การพัฒนาความรู้ด้านคำศัพท์ของนักเรียนระดับมัธยมศึกษาตอนปลายชาวไทยที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ

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บทคัดย่อ

ความรู้คำศัพท์ประกอบด้วยการณ์ลักษณะในการเรียนรู้หลายประเภทอันประกอบด้วยรูป ความหมายและการใช้ และความรู้คำศัพท์ถือเป็นกระบวนการเรียนรู้ที่ต่อเนื่อง ดังนั้นการวัดความรู้เรื่องคำศัพท์จึงจำเป็นต้องอาศัยเครื่องมือที่เหมาะสมและหลากหลาย งานวิจัยฉบับนี้ศึกษาการรับคำศัพท์ใน 3 การณ์ลักษณะ ได้แก่ รูป ความหมาย และวิธีการใช้ นักเรียนระดับมัธยมศึกษาตอนปลายชาวไทยที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศจำนวน 154 คน เข้ารับการทดสอบทักษะความสามารถด้านการรับคำศัพท์ (receptive vocabulary knowledge) และความสามารถด้านการใช้คำศัพท์ (productive vocabulary knowledge) ผลการทดสอบชี้ให้เห็นว่ารูปการณ์ลักษณะสามารถรับได้ง่ายกว่าความหมายและการใช้คำตามลำดับ การวิเคราะห์ความสัมพันธ์ระหว่าง 3 รูปการณ์ลักษณะพบว่ามีความสัมพันธ์กัน นอกจากนี้ยังพบว่าความถี่ในการพบเห็นคำศัพท์มีผลดีต่อการรับคำศัพท์ อีกทั้งความรู้การณ์ลักษณะของคำศัพท์หนึ่ง ๆ ยังช่วยพัฒนาการเรียนรู้คำศัพท์ทั้งแบบรับและแบบใช้งานได้อีกด้วย

คำสำคัญ: การรับคำศัพท์ ประเภทการณ์ลักษณะของคำ ความสามารถด้านการจำคำศัพท์ ความสามารถด้านการใช้คำศัพท์

The Acquisition of Vocabulary Knowledge in Thai EFL High School Students

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Abstract

Vocabulary knowledge is a multidimensional construct and requires the incremental learning process. Therefore, different vocabulary measures may be appropriate at the different stages of acquisition. This study investigates the acquisition of vocabulary knowledge aspects: form, meaning, and use. One hundred and fifty-four Thai EFL students were tested on their receptive and productive knowledge of these aspects, specifically word parts, form-meaning link, and collocation knowledge. The findings showed that word form is easier to acquire, followed by the meaning and use of a word. The correlation analysis revealed that all word knowledge aspects were interrelated in learning. Moreover, exposure to vocabulary has a positive effect on vocabulary acquisition, and each of the word knowledge aspects contributes to receptive and productive vocabulary development.

Keywords: Vocabulary acquisition, vocabulary knowledge aspects, receptive vocabulary knowledge, productive vocabulary knowledge

Introduction

Word knowledge, an essential proxy in vocabulary acquisition, is a complex construct and entails learning different aspects of a word (González-Fernández & Schmitt, 2019; Meara, 1983; Nation, 2013). Nation (2013) suggested that such knowledge requires three aspects: form, meaning, and use, with receptive and productive dimensions. Some of these aspects are likely mastered before others. Indeed, research on vocabulary acquisition has revealed that learning a word is typically a long and incremental process (Henriksen, 1999; Read, 2000; Schmitt, 2014). The process begins by becoming familiar with the word and ends with using the word correctly in context. This process is, therefore, a continuum composed of the receptive and productive knowledge of a word that learners need to achieve, starting with comprehensive word knowledge and leading to word production (Laufer & Goldstein, 2004; Lin, 2015; Sukying, 2017). As such, the experience of learners in embedding the words can influentially promote vocabulary learning and development.

