

Learning vocabulary from reading-only, reading-while-listening, and reading with textual input enhancement: Insights from Vietnamese EFL learners

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Abstract

This paper reports the results of two experiments which compared the effects of reading-only, reading-while-listening, and reading with textual input enhancement (i.e. underlining) on Vietnamese English as a foreign language (EFL) learners' learning of three aspects of vocabulary knowledge: form recognition, form recall, and meaning recall. Sixty Vietnamese EFL learners (32 beginner and 28 intermediate learners) were assigned to one of three experimental conditions: reading-only, reading-while-listening, or reading with textual input enhancement. During four weeks, all learners read four graded readers in their conditions. Tests of target words were administered three times: one week before the reading (pre-tests), immediately after the reading (immediate post-tests), and one week after the reading (delayed post-tests). To gain more insights into the learners' perspectives, follow-up semi-structured interviews were conducted. The results showed that the three reading modes resulted in word learning gains for the three word knowledge aspects tested. However, reading with textual input enhancement resulted in significantly more vocabulary learning than reading-only, while the reading-while-listening and reading-only groups did not differ significantly. In addition, form recognition had the largest gains while form recall the smallest.

Key words: vocabulary acquisition; reading; reading-while-listening; input enhancement; English as a foreign language

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Introduction

Input plays an important role in learners' foreign/second language (L2) learning (Ellis and Shintani, 2014; Gass, 2017). However, in English as a foreign language (EFL) contexts like Vietnam, learners often receive a limited number of hours of L2 instruction and their access to L2 input outside classrooms tends to be limited (Webb and Nation, 2017). As a result, many EFL learners may not have sufficient exposure to L2 input for their L2 learning. Apart from formal input sources such as course books and teacher talk (Ellis and Shintani, 2014), extensive reading, i.e. an approach "in which learners read large quantities of material that are within their linguistic competence" (Grabe and Stoller, 2011: 286), could be a potential input source outside class hours (Nation, 2015). Extensive reading can help learners acquire unknown words (Grabe and Stoller, 2011) and enhance their knowledge of already known words (Nation, 2013; Nation and Webb, 2011). For that reason, research into how extensive reading programmes should be implemented to help L2 learners improve their vocabulary can provide significant pedagogical implications.

Researchers have examined the effects of different reading conditions on vocabulary learning, including reading-only (e.g. Horst, 2005; Pigada and Schmitt, 2006; Waring and Takaki, 2003), reading-while-listening (e.g. Brown, Waring, and Donkaewbua, 2008; Webb and Chang, 2012, 2015), and reading with textual input enhancement (e.g. Peters, 2012; Sauer, 2017), but previous studies pointed to mixed findings and did not directly compare the three reading conditions. In addition, little is known about learners' perspectives toward their vocabulary learning in each reading condition. This study aims to make a theoretical contribution by comparing three reading conditions and by exploring learners' perspectives on their vocabulary learning in each reading condition.

Literature review

Vocabulary learning from (extensive) reading

Previous research (e.g., Horst, 2005; Pellicer-Sánchez and Schmitt, 2010; Pigada and Schmitt, 2006; Waring and Takaki, 2003) has shown that vocabulary can be learned from (extensive) reading, but at different rates. Waring and Takaki (2003) examined vocabulary learning from reading one modified graded reader among Japanese university students. Learning of 25 target substitute words from the reading was measured in immediate and delayed post-tests on form recognition, meaning recognition, meaning recall. The results showed that only few new words were learned

from the reading, about half of which were forgotten after three months. The highest gains were found for form recognition while the lowest gains for meaning recall. Pellicer-Sánchez and Schmitt (2010) showed more encouraging findings. In this study, advanced Spanish EFL learners read an authentic unmodified English novel in about one month and their vocabulary learning of 34 target items was measured in terms of form recognition, word class recall, meaning recognition and recall. The results showed that a substantial amount of vocabulary was learned from reading, indicating that reading authentic novels could be as beneficial for vocabulary learning as reading graded readers. The gains in meaning recognition were the largest whereas meaning recall had the smallest gains.

