



THE EFFECTS OF TEXT-BASED INCIDENTAL VOCABULARY LEARNING ON EFL HIGH SCHOOL STUDENTS' READING COMPREHENSION

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Abstract:

This paper reports a study that examines the effects of text-based incidental vocabulary learning on EFL high school students' reading comprehension and explores their attitudes toward text-based incidental vocabulary learning. It was a quasi-experimental study with 70 students from a high school in Kien Giang province. These students were divided into two groups: the control group and the experimental group. The quantitative data from reading tests (for pre-test and post-test) were used to examine students' reading comprehension over eight weeks. Questionnaires and the qualitative analysis from semi-structured interviews focus on their attitudes towards text-based vocabulary learning in reading comprehension. The findings indicate that text-based incidental vocabulary learning influenced positively students' reading comprehension after the treatment and that students yielded positive attitudes towards text-based incidental vocabulary learning in their reading lessons.

Keywords: text-based incidental vocabulary learning, attitudes, reading comprehension

1. Introduction

In global integration, English plays a crucial role in several aspects of life such as business, management, science, technology, and education. As its influence grows over time, students are expected to become proficient in English used in their academic studies and prospects to keep up with the social, professional, and educational contexts (Nguyen, Haworth, & Hansen, 2019).

Of the four language skills of English, reading is an important skill and a useful tool for language teaching and learning. In fact, it helps students consolidate knowledge, build up vocabulary, and enhance their use of English in their learning process. According to Gu (2003), reading exposes students to the target language and provides them with essential linguistic input, hence enhancing their language ability. In particular, one way to forward students' reading is through vocabulary learning which allows

students to communicate in English; otherwise, a lack of vocabulary can be a barrier for them (Nguyen & Nguyen, 2018; Renandya & Richards, 2002). Despite the role of vocabulary in promoting students to use English as a foreign language, it is found challenging by students. Nagy and Herman (1987) note that the number of words that students acquire directly from course books or classroom exercises or activities remains limited. They further indicate that vocabulary is acquired accidentally by students if they are exposed to the appropriate level of difficulty in meaningful circumstances. In other words, students can increase their vocabulary by memorizing words and practicing them in reading contexts. To put it together, reading comprehension and vocabulary are intertwined (Seifert et al., 2017). This recognition is advocated by the Vietnamese government's assertion of the need for the quality of teaching and learning foreign languages through the National Foreign Languages project (Ministry of Education and Training, 2008). In particular, it is expected that by 2020, Vietnamese students are able to use foreign languages confidently in communication, studies, or their work in a competitive world. However, in the context of English language learning at universities in Vietnam, especially in the Mekong Delta, it was observed that English as a foreign language (EFL) students found it difficult to learn text-based vocabulary because they generally learn new words relying on the teacher's support or guide in class (Nguyen & Khuat, 2003).

In the context of teaching reading at Vietnam schools, students were found to have negative attitudes toward learning vocabulary because teaching at universities is largely based on traditional lecturing (Le & Nguyen, 2017; Nguyen, 2013). This passive learning style may be due to how students learn new words influenced by mother tongue translation, which slows down their reading comprehension or even makes them misunderstand reading contents. Thus, examining these challenges students encountered in learning text-based vocabulary is necessary. This paper is therefore aimed at exploring the effects of text-based vocabulary instruction on students' reading comprehension and their attitudes toward this type of instruction in reading classes.

The following section reviews the literature on four concepts: vocabulary, vocabulary instruction, text-based approach, and reading comprehension.

2. Vocabulary

Several definitions of the term vocabulary are documented in the literature. It is defined as a collection of words (Hasbún, 2005) or words that have meanings in a particular context (McCarthy, 1990). Like Hasbún (2005), Thornbury (2002) defines vocabulary as a word or group of words that function as a single unit of meaning. Vocabulary is also viewed as the knowledge of words (Lehr et al., 2004). According to Lehr and his colleagues, the complexity of vocabulary is more than this definition suggests. First, there are two forms of words: receptive and productive. Oral forms are words that can be understood and used through hearing and speaking. Receptive or passive vocabulary is comprised of words whose forms and meanings can be identified from reading and

listening. Conversely, productive, or active vocabulary refers to terms used in both oral and written forms (Lehr et al., 2004). As a result, the notion of vocabulary includes knowledge of word spelling, pronunciation, collocations (i.e., words go with others), and appropriateness (Nation, 1990). Thus, in this current study, vocabulary is viewed as words students know and use in order to understand the meanings embedded in a particular context.

