between L1-context reading and rote memorization in acquisition of form and meaning? Twenty four Florida International University students with no knowledge of a logographic language were assigned to the L1-context Reading Group or the Rote Memorisation Group. For five minutes, the Reading Group read a list of English sentences, each containing a Chinese word, while the Rote Memorization Group read a list of target words paired with English translations. Reading Group post-test scores for meaning and form were significantly higher than chance, but not higher than the Rote Memorization Group. The findings show the potential of L1-context reading as a tool for Chinese vocabulary learning.
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1. LITERATURE REVIEW

Paucity of Chinese Foreign Language Pedagogical Resources

The demand for teachers and pedagogical resources for Chinese as a foreign language is significantly on the rise (Orton, 2010a, 2013). China’s political and economic influence has been steadily increasing in recent years, leading to increased demand for Chinese proficiency in business, diplomacy, and personal relations, along with a surge in popularity of Mandarin Chinese as a foreign language. In 2013, the Modern Language Association of America reported an increase of 3.6 percent in Chinese Language enrollments in BA-granting programs, with the number of completed bachelor’s degrees in Chinese rising 32.8 percent and a steady increase in advanced level enrollment proportions persisting from 2006 (Goldberg, Looney, & Lusin, 2015). Faced with the growing demand, teachers in the United States are unprepared for the influx of new second language (L2) learners of Chinese due to the paucity of pedagogical tools for the teaching of Chinese to English natives (Orton, 2010a, 2010b). According to Orton (2010a), the resources that currently exist for Chinese teaching and learning are outdated, and the majority of Chinese teachers are not trained in a way that caters specifically to Chinese language teaching, but rather are native speakers of Chinese who have been trained in general foreign language teaching, and ultimately lack insight into the challenges of learning their mother tongue. The present study seeks to contribute to the expansion of new pedagogical resources by exploring a potential tool for aiding written vocabulary acquisition and promoting literacy among Chinese L2 learners.
Importance of L2 Vocabulary Development

The development of tools for Chinese L2 learners should take into consideration what the problematic areas are in learning Chinese and in second language learning in general. The most immediate need of students in early stages of learning any foreign language is vocabulary (Singleton, 1999; Hunt & Beglar, 2005). According to Lewis (2000), acquiring sufficient vocabulary is the “single most important task” (p. 8) for the L2 learner, as without a lexicon, the learner will be unable to communicate or understand others using the language. As Wilkins (1972) puts it, “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (pp. 111-112). The importance of vocabulary arises not only because words are needed to compose sentences, but also because of the influence that vocabulary acquisition extends to other linguistic abilities such as grammatical competence and discourse skills (Barcroft 2004; Cobb 2007; Proctor et al. 2005). The focus on vocabulary before grammar is also supported by Task-Based Language Teaching (TBLT). TBLT is a learner centered educational framework for the teaching of foreign languages that emphasizes authentic, meaningful productions of the students own words in the performance of pedagogical tasks modeling real world tasks (Ellis, 2003; Long, 2015; Gilabert, 2016). These real world tasks are those assessed to be relevant to the students’ anticipated needs in the foreign language environment. The critical initial step to enabling beginning students of any foreign language to perform real world tasks in the L2 is to provide them with vocabulary that is applicable to the tasks they need to perform.
Defining Vocabulary Knowledge

As Pignot-Shahov (2012) aptly states, there is no simple or unanimous answer to the question of what it means to know a word. Nation (2001) outlines nine levels of knowing a word, ranging from simple to complex, with three main knowledge goals of word form, meaning, and use bridging the various aspects of a word. Table 1 lists the nine aspects of word knowledge Nation proposes, along with his suggestions for activities to facilitate learning a word on the various levels.

*Table 1. Nine aspects of word knowledge with suggestions for classroom activities as outlined by Nation (2001).*

