

## **An Investigation of Vocabulary Size of Thai Freshmen and Its Relationship to Years of English Study**

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### **Abstract**

The specific size of vocabulary has been prescribed in Thailand's basic education curriculum for decades, but less is known about Thai students' vocabulary size. This study focused on Thai freshmen who just finished their 12 years of basic education. The objective of the study was to assess their vocabulary size and examine the relationship between vocabulary size and years of study. The participants were 484 Thai freshmen from four public universities and three private universities across Thailand. The results showed that Thai freshmen possessed around 4,200 word families. The Pearson correlation coefficient between vocabulary size and years of study was significant and positive yet relatively weak ( $r=.201$ ,  $p<.01$ ) which indicated that years of study were partly related to vocabulary size.

**Key words:** vocabulary size, years of English study, Thai freshmen

### **Introduction**

English has been in the Thai education system for decades. Starting from 1900 English was added into the Basic Education Curriculum B.E. 2533 (A.D. 1990) (Ministry of Education, 1990) and was taught as an elective subject for students in Grades 5-12. Later on, due to its increasing importance, English became a required subject. The basic education curriculum was revised with a strong concern for the English language. As a result, Thailand's Basic Education Curriculum B.E. 2544 (A.D. 2001) was issued. English became a main foreign language that Thai students were required to study from Grade 1 onward (Ministry of Education, 2001). Although the basic education curriculum was also revised in B.E. 2551 (A.D. 2008), English still remains a required subject for Thai students (Ministry of Education, 2008).

According to Basic Education Curriculum B.E. 2533 (A.D. 1990), 2544 (A.D. 2001) and 2551 (A.D. 2008) of Thailand (Ministry of Education, 1990, 2001, 2008), compulsory education includes 6 years of primary education, Grades 1-6, and 3 years of lower secondary, Grades 7-9. The upper education level, or high school, from Grades 10-12 is required for students who wish to pursue education at the university level. Kindergarten is not required for basic education. Therefore, most students who enter a university normally have 12 years of English study.

The specific sizes of vocabulary are prescribed in the core curriculum. The Basic Education Curriculum B.E. 2544 (A.D. 2001) and B.E.2551 (A.D. 2008) prescribed that Grade 3 graduates should have a vocabulary size of around 300-450 words. Grade 6 graduates should have a vocabulary size of around 1,050-1,200. Grade 9 graduates should have a vocabulary size of around 2,100-2,250 words and finally Grade 12 graduates should have a vocabulary size of around 3,600-3,750 words (Ministry of Education, 2008).

Consequently, students who graduate from high school and become freshmen should possess a vocabulary size of at least 3,600-3,750 words. However, less is known about how large of a vocabulary size Thai high school graduates actually have after many years of English study. Not many studies in Thailand focus mainly on the vocabulary size of university students. Most previous studies in Thailand were conducted on students from elementary and secondary schools. Only four studies, i.e., Nirattisai and Chiramanee (2014), Pringprom (2012), Pringprom and Obchuae (2011), and Zhiying (2007) focused on Thai university students. A relatively small sample size from one university was represented in each aforementioned study. Therefore, an up-to-date empirical study on vocabulary size with a larger sample size from different universities is essential because students' vocabulary size is always an important part of students' English language study and success. It is also interesting to know if Grade 12 students' vocabulary size reaches the requirement of Thailand's Basic Education Curriculum B.E. 2544 (A.D. 2001) after 12 years of English study in basic education.

The major goals of this study are, therefore, to examine vocabulary size of Thai freshmen who just finished basic education and to investigate the degree to which years of study are related to vocabulary size.

## Literature Review

### Vocabulary Size and Its Effects

Vocabulary size is an important element in learning and using English for all skills for ESL/EFL students. If students did not have enough size of vocabulary, they may find difficulty when using a language (Asgari & Mustapha, 2011). Schmitt (2008) stated that to master a second language, vocabulary size was needed. Students cannot communicate in foreign language if they knew only a few words (Rubin & Thompson, 1994). Even though students might know grammar and sounds of a language well, a lack of vocabulary knowledge meant they still cannot communicate (McCarthy, 1990). In addition, Nation (1990) emphasized that students' language skills relied on their vocabulary size. That is students can use their language skills better when they possess a great number of vocabulary.