2.1 Text-based learning

A. Texts

Texts in reading as a means of obtaining information are widely held to pique students' interests (Nuttall, 2005). This means a text might act as a springboard for reading or writing assignments (Johns & Davies, 1983). According to Tomlinson (2015), all instructors and students should find something engaging in a text.

B. Text-based learning

Research has indicated that text-based learning involves students learning new words and use them to facilitate reading comprehension of a given text chunk (Joe, 1995; Pham and Nguyen, 2017). Joe (1995) further adds that how students' approach and digest information influences their incidental learning to some degree. This type of learning stems from features such as word form, meaning (background knowledge), and associations (contexts and concepts), collocations, and appropriateness (Nation, 1990). Therefore, teachers are responsible for choosing a pertinent text to student learning so as to motivate them to learn as well as develop new words from these texts.

2.2 Reading comprehension

There are several views of reading comprehension in the literature. According to Goodman (1988), reading is a receptive psycholinguistic process in which readers employ strategies to make sense of the text. Duke (2003) claims comprehension is a process in which readers make meaning by interacting with the text through the combination of prior knowledge and previous experience, information in the text, and the views of readers related to the text. Grabe (2009) views reading comprehension as an individual ability to process information generated from a specific text for meaning. Thus, reading is not a linear process; rather, it is an interactive process because readers form hypotheses and use their knowledge to construct meaning (Israel & Duffy, 2009). Others view reading as a process of understanding the meanings of printed material or texts through readers' knowledge (Snow, 2002). This implies that reading is a process of making sense of meaning between the reader and the text (Nuttall, 2005). In other words, reading is conceptualized as a sophisticated and interactive process between the reader, the text, and the writer's message or meaning (Nuttall, 2005; Pearson, 2009).

2.3 Vocabulary-reading interplay

Several studies have shown that there is an interplay between vocabulary knowledge and reading comprehension in learning English as a foreign or second language (e.g., Grabe,

2009; Nuttall, 2005; Nguyen and Nguyen, 2017). Decoding, which is an important element of reading, is made easier with vocabulary knowledge. This association appears intuitive; to make sense of what they read; pupils require a large vocabulary as well as the capacity to employ multiple ways to determine the meanings of new words when they come across them. Comprehension is typically difficult for young kids who lack the vocabulary or word-learning procedures. Their poor reading experiences put in motion a cycle of frustration and failure that lasted the rest of their schooling (Hart & Risley, 2003; White, Graves, & Slater, 1990). These students often avoid reading because they lack sufficient word knowledge to comprehend what they read. They do not have a lot of opportunities to see and learn new words because they don't read much. Good readers read more and acquire more words; whereas, poor readers read less and learn fewer words. This link between language knowledge and reading comprehension appears to be clear. To add to the knowledge of text-based vocabulary instruction and reading comprehension, this paper specifically focuses on the effects of text-based vocabulary instruction on the reading comprehension of high school students. The study is guided by the following questions:

- What are the effects of text-based incidental vocabulary learning on high school students' reading comprehension?
- What are students' attitudes toward using text-based incidental vocabulary learning in reading comprehension?

3. Methodology

The current study was conducted throughout a twelve-week semester during the academic year (2020-2021) at a high school in the Mekong Delta, Vietnam. A quasi-experimental study was used to examine the effects of text-based incidental vocabulary learning on high school students' reading comprehension and their attitudes towards TBIVL in reading comprehension. A mixed-methods approach which was conducted to answer two research questions incorporates quantitative and qualitative data collection and analysis (Fraenkel, Wallen, & Hyun, 2012). Questionnaires and vocabulary tests as the quantitative method were designed to examine the effects of text-based incidental vocabulary on students' reading comprehension. The qualitative method using semi-structured interviews aimed to obtain an in-depth understanding of teachers' views on the topic under investigation (Creswell, 2014; Fraenkel et al., 2012).