<table>
<thead>
<tr>
<th>GOAL</th>
<th>SAMPLE ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM</td>
<td></td>
</tr>
<tr>
<td>Spoken form</td>
<td>Pronounce the words</td>
</tr>
<tr>
<td></td>
<td>Read aloud</td>
</tr>
<tr>
<td>Written form</td>
<td>Word/sentence dictation</td>
</tr>
<tr>
<td></td>
<td>Finding spelling rules</td>
</tr>
<tr>
<td>Word parts</td>
<td>Cutting up complex words</td>
</tr>
<tr>
<td></td>
<td>Choosing a correct form</td>
</tr>
<tr>
<td>MEANING</td>
<td></td>
</tr>
<tr>
<td>Form-meaning connection</td>
<td>Matching words and definitions</td>
</tr>
<tr>
<td></td>
<td>Discussing the meanings of phrases</td>
</tr>
<tr>
<td>Concept and Reference</td>
<td>Finding common meanings</td>
</tr>
<tr>
<td></td>
<td>Choosing the right meaning</td>
</tr>
<tr>
<td></td>
<td>Semantic feature analysis</td>
</tr>
<tr>
<td>Associations</td>
<td>Explaining connections</td>
</tr>
<tr>
<td></td>
<td>Classifying words</td>
</tr>
<tr>
<td></td>
<td>Finding opposites</td>
</tr>
<tr>
<td></td>
<td>Suggesting causes or effects</td>
</tr>
<tr>
<td></td>
<td>Suggesting associations</td>
</tr>
<tr>
<td>USE</td>
<td></td>
</tr>
<tr>
<td>Grammar</td>
<td>Matching sentence halves</td>
</tr>
<tr>
<td></td>
<td>Putting words in order to make sentences</td>
</tr>
<tr>
<td>Collocates</td>
<td>Matching collocates</td>
</tr>
<tr>
<td></td>
<td>Finding collocates</td>
</tr>
<tr>
<td>Constraints on Use</td>
<td>Identifying constraints</td>
</tr>
<tr>
<td></td>
<td>Classifying constraints</td>
</tr>
</tbody>
</table>
As this study was directed toward individuals who have no knowledge of the target language, the focus was restricted to only two areas of word knowledge. Specifically, focus was on development of form and meaning knowledge, and within those domains, limited to written form and form-meaning connection. Learning written word forms in association with meaning without first learning the spoken word forms may seem unusual from the perspective of readers of alphabetic orthographies, in which written form is largely inseparable from the spoken form, however in logographic orthographies such as Chinese, the connection between written form and phonology is not as fixed as the connection between the written form and the meaning. An approach to the study of logographic vocabulary focusing first on written form and meaning exists for the study of Japanese *kanji*, logographic relatives of Chinese characters, which like the Chinese can convey meaning without a direct link to the language’s phonology. The approach was created by James Heisig (1986) initially to facilitate his own mastery of Japanese *kanji* while living in Japan with no knowledge of Japanese and no desire to take language classes. Heisig (1986) recounted his experience saying that after some weeks of employing his study method, he began to notice that he was experiencing remarkable gains in a short span of time, to the astonishment of those who knew he had not been studying the language long. Encouraged by Japanese students and teachers, he compiled his notes into a text for publication, and today Heisig’s *Remember the Kanji* remains a popular, if controversial, title among students of Japanese. Recently, Heisig’s method has also been adapted to the study of simplified Chinese characters (Heisig & Richardson, 2009).
One of the reasons for controversy regarding Heisig’s method is because it is not universally effective. As with any language learning tool, students who use Heisig’s method achieve varying degrees of success, whether it be because of differences in interest, learning styles, or and consistency of use. There are also cognitive differences among individuals that make some pedagogical tools more suited to their learning styles than other tools. Kim (2011) determined that the involvement load of a vocabulary learning task affects the degree to which the user benefits from it. The more involved the individual is in performance of the task, the more likely learning will occur. On the other side of this is the effect of cognitive processing load, too much of which hinders the learner’s ability to notice and gain meaningful information from the vocabulary task and hold it in memory for the long term. Kim (2011) expressed the need for research to identify the types of learning task that optimize L2 vocabulary learning. At the moment, support for or against Heisig’s method is mostly anecdotal, and so it would be to the benefit of learners of languages that use logographic orthographies if studies were conducted to determine whether the method is empirically supported.

The Challenge of Vocabulary Learning

Vocabulary acquisition is a major challenge for L2 learners, as thousands of words are required in order to have sufficient command of the four basic language skills: listening, speaking, reading and writing (Nation, 1990; Lan, 2013; Li, 2014; Meara, 1982), and process of word learning itself involves multiple aspects of knowledge for a single word (Nation, 2011). One hindrance to rectifying the issue is the lack of clear criteria for the introduction of new vocabulary items throughout a Chinese language course. While native speakers of a language learn vocabulary without having to consider
what words are important for their most immediate needs, L2 learners often have urgency requiring them to develop communicative skills as quickly as possible, meaning that they must prioritize learning vocabulary that will hasten this achievement. The label “communicative skills” actually encompasses the different registers of communication that an individual needs for different settings, such as academics, employment, personal relationships, and daily tasks. Catering to all the diverse needs of students in a classroom requires use of diverse methods that will expose students to a wide range of vocabulary (Nation, 2011). One method that has proven effective for expanding L2 vocabulary in and outside the language classroom is extensive reading.