Vocabulary size was found to be related to reading ability (e.g. Baleghizadeh & Golbin, 2010; Farvardin & Koosha, 2011; Hirsh & Nation, 1992; Ibrahim, Sarudin, & Muhamad, 2016; Laufer, 1992; Na & Nation, 1985; Nation & Waring, 1997; Pringprom, 2012). Many studies were conducted to find a specific size of vocabulary knowledge that can help students to comprehend reading texts (Hirsh & Nation, 1992; Hu & Nation, 2000; Laufer, 1992; Na & Nation, 1985; Nation, 2006; Schmitt, Jiang, & Grabe, 2011).

The first threshold level of vocabulary size was 3,000 word families which was the basic requirement for students to have adequate comprehension in reading texts as well as to be able to guess the meaning of unknown words from context (Laufer, 1989, 1992; Na & Nation, 1985; Nation, 1993; Nation & Waring, 1997). Laufer (1992) and Nation (1993) explained that students who had 3,000 word families should be able to know 95% of the vocabulary coverage in a text. The second threshold level of vocabulary size that covered 98% of reading texts was 5,000 word families (Hirsh & Nation, 1992; Hu & Nation, 2000; Schmitt et al., 2011). However, Hirsh and Nation (1992) indicated that knowing 5,000 word families would cover 98% of vocabulary in unsimplified texts such as short novels like *Alice in Wonderland*, *The Pearl*, and *The Haunting*. However, for fictional books or newspapers, 8,000 – 9,000 word families were adequate to reach 98% of text coverage. Indeed, 8,000-9,000 word families seemed to be a high number for EFL students. Thus, many researchers

(Hirsh & Nation, 1992; Hu & Nation, 2000; Nation, 2006) agreed that 5,000 word families should be a possible goal for students.

Vocabulary size can be a predictor of students' reading proficiency. Previous studies found a strong correlation between vocabulary size and reading comprehension (Baleghizadeh & Golbin, 2010; Chen, 2011; Jianbin, Yuedong, & Ying, 2007; Laufer, 1991). As such, vocabulary size had capability to predict students' reading comprehension. Chen (2011) revealed that students who had a high vocabulary size found reading easy. This means that the larger the vocabulary size, the better the reading. Therefore, Jianbin et al. (2007) suggested that the specific size of vocabulary should be added as a requirement in the English syllabi.

Vocabulary size also plays crucial roles in development of other language skills. Listening skill requires receptive vocabulary size. Milton and Hopkins (2005) and Stæhr (2008) found that vocabulary size had a strong relationship with listening comprehension. Nation (2006) studied how many word families were needed to understand a children's movie. The cartoon *Shrek* was used in this study. He found that if children had 4,000 word families, they would be familiar with 96.74% of the tokens. If they had around 6,000-7,000 word families, they would be familiar with 98 % of the tokens. Furthermore, in order to see if these numbers of word families could be applied to other children's movies, the vocabulary in *Toy Story* was brought up to compare with the vocabulary in *Shrek*. It was found that these two movies used different words. Beyond the fifth 1,000 levels, there were only eight words that were used in both movies. Nation (2006) stated that "each movie will bring its own vocabulary from the whole range of levels" (p. 75).

Nation (2006) also studied the numbers of words that were needed to understand unscripted spoken English. He used the Wellington Corpus of Spoken English to analyze unscripted spoken English. He gathered data from talk-back radio and conversation between family members and friends. The results showed that with 3,000 word-families listeners were able to deal with 95% coverage. With 6,000 – 7,000 word families, listeners were able to deal with 98% coverage. Hence, in order to comprehend both scripted and unscripted spoken English, 6,000 – 7,000 word families were needed.

For productive skills involving speaking and writing, Nation (1990) and Laufer (1992) indicated that approximately 2,000 of the most frequent words would be enough for students to communicate. Newton and Nation (1997) suggested that to enhance productive skills, these 2,000 words ought to be learned as soon as possible. However, students still needed at least 3,000 high-frequency English words in order to cope with university level tasks (Nation, 1990).