Seventy participants were chosen by using convenience sampling (Fraenkel et al., 2012). They were grade-10 students in two classes at a high school in Kien Giang province. This sampling was based on the number of students available and accessible at a high school.

The pre-test and post-test were designed to measure students' ability to comprehend the English text. The reading exam was administered for two reasons. First, it can satisfy the testing principle that "*we test what we teach*" (Hughes, 1997). Second, to ensure its validity and reliability, an exam should be based on the textbook's syllabus

(Hughes, 1997). The design of the examination was primarily based on the contents of textbooks that are used in the study program in grade 10th. The tests were taken and adapted from English Grade Ten (Tieng Anh 10) and English Grade Ten Grade Exercise Book (Sach Bai Tap Tieng Anh 10. These items were chosen because their format was suitable for high school students' competency levels.

In the section measuring reading comprehension, the participants were provided with middle school-typical academic texts and age-appropriate materials. Therefore, it was expected that the pupils would be familiar with it. The pre- and post-tests had identical instructions, duration, level of difficulty, and allotted time. The reading themes of the two tests were, however, dissimilar. Texts on familiar topics, such as *For a better community* (228-word test), *New inventions* (209-word text), *Cultural diversity* (210-word text), and *New ways to learn* (210-word text), which contain non-technical vocabulary, are generally appropriate for students' levels in terms of lexis, grammar, and text length.

Each test consisted of two reading passages with two parts. The first section consisted of a five-gap cloze test, while the second section contained five multiple-choice questions. The cloze tests were used to measure the readability of textual content for global reading comprehension, investigate the nature of contextual limits, and measure overall language proficiency and efficacy (Davies, 1978; Oller, 1979; Weir, 1988). In addition, Oller (1979) has described the procedures for using cloze texts to determine the readability of a text and for measuring reading comprehension with these texts.

In Part One of each reading passage, there were missing nouns, adjectives, and verbs. Markham (1987) states that in logical cloze tests, only content words (such as nouns, verbs, and adjectives) are deleted, not articles, prepositions, or conjunctions. This component evaluated the participants' ability to deduce the meaning of words from context. Students were required to attentively read the content to complete this section.

In Part Two, there are five multiple-choice questions. According to Nuttall (2005), multiple-choice questions are another common device for assessing text comprehension. Three questions were designed to find out the referents for pronouns. Nuttall (2005) contends that this question may require the reader to put together pieces of information that are scattered throughout the text. The following three questions were tested about the synonyms of a noun, a verb, and an adjective based on the text.

3.1 Piloting the tests, questionnaire, and interviews

All instruments were piloted to ascertain the reliability of data collection. Fifteen non-English students (with similar backgrounds to the actual research participants) were selected for the pilot study. The Alpha coefficient (α) of the pre-test was .854 and the post-test was .855. The results indicate that pre- and post-tests were reliable for obtaining the data for this study.

The questionnaire used in this study was adapted from the interview questions developed by Pham and Nguyen (2017). With a five-point Likert scale, the 27-item questionnaire is divided into two parts. Part One provides a short introduction to students' background information. Part Two comprises three clusters.

The participants were asked to respond to questionnaires by ticking boxes from (1) strongly disagree to (5) strongly agree for each item. Cluster one consists of fifteen items that examined the impacts of text-based incidental vocabulary learning (TBIVL) in English reading comprehension. Cluster Two includes eight items that investigated the challenges of adopting text-based incidental vocabulary learning to learn English reading. Cluster three with four items focuses on the students' expectations of enhancing English reading comprehension through text-based incidental vocabulary development. Before being officially distributed to the students, the questionnaires were piloted among fifteen high school students. The objectives of the pilot study were to assist the researcher in determining the questionnaire's dependability (Creswell, 2014) and to determine whether the participants had any questions when completing the questionnaires. The use of the Vietnamese version of the questionnaires is intended to eliminate any potential misinterpretation of the questions and to increase the reliability of the students' responses. Therefore, the questionnaires distributed to the participants were written in both Vietnamese and English. The feedbacks from the participants were reviewed and modified before the questionnaires were used in the main study.

