THE ROLE OF VOCABULARY E-LEARNING:
COMPARING THE EFFECT OF READING SKILL TRAINING
WITH AND WITHOUT VOCABULARY HOMEWORK

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Abstract

Since vocabulary is a strong predictor of reading comprehension, vocabulary homework is seen as a way to improve reading comprehension. This study utilized an online learning platform to deliver vocabulary homework to students learning reading skills in the classroom and compare their scores with students given paper-based homework and those who did not receive any homework. The objective of the research was to determine the differences in reading achievement between students who were given either paper-based vocabulary homework or online vocabulary homework, in addition to classroom face-to-face interaction (experimental groups) and those who only participated in face-to-face interaction in the classroom (control group). Two experimental groups were instructed to complete vocabulary homework outside of the classroom. The selected vocabulary for homework consisted of 400 words common to the target academic texts. The data were collected by administering a reading comprehension pre-test and post-test, where five academic texts were used with approximately ten questions for each text. The results revealed a p-value of 0.047 for the paper-based homework group, 0.045 for the online vocabulary group, and 0.338 for the control group, which suggests that both experimental groups outperformed the control group in the post-test.

Keywords: online vocabulary homework; blended learning; reading skill training

1. Introduction

English as a Foreign Language (EFL) students have been reported to have problems with reading comprehension (Freedle & Kostin, 1993; Kheirzadeh & Tavakoli, 2012). Research has confirmed that the students' difficulty in reading comprehension originated from a lack of vocabulary size and depth (Kheirzadeh & Tavakoli, 2012, p. 150; Zuhra, 2015, p. 437). Therefore, reading comprehension instruction, which is challenging for EFL teachers, has focused on vocabulary development (Huang & Lin, 2014; Nikoopour & Kazemi, 2014; Yamamoto, 2014). Others suggested strategies to develop students' autonomy in vocabulary

learning (Haddad, 2016; Shams, 2013). In some contexts, such as test preparation, there were limited meetings dedicated to reading comprehension, and only one or two meetings focused on the topic of vocabulary (Gear & Gear, 1996; Phillips, 2001). Although vocabulary can be taught indirectly, the time dedicated to building vocabulary should not be as significant (Sonbul & Schmitt, 2009, p. 258), because even one word needs to be taught several times in order for a student to memorize it and understand its usage (Waring & Takaki, 2003, p. 145). Therefore, vocabulary homework such as using a vocabulary notebook by students to create "personalized vocabulary lists" (Bazo, Rodríguez, & Fumero, 2016, p. 270) is one of the potential supplements for vocabulary development (Vela & Rushidi, 2016, p. 204).

Many studies found that vocabulary homework can significantly increase students' vocabulary (Hirschel & Fritz, 2013; Wu, 2015) and thus enhance their reading comprehension of non-academic English texts (Furqon, 2013; Ricketts, Nation, & Bishop, 2007, pp. 235-236). However, conventional vocabulary homework cannot be monitored by teachers. Students who are less motivated can cheat without being discovered (Orosz et al., 2016, p. 43; Park, Park, & Jang, 2013, p. 350). A report by Graves (2008, p. 17) indicated that university students were more likely to cheat on homework than on tests. As a result, vocabulary homework can only be used with motivated and diligent students (Flunger et al., 2017, p. 11).

Therefore, there is a need for a method of delivering homework in which the students can be better tracked. Shuaiwen, Xiaoming and Song (2012) proposed the use of an online homework management system to encourage vocabulary building and discourage cheating. Course Management System software (MOOC), which works similarly to the system proposed by Shuaiwen, Xiaoming and Song (2012), can be used to deliver homework to students. Owing to the platform, teachers can check how long it takes for students to complete a task, how many times they repeat the task, and what their scores for each attempt are. Students who were found to be less serious can be given a warning, even detention.

However, there is little empirical research which investigates the effects of online and paper-based vocabulary homework on students' reading comprehension. Therefore, the objective of this study was to determine the difference in learning achievement among students who were given vocabulary homework through an e-learning program, those who were given paper-based vocabulary homework, and those who were not given any vocabulary homework outside of the classroom. The results of the research can benefit teachers struggling to improve their students' reading comprehension.

2. Literature review

This section presents selected literature findings, both from research and books, related to the variables in this research, i.e., reading comprehension, vocabulary in reading comprehension, and homework.