Stæhr (2008) studied the relationship between vocabulary size and skills of listening, reading and writing of Danish students of English in lower secondary school who had studied English for seven years. The results showed that vocabulary size was strongly related to reading and writing, but was moderately related to listening. He also found that student who knew the 2,000 frequently used words performed well in all three skills. Therefore, Stæhr (2008) concluded that it was necessary for English language students to first know the 2,000 frequently used words because it would likely lead to better performance in listening, reading, and writing skills for low-level language students.

Oya, Manalo, and Greenwood (2009) focused on speaking performance. Other than vocabulary knowledge, they also added the influence of language contact to their study. The sample was Japanese students in New Zealand's English language school. With the language contact questionnaire, vocabulary test, and storytelling tasks, the study revealed that students

with a high level of vocabulary size performed well in speaking with regard to accuracy and sentence complexity. Moreover, language contact had positive correlation with speaking performance. This study showed that students needed more chances to actually use English in order to master it.

It is very certain that vocabulary size is important for students. It seems that students should have a large size of vocabulary so that they can perform well in English. For receptive vocabulary, in order to comprehend reading texts, students need at least 3,000 word families as a basis and 5,000 word families are the goal that students should reach. For the productive vocabulary size, the number of necessary word families is smaller than the receptive vocabulary size - at 2,000 frequently used words. However, it is noticeable that to perform well at the university level, the productive vocabulary size should be larger than 2,000 and at least 3,000 word families should be the requirement.

### **Studies about Vocabulary Size in Thailand**

The studies about vocabulary size in Thailand were done in various aspects.

Pringprom and Obchuae (2011) studied the relationship between vocabulary size and reading comprehension. The subjects were thirty freshmen from a private university. The findings revealed that students did not have a large enough vocabulary size for the university level in which 2,000-word levels were required. A positive correlation between vocabulary size and reading comprehension was reported. Moreover, Pringprom (2012) investigated more on students' vocabulary size. Her subjects were eighty-one freshmen enrolling in the second semester. The result was also similar to the previous study that students still did not have sufficient vocabulary size to cope with their current education level.

Zhiying (2007) conducted a study on the relationship between passive recognition vocabulary knowledge, active recall vocabulary knowledge, and free active written vocabulary knowledge. The subjects were 142 Thai and Chinese freshmen who enrolled in Foundation English course. At the end of the course, students had above 3,000 word families for passive recognition vocabulary size. For active recall vocabulary size, Thai students had 1,118 word families while Chinese students had 1,456 word families. Significant correlations between passive recognition vocabulary size and active recall vocabulary size were found.

Nirattisai and Chiramanee (2014) studied the relationship between vocabulary size and vocabulary learning strategies. Her subjects were 347 third-year university students studying in a public university. The results showed that the largest group of students (28%) had a receptive vocabulary size at 5,000 word families. The highest vocabulary size was at 11,000 word families while the lowest one was at 1,000 word families.

As seen, the foci of the aforementioned studies were the relationship between vocabulary size and reading comprehension, the relationship between passive recognition vocabulary knowledge, active recall vocabulary knowledge, and free active written vocabulary knowledge, and the relationship between vocabulary size and vocabulary learning strategies. None was concentrated on the relationship between vocabulary size and years of study. Thus, investigating vocabulary size and its relationship to years of study is essential and it can fill in a researching vocabulary gap as well.

### **Research Questions**

1. How large was the vocabulary size of Thai freshmen students?
2. To what extent were vocabulary size and years of English study related?

## Research Methods

### Participants

In order to generalize the results of this study, the stratified random sampling technique was used to select a sample from Thai freshmen in both public and private universities across Thailand. The participants of this study were 484 Thai freshmen from four public universities and three private universities located in Bangkok and other regions of Thailand. The students were from different faculties including Faculty of Humanities, Faculty of Engineering, Faculties of Communication Arts, Faculty of Business Administration, and Faculty of Science and Technology. They studied in Thai-programs in high schools. All participants signed the consent form and had all rights to withdraw from participation at times.

### Research Instruments

To answer the first research question, the instrument was a set of Bilingual English-Thai Version of Vocabulary Size Test (VST) adapted from the English version of Nation and Beglar (2007). The adapted test included 100 items. Each item was worth 1 point and therefore the total of the test was 100 points. The scores were multiplied by 100 in order to find the students' vocabulary size. For example, if a student had 30 out of 100 points, this meant the student had 3,000 word families.