Studies on extensive reading also showed positive results. Horst's (2005) study evaluated adult immigrant English learners' gains in meaning recognition of 100 target words after 6 weeks of reading four graded readers. The findings suggested that over half of the target words were picked up, which made Horst (2005) conclude that learners should be encouraged to read in large amounts. High vocabulary gain rates from extensive reading were also found in Pigada and Schmitt's (2006) case study which investigated a male French language learner's acquisition of the spelling, meaning, and grammatical features of 133 words after reading four graded readers in one month. The results from the one-on-one interviews with the learner revealed that his knowledge of up to 65% of the target words improved, demonstrating that extensive reading significantly enhanced the learner's vocabulary knowledge. Word spelling outweighed word meaning and grammar in terms of improvement, which suggested that different aspects of vocabulary knowledge should be addressed differently.

Vocabulary learning from reading-while-listening

Recently, there has been an increased interest in the effects of reading-while-listening on vocabulary acquisition. One of the first studies to investigate the potential of reading-while-listening for vocabulary learning was Brown et al. (2008). Japanese students had to read three graded readers in three conditions: reading-only, reading-while-listening, and listening-only. Their learning of 28 substitute words from the reading was measured in a multiple choice test (meaning recognition) and a translation test (meaning recall) immediately after the treatment, one week later, and three months later. The results indicated that the learners had learned vocabulary in the three reading modes, but the gains were modest. There was, however, no significant difference between reading-only and reading-while-listening. The gains in meaning recognition were significantly better than in meaning re-

call. The interviews with the learners revealed that reading-while-listening was the most favoured because the narrators in the recordings segmented the texts, which, the authors argued, could have helped the learners process the reading and infer word meanings more effectively.

Webb and Chang (2012, 2015) provided more support for reading-while-listening. In Webb and Chang's (2012) study, Taiwanese secondary EFL students engaged in either reading-only or reading-while-listening (at least two times) of 28 short texts over two seven-week periods. Their learning of 100 target words was measured in post-tests on form and meaning recognition one week after their reading. The results indicated that the participants in both groups recognised more target words after the reading treatments. Reading-while-listening proved to be more effective for learning vocabulary than reading-only. Some reasons for the superior effect of reading-while-listening were suggested, including the learners' probably greater knowledge of spoken form of some words than written form, their possibly better comprehension of the texts, and their increased exposures and attention to the target vocabulary in this reading condition. The positive effects of reading-while-listening on vocabulary learning were corroborated in Webb and Chang (2015).

Vocabulary learning from reading with textual input enhancement

A few studies have explored the effect of textual input enhancement, i.e. the bolding or underlining of target words in the written input, but the findings seem to be inconclusive.

In Peters's (2012) study, German-as-a-foreign language learners read a glossed German text with half of the target items (12 single words and 12 formulaic sequences) typographically enhanced (bold typeface and underlining) and the other half not. The results from the immediate post-tests suggested that typographic salience had a significant effect on the learners' recalling the form of both single words and formulaic sequences. Textual enhancement was argued to attract the learners' attention to the target items, making them salient for learning and hence facilitating the learners' processing. The learners also wrote down more typographically enhanced items than non-enhanced items while reading the text. The recall scores, however, were low probably because the learners' processing of the target items was merely superficial.

In Sauer's (2017) study, however, the results on the effects of textual enhancements were inconsistent. In three in-class reading sessions over three weeks, EFL learners either read an unmodified text (control group) or one of three types of modified text: bold-printing, L2 glossing, or both, followed by tests on form recognition, meaning recognition, and meaning recall. The findings showed that: 1) working with texts combining bold-printing and L2 glossing yielded significantly higher

vocabulary gains than bold-printed, L2 glossed and unmodified texts; 2) the highest gains were found in form recognition while the lowest in meaning recall. Between bold-printed texts and unenhanced texts, the results were inconclusive. Only in the third session was a significant difference found in meaning recall between the control group and the bold-printing group while the two previous sessions showed no significant group differences. Bold-printing was assumed to enhance typographical salience and subsequently learners' noticing the word form, rather than the meaning. Data from the retrospective interviews with the participants revealed that the levels of noticing of the enhancements varied among learners and that reading enhanced texts was generally favoured over reading unenhanced texts.