**Extensive Reading as a Method of Vocabulary Learning**

Learning a language involves oral and written perceptive and productive skills. While students may achieve working knowledge of spoken Chinese, written skills are often ignored in the classroom and left up to the learners to develop on their own (Zhong, 1990). Leaving the task of developing literacy up to the English native Chinese L2 students is problematic, because the contrasting properties in native and target orthographies require development of new mapping principles for which the learner would lack intuitions (Chang, Xu, Perfetti, Zhang, & Chen, 2014). It has been posited that the decision to focus on characters in the initial stages of Chinese L2 study results in a conundrum for the learner, because early focus on written form can delay oral skill development, while delaying character learning makes learning tools such as reading unavailable (Loach & Wang, 2016). Evidence shows, however, that reading, especially extensive reading, is critical to the development of proficiency in any language (Krashen, 1989; Nation, 2015; Nakanishi, 2015; Takase, 2007; Ro, 2013; Yamashita, 2007).
Extensive reading is a pedagogical activity that can be defined as the reading of second language material over long stretches of time for personal pleasure without additional tasks or follow-up work (Hafiz & Tudor, 1989). This approach contrasts with intensive reading, in which students read texts that are somewhat above their reading level and require more time to decipher, such as those found in textbooks. Extensive reading allows students to choose and read large amounts of comprehensible material that suits their personal interests. This approach has piqued the interest of teachers and researchers as a tool for language learning, and studies have shown that extensive reading, at least in relation to alphabetic scripts, supports the development of a variety of linguistic areas (Nation, 2015; Nakanishi, 2015; Takase, 2007), as well as affective factors of L2 learning (Ro, 2013; Yamashita, 2007).

For extensive reading to be effective, learners must be regularly exposed to large amounts of comprehensible text, as without repeated encounters to consolidate meaning, the incidental vocabulary gained in one encounter is fleeting (Hunt & Beglar, 2005). Mason (2014) reported that Japanese EFL students reading a thousand pages of English graded readers acquired an average of nine words per week. In a study investigating the long-term effect of varying levels of pleasure reading on student reading gains, Beglar, Hunt, and Kite (2012) compared the reading rate and comprehension gains of students who engaged in extensive reading of English with those who did not, and found that students who engaged in extensive reading had greater reading gains than those who only read intensively. The study involved 97 first-year Japanese EFL learners with 6 years of formal English study, separated into four groups: one untreated (Intensive Reading) group and three experimental (Pleasure Reading) groups. The Intensive Reading Group
engaged in intensive reading in and out of class, Pleasure Reading Group 1 read intensively in class and read for pleasure outside of class, and Pleasure Reading Groups 2 and 3 read six simplified texts in class and engaged in pleasure reading both in and outside of class, Group 3 reading a higher percentage of simplified texts. Reading rate and comprehension measures at the beginning and end of the academic year were compared, and results showed scores in both measures increase relative to the amount of pleasure reading performed. Group 3, which had read the highest percentage of simplified material, also ultimately read the most material overall and made the most reading gains (Beglar, Hunt, & Kite, 2012).

Despite the reported benefits of extensive reading, problems such as the lack of suitable reading materials for second language readers hinder the proliferation of its use in foreign language classrooms. A popular approach to the lack of material for learners is to read books intended for children, but this is an inadequate solution. Webb and Macalister (2013) found that the lexical load of reading children’s texts is comparable to reading texts designed for adults, making children’s texts just as unsuitable for extensive L2 reading as adult texts. Cobb (2007) also reported key problems to extensive reading of texts designed for native speakers, such as that beyond the 2000 most frequent words in English, less frequently used words are unlikely to be encountered enough times in natural reading to allow incidental learning to occur. The use of graded readers and computers in language learning settings would better give L2 readers access to higher frequencies of less common words (Cobb, 2007), which Nation (2001) found to be critical for vocabulary learning in English.
The quality of the contexts in which new vocabulary is encountered has also been found to be critical to incidental learning. Webb (2008) conducted a study comparing the effects of different kinds of context on the incidental acquisition of English vocabulary through reading, and found one crucial factor to be the informativeness of context surrounding new words. Fifty Japanese native EFL students, separated into one experimental and one comparison group, were given three exposures to 10 target words in contexts ranging from most to least informative. All participants read the target words in their most informative context on their first encounter, but on subsequent encounters, the experimental group encountered target words in informative contexts, while the comparison group read them in their least informative contexts. Results showed that encountering new words in contexts that were most informative about their meanings led to significantly higher learning of the vocabulary than encountering them in unclear contexts. The finding suggests that encountering words in more informative contexts may allow them to be learned with fewer repetitions than uninformative contexts (Webb, 2008).