The Bilingual English –Thai Version of VST was adapted by translating the 4 choices of each item into Thai. New Modern Dictionary English – Thai (Sakornthas, 2006) and Cambridge Dictionary: English –Thai Dictionary (Cambridge, 2006) were consulted for Thai definitions of the words for the test. The test was then verified by three experienced professionals who were in the field of English language instruction and professional translating. The VST was piloted with 40 Thai freshmen. Kuder-Richardson Formula 20 was used to measure the internal consistency reliability. The reliability was 0.97. The test was revised before use with the main study. Here is a sample of the test:

<i>Original Version</i>	<i>Bilingual English-Thai Version</i>
4. Figure: Is this the right <b>figure</b> ?	4. Figure: Is this the right <b>figure</b> ?
a. answer	a. คำตอบ
b. place	b. สถานที่
c. time	c. เวลา
d. number	d. ตัวเลข

The Kuder-Richardson Formula 20 was used again to measure the internal consistency reliability of the test after the data collection. The reliability was 0.91.

To answer the second research question, students were asked to fill in a background questionnaire after they finished doing the test.

### Procedure

The Bilingual English-Thai Version VST was distributed to each participant. They had forty minutes to complete the test. The researcher gave the test instructions in Thai and allowed some time for participants to ask questions. They were informed that the scores of the test would not affect their score and grade in any class they were taking during that semester. However, they were encouraged to do their best because the results could show their own vocabulary size. After taking the VST, participants were asked to complete the personal background questionnaire.

## Data Analysis

To answer the first research question, descriptive statistics were employed to analyze the VST scores to find percentage, mean, and standard deviation.

To answer the second research question, Pearson product moment correlation was used to analyze the relationship between the VST scores and years of English study.

## Results and Discussion

### Research question 1: How large was the vocabulary size of Thai freshmen?

**Table 1**

*Mean score of Thai freshmen's vocabulary size (n=484)*

	Mean	Std. Deviation	Minimum	Maximum
Vocabulary Size	42.72	17.88	4	94

The mean score of Thai freshmen's vocabulary size is 42.72 points or 4,272 word families. The minimum score is 4 points or 400 word families and the maximum score is 94 or 9,400 word families.

The results reveal that Thai freshmen have the vocabulary size of 4,272 word families which is higher than the basic requirement of 3,000 word families. It also shows that their vocabulary size is larger than the requirement of Thailand's Basic Education Curriculum B.E. 2544 (A.D. 2001). This means that Thai freshmen pass the requirement prescribed in the core curriculum and the first threshold of 3,000 word families recommended by many researchers.

Laufer (1992), Nation (1993), Hirsh and Nation (1992), Hu and Nation (2000), and Schmitt et al. (2001) stated that 3,000 word families and 5,000 word families should be sufficient to know 95% and 98% of the vocabulary coverage in a text, respectively. Nation (2006) reported that having 4,000 word families was enough for about 96.74% of the tokens in the children's movie like *Shrek*. Nation (2006) also reported that listeners of radio and conversation between family members and friends who had 3,000 word families should be able to handle 95% listening coverage. Nation (1990) and Laufer (1992) also documented that about 2,000 word families of the most frequent words should be sufficient for communication. However, Nation (1990) noted that at least 3000 high-frequency words were essential for learning tasks at a university level. Last but not least, Stæhr (2008) concluded that the students who had 2,000 words have above average scores in the listening, reading, and writing tests.

On the whole, with the vocabulary size of 4,272 word families found in this study, Thai freshmen should be able to cope with reading simple texts well and should be able to guess the meaning of unknown words. They should be able to know 95%-98% of the vocabulary coverage in the text. Moreover, they should be able to understand children's movies and radio talk shows between family members and friends. In terms of speaking and writing, Thai freshmen should be able to communicate and handle learning tasks encountered at a university.

It is important to note that the goal of vocabulary size for reading is at 5,000 word families which allow students to understand 98% of text coverage. Even though Thai freshmen in this study do not reach 5,000 word families, it is a good sign that they are moving closer to 5,000 word families. Therefore, it is important for teachers to help students reach 5,000 word families or more. Thus, freshmen still have at least three more years in a university which will allow even more attainment of English vocabulary.