Rationale and research questions

Even though there has been some research into different reading modes, no study has compared the differential effects of reading-only, reading-while-listening, and reading with textual input enhancement on different word knowledge aspects. Additionally, there seems to be a lack of studies investigating learners' perspectives on vocabulary learning in different reading modes. A study comparing different reading modes and analysing learners' perspectives can provide useful insights for both theories of vocabulary learning from meaningful input and L2 classrooms.

The current study seeks to address the following research questions:

1. In which condition do learners learn more vocabulary knowledge: reading-only, reading-while-listening, or reading with textual input enhancement?
2. What are the learners' perspectives about vocabulary learning in each reading condition?

Methodology

To answer our research questions, two parallel experiments were set up, in which the vocabulary learning gains in three reading modes were compared: reading-only, reading-while-listening, and reading with textual input enhancement. In both experiments, a pre-test, immediate post-test, delayed post-test design was adopted. The data in experiment 1 were collected from beginner EFL learners whereas the data in experiment 2 were collected from intermediate EFL learners.

Experiment 1

Participants

Initially, 54 Vietnamese tertiary beginner EFL learners coming from both rural and urban areas were involved in the experiment. However, the data from the participants who did not attend all the data collection sessions were not analysed. As a result, only the data of 32 learners were analysed. Their number of years of learning English ranged from 6 to 12 years ($M = 8.33$, $SD = 1.02$). They were assigned to one of the three experimental groups: reading-only (10 learners), reading-while-listening (11 learners), and reading with textual input enhancement, i.e. underlining (11 learners). The participants' mean score of the TOEIC (Test of English for International Communication) test was 126.56 ($SD = 30.23$) and the three groups did not differ significantly, $F(2,29) = 3.21$, $p = .06$. To check their general vocabulary knowledge, only the first two sections (1,000 and 2,000 word levels) of the updated Vocabulary Levels Test (Webb, Sasao, and Ballance, 2017) were employed because of the participants' limited vocabulary knowledge. Their mean test scores at 1,000 and 2,000 word levels were 15.56 ($SD = 4.2$) and 3.75 ($SD = 3.23$) respectively. There was no statistically significant difference in the three groups' vocabulary knowledge as determined by a one-way ANOVA, $F(2,29) = 1.69$, $p = .20$.

Reading materials

For the ecological validity of the study, graded readers rather than texts created for research purposes were selected based on the learners' English proficiency and vocabulary levels. The participants read four non-fiction graded readers: *Trees* (#1.1), *Young Animals* (#1.2), *Camouflage* (#1.3), and *Farms* (#1.4). These books, which were of levels 1 and 2 with 300 and 450 headwords from Oxford Read and Discover series, were chosen because they were assumed to be appropriate for the participants' English proficiency. Their suitability was verified in a pilot study with learners of similar proficiency and vocabulary levels prior to the actual data collection. One note is that the pictures enclosed in the original graded readers were not removed because of the ecological validity of the study.

Target items

The target items were real words from the reading texts to ensure ecological validity. To select the target items, one week before each reading session three pre-tests targeting words occurring in the

graded reader that had to be read was administered: form recall, form recognition, and meaning recall. Each test contained 30 words, including 20 words from one graded reader expected to be unknown and 10 distracters to prevent learners' intentional memorisation of target items. To measure absolute gains, items that were known by at least one participant were not included in the target item selection and were no longer tested in the immediate and delayed post-tests. This procedure resulted in 16 target items (see Table 1) with each graded reader containing 4 target items. The frequency of occurrence ranged from 2 (e.g. *quilt*) to 12 (e.g. *caterpillar*).

Table 1 Target items (16) for beginner learners ($N = 32$)

Target words (frequency of occurrence)			
Week 1: Book #1.1	Week 2: Book #1.2	Week 3: Book #1.3	Week 4: Book #1.4
Conifer (5)	Caterpillar (12)	Grouse (5)	Terrace (3)
Pollen (4)	Chimpanzee (2)	Gazelle (9)	Fleece (3)
Needles (4)	Tadpole (2)	Flounder (2)	Poultry (3)
Broadleaves (4)	Cheetah (6)	Katydid (2)	Quilt (2)

Data collection instruments

Data were collected by means of vocabulary tests and interviews.