Reading Models

For any language, the cognitive process of reading is dependent on the structure and depth of the orthography. In an alphabetic orthography, letters corresponding to phonemes are arranged in various combinations to compose words, and in a logographic orthography, individual characters represent whole morphemes and may stand alone as words or be combined to form compounds. Alphabets have relatively few units, English having 26 letters, while logographies, such as Chinese, have thousands of characters. When the pattern of written units in words closely resembles how words are pronounced
in the spoken language, the orthography is said to be shallow, as with Spanish. English orthography is somewhat less transparent than Spanish because of irregular spelling, but is relatively shallow compared to Chinese, which lacks grapheme-to-phoneme rules (Ho & Bryant, 1997).

The simple view of reading (SVR) posited by Gough and Tunmer (1986) models reading comprehension as the product of linguistic comprehension and decoding. Linguistic comprehension may be defined as the ability to interpret lexical information, and decoding as word recognition (Hoover & Gough, 1990). Finding that the majority of studies supporting the SVR were conducted on languages using alphabetic orthographies (e.g., Aaron, 1991, Adlof et al., 2006; Conners, 2009; Joshi & Aaron, 2000; Kendeou et al., 2009; Muter et al., 2004; de Jong & van der Leij, 2002; Megherbi, Seigneuric, & Ehrlich, 2006; Kendeou, Papadopoulos, & Kotzapoulou, 2013; Høien-Tengesdal & Høien, 2012; Høien-Tengesdal, 2010), Yeung, Ho, Chan, and Chung (2016) conducted a longitudinal study on beginning readers of Cantonese Chinese to reassess the validity of the SVR for logographic languages. Prior to this, in a study testing the validity of the SVR for readers of alphabetic languages with varying orthographic depth, Florit and Cain (2012) found that the depth of the orthography affected the relative influence of linguistic comprehension and decoding on reading comprehension, the influence of decoding being greater in deeper orthographies. Specifically, while decoding fluency was found to predict comprehension for both deep and shallow orthographies, decoding accuracy had increased influence on comprehension of deeper orthographies. When investigating this claim in their study on Cantonese, Yeung et al. (2016) found that decoding, which the authors operationalized as recognition accuracy and word reading fluency, was indeed a
significant predictor of reading for Cantonese readers, more so than for English readers. Decoding ability may then be a reasonable predictor of reading comprehension for L2 learners of Chinese. Unfortunately, however, the greatest challenge for Chinese L2 learners, according to a 2001 survey of U.S. college, pre-college, and heritage Chinese schools, is Chinese characters (Ke, Wen, & Kotenbeutel, 2001). Character recognition, specifically, is reported to be the most challenging task for English speakers (Everson, 1998). Based on these findings, it is evident that the tools currently available for learning Chinese do little to ease the load of character learning for the average L2 learner. It is not uncommon for students to take Chinese for one or two semesters and then quit, frustrated by their inability to improve and the inaccessibility of the learning tools (Orton, 2010a, 2013). Orton (2010b) reports a 94 percent dropout rate among classroom learners in Australia, suggesting a comparable or worse trend in countries where Chinese pedagogy is even less developed. Effective pedagogical tools for Chinese L2 learners would be those that adequately address the students’ needs for training in character recognition and other reading related skills. The current study investigates the efficacy of one potential tool: use of the learner’s L1 as the context for encountering new L2 written vocabulary.

A similar study, conducted by Ge (2015), explored the efficacy of an L1 storytelling approach to L2 vocabulary learning for Chinese EFL students. The study involved 60 participants, two online EFL classes of 30 students, one of which was designated the experimental group, and the other the control group. For 10 minutes of one class session, the experimental group read a Chinese text with embedded English vocabulary, while the control group memorized a list of the same vocabulary words. Afterward, two post-tests, one immediate and one delayed three weeks, were given to the
students. Results showed that the students who read the text performed significantly better on the immediate and delayed post-tests than those who memorized the vocabulary list, suggesting that encountering L2 vocabulary in L1 context is an effective means of short- and long-term vocabulary acquisition when compared to rote memorization, at least for L1 logographic readers learning an alphabetic L2.

The Current Study

This study investigates whether the same technique is effective from the standpoint of L1 alphabetic readers learning a logographic L2. The research objective is to determine whether there is a difference in retention of character meanings and forms between a group of participants who use rote memorization to learn a list of Mandarin Chinese words and definitions and a second group of participants who learn the vocabulary by reading the Chinese words embedded in an alphabetic text context. The experimental design was a partial replication of Ge’s (2015) L1 context study with influences from Webb’s (2008) context informativeness study. The following research questions were addressed in the current study:

1. Can an alphabetic text context be used to facilitate incidental learning of logographic vocabulary?
2. If so, is there a difference between L1-context reading and rote memorization in acquisition of form and meaning?