2.1. Reading comprehension

To comprehend a text means to finish the text with a full understanding of both its stated and implied meanings (Pearson, 2009, p. 3), which is essential for successful reading (Woolley, 2011, p. 15). In addition, it has become one of the foci in English for Academic Purposes (EAP) teaching and learning (Atai & Nazari, 2011). Therefore, many research studies have been conducted in the area of reading comprehension (Oakhill, 1993, pp. 224-226). Gleeson and Davidson (2016, p.50) discovered that reading comprehension is problematic for students in learning while Clift (1991, p.68) revealed that it also presents challenges to teachers. Back in 1965, Kerfoot (1965) demonstrated that reading difficulties were common and the sources of those difficulties were complex.

Numerous studies have proposed methods and strategies for teaching reading comprehension (Soler, 2017, p. 3). In fact, the teaching of reading started in the early days of language teaching with the emergence of *The Reading Method* (American Classical League, 1933, p. 2). Grabe and Stoller (2011, pp. 129-130) suggested that teachers teach students reading comprehension skills to develop the ability to understand texts. Mikulecky (2008, p. 1) defined reading comprehension skills as "the cognitive processes that a reader uses in making sense of a text." According to Grabe (2009, p. 280), there are five core reading comprehension skills which should be taught to help students comprehend texts, i.e., main idea, reading strategies, grammar, discourse, and vocabulary. However, the classification of reading comprehension skills by Gear and Gear (1996) is more practical for teaching purposes, i.e., main idea, detail information, inference, reference, and vocabulary.

2.1.1. Reading for the main idea

The main idea is defined as what the text is about (Montelongo & Hernández, 2007, p. 542). The main idea can be used as a measure to identify how much a reader understands a text (Yussen, Rembold, & Mazor, 1989, p. 313). Therefore, it has been used to test reading comprehension skill in a standardized test. The main idea is sometimes stated either in the beginning, in the middle, or at the end of a text, but sometimes the main idea is not stated, and thus readers need to infer what the main idea is (Mikulecky & Jeffries, 2007, p. 110). For

instructional purposes, research by Stevens, Park and Vaughn (2018, p. 16) proved that teaching the main idea helps students determine the main idea of a text. Mikulecky and Jeffries (2007, p. 170) suggested that teachers invite students to practice skimming to find main ideas quickly.

2.1.2. Reading for detailed information and referents

Detailed information is provided in a text to support the main idea of the text (Grabe & Stoller, 2011, p. 7), which includes detail about "facts, reasons, examples, or opinions" (Montelongo & Hernández, 2007, p. 542). In language testing, detailed information can be spotted by scanning the texts (Khezrlou, in press, p. 12). To determine how much a learner understands detail information, language tests such as the TOEFL include two types of detail information questions, i.e., stated detail and unstated detail questions. Another standardized English language test, i.e., the International English Language Testing System (IELTS), includes three types of questions for detailed information, i.e., true, false, and not given. In addition to stated and unstated detailed information, pronoun referents are considered as detailed information, and a reader can use a scanning technique to find out what a pronoun refers to (Brown, 2004, p. 209). It is most common that the antecedent for a referent is found before the referent (Mikulecky & Jeffries, 2007, p. 114). Therefore, teachers found it less difficult to teach referent selection skills to EFL learners.

2.1.3. Reading for inference

Inferential skill is defined as a high-order skill which shows good comprehension of text (Rapp & Kendeou, 2007). Not surprisingly, Putra, Kasim, and Mustafa (2017) found that advanced EFL learners scored less for inference questions. Many research studies have found that learners can make better inferences when they have background knowledge on the topic they are reading (Tarchi, 2010, 2015). However, in a test environment, most learners might not have access to this background knowledge. Hudson (1996, p. 11) claimed that language tests were designed to be answered correctly without the need for prior knowledge. A study on the effect of prior knowledge on reading comprehension in the TOEFL iBT test showed that background knowledge played a very insignificant role in reading comprehension (Hill & Liu, 2012).

All reading comprehension skills discussed above require vocabulary knowledge. Williams (1986, p. 164) stated that vocabulary is one of the factors which influence students' ability to find the main idea. A study comparing the ability to draw inferences in a Spanish class concluded that low-vocabulary undergraduate students were not able to infer meaning from a text (Calvo, Estevez, & Dowens, 2003).