Vocabulary learning was measured in three tests of about 15 minutes each to obtain a more accurate picture of the learning (Webb, 2005): a form recognition test, a form recall test, and a meaning recall test.

Form recognition test

This is a multiple choice test in which participants had to select one correct spelling out of four options.

Example: Choose the word with the correct spelling.

- A. Wrasse B. Wressa C. Wrase D. I don't know

Form recall test

In this test, participants were asked to translate Vietnamese words into English.

Example: Translate the following words into English.

Con tinh tinh:

Meaning recall test

For this test, students were asked to translate English words into Vietnamese.

Example: Translate the following words into Vietnamese:

Anemone:.....

The three tests were used as pre-tests (one week before the reading), immediate post-tests (immediately after each reading) and delayed post-tests (one week after each reading). To avoid test effects, the form recall test was administered prior to the form recognition test and the meaning recall test. The orders of words in the immediate and delayed post-tests were randomised.

Interviews

The purpose of the semi-structured interviews was threefold. First, they were used to evaluate the participants' overall reading experience. Second, through the interviews the participants could confirm whether their learning of target words resulted from the reading, the tests, or other sources outside the reading sessions. Third, the interviews could provide information about the participants' cognition to compare with their results in the vocabulary tests after their reading since learner beliefs can help explain their learning outcomes (Dörnyei and Ryan, 2015). The language used in the interviews was either English or Vietnamese, depending on the participants' preferences. The beginner students in experiment 1 all preferred to speak Vietnamese. Pseudonyms are used for the quotes of the participants in this paper to ensure anonymity and confidentiality.

Procedure

The experiment lasted for six weeks (see Table 2). In week 1, the participants completed the informed consent forms, the TOEIC test and the updated Vocabulary Levels Test (Webb et al., 2017). They also took a pre-test on vocabulary related to the first graded reader. Weeks 2 to 5 were devoted to the reading treatment. Before the reading sessions started, the participants were instructed to focus on the content of the texts in order not to draw their attention to vocabulary. Dictionaries or discussions were discouraged to ensure that any vocabulary gains would merely result from the reading sessions. After each reading session in each week, the reading materials were collected to prevent extra access to the target words. Each reading session was preceded by pre-tests one week be-

fore the reading and followed by vocabulary post-tests immediately and then one week later. After four weeks of reading and vocabulary tests, each participant was invited for a semi-structured interview of about 5 minutes each to provide their perspectives on their own reading experience as well as the influence of the reading sessions on their vocabulary learning.

Table 2 Data collection procedure

Week	Procedure
1	Updated Vocabulary Levels Test, TOEIC, informed consent form Pre-tests related to book 1
2	Reading of book 1 Immediate post-tests related to book 1 Pre-tests related to book 2
3	Delayed post-tests related to book 1 Reading of book 2 Immediate post-tests related to book 2 Pre-tests related to book 3
4	Delayed post-tests related to book 2 Reading of book 3 Immediate post-tests related to book 3 Pre-tests related to book 4
5	Delayed post-tests related to book 3 Reading of book 4 Immediate post-tests related to book 4
6	Delayed post-test related to book 4 Semi-structured interviews

Scoring and data analysis

For the immediate and delayed post-tests, each correct answer was worth 1 point while incorrect answers received 0 point. Because the data were normally distributed, as checked by means of

Shapiro-Wilk, Skewness and Kurtosis tests, One-way repeated measures ANOVAs² were employed to answer research question 1. The semi-structured interviews were transcribed, translated, coded and analysed thematically to answer research question 2 on the learners' perspectives.