METHODS

Participants

For the study, 24 participants were recruited from the student population of Florida International University and distributed between an experimental (n=12) and a
control (n=12) group. The experimental group was to read the target words in an L1 context, while the control group was to memorize a list of the target words and glosses. To ensure homogeneity of the groups’ experience with logographic languages, only participants with no knowledge of Chinese or Japanese were chosen for the study.

Materials

Pre-test survey Prior to the study, students enrolled in Chinese classes at the Florida International University were given a needs analysis survey, which they completed anonymously (see Appendix A). Results of the survey indicated that students considered the ability to perform tasks such as ordering food, finding employment, and performing daily life activities to be most closely related to their real-world goals. A needs analysis was conducted in accordance with the standards of TBLT, which is focused on students anticipated language needs in the real world.

Training stimuli In accordance with the students’ reported needs, this study employed 10 target Chinese words related to the topics of personal description, food, entertainment, errands, and school. The target words were all two-character compounds and were of the same part of speech: noun. The decision to use ten vocabulary words was made to parallel the methods used by Ge (2015) and to avoid ceiling effects that might result from having too few target words. The decision to use only nouns was made to eliminate possible interactions of lexical category. Although Ge’s (2015) study employed glosses in both the experimental and control groups, for this study, participants in the experimental condition relied on context rather than glosses to garner the meaning of the target words. Each of the target words appeared in 7 different contexts in the
experimental condition, for a total of 70 sentences, which were spread across four pages. The memorized vocabulary list spanned a single page.

Post-training Test

Two post tests, one testing word meaning and the other testing word form, were given immediately following the training session. The meaning test asked participants to write the English translation of a given Chinese word, and the form test asked participants to circle the correct Chinese word for a given English definition from visually similar choices. The tests were administered in the same order for all participants, with the test for meaning followed by the test for form. The time limit for the entire post-test was 5 minutes. Upon completing the test, participants were given the option to comment briefly on their experience with the method they had used to learn the vocabulary.

Procedure

Participants were seated at individual desks in a quiet room and told that they would be participating in a study about vocabulary learning. Prior to beginning, participants signed consent forms and indicated whether they had prior knowledge of Chinese or Japanese. None of the students chosen to participate had knowledge of either language. Afterward, participants were given folders containing either the target words embedded in English sentences, or the vocabulary list. A comparison of the stimuli is shown in Table 2. The full list of stimuli can be seen in in Appendix B (stimuli for the Memorization Group) and Appendix C (stimuli for the Reading Group).
Table 2. Comparison of experimental and control stimuli.

<table>
<thead>
<tr>
<th>L1 Context Stimuli</th>
<th>Wordlist Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can’t drink 牛奶 because I’m lactose intolerant. Have you seen the 医生 about your symptoms? I got an A on my math 考试. That 老师 has high standards for her students. Give me some 时间 to think about it.</td>
<td>牛奶 milk 医生 doctor 考试 test 老师 teacher 时间 time</td>
</tr>
</tbody>
</table>

Participants in the Reading Group were instructed to read the provided four pages of English text containing the embedded target Chinese vocabulary. Participants in the Memorization Group were instructed to attempt to memorize a list of ten Chinese words and meanings. Both groups were given five minutes of exposure to the stimuli. After the allotted time, the participants were instructed to return the stimuli to the folders and hide them from view, the post-test was distributed.

3. RESULTS

Table 3. Descriptive statistics of participant scores in Experimental and Control groups.