The *Scale test* was run to check the reliability of the questionnaire. The result shows that Cronbach's alpha coefficient (α) of the questionnaire was .814, indicating that the questionnaire was reliable to be used for collecting the data (see Appendix 6).

The pilot interview was used to check the validity of the questions and their construct (Lapan & Quartaroli, 2009), as well as to review, change, and add to the information. This pilot helped the researcher make changes to the time spent on interviews before the actual ones (Nguyen, 2014).

During the first week of the study, all interview questions were translated into Vietnamese so that interviewees could comprehend the questions and express their viewpoints freely. Before the interview questions were delivered to the study participants, they were sent to the supervisor and two teachers of English to make sure these are relevant to the research questions. The two teachers were not involved in the actual study. The response from the pilot students indicated that the majority of interview questions were comprehended. Therefore, these interview questions could be utilized for actual interviews in this study.

4. Findings

4.1 Students' reading comprehension

A. Before the experiment

The result of the *Independent Samples t-Test* on the pre-test shows that the mean score of students' reading in the control group ($M= 5.07, SD= .123$) was similar to that of the experimental group ($M= 4.96, SD= 1.12$). Thus, both groups did not differ significantly ($t= -.550, df= 78, p= .584$) in their reading comprehension. It could be concluded that before the study, students' level of reading comprehension of the two groups was not significantly different, as shown in Table 1.

Table 1: Independent Samples t-Test of the two groups on pre-test

Reading tests	Groups	N	Min	Max	M	SD
Pretest	Control Experimental	35	3.00	8.50	5.07	1.23
		35	3.00	8.00	4.96	1.12

B. After the experiment

The result of the *Independent Samples t-Test* on the post-test shows that the mean score of students' reading comprehension in the experimental group ($M= 7.33$, $SD= .95$) was higher than that of the control group ($M= 5.04$, $SD= 1.31$). The students' reading comprehension post-test scores between the two groups were significantly different ($t= -2.52$, $df= 78$, $p= .00$). It could be seen that students' reading comprehension in the experimental group was higher than that of the control group after the study. The results also reveal that the students who received text-based vocabulary instruction obtained more than the students who did not get text-based vocabulary instruction.

Table 2: Independent Samples t-test of two groups on post-test

Reading tests	Groups	N	Min	Max	M	SD
Posttest	Control Experimental	35	3.00	8.50	5.04	1.31
		35	5.50	9.50	7.33	0.95

The above results have shown that the students' reading comprehension of the control group and experimental group were at the same level before the study. After the study, the students' level of reading in the experimental group outweighed that of the control group. However, the students' level of reading in the control group did not change after the study. Figure 1 displays students' reading achievement in both groups.

4.2 Students' attitudes towards the use of text-based incidental vocabulary learning

A. Questionnaires

The *Scale Test* was used, and the reliability of the questionnaire was computed; the result shows that the internal reliability coefficient was acceptable ($\alpha = .814$). This indicates that the official questionnaire was reliable to collect data for the current study.

Table 3: The reliability of the pilot and official questionnaire

	Number of respondents	Reliability (Cronbach's Alpha Coefficient)
Pilot questionnaire	15	.810
Official questionnaire	35	.814

Table 4: Overall mean of participants' attitudes

	No.	Min.	Max.	Mean	Std. Deviation
Participants' attitude	35	2.88	4.63	3.8	.40

Table 4 shows the overall mean score of the participants' attitudes towards the effects of TBIVL ($M=3.8$) which was considered as a high level based on *Key to understand the averages* in table 3.4 A *One Sample t-Test* was run to evaluate whether there was a statistic difference between the level of the students' attitudes towards the integrating TBIVL into their lessons mean ($M=3.8$) and the test value of 4.5 considered as the very high level in the light of Oxford framework. The result shows that the sample mean score ($M=3.8$) was significantly different from the test value ($M = 4.5$) ($t = -13.5, p = .00$). The results supported the conclusion that students' attitudes towards the use of text-based incidental vocabulary learning in their reading performance was high.