It has been assumed that knowledge aspects are acquired incrementally, and exposure to the language is required, as an increased comprehension of a word advances its production. However, it remains unclear how word knowledge aspects are naturally developed and complement each other (Milton & Fitzpatrick, 2014; Schmitt, 2014; Schmitt & Meara, 1997) as well as how L2 and/or EFL learners acquire word knowledge. This may be partly because previous studies did not focus primarily on a multidimensional nature of word acquisition and did not typically explore an interrelationship between the word aspects, including the word knowledge framework (Nation, 2013), which may have led to misleading or inconsistent conclusions.

With regards to a great reason for this lack of a general theory of vocabulary acquisition, investigating the roles of word knowledge aspects can consequently provide a vibrant perception of vocabulary acquisition and development and exploring different education levels of learners may

also contribute to comprehend better the process of learning a word of learners in context. This study was designed based on Nation's (2013) word knowledge framework, which includes the word knowledge aspects, form, meaning, and use, both receptively and productively.

Literature review

The construct of word knowledge was described by Richards (1976) and, more recently, Nation (2013) provided a comprehensive construct of word knowledge, including a description of its three aspects, form, meaning, and use. Acquiring a word typically involves both receptive and productive dimensions. Receptive knowledge relates to the recognition of a word, whereas productive knowledge is the ability to use and produce a word. The construct of word knowledge is illustrated in Figure 1.

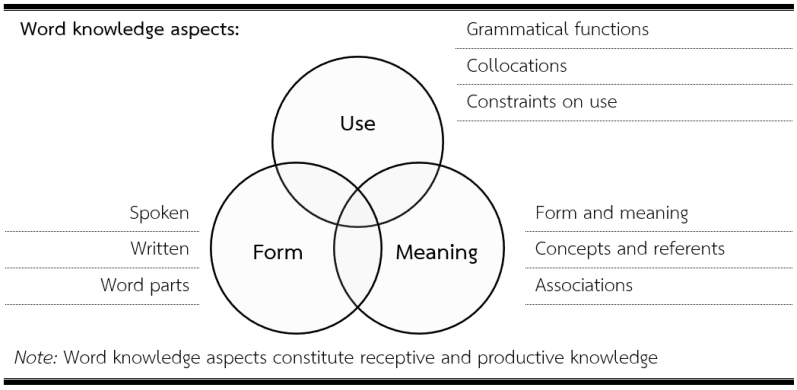

Figure 1: The aspects of word knowledge (Nation, 2013)

Based on Nation (2013), the aspect of form describes spoken, written, and word parts knowledge. The aspect of meaning includes a form-meaning link, concepts and referents, and associations knowledge and, at least, the aspect of use refers to grammatical functions, collocations, and constraints on use knowledge. Many studies have explored these aspects within the word knowledge framework. Research on vocabulary acquisition

shows that the aspects are interrelated and, notably, occur on a continuum of receptive knowledge which advances the increasing degrees of word knowledge to the production (Laufer & Goldstein, 2004). As such, different word knowledge aspects have varying degrees of understanding, and acquiring a word is assumed to be acquired at different stages and time (Nation, 2013; Schmitt, 2000).

Paul Meara (1983) first explored a general acquisition of vocabulary and showed that different aspects of word knowledge were interrelated and were associated with different difficulties. A number of other studies have since supported this finding (e.g., Lin, 2015a, 2015b; Schmitt, 2014; Schmitt & Meara, 1997; Sukying, 2018). For example, Laufer and Goldstein (2004) also found that the word knowledge aspects were connected, both receptively and productively, and vocabulary learning occurs on a continuum of receptive and productive knowledge. Specifically, the productive dimension was more difficult to acquire than the receptive dimension. (Henriksen, 1999; Nation, 2013; Webb, 2005).

Recently, González-Fernández and Schmitt (2019) explored the relationship between multiple word knowledge aspects, both receptively and productively, including the form-meaning link, derivatives, multiple meanings, and collocations. The study assumed a general acquisition order of word knowledge aspects acquired beginning with form, then meaning and, finally, use. Consistent with previous literature, it was found that acquiring these word knowledge aspects was an incremental process and facilitated the word acquisition (Nation, 2013; Schmitt, 2000; Schmitt & Meara, 1997). However, it remains unclear how different aspects of a word are naturally acquired (Schmitt, 2014). Indeed, most vocabulary research has failed to focus directly on the acquisition of word knowledge or to investigate a single aspect or form-meaning link (Laufer & Goldstein, 2004; Sukying, 2017). Moreover, existing studies have explored different contexts and perspectives, often using different measures. As such, knowing a word is still complicated

and need to be explored to seek reliable and valid evidence for the acquisition of vocabulary. This is particularly true for English as a Foreign Language (EFL) learners (Hayashi & Murphy, 2011).