Results

1. Vocabulary learning gains in the three reading conditions

Table 3 Vocabulary test scores of beginner learners by reading modes ($N = 32$)

Reading Mode	Immediate post-tests: M (SD)* [95% Confidence intervals]			Delayed post-tests: M (SD) [95% Confidence intervals]		
	Form recognition	Form recall	Meaning recall	Form recognition	Form recall	Meaning recall
RO	9.00 (1.56) [7.88, 10.12]	3.30 (2.00) [1.87, 4.73]	7.60 (1.51) [6.52, 8.68]	8.20 (1.81) [6.90, 9.50]	3.00 (1.56) [1.88, 4.12]	6.70 (1.77) [5.44, 7.96]
RWL	10.55 (2.42) [8.92, 12.17]	4.64 (1.69) [3.50, 5.77]	8.82 (1.60) [7.74, 9.89]	9.45 (2.12) [8.03, 10.88]	4.09 (2.07) [2.70, 5.48]	8.00 (2.57) [6.27, 9.73]
TIE	12.73 (1.90) [11.45, 14.01]	8.36 (2.77) [6.50, 10.22]	11.27 (1.85) [10.03, 12.51]	11.73 (1.56) [10.68, 12.77]	6.82 (2.75) [4.97, 8.67]	10.27 (1.62) [9.19, 11.36]

Note. * maximum = 16.

RO = Reading-only; RWL = Reading-while-listening; TIE = Reading with textual input enhancement

Table 3 shows the beginner learners' scores in the reading-only, reading-while-listening and reading with textual input enhancement modes in the immediate and delayed post-tests. It can be seen that in the three tests the highest vocabulary learning rates were found in the reading with textual input enhancement condition, followed by the reading-while-listening group. This was the case for the immediate as well as the delayed post-tests. The ANOVAs revealed that there was a significant effect of reading modes on the form recognition test ($F(2, 29) = 10.79, p < .001$, partial $\eta^2 = .37$), the form recall test ($F(2,29) = 12.72, p < .001$, partial $\eta^2 = .47$), and the meaning recall test ($F(2,29) = 12.43, p < .001$, partial $\eta^2 = .46$). Further, post-hoc tests with Bonferroni adjustment applied $p < .05$ showed that among the three tests, the textual input enhancement condition differed significantly from both the reading-only group ($p < .001$ in the form recognition, form recall, and meaning recall

² ANCOVA was not used since there was no correlation between the learners' vocabulary gains and their scores of the vocabulary levels tests.

tests) and the reading-while-listening group ($p = .02$ in the form recognition test, $p = .003$ in the form recall test, and $p = .008$ in the meaning recall test). No other significant differences were found.

In terms of the learning gains in different aspects of vocabulary knowledge, the highest learning gains were found in form recognition while the lowest gains were recorded in form recall.

2. Learners' perspectives on their vocabulary learning in different reading conditions

The participants in the reading-only group generally thought they had improved their vocabulary through the reading activity, saying they could learn new words from the reading. Four participants, however, said that they might not remember many new words from reading because they did not pay attention to new words. They suggested note-taking or doing vocabulary exercises to achieve better results.

'I couldn't remember many words from the reading. I need to take notes of them.' (Yen)

'I like to do exercises on vocabulary after the reading to remember the words better.' (Hung)

As for reading-while-listening, the majority of participants favoured this reading condition and maintained that it enhanced their comprehension of the content of the books as well as their vocabulary effectively.

'Reading-while-listening could help increase my comprehension. I could also learn the words better because I could learn the pronunciation of the words.' (Van)

Five participants, however, did not enjoy the reading-while-listening mode since they found it distracting.

'I didn't like reading-while-listening because it made it hard for me to concentrate and pay attention to individual words.' (Hung)

Reading with textual input enhancement was considered helpful for the participants' vocabulary learning because they admitted paying more attention to the underlined words and trying to commit them to their memory.

'Underlining the words helped me notice new words more easily and I think I could recall them more quickly'. (Lan)

Nonetheless, three participants did not like reading with textual input enhancement, even though they all acknowledged that this reading mode could help them learn vocabulary better. They argued that textual input enhancement negatively affected their reading comprehension and their concentration on the content.