**Research question 2: To what extent were vocabulary size and years of English study related?****Table 2**

*Pearson correlation coefficient between vocabulary size and reading comprehension  
(n = 484)*

	Vocabulary Size	Years of English Study
Vocabulary Size		.201**

\*\* $p < 0.01$

Pearson correlation coefficient between vocabulary size and years of English study was .201 and it is significant at  $p < 0.01$ . The coefficient is significant and positive yet relatively weak. This can be interpreted that years of study and vocabulary size are partly related. It is speculated that other factors may contribute to vocabulary size, for example, vocabulary learning strategies (Nirrattisai & Chiramanee, 2014). The empirical study regarding factors that may relate to vocabulary size is needed. In a different point of research dimension, vocabulary size may connect to other factors such as reading and listening comprehension as well as speaking and writing ability (e.g., Nation 1990; Laufer, 1992; Hirsh & Nation, 1992; Hu & Nation, 2000; Nation 2006). This point also deserves investigation.

In respect to the relationship between years of study and vocabulary size, Alfadle (2016) and Sun, Zhang, and Scardamalia (2010) revealed that students' vocabulary size increased when they had more time to study English. Alfadle (2016) also found that students' vocabulary size increased annually around 800 – 1,000 word families. Sun et al. (2010) revealed that after 2 years of studying vocabulary through science and social studies contexts, students increased their vocabulary in both productive vocabulary and academic vocabulary. Students not only understood words at their current grade, but they also understood words in upper levels (Grades 5-8). Therefore, it is likely that a number of years they spend in studying English should be a good indicator to their vocabulary size. In brief, vocabulary size can be grown as far as the students continue to study.

So far, it is likely that years in university should be good assets for freshmen to enhance their vocabulary size. However, a success in acquiring new vocabulary needs students' efforts and various kinds of strategies. This point should be a future research topic on how and how much university students can enhance their vocabulary size.

**Conclusion**

Thai freshmen had enough vocabulary to cope with basic language use and the size was quite impressive (4,200 word families) because it was larger than the requirement (3,600-3,750 word families) stated in the basic core curriculum and the first recommended threshold of 3,000 word families. This size would sufficient for Thai freshmen to perform basic language skills encountered at a university. It would be better for teachers to assist the students in order to acquire more vocabulary. A larger vocabulary size can help students perform better in all language skills. The length of English study is also an important key to increase students' vocabulary size. That is to say, longer years of English study, by far, is helpful to the growth of vocabulary size.

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## Reference

- Alfatle, A. B. M. (2016). *Investigating the growth of vocabulary size and depth of word knowledge in Iraqi foreign language learners of English*. (Master's Thesis), Missouri State University.
- Asgari, A., & Mustapha, G. (2011). Vocabulary learning strategies of Malaysian ESL students. *Pertanika J. Soc. Sci. & Hum.*, 20(3), 751-764.
- Baleghizadeh, S., & Golbin, M. (2010). The effect of vocabulary size on reading comprehension of Iranian EFL learners. *Linguistic and Literary Board Research and Innovation*, 1(2), 33-46.
- Cambridge. (2006). *Cambridge Dictionary: English-Thai Dictionary*. Cambridge: Cambridge University Press.
- Chen, K. Y. (2011). The impact of EFL students' vocabulary breadth of knowledge on reading comprehension. *Asian EFL Journal*, 51, 30-38.
- Farvardin, M. T., & Koosha, M. (2011). The role of vocabulary knowledge in Iranian EFL students' reading comprehension performance: Breadth or depth? *Theory and Practice in Language Studies*, 1(11), 1575 - 1580.
- Hirsh, D., & Nation, I. S. P. (1992). What vocabulary size is needed to read unsimplified texts for pleasure? *Reading in a foreign language*, 8(2), 689 -696.
- Hu, M., & Nation, I. S. P. (2000). Unknown vocabulary density and reading comprehension. *Reading in a foreign language*, 13(1), 403-430.
- Ibrahim, E. H. E., Sarudin, I., & Muhamad, A. J. (2016). The relationship between vocabulary size and reading comprehension of ESL learners. *English Language Teaching*, 9(2), 116-123.
- Jianbin, H., Yuedong, S., & Ying, X. (2007). On the vocabulary size for Chinese English learners. *Polyglossia*, 13, 15-25.
- Laufer, B. (1989). *What percentage of text-lexis is essential for comprehension?* Clevedon: Multilingual Matter.
- Laufer, B. (1991). The development of L2 lexis in the expression of the advanced learner. *The Modern Language Journal*, 75(4), 440-448.
- Laufer, B. (1992). How much lexis is necessary for reading comprehension? In P. J. L. Arnaud & H. Bejoint (Eds.), *Vocabulary and applied linguistics* (pp. 126-132). Basingstoke: Macmillan.
- McCarthy, M. (1990). *Vocabulary*. Oxford: Oxford University Press.