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Meaning</th>
<th>Form</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>READING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>12</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Sum</td>
<td>59</td>
<td>70.5</td>
<td>129.5</td>
</tr>
<tr>
<td>Average</td>
<td>4.916667</td>
<td>5.875</td>
<td>5.395833</td>
</tr>
<tr>
<td>Variance</td>
<td>14.44697</td>
<td>1.369318</td>
<td>7.803895</td>
</tr>
<tr>
<td><strong>MEMORIZING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>12</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Sum</td>
<td>98</td>
<td>81</td>
<td>179</td>
</tr>
<tr>
<td>Average</td>
<td>8.16667</td>
<td>6.75</td>
<td>7.458333</td>
</tr>
<tr>
<td>Variance</td>
<td>7.969697</td>
<td>2.068182</td>
<td>5.324275</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>24</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>157</td>
<td>151.5</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>6.541667</td>
<td>6.3125</td>
<td></td>
</tr>
<tr>
<td>Variance</td>
<td>13.47645</td>
<td>1.84375</td>
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</tbody>
</table>
Table 3 contains descriptive statistics of participant scores in the Reading and Memorization Groups on tests for meaning and form. To answer the first research question – Can an alphabetic text context be used to facilitate incidental learning of logographic vocabulary? – a one-sample t-test was performed to compare the mean of Reading Group scores on the meaning test with the test value of 0, and another t-test was performed to compare the mean of Reading Group scores on the form test with the test value of 2, which was based on the probability of guessing the correct answer from five choices on a ten question post-test. The Reading Group post-test scores for meaning were significantly different from the test value, \( t(11) = 3.84, p = 0.003 \), indicating that L1-context reading led to gains in knowledge of word meanings. Reading post-test scores for form were also significantly different from the test value, \( t(11) = 11.47, p < 0.0001 \), indicating that L1-context reading led to gains in knowledge of word forms. To answer the second research question – Is there a difference between L1-context reading and rote memorization in acquisition of form and meaning? – a two-way repeated measures ANOVA was performed on means for both conditions on both test types. There was a main effect of condition, \( F(1,44) = 7.90, p < 0.01 \), indicating that participant scores were significantly higher in the Memorizing Group than in the Reading Group in both test types. There was no significant main effect of test type, or interaction between condition and test type. Comparisons of scores on the tests of meaning and form are shown in Figure 1 and Figure 2.
4. DISCUSSION AND LIMITATIONS

The results of the experiment indicate that L1 context reading was able to facilitate learning of word meanings and forms. A closer look at the counts of participant scores (Figure 3) highlights the significant gains in meaning. Of the 12 participants in the
L1-context Reading Group, 5 scored 80 percent correct or higher on the meaning test. From these observations, it is plain that L1-context has potential as a tool for learning logographs, as even 5 minutes of reading is enough time to make significant gains in knowledge of word meaning from a starting point of no prior knowledge.

![Meaning Score Counts](image)

Figure 3. Meaning score counts for participants in the L1-context Reading Group.

On the other hand, as seen in Figure 3, the other half of the Reading Group scored 40 percent and below. This split in the data indicates the possibility of a variable within the sample that was unaccounted for in the study. Factors such as those brought up by Kim (2011) regarding differences in task involvement load, as well as the issue of cognitive load, may have affected participants differently depending on their individual learning styles, cognitive abilities, or situational affect. Participant performance within the experimental group mirrors what learners often experience with other pedagogical tools, such as with Heisig’s method for learning kanji, which students of Japanese either swear by or dismiss: learners excell when they use methods compatible with their preferred learning style, and perform poorly when using incompatible methods, a factor
that could not be controlled for in the scope of this study. This poses the question of what type of learner L1-context reading is suited for, and whether the gap between learners on opposite sides of the performance scale would be bridged with repeated use of the method.

Although participants in the Reading Group performed significantly better than chance, the results showed that they were outperformed by the Memorization Group in measures of meaning and form. This is counter to the findings of Ge (2015) that L1 context facilitated L2 vocabulary learning. However, there are major differences between the current study and that on which it was based, not least notably including the differences in amount of exposure (10 versus 5 minutes), the fact that the target writing system in this study is logographic rather than alphabetic, and the fact that Ge’s participants had prior experience with their target language. Ge (2015) used a storytelling approach, whereas this study employed a list of unrelated sentences. It is possible that the coherence of the context in which the vocabulary was embedded affected the participants’ ease of learning them. The existence of orthographic differences between L1 and L2, as well as the fact that Ge’s (2015) study employed a read-aloud by the instructor coupled with glosses in both conditions, may also have played a role, as an alphabetic orthography provides both a visual and a phonological link to the meaning of a new word encountered in a text, while a logographic orthography without annotation provides only a visual link. In addition to effects on task involvement load, according to Paivio’s (1971) dual coding theory, receiving information via an additional channel of perception may have facilitated Ge’s participants’ ability to learn the vocabulary.
5. SUGGESTIONS FOR FUTURE STUDIES

The takeaway from the current study is that L1-context reading has potential as a pedagogical tool for Chinese vocabulary learning. More investigation is needed to determine what the most effective context is for long-term learning. Future studies should investigate such issues as how informative, how coherent, and how engaging the context must be in order to optimally facilitate learning; what the maximum ratio may be for logographic vocabulary learning in an alphabetic text context; whether character pronunciations should be included as annotations within the text or provided as external audio, and whether the efficacy of such a method differs according to the learner’s expertise in the L2, learning style, and other personal factors, with the ultimate goal of such research being to refine the tool until it is empirically shown to be reliable and efficient for vocabulary learning.