‘When reading with words underlined, I only paid attention to the underlined words without attending to the content, so that affected my reading comprehension.’ (Tung)

‘Reading the texts with underlining made me only focus on the words underlined and ignore other words in the reading. It may help me remember the underlined words, but I still prefer to read the texts without underlining.’ (Cuc)

Experiment 2

Participants

Experiment 2 involved 46 Vietnamese tertiary intermediate EFL learners from both urban and rural areas, but only the data of 28 learners who completed all the required tests were analysed. These learners had been learning English for 6 to 12 years ($M = 8.10$, $SD = 1.38$). Like experiment 1, the learners in experiment 2 were also assigned to one of the three reading groups: reading-only (9 learners), reading-while-listening (9 learners), and reading with textual input enhancement (10 learners). The learners’ mean score in the TOEIC test was 739.29 ($SD = 99.65$) and the difference in English proficiency among the three groups was non-significant ($F(2,25) = 0.92$, $p = .41$). Their mean score on the updated Vocabulary Levels Test (Webb et al., 2017) was 124 out of 150 ($SD = 9.31$). Unlike the participants in experiment 1, the participants in experiment 2 took the complete updated Vocabulary Levels Test. There was no statistically significant difference among the three groups in terms of vocabulary knowledge as determined by one-way ANOVA ($F(2,25) = 0.67$, $p = .52$).

Reading materials

The participants read four non-fiction graded readers: *All About Ocean Life* (#2.1), *All About Plants* (#2.2), *Incredible Earth* (#2.3), and *Animals At Night* (#2.4) respectively. These books were in Ox-

ford Read and Discover series at Level 4 with 750 headwords each. Similar to experiment 1, these reading materials were also chosen based on the learners' English proficiency and vocabulary levels and their suitability was also verified by a pilot study.

Target items

13 words (see Table 4) from the graded readers, which were unknown to all the participants in the experiment, were selected out of pre-tests prior to the reading sessions. The selection process was exactly the same as in experiment 1.

Table 4 Target items (13) for intermediate learners ($N = 28$).

Target words (frequency of occurrence)			
Week 1: Book #2.1	Week 2: Book #2.2	Week 3: Book #2.3	Week 4: Book #2.4
Mangrove (3)	Spore (3)	Geyser (3)	Opossum (2)
Anemone (3)	Asparagus (1)	Stalactite (2)	Antenna (2)
Wrasses (4)	Chlorophyll (3)		Tapetum (2)
Shoal (2)			Aardvark (2)

Data collection instruments

The instruments used in experiment 2 were also similar to those in experiment 1, including pre-tests (one week before the reading), immediate post-tests (immediately after the reading) and delayed post-tests (1 week later) on form recognition, form recall, and meaning recall, followed by semi-structured interviews when the participants had finished the treatment.

Procedure

The data collection procedure in experiment 2 was the same as in experiment 1.

Scoring and analysis

The scoring and analyses were also identical to the ones in Experiment 1.

Results

1. Vocabulary learning gains in the three reading conditions

Table 5 Vocabulary test scores of intermediate learners by reading modes ($N = 28$)

Reading mode	Immediate post-tests: M (SD)* [95% Confidence intervals]			Delayed post-tests: M (SD) [95% Confidence intervals]		
	Form recognition	Form recall	Meaning recall	Form recognition	Form recall	Meaning recall
RO	9.22 (2.17) [7.56, 10.89]	5.11 (0.78) [4.51, 5.71]	8.22 (1.56) [7.02, 9.42]	8.44 (2.24) [6.72, 10.17]	4.22 (1.09) [3.38, 5.06]	7.22 (2.22) [5.51, 8.93]
RWL	10.00 (1.12) [9.14, 10.84]	5.44 (0.88) [4.77, 6.12]	9.44 (1.10) [8.67, 10.22]	9.67 (1.41) [8.58, 10.75]	5.11 (1.05) [4.30, 5.92]	8.78 (1.64) [7.52, 10.04]
TIE	12.00 (1.05) [11.25, 12.75]	6.60 (1.58) [5.47, 7.73]	11.10 (1.45) [10.06, 12.14]	11.50 (1.27) [10.59, 12.41]	6.10 (1.48) [4.91, 7.29]	9.30 (1.49) [8.23, 10.37]