- Milton, J., & Hopkins, N. (2005). Comparing phonological and orthographic vocabulary size: Do vocabulary tests underestimate the knowledge of some learners. *The Canadian Modern Language Review*, 63(1), 127-147.
- Ministry of Education. (1990). *Basic education curriculum B.E. 2533 (A.D. 1990)*. Bangkok: Kurusapa Ladprao Publishing.
- Ministry of Education. (2001). *Basic education curriculum B.E. 2544 (A.D.2001)*. Bangkok: Kurusapa Ladprao Publishing.
- Ministry of Education. (2008). *Basic education core curriculum B.E.2551 (A.D.2008)*. Bangkok: Kurusapa Ladprao Publishing.
- Na, L., & Nation, I. S. P. (1985). Factors affecting guessing vocabulary in context. *RELC Journal*, 16(1), 33-42.
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. New York: Newbury House.
- Nation, I. S. P. (1993). *Vocabulary size, growth, and use* (Vol. 6). Amsterdam: John Benjamins Publishing.
- Nation, I. S. P. (2006). How large a vocabulary is needed for reading and listening? *The Canadian Modern language Review*, 63(1), 59 - 82.
- Nation, I. S. P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher*, 31(7), 9-13.
- Nation, I. S. P., & Waring, R. (1997). Vocabulary size, text coverage and word lists. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 6 - 19). Cambridge: Cambridge University Press.
- Newton, J., & Nation, I. S. P. (1997). Vocabulary and teaching. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition* (pp. 238-254). Cambridge: Cambridge University Press.
- Nirattisai, S., & Chiramanee, T. (2014). Vocabulary learning strategies of Thai university students and its relationship to vocabulary size. *International Journal of English Language Education*, 2(1), 273-287.
- Oya, T., Manalo, E., & Greenwood, J. (2009). The influence of language contact and vocabulary knowledge on the Speaking performance of Japanese students of English. *The Open Applied Linguistics Journal*, 2, 11-21.
- Pringprom, P. (2012). Exploring relationship between students' vocabulary breadth and their reading proficiency. *US-China Foreign Language*, 10 (4), 1098 - 1105.
- Pringprom, P., & Obchuae, B. (2011). *Relationship between vocabulary size and reading comprehension*. Paper presented at the The 2nd International Conference on Foreign Language Learning and Teaching, Thammasart University, Bangkok.
- Rubin, J., & Thompson, I. (1994). *How to be a more successful language learner*. Boston: Heinle and Heinle Publishers.
- Sakornthas, N. (2006). *New modern dictionary English - Thai*. Bangkok: Pim-Aksorn Printing.
- Schmitt, N. (2008). Instructed second language vocabulary learning. *Language Teaching Research*, 12 (3), 329 - 363.
- Schmitt, N., Jiang, X., & Grabe, W. (2011). The percentage of words known in a text and reading comprehension. *The Modern Language Journal*, 95, 26-43.
- Stæhr, L. S. (2008). Vocabulary size and the skills of listening, reading, and writing. *Language Learning Journal*, 36(2), 139 - 152.
- Sun, Y., Zhang, J., & Scardamalia, M. (2010). Knowledge building and vocabulary growth over two years, Grades 3 and 4. *Instructional Science*, 38(2), 147-171.
- Zhiying, Z. (2007). Three - modality vocabulary knowledge of South China Agricultural University and Thai Prince of Songkla University EFL learners. *CELEA Journal*, 30(2), 25-33.