The *Descriptive Statistic Test* was run to examine the mean scores of three clusters of students' attitudes toward the integration of TBIVL into their lessons. Table 5 shows the results of the mean scores of the three clusters.

Table 5: Mean scores of students' attitudes of three clusters

Clusters	No.	Min.	Max.	Mean	Std. Deviation
Benefits of using TBIVL in learning reading	35	3.53	4.87	4.16	.374
Challenges of using TBIVL in learning reading	35	3.13	4.5	3.89	.328
Students' expectations of using TBIVL in reading	35	3.00	5.00	4.01	.609

As can be seen, the mean score of students' attitudes toward the benefits of TBIVL ($M = 4.16$) is the highest. To detail the three clusters, the next section presents the results from the *Descriptive Statistic Test*, *One Sample t-Test*, and *Paired Sample t-Test* on participants' attitudes toward the benefits, challenges, and expectations of the integration of TBIVL in learning reading comprehension.

B. Findings from the interviews

All of the six interviewed students perceived that text-based incidental vocabulary learning benefited students' reading comprehension in several ways. They expressed:

"... I think the biggest benefit that text-based incidental vocabulary learning helps me study in an active learning environment, so I feel comfortable and exciting when learning reading skills. Moreover, I find that I can interpret the text fluently and grasp ideas in reading texts faster. Learning vocabulary based on text helps me memorize words longer and understand how to use each word in real context..." (Student A, line 23-28)

"...In my opinion, text-based incidental vocabulary learning helps me improve grammar and vocabulary knowledge a lot by some ways such as guessing the new words from the context, synonyms and lexical references. It also motivates me to do comprehension exercises and is an exciting way to learn vocabulary for developing reading comprehension..." (Student B, line 88-92)

However, two average students revealed the benefits of text-based incidental vocabulary learning in a different way.

"Text-based incidental vocabulary learning helps me in confidence when I meet new words because in the past, I learned mainly by using Google translate when I encountered new words and then learned them by heart. As a result, after a few days when I didn't remember those words anymore. However, with the new learning vocabulary approach, I can acquire vocabulary and understand it in a specific context, and then memorize it. Therefore, I can remember new words easier and deeper. Besides, I think TBIVL can help me grasp ideas in reading texts faster and identify the main ideas in the reading texts in a logic way. As a result, it can help me to prepare for reading test better. (Student C, line 143-151)

On the other hand, students with low scores expressed their views of the benefits of text-based incidental vocabulary learning:

"...Well, first of all, knowing more vocabulary helps me understand English reading more words which can significantly improve reading comprehension skills. Secondly, by understanding how to guess the meaning from the context or synonyms, I can read more reading comprehension texts with more diverse content. At last, TBIVL are helping me connect idea in a coherent way and feel more confident to answer the reading questions as well as do the reading test better..." (Student E, line 261-266)

The quantitative results were in correlation to what was explored from the semi-structured interviews; TBIVL has some challenges that may impede the students from using it. Three out of the two students said that mixed-ability students' English proficiency was the most challenging while delivering reading passages. The following extracts illustrate their views.

"...The difficulty of TBIVL for students, I think, is the unequal level of students in the class. Some students find it hard to express their ideas to share with others as their words are limited..." (Student B, line 102-104)

"...I think, I'm an average student, so at first I found this method quite difficult for me because I don't understand many words. To guess I need the help of teachers and friends." (Student D, line 215-217)

In addition, students said that they had to encounter when learning reading comprehension with text-based vocabulary instruction; only one student revealed that translation could slow down their reading process or even lead to misunderstanding of word meanings in a reading passage. Some students expressed:

"... If we are not equipped with some knowledge such as vocabulary or do not understand part of the content of a sentence or paragraph containing new vocabulary, we may have difficulty in guessing the meaning or guess the meaning of that word...." (Student C, line 162-165)

"...There are so many new words even a phrase in a paragraph. At that time, I had to translate. I break the sentences into parts and then translate words in isolation. Thus, such translation is a waste of time and sometimes can lead me to wrong meanings (Student D, from average scores)" (Student D, line 201-205)