Note. * maximum = 13

RO = Reading-only; RWL = Reading-while-listening; TIE = Reading with textual input enhancement

Table 5 shows the intermediate learners' scores in the three reading modes in the immediate and delayed post-tests. Similar to experiment 1, the highest vocabulary learning rates in the three immediate and delayed tests were found in the reading with textual input enhancement condition, followed by the reading-while-listening group. The ANOVAs revealed that there was a significant effect of reading modes on the form recognition test ($F(2,25) = 9.28, p = .001, \text{partial } \eta^2 = .43$), the form recall test ($F(2,25) = 5.012, p = .015, \text{partial } \eta^2 = .29$), and the meaning recall test ($F(2,25) = 8.08, p = .002, \text{partial } \eta^2 = .39$). Further, post-hoc tests with Bonferroni adjustment applied $p < .05$ indicated that in the three tests, the textual input enhancement condition differed significantly from the reading-only group ($p = .001$ in the form recognition tests, and $p = .01$ in both the form recall and meaning recall tests). Unlike experiment 1, however, the textual input enhancement group only differed significantly from the reading-while-listening group in the form recognition tests ($p = .03$). No other significant differences were found.

Similar to experiment 1, the form recognition tests yielded the highest scores while the form recall tests the lowest.

2. Learners' perspectives on their vocabulary learning in different reading conditions

In the reading-only group, the participants considered the reading sessions effective for their vocabulary enhancement. They also reported that during reading they could recall many familiar words they knew before but did not regularly use.

'I could recall some words I know before but I don't often use and have forgot about them.

For some new words, I can make inferences about their meanings because I have background knowledge about the topics'. (Hoang)

Some students in the reading-only group claimed that additional teacher instruction or more exposures to vocabulary could benefit them more.

'I think I just learned a bit vocabulary from the reading. I didn't pay attention to any particular words. Maybe you [teacher] could provide us [students] with some instruction on learning vocabulary after the reading so that we can remember new words'. (Thao)

'Some new words appeared very few times in the reading texts, and I find them difficult to remember. I want to see them again so that I can remember them better.' (Dao)

In the reading-while-listening group, most of the learners also found this reading mode useful for their vocabulary improvement.

'I think that reading-while-listening could help me learn vocabulary because I could both see and hear the words at the same time, which made me learn the words twice and helped me remember the words easily.' (Hoang)

Three participants, however, disliked reading-while-listening because they were not comfortable with both reading and listening at the same time.

'I prefer to read only because in my case I can't focus on reading and remembering information when there are some other sounds playing around me. I want to separate the listening part and reading part, maybe read first and listen without transcript later.' (Hanh)

Unlike experiment 1 where some participants did not enjoy reading with textual input enhancement, this reading mode gained support of all the participants in experiment 2 because it was claimed to help draw their attention to new words.

‘I personally liked reading with new words underlined because the underlined words attracted my attention and made me focus on thinking about them and their meanings.’ (Quynh)

Discussion

The two exploratory experiments in the current article compared the effects of reading-only, reading-while-listening, and reading with textual input enhancement (i.e. underlining) on Vietnamese EFL learners’ learning of the form and meaning of new words. The results showed that extensive reading in these three conditions led to gains in form recall, form recognition, and meaning recall, indicating that extensive reading could be considered a potential source for vocabulary learning as previously suggested (Grabe and Stoller, 2011; Nation, 2013; Nation and Webb, 2011). The superior gains in form recognition in this study could be corroborated by previous studies (Pigada and Schmitt, 2006; Sauer, 2017; Waring and Takaki, 2003), which suggested that extensive reading can effectively boost learners’ knowledge of word forms. To recall word meanings and word forms, however, seems to be more difficult than to recognise word forms.