Previous research has examined vocabulary acquisition in Thai EFL learners (e.g., Liangpanit, 2014; Kittigosin & Phoocharoensil, 2015; Phoocharoensil, 2013, 2014; Sukying, 2017, 2018, 2019, 2020; Supasiraprapa, 2019). These studies tend to show low performance on word knowledge, both receptively and productively, in a Thai context, even if Thai EFL participants had experienced the English language for years. Many studies have explored the acquisition of word knowledge in high school and university students (e.g., Sukying, 2017; Supasiraprapa, 2019). These studies have shown that Thai EFL learners have poor knowledge of English production, low English proficiency (Noom-ura, 2013), and the students' receptive vocabulary size is almost double their productive vocabulary size (Kotchana & Tongpoon-Patanasorn, 2015; Srisawat & Poonpon, 2014). This reveals that Thai EFL learners lack word knowledge and have an inadequate comprehension of word knowledge for the production of a word (Sukying, 2018; 2019); therefore, pedagogy must focus on pushing learners' knowledge from receptive towards productive competence. Indeed, the embedding of the words influences the acquisition of vocabulary knowledge, and understanding the roles of word knowledge aspects will enhance the vocabulary improvement of learners in context. As such, the investigations into the acquisition process are required to better understand the nature of word knowledge acquisition and vocabulary growth.

The current study

The aim of the current study is to investigate L2 word acquisition in Thai EFL learners and to explore whether or not there is any difference between education levels of learners in vocabulary acquisition. In this regard, two primary research questions are examined:

1.Does the education level influence the acquisition of word knowledge aspects in Thai EFL high school students?

2.What is the relationship be with word knowledge aspects?

Methods

1. Participants

The participants were 154 Thai students in tenth- (67 students) and twelfth-grade (87 students) high school who had studied English as Foreign Language (EFL) for approximately ten years. Participants were aged from 16 to 18 years. Both the tenth and twelfth graders' English proficiency was grouped as the senior high school level. These students were at a level of learning and using high-frequency vocabulary. All participants were Thai native speakers, using their L1 to communicate with their friends or classmates at school, and had not studied English in an English-speaking country. The participants acknowledged an estimated average of five hours of English instruction per week, including four 50-minute English sessions with EFL teachers and one 50-minute session with native English speakers. Consistent with the Office of the Basic Education Commission (Ministry of Education in Thailand), all participants had been enrolled in EFL classes for a minimum of ten years as a mandatory subject.

The twelfth-grade students had additional two years of English learning compared to the tenth-grade students. Indeed, the tenth-grade learners are at a stage between advanced junior and beginning senior high school level, and the twelfth-grade learners will next move on to university. Their differences in English experience may affect the ease or difficulty with which they learn a word. However, the participants have similar English instruction, and, as such, it is interesting to examine their comprehension and production of English and, specifically, the acquisition of word knowledge aspects.

2. Selecting the prompt words

Prompt words were selected that are common in daily life and the area of academic study. All words also reached the requirement of Thailand's Basic Education Curriculum B.E. 2544 (A.D. 2001). The prompt words were selected from two-word lists, the Academic Word List (AWL) (Coxhead, 2000) and the New General Service List (NCSL) (Browne, Culligan, & Phillips, 2013), and were piloted by 50 senior high school students, excluded in the main study, to verify their appropriateness in a Thai EFL high school context (Morgan and Bonham, 1944; Meara, 1983). Prompt words should be neither the easiest nor the most difficult grammatical class of words and should be sufficiently familiar and suited to measuring the capacity of word knowledge, both receptively and productively. The familiarity of the prompt words for a high school level was assessed using the Preliminary for Schools Vocabulary List, initially developed by Cambridge English. The collocational words were based on the websites, including the Longman Dictionary of Contemporary English and Online Oxford Dictionary. Five experts determined that the content of the tests should be sufficiently familiar to the participants.