In order to refine the tool in question, the experimental methods used to do so must also be refined. A number of factors that were not accounted for in the current study’s experimental design, should be controlled for in future research. Firstly, differences in participants’ reading and cognitive ability were not considered in participant selection; only lack of prior knowledge of Chinese and Japanese was taken into account. This means also that students were only assumed to be L1 speakers of English, as they were not specifically asked to report their first language. Given the culturally diverse setting in Miami, Florida, particularly in Florida International University, which has currently has 76 percent Hispanic enrollment (FIU, 2017), it is highly likely that a number of participants were in fact English-Spanish bilinguals of varying levels of balance between their two languages. Since the study largely depends
on the participants’ ability to read the stimuli, differences in reading ability stemming from variations in cognitive abilities among participants or differences in participants’ language background could affect performance on the reading task. Future studies would be improved by use of a survey of participants language backgrounds and inclusion of a pre-test measuring participants’ general reading to ensure group homogeneity in these aspects. A second issue is the fact this study targeted only participants who had never studied a logographic language. It would advance the literature to investigate how students who have some familiarity with Chinese or Japanese fare in comparison to those who have only experienced alphabetic orthographies.

Lastly, adjustments could be made to the creation of the stimuli to make the informativeness of the L1-context more uniform, as some sentences used in the experimental condition may have led to ambiguous interpretations of the embedded target word. For instance, in the sentence “Lifeguards at the 海滩 have to be really attentive,” the target word could have been interpreted as beach or pool if not for a previous encounter with a more informative sentence like “Let’s go to the 海滩 and build sandcastles.” Another experiment could adopt the procedures of Webb (2008) and first meticulously design the contexts in which the words would be embedded, have these ranked according to informativeness, and then use the contexts ranked highest as the experimental stimuli. Alternatively, characteristics of the L1-context stimuli such as informativeness, text coherence, and enjoyability could be made independent variables in studies testing their separate and interacting effects on reader performance.

On a final note, the reason rote memorization was used as a benchmark in this study is because it is currently established as the traditional vocabulary learning method
in Chinese L2 classrooms, and the minimum requirement for a pedagogical tool should be to perform at least as well as old tools. A hallmark of a good learning tool, in addition to its effectiveness, is the willingness of learners to use it. Rote memorization may be employable for short intervals, but students are likely to find it tedious after extended use, especially in the case of trying to memorize thousands of Mandarin Chinese characters.

Reading, on the other hand, may be sustained for hours as long as the reader is interested in the text. As mentioned in the review of the literature, interest in Chinese foreign language study is steadily increasing, but at the same time, quitting rates are needlessly high. Rote memorization as a pedagogical tool is obviously not providing a large percentage of learners with a means of sustaining interest in the language and belief that they can become proficient. Methods that increase and maintain learners’ positivity toward Chinese and ease the difficulties associated with learning the language are critical to increasing the number of students who persist in their studies, and eventually transition from low to high to even superior levels of proficiency. Informal feedback from participants who had experienced L1-context reading in this study points to its potential to become one such method. One participant said that even though she could not translate the Chinese words when tested, she felt as though she had been learning them while reading the L1-context sentences, and believed that she would have learned them fully had she been given more time and more sentences. Others said that they liked the idea of learning the vocabulary through text and thought they might use such a method if the vocabulary were embedded in books of their preferred genres.
6. CONCLUSIONS

The experiment conducted demonstrates the usefulness of L1 alphabetic context for L2 logographic vocabulary learning, and highlights its potential as a pedagogical tool to increase Chinese Foreign Language learners’ ability to persist in study of the language. The current study also showed that while L1-context reading enabled participants to make substantial gains in knowledge of word meanings and forms in the short span of five minutes, it did not lead to better performance than memorizing a list of words by rote in the same amount of time. As people tend to read for more than five minutes at a time in real world settings, the question arises whether the advantage of rote-memorization would persist or decrease in a longer experiment. In addition to addressing this question, future studies should investigate how to optimize the L1-context for learning Chinese by addressing such questions as whether learners would benefit from the inclusion of annotations for pronunciation, read-aloud accompaniment, or glosses; to what extent other information should be included; and whether the L2 density of L1-context reading can be graded to allow readers to transition from single vocabulary words to complex structures like syntactic constituents and grammatical units.
REFERENCES


Dear students,

We are doing a small-scale study on the design of communicative language-teaching tasks for Chinese foreign language study. Your insight and real-world needs are a critical part of this. Please kindly fill out the questions below. We thank you for your time!

1. What are your purposes for studying Chinese?

2. What do you hope to accomplish with the Chinese language in the near future?

3. What real world tasks do you hope to be able to perform with Chinese? (For example: ordering a meal, purchasing a plane ticket, emailing a professor, turning down an invitation, asking for directions, filling out a resume, etc.). Please list at least 5.