In terms of the effects of different reading modes on vocabulary learning, the most learning gains were found in the reading with textual input enhancement (i.e. underlining) mode in both the immediate post-tests and delayed post-tests. This finding was in line with Peters (2012). One possible reason was that in this reading mode the target items were salient in the input and might have drawn learners’ attention. This was confirmed in the follow-up interviews where many learners mentioned that they had paid more attention to the underlined words and made efforts to commit those words to memory. Noticing is necessary for learning new words (Peters, 2012; Schmidt, 1990) and learners need to pay attention to the form-meaning relationships of words in order to learn them (Hulstijn, Hollander, and Greidanus, 1996; Peters, Hulstijn, Sercu, and Lutjeharms, 2009). Previous research has shown that attention-drawing techniques could be effective for vocabulary learning (Peters et al., 2009) and textual input enhancement can be one of such techniques to enhance the salience of target words and subsequently increase learners’ attention to and noticing of those words, an initial necessary step for them to pick up the words.

Like Brown et al. (2008), we did not find a difference between reading-while-listening and reading-only. This finding, however, was different from Webb and Chang (2012). The data from the semi-structured interviews with the participants in the present study suggested that reading-while-listening might negatively affect some learners' concentration on the reading and attention to new words because they had to read and listen at the same time. Such distraction might be one of the reasons why the vocabulary learning outcomes in the reading-while-listening groups were not superior to those in the reading-only groups. From the perspective of Cognitive Load Theory (Sweller, Van Merriënboer, and Paas, 1998), one assumption could be that reading and listening simultaneously might have imposed too high demands on some learners' cognitive system, which might have hampered their learning in this reading condition. In addition, learners' preference might be another factor that should not be ignored. Some learners had negative perspectives toward reading-while-listening, which might have detrimentally affected their vocabulary learning from the texts in this reading condition.

Many suggestions from the learners in the interviews should also be taken into consideration. The suggestion on follow-up activities after the reading sessions to memorise vocabulary, i.e. word-focused activities, can be supported by Laufer (2001, 2003) and Peters et al. (2009). One learner's recommendation of teacher's instruction on vocabulary after the reading can also be supported by Sonbul and Schmitt's (2010) study which found that direct instruction on vocabulary after reading is more effective than learning from reading only.

The present study, however, has some limitations that should be noted. First, the sample size was small due to high drop-out rates, so replication studies with a larger sample size are recommended to confirm the results in this study. Second, the number of target words from each graded reader was quite small, so it might have been easier for the learners to pick up the target words. Third, some of the target words, which were guaranteed to be unknown to all participants, might have been difficult for Vietnamese learners to pick up because of their unfamiliarity in Vietnamese context. The enclosed pictures in the texts might also have increased the chance for learners to learn the words. Nonetheless, this was consistent across three reading conditions, so any effects of the pictures should have been similar across the groups. Also, the immediate and delayed post-tests were in written forms, so the vocabulary gains might have been different if tests on aural forms had also been included. In addition, test effects were possibly inevitable. Because learners' knowledge of the target items was tested after each reading session, they could have been alerted about the tests and intentionally memorised vocabulary (Laufer, 2003; Nation and Webb, 2011). However, in the follow-up interviews, none of the participants indicated to have attempted to memorise the words from

the tests. Also, there was no control group to control for any test effects. Nonetheless, we tried to minimise the test effects by including distracters in the pre-tests and post-tests.

Pedagogical implications

Our findings suggest that extensive reading in any mode has the potential to result in vocabulary learning, which provides support for the incorporation of extensive reading into EFL learning programmes (Webb and Chang, 2015). To improve learners' vocabulary uptake, new words could be textually enhanced, i.e. underlined, so that learners would pay more attention to those words as well as make attempts to memorise them. Reading-while-listening could also be an option, but it might depend on the preferences of learners, some of whom may wish to practice listening or learn spoken form of words. Based on participants' suggestions from the interviews, we suggest that post-reading vocabulary-focused activities, including exercises and teacher instruction, could also be provided to boost learners' vocabulary repertoire.

Conclusion

This paper highlights that extensive reading can be beneficial for vocabulary learning and reading with textual input enhancement of target words can effectively enhance learners' learning of word form and meaning in the reading texts. Between reading-while-listening and reading-only conditions, learners can choose either mode that they feel more comfortable with because this study suggested that they did not differ statistically significantly. Learning word form recognition benefited the most from extensive reading while word form recall and meaning recall could be learned to lesser degrees.

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