3. Materials

Six tests were used to assess participants' word knowledge, both receptively and productively, including word parts (form), form-meaning (meaning), and collocations (use) knowledge. The receptive tests assessed the ability to recognize a word, whereas, the productive tests tested the ability to recall and produce a word in the context. Content validity was assessed by five experts with more than ten years of experience in the area of English education, including one native speaker, one university teacher, and three high school teachers. The validity and reliability of tests were then established with scoring 0.746 on Cronbach's Alpha, indicating acceptability.

3.1 The Word Segmentation Test (WST)

The Word Segmentation Test (WST), based on Hayashi and Murphy (2011), was used as the receptive word form task and was developed to measure word part knowledge in receptive dimension. The test included 40

items, with one verb, twenty-three nouns, six adverbs, and ten adjectives. In this test, participants were required to break down word components into smaller morphemes, the smallest meaningful part of a language based on Bauer and Nation's (1993) word family criteria. For the scoring, one morpheme was awarded one point. Zero points were awarded for no answer or an incorrect answer, such as an incorrect root word. The scoring criteria of the WST are shown in Table 1.

Table 1: The Word Segmentation test scores

Instructions: Break down a word into the smallest parts

Examples	Point
inaccessible = in+access+ible	3
accessible = access+ible	2
inaccessible = in+accessible	2
accessible = accessible	0
inaccessible = inaccess+ible	0

3.2 The Affix Elicitation Test (AET)

The Affix Elicitation Test (AET), also based on Hayashi and Murphy (2011), was used as the productive word form task to assess productive knowledge of word parts. The test included 20 items. Participants were required to supply a correct form of a word for each blank in the sentence and to provide a part of speech for the derived word. No points were awarded for a blank answer or an incorrect answer. One point was awarded for each correct response, including a correct form in context and one for providing a correct type of a derived word. The scoring criteria for this task are shown in Table 2.

Table 2: The Affix Elicitation test scores

Instructions: Choose an appropriate part of speech in part B to complete the sentence in part A

Part A	Point	Part B				Point	Total
		N.	V.	Adj.	Adv.		
He is a *teacher* (teach).	1	*X*				1	2
He is a *teacher* (teach).	1		*X*			0	1
He is a teach (teach).	0	*X*				1	1
He is a teaches (teach).	0			*X*		0	0

3.4 The L1 Translation Test (L1TT)

The L1 Translation Test (L1TT) was developed based on Laufer and Goldstein (2004) and was used as the productive word meaning task. This test was primarily designed to measure productive knowledge of form-meaning aspect and comprised 20 lines with one line for each prompt word. The instructions asked the participants to recall the meaning for each prompt word. For example, Thai words were provided and the participants were asked to supply the definition of the word in English by following a given letter. One point was awarded for a correct word definition and/or a similar meaning, and no points were given for no answer or an incorrect answer. An example of this test is shown in Table 4.

Table 4: The L1 Translation test Scores

Instructions: Read the meaning of the following words in Thai and complete the English words with the first letter given

Word questions	Answer	Correct Answer	Point
1. สมุด	B *ook*	Book	1
2. การเขียน	W *rite*	Writing	0.5
3. อย่างเชื่องช้า	S *low*	Slowly	0.5

3.5 The Collocation Recognition Test (CRT)

The Collocation Recognition Test (CRT) was used as the receptive measure of word use (Schmitt, Schmitt, and Clapham, 2001). This test was designed to assess receptive knowledge of word collocations. The test included 40 collocational items and participants were required to match the correct word collocation to the suitable context by selecting among the given words. No points were given for incorrect or blank answers, and one correct match was awarded one point. An example of this test is shown in Table 5.