4. What specific vocabulary words, topics, etc., would you like to learn in Chinese? (E.g., what is relevant to your own life goals and needs?)

5. Any other comments or suggestions?
Appendix B

Stimuli for Memorization Group

Instructions: Please attempt to memorize the following list of Chinese words and translations.

比萨 Pizza
房子 House
海滩 Beach
老师 Teacher
电影 Movie
医生 Doctor
时间 Time
考试 Test
牛奶 Milk
眼睛 Eyes
Appendix C

Stimuli for Experimental Group

I can’t drink 牛奶 because I’m lactose intolerant?
Have you seen the 医生 about your symptoms?
I got an A on my math 考试.
That 老师 has high standards for her students.
Give me some 时间 to think about it.
Let’s play 海滩 volleyball.
Yogurt and other dairy products are made of 牛奶.
Text me directions to your 房子.
I asked my 老师 for an extension.
He pulled an all-nighter, so his 眼睛 were puffy and red.
电影 theaters with reclining seats are the best.
Now is not the 时间 to discuss it.
The 海滩 is a great place to relax in the sun.
The LSAT is a 考试 for law school applicants.
The 老师 handed back our exams.
Consult your 医生 before starting a new health regimen.
The 考试 was so hard no one passed.
Be patient. This won’t take much 时间.
I still live in my parents’ 房子.
Do you want to watch a 电影 with me?
Are you hungry? Let’s order a 比萨.
Do you pour 牛奶 first or cereal first?
I live in a two-storey 房子.
The 老师 was up all night grading quizzes.

Finding Nemo is a Disney 电影.

比萨 is my favorite food.

The 医生 told me to stay off my feet.

Let’s go to the 海滩 and build sandcastles.

The 眼睛 are the window to the soul.

I forgot to put on sunscreen when I went to the 海滩.

Procrastination wastes 时间.

I ate nachos and popcorn while I watched the 电影.

The most common 比萨 topping is pepperoni.

I forgot to study for my 考试.

I collected all these seashells at the 海滩.

Don’t drink that 牛奶; it has chunks in it.

I got a prescription of antibiotics from the 医生.

His 眼睛 were wide like a deer in headlights.

I ordered a large 比萨 with extra cheese.

I saw a scary 电影 and couldn’t go to sleep.

Help! Is there a 医生 in the house?

The mortgage on my 房子 is above the property value.

I have allergies so my 眼睛 are itchy.

I waited for a long 时间.

Don’t put dirty contact lenses in your 眼睛.

My English 老师 wrote in red all over my essay.

Whose 比萨 is better? Domino’s or Papa John’s?

A veterinarian is an animal 医生.
I’m a kindergarten 老师.
Mammals are produce 牛奶 for their young.
Did you pass your driving 考试?
Do you think two large 比萨 is enough for ten people?
Don’t talk to him; he’s not worth your 时间.
I can see my 房子 on Google Earth
Would you like some 牛奶 and cookies?
The student gave the 老师 an apple.
I got the 电影 star’s autograph.
We’re all going to South 海滩 this weekend.
Put ham and pineapples on the 比萨.
His 房子 is so huge, it’s practically a mansion.
Deadpool is not a rated-G 电影.
Baby’s got blue 眼睛．
Lifeguards at the 海滩 have to be really attentive.
We’ll have a review the day before the 考试.
Do you have 时间 to talk?
You have your mother’s 眼睛．
The math 考试 grades are in.
He’s having a 房子 warming party.
The 医生 was sued for malpractice.
I don’t like the 2% 牛奶．
Appendix D

Post-test of Meaning

Write the English translations of the following Chinese Characters.

1. 医生
2. 海滩
3. 比萨
4. 牛奶
5. 时间
6. 老师
7. 考试
8. 眼睛
9. 房子
10. 电影
Appendix E

Post-test of Form

Circle the Chinese word corresponding to the English.

1. Milk
   - 干妃  牛奶  牛妃  丰妁  NONE
2. Doctor
   - 医生  医生  医玉  医生  NONE
3. Time
   - 时间  时月  时同  时问  NONE
4. Test
   - 考式  考诉  考试  考诉  NONE
5. Pizza
   - 北萨  比铲  化萨  北铲  NONE
6. Teacher
   - 老帅  老希  老布  老师  NONE
7. Beach
   - 咖难  每准  海滩  咖滩  NONE
8. Movie
   - 车影  男彩  车彭  电彭  NONE
9. Eyes
   - 眼睛  眼眸  眼睇  眼眸  NONE
10. House
    - 旁字  房了  房子  房子  NONE