The findings from the interviews support the results of the questionnaire that five out of six participants believed that TBIVL would be expanded and replicated not only in the English pilot classes but also in other ones to assist students to improve their English reading abilities and increase their affection among friends. One interviewee expected that TBIVL model would be replicated in many schools in the future as he could share not only with his classmates but also with friends from adjacent schools and friends from different provinces, allowing him to innovate and become an exciting activity, making reading skills no longer too arduous for him or other students. As a result, reading comprehension skills would become more developed, and students would find it simpler to comprehend. They expressed:

"...I hope that text-based incidental vocabulary learning will be expanded and replicated not only in the pilot classes but also in all other classes". (Students A, line 101-102)

"...I hope the text-based incidental vocabulary learning model will be replicated in many schools in the future. Later, not only can I exchange with my classmates, but I can also exchange with friends from neighboring schools, and friends in other provinces to innovate and become an interesting activity, making reading skills no longer too difficult for me or other students. English subjects will be more and more developed, learners will be easier to absorb ..." (Students B, line 181-189)

"...I hope that text-based incidental vocabulary learning will be used widely and more often in English reading practice to help students improve their reading skills and increase the affection between students..." (Student C, line 145-146)

"I wish text-based incidental vocabulary learning would be incorporated into the curriculum more widely in the classroom because it has many benefits..." (Student D, line 146-147)

In the same vein, six participants would like to continue using text-based incidental vocabulary learning for learning to read English in the future because they aspire to discuss with their friends and improve their reading skills. They reported:

"...I still would like to continue using text-based incidental vocabulary learning to learn reading comprehension because it is very good..." (Student A, line 75-76)

"...I hope that text-based incidental vocabulary learning will be used widely and more often in English writing practice to help students improve their English reading skills and increase the affection between students in the future..." (Student B, line 95-98)

Overall, the findings from the interview data reveal that students had positive attitudes toward the use of text-based vocabulary learning in their reading classes. Although there were some difficulties reported by one student, the others recognized the usefulness of this instruction as it influenced how students learned to read.

5. Discussion

The findings from two reading tests show that students in the experimental group improved their reading comprehension and students in the control group did not improve after the study. In addition, the findings of the questionnaires and semi-structured interviews indicate that the majority of participants of low to high reading test scores had positive attitudes toward the use of text-based incidental vocabulary learning in their reading classes.

The findings supported the hypothesis that text-based incidental vocabulary learning could have positive effects on high school students' reading comprehension. The results of the pre-test and post-test reveal that the students in the experimental group and those in the control group made some changes. It could be concluded that students' reading comprehension was improved by text-based incidental vocabulary learning. This improvement is in line with studies by Wang (2013), Pham (2017), and Hidayati (2021), who found that students who were taught vocabulary lists could enhance their reading comprehension.

The findings from the interview reveal that students recognized the relationship of vocabulary knowledge and reading comprehension as evidenced by how they perceived the usefulness of vocabulary gains that extend their comprehension. This supports the claims of Schmitt (2008), Hunt and Beglar (2005), and Grabe (2009) who contended that reading is the most important language skill that aids learners in improving their vocabulary knowledge and acquisition. Students' positive attitudes towards the implementation of the teaching text-based vocabulary could be shown through students' learning progress. This kind of implementation helped them enhance and retain vocabulary, figure out word meanings from the text as well as involve them to do further reading exercises. It was observed that participating students found this text-based instruction a new learning way that moved them forward in reading practices. This finding confirms the claim of studies by Marzano (2004), McMillen (2009), and Johnson and Johnson (2012) who highlighted that vocabulary instruction was a vital component to develop students' reading performance.

6. Conclusions

The study shows significant effects of text-based incidental vocabulary learning on high school students' reading comprehension. The previously stated hypothesis was therefore refuted. The findings suggest that the incorporation of text-based incidental vocabulary learning into reading lessons has relatively significant effects on students' reading comprehension and that students were in favor of the use of this type of constructivist learning. Future research can continue to expand the scope of the study to find alternative ways to implement this learning approach in reading classroom practices in order to make the best use of student learning.

Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

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