Table 5: The collocation Recognition test scores

Instructions: Choose the best word choice in the first column to describe the noun in the second			
Adjective	**Noun**	**Correct Answer**	**Point**
great			
serious	1. *great* _____survivor	1. great	1
systematic	2. *mini* _____ injury	2. serious	0
mini			

3.6 The Productive Collocation Recall Test (PCRT)

The Productive Collocation Recall Test (PCRT) was used as the productive measure of word use and was developed based on Laufer and Nation (1995, 1999). The test was formatted as a gap-filling task and included 20 collocational items. The test specifically measured productive knowledge of word collocations. Only one correct answer is allowed. In this test, to prevent guessing, the initial letters of the target collocations were provided to avoid non-target words that may fit in the allocated sentence. The correct answer was awarded one point, and no points were given for incorrect or blank answers. Example questions from the PCRT are shown in Table 6.

Table 6: The Productive Collocation Recall test

Instructions: Complete the sentence below with an appropriate word	**Correct Answer**	**Point**
1. Many an..... sites were destroyed in 1898.	ancient	1
2. A re..... trend in outfits is a colourful style.	recent	1

4. Data procedure

Six tasks were used to assess participants' word knowledge, both receptively and productively. The productive measure was administered before the receptive measure for each aspect to ensure that participants will not transfer knowledge from a receptive test to a productive test. Indeed, the test of word meaning must be administered before the measure of word form because the ability to supply the word form as productive knowledge can be transferred to the ability to supply the word meaning as receptive knowledge (Laufer & Goldstein, 2004). As such, the six tests were conducted

in the following order: 1) the collocation recall test, 2) the collocation recognition test, 3) the L1 translation test, 4) the L2 translation test, 5) the affix elicitation task, and 6) the word segmentation task. A summary of the data collection procedure is shown in Table 7.

Table 7: Summary of the data collection procedure

No.	Word aspects		Grade 10 (n=67)	Grade 12 (n=87)	Time
1	P	Use	PCRT	PCRT	20 minutes
2	R		CRT	CRT	40 minutes
3	P	Meaning	L1TT	L1TT	20 minutes
4	R		L2TT	L2TT	40 minutes
5	P	Form	AET	AET	20 minutes
6	R		WST	WST	40 minutes

Note: R = receptive knowledge, P = productive knowledge

5. Data analysis

The test scores were analyzed to detect the nature of word knowledge construct with the Statistical Package for the Social Sciences (SPSS) (Larson-Hall, 2016). The probability coefficient (p), which can range from 0 to =1, was calculated and significance was set at 0.05 to reject the null hypothesis (Dörnyei, 2007). The reliability or consistency of the test scores was determined using Cronbach's Alpha (Mackey & Gass, 2005). The Cronbach's Alpha coefficient is set at above 0.70 (DeVellis, 2003) or 0.80 for a well-developed test (Dörnyei, 2007). Descriptive statistics were collated for participants' test performance on word knowledge, including means, and standard deviations (Mackey & Gass, 2005). A pair-samples t-test and repeated-measures ANOVA were examined to detect any significant differences in word knowledge tests. Finally, A correlation analysis was conducted on the relationship between different word tests based on Cohen's (1988) guidelines: small, r = 0.10 to 0.29; medium, r = 0.30 to 0.49; large, r = 0.50 to 1.0. Table 8 summarizes these data analyses.

Table 8: A summary of data analysis

Word Aspects		Test Instruments	Data Analysis
R	Form	WST	
P	Form	AET	• Descriptive statistics
R	Meaning	L2TT	• A paired-samples *t-test*
P	Meaning	L1TT	• A repeated-measures ANOVA
R	Use	CRT	• Correlation analysis
P	Use	PCRT	

Note: R = receptive knowledge, P = productive knowledge

Results

Overall, the results showed that participants performed better on the receptive tests than productive tests and achieved the highest score performance on the word form, followed by word meaning, and word use in two grades. This pattern was similar for both tenth- and twelfth-grade students; however, the twelfth-grade participants scored slightly higher than the tenth-grade participants on each test. However, the analysis revealed that there was only a significant difference between the two different grades on the L2TT and CRT performance. The descriptive statistics of the performances on each test are shown in Table 9.

Table 9: Descriptive Statistics of test performance of the tenth and twelfth-grade participants

Word aspects		Tests	Grade 10 (n = 67)		Grade 12 (n = 87)		*t*-value
			Mean	SD	Mean	SD	
R	Form	WST	73.46	10.15	73.69	10.19	0.10
P		AET	20.18	8.40	21.86	8.90	1.35
R	Meaning	L2TT	26.24	6.14	30.37	5.24	4.98*
P		L1TT	15.01	2.33	15.14	2.73	0.79
R	Use	CRT	22.04	7.00	24.75	7.10	2.55**
P		PCRT	9.21	3.31	9.24	3.58	1.25

Note: $*p < 0.001$, $**p < 0.05$

For both grades, the analysis also showed that performance on word knowledge tests was significantly different. The analysis of a repeated measure ANOVA on word knowledge aspects for the tenth- and twelfth-grade students is illustrated in Figure 2.

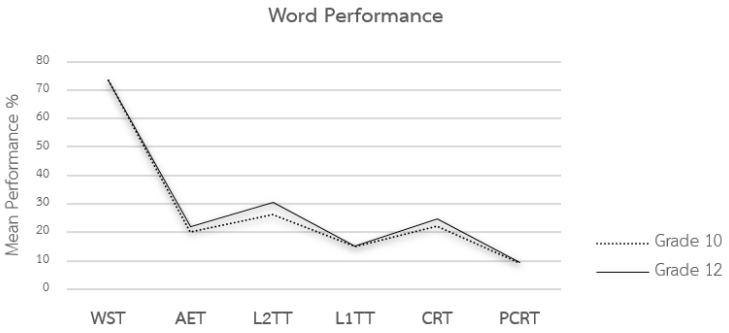

Figure 2: Word performance for the tenth- and twelfth-grade students

The repeated measures ANOVA showed that there was a significant difference between all word tests in both grades. The WST, AET, L2TT, L1TT, CRT, and PCRT were significantly different for the tenth-grade participants ($F(3.129, 206.481) = 1.287$, $p < 0.001$), and for the twelfth-grade participants ($F(3.195, 274.813) = 1.469$, $p < 0.001$). This indicates the varying levels of difficulty for each of the word knowledge aspects.

A correlation analysis was conducted to examine the relationship of word knowledge aspects. The correlation analysis for the test performances of tenth-grade students is shown in Table 10.

Table 10: Correlation coefficients for the test performances of tenth-grade students

Tests	WST	AET	L2TT	L1TT	CRT	PCRT
WST						
AET	0.521***					
L2TT	0.544***	0.678***				
L1TT	0.303*	0.460***	0.499***			
CRT	0.340**	0.478***	0.678***	0.440***		
PCRT	0.336**	0.411***	0.477***	0.449***	0.477***	

Note: ***$p < 0.001$, **$p < 0.005$, *$p < 0.05$, $N = 67$

Table 10 shows the correlation coefficients for the tenth-grade participants and reveals that performance on the word knowledge tests was significantly positively correlated, indicating that the word knowledge aspects were interrelated. The correlation analysis for the test performances of twelfth-grade students is shown in Table 11.

Table 11: Correlation coefficients for the test performances of twelfth-grade students

Tests	WST	AET	L2TT	L1TT	CRT	PCRT
WST						
AET	0.501**					
L2TT	0.430**	0.521**				
L1TT	0.616**	0.521**	0.370**			
CRT	0.286*	0.380**	0.647**	0.278*		
PCRT	0.161	0.156	0.401**	0.088	0.442**	

Note: $^{**}p < 0.001$, $^{*}p < 0.05$, $N = 87$

Table 11 shows the correlation coefficients for the twelfth-grade participants. The analysis revealed that performance on most word knowledge tests was significantly positively correlated, suggesting that word knowledge aspects were also closely related in this group of learners. Only the correlations among the WST and PCRT, AET and PCRT, and L1TT and PCRT were found to be not significant.

In summary, the findings showed that the twelfth-grade participants performed slightly better than the tenth-grade participants in all tests, but this difference was not statistically significant. For both grades, the results showed that word knowledge tests were significantly different and also revealed that they were related to each other, such that good performance on one test was associated with good performance on the other tests. All participants performed best on the word form, followed by word meaning and, finally, word use. This suggests a similar learning process for both grades of students. Overall, the results indicated that word knowledge aspects were interrelated and had varying difficulty levels. This provides further evidence that these aspects are learned on an incremental continuum and are not acquired simultaneously.

Discussion

This study explored the difference between tenth-grade and twelfth-grade students on vocabulary acquisition. Specifically, word parts knowledge (form), form-meaning knowledge (meaning), and collocations knowledge

(use) were assessed both receptively and productively. The twelfth-grade participants achieved higher performance than the tenth-grade participants in all tests, but only performance on the L2TT and CRT was found to be significantly different. The results for each grade revealed a significant difference between the word tests as well as a positive correlation between performance on the tests. The findings showed that the two grades of students performed best on the word form test, followed by the word meaning and word use tests, respectively. Both grades performed significantly better on the receptive tests than the productive tests for each aspect. These findings are consistent with previous studies (e.g., Henriksen, 1999; Laufer & Goldstein. 2004; Nation, 2013; González-Fernández & Schmitt, 2019; Sukying, 2017, 2018).

Regarding Research Question 1, the results revealed that there was a little different performance between all word knowledge tests in both grades. The twelfth-grade participants achieved higher performance than the tenth-grade participants in all tests. This is perhaps because the twelfth-grade participants have more experience in learning a word, which is congruent with the view that understanding the roles of word knowledge requires greater language experience (Hayashi & Murphy, 2011; Schmitt & Zimmerman, 2002). However, the analysis revealed that there was an only significant difference between L2TT and CRT performance. This is partly because, while the twelfth-grade participants had more experience with the English language than the tenth-grade participants by approximately two years, both groups were considered to be at the same level. As a result, the findings suggest that the two grades were at a similar level of knowing a word, indicating little development in vocabulary learning in the senior high school pedagogy with additional language exposure. A long experience of English vocabulary learning seems effectively enhancing the development of vocabulary knowledge. However, it is hard to clarify the improvement of learners in vocabulary knowledge dealing with one time assessing.

Both groups of participants also performed better on the receptive tests than the productive tests. Typically, receptive knowledge is more accessible than productive knowledge (Lin, 2015b; Sukying, 2017). The receptive tests, WST, L2TT, and CRT, reflected the ability to recognize a word, whereas, the productive tests, AET, L1TT, and PCRT, tested the ability to recall and produce a word in the context. Hayashi and Murphy (2011) argued that receptive knowledge is achieved first, which then promotes productive knowledge. The comprehension of a word sets the foundation for the production of a word, but if the students do not have sufficient receptive knowledge, this will affect the production of a word. As such, the results are consistent with earlier findings that the productive task is more complicated than the receptive task and demands a greater knowledge load (e.g., Hayashi & Murphy, 2011).

The results suggest similar L2 word acquisition for both grades, which is consistent with the general theory of vocabulary acquisition described in previous studies (Meara, 1983; González-Fernández & Schmitt, 2019). All participants performed best on the word form, followed by word meaning and word use, respectively. The results also showed a significant difference in performance on all the word tests. This is consistent with previous literature (e.g., González-Fernández & Schmitt, 2019; Nation, 2013; Schmitt & Zimmerman, 2002), showing that word knowledge aspects demand varying degrees of understanding. Altogether, the findings provide evidence that the aspects of a word are not acquired simultaneously, and the word form is easiest to be achieved, followed by word meaning and, finally, word use. Indeed, the altered contextualization of English learning can specifically intend the dissimilar results (Hayashi & Murphy, 2011; Nation, 2013; Sukying, 2019).

In a Thai context, the learners appear to learn the grammatical rules explicitly, and the grammatical rules of a word are easily acquired and remembered. For example, the word “create” can be recognized with the different forms “creates, created, creating, creative, creatively, creation, and

creator, etc." It has previously been argued that grammatical knowledge can facilitate the ability to recognize the definition of a word. The knowledge of meaning appears byzantine because it takes time to remember the words and demands an ability to translate between L1 to L2 and L2 to L1. As such, the learners first need some experience and comprehension of word knowledge. However, this hardly confirms the complicated order between word form and meaning. Some studies early showed some different results inconsistently. For example, some researchers considered that form knowledge, concerning the syntactical knowledge of word family members, was seemly difficult, learned relatively late, and required explicitly teaching attention (Barcroft, 2002; Chui, 2006).

Nevertheless, some other researchers argued that meaning knowledge was more difficult to acquire (Wolter, 2009). For instance, productive meaning aspect was acquired incidentally from listening after spelling and word-class, and it was also found that L2 learners may achieve knowledge of other word aspects without a mastery of word meaning (Schmitt, 1998; Van Zeeland & Schmitt, 2013). With earlier findings, the different methods may produce and affect somewhat different results (González-Fernández & Schmitt, 2019). In the following, word use is the last to be achieved because this aspect reflects the ability to produce a word. Indeed, the function of a word requires a higher degree of comprehension and exposure. This aspect is the nature of language; therefore, L2 and EFL learners take longer to accurately learn this aspect (Nation, 2013). This learning is also impeded when the learner has limited exposure to an English context, making it difficult to achieve word use in a predominately Thai context. Previous studies in other contexts have also found the learners will achieve receptive knowledge first (i.e., form and meaning) and will then acquire comprehensive knowledge of the production of a word (Hayashi & Murphy, 2011; Nation, 2013; Sukying, 2018, 2020).

In response to Research Question 2, the current study found a positive correlation of many of the word tests, and this was true for both

school grades. The results of the current study are consistent with previous studies. For example, González-Fernández and Schmitt (2019) revealed a positive relationship between word knowledge aspects and suggested that there was a continuum of receptive and productive knowledge of a word. This means that learners with multiple aspects of word knowledge can learn vocabulary more effectively than with a single-mode alone (Lin, 2015). However, it should be noted that the failure to find a significant correlation of some of the tests may be due to the relatively small sample size. Regarding quantitative research, a sample size of participants can affect and mislead the error results. Nevertheless, the results show that word knowledge aspects are positively correlated, and learning a word is an incremental process, which is in line with Murphy and Hayashi's (2011) continuum of receptive and productive knowledge.

To summarize, regarding Research Question 1, there was little difference between the performances of tenth- and twelfth-grade students, and this is likely because both groups were categorized at the senior high school level. The results for both grades showed that a receptive test is more straightforward than a productive test and that receptive knowledge is first acquired and this knowledge then advances productive knowledge. Indeed, a productive dimension requires a higher degree of cognitive and metacognitive knowledge (Hayashi & Murphy, 2011). Both tenth- and twelfth-grade Thai EFL students showed the same sequence of word acquisition; they acquired the form of a word first, followed by the meaning of a word and then the use of a word. This suggests that word knowledge is acquired at different stages and times. As to Research Question 2, word knowledge tests were also positively related, reflecting the interrelatedness of the word knowledge aspects. This confirms the developmental process of vocabulary learning. The results of the present study are largely consistent with earlier findings on the process of vocabulary acquisition.

Conclusion

The results for the two different grades showed that word knowledge aspects were varying degrees and closely related and revealed that receptive knowledge of a word is easier to acquire than productive knowledge. Both grades showed a similar pattern of word acquisition, beginning with word form, then meaning and, finally, word use. Interestingly, there was little evidence for development in vocabulary from the tenth-grade to twelfth-grade learners. Overall, the findings revealed that word knowledge aspects are interrelated and cannot be acquired simultaneously. Learning a word first requires comprehension of the word in order to promote its production. Word acquisition is, therefore, likely to be a developmental process and requires a large degree of cognitive and metacognitive loads as well as adequate exposure to the language.

Recommendation

Word knowledge typically includes 18 aspects (Nation, 2013); thus, future studies should aim to include more aspects to gain a clearer understanding of vocabulary acquisition and development. Longitudinal research would also be beneficial to the investigation of English vocabulary acquisition in Thai learners. Moreover, participants with many different educational levels should be included to better understand the roles of word knowledge aspects in specific contexts, such as primary, high school, and university students. It should also be noted that the tests used here were designed for the specific purposes of this study, and future studies may need to adapt these tests according to their own objectives. Overall, these findings inform pedagogy in English vocabulary teaching and learning.

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