2.2. Vocabulary in reading comprehension

Vocabulary is the strongest predictor of reading comprehension (Sen & Kuleli, 2015; Sidek & Rahim, 2015; Zhang, 2012; Zhang & Anual, 2008). When a language was first taught, vocabulary, in addition to grammar, was the focus of the teaching (American Classical League, 1933, p. 2). With the emergence of research in the field of language teaching and learning, various methods of vocabulary teaching have been introduced by experts in the field such as Michael Philip West, one of the pioneers in English language teaching working outside Europe (Howatt & Smith, 2014, p. 85). The methods of vocabulary teaching have been based on two main vocabulary learning strategies, i.e., deliberate vocabulary learning and incidental vocabulary learning (Hashemi & Hadavi, 2015, p. 630; Yamamoto, 2014, p. 233-234). In deliberate vocabulary learning, students learn using word-cards, learning word parts, or studying dictionaries (Nation, 2013, pp. 2-7). With the word-card strategy, students keep cards where, on each card, an English word is written on one side with an example and translation in L1 on the other side. The cards are reviewed when students have free time. Vocabulary can also be learned by studying word parts, which is a cognitive strategy (Taie, 2015, p. 3). As with many languages, a word may be broken down into parts where the meaning of each part contributes to the meaning of the word (Nation, 2001, p. 263). For example, the word *predict* (*pre* 'before', and *dict* 'say') can be understood through its parts to get to the combined meaning: to say something before it happens. Nation (2013, p. 5) proposed the use of a dictionary to help learners utilize the two strategies and as a learning tool itself.

Incidental vocabulary has revealed higher retention rates for new vocabulary. In incidental learning, vocabulary is learned as a result of language exposure (Aghlara & Tamijid, 2011, p. 557; Chun, Choi, & Kim, 2012, p. 128; Teng, 2016, p. 9). This strategy is similar to a child acquiring vocabulary in his/her native language (Day, Omura, & Hiramatsu, 1991, p. 541). Incidental vocabulary learning can happen through watching movies (Mousavi & Gholami, 2014, pp. 1277-1278), extensive reading (Day, Omura, & Hiramatsu, 1991, p. 545; Wang, 2013, pp. 68-69), playing games (Madarsara, 2015, p. 31; McGraw, Yoshimoto, & Seneff, 2009, p. 1019), and glosses (Choi, 2016, p. 137). In a teaching context, Mustafa (2018, p. 58) suggested that schools specify the vocabulary size expected in each grade in order that teachers can direct the foci of their instruction. Teng (2016, p. 9) discovered that a learner must be exposed to the target word at least ten times in an informative context for productive vocabulary acquisition. However, when the input is received aurally, a learner needs to be exposed to the vocabulary at least 15 times (van Zeeland & Schmitt, 2013, p. 609).

Research on the vocabulary size required to understand texts in English has been conducted by Nation and Waring (1997) and Nation (2006). They discovered that in order to fully understand authentic texts, one requires the 1st 6,000 most frequently used words listed in the Brown Corpus. To read a novel for teenagers, the expected vocabulary size is 2,600 words (Nation & Waring, 1997, p. 10). For other novels and newspapers in English, a reader needs the 1st 4,000 words in the BNC word family list and the 1st 3,000 words for spontaneous conversation (Nation, 2006).

Several tests have been developed to measure the vocabulary size of learners (Nation, 1983; Laufer & Nation, 1999; Schmitt, Schmitt, & Clapham 2001). The most recent version was developed in 2007 by Nation & Beglar (2007). The test consists of 140 items where each level (1,000 words) is represented by ten words. As much as it is useful and practical, the vocabulary tests are subject to some limitations. First, the tests only measure receptive vocabulary, while productive vocabulary could not be covered (Nation & Beglar, 2007, p. 12). The current version of the test is in a multiple-choice format. One item answered correctly by guessing, which students often do (Schmitt, Schmitt, & Clapham, 2001, p. 74), can mislead the evaluation of the learners' vocabulary size. Additionally, some higher-level words have been borrowed by other languages such as Indonesian borrowing *thesaurus* (level 14), *plankton* (level 13), *caffeine* and *reptile* (level 12), and *yoga* (level 11). Knowing these words does not signal vocabulary level in the target language. However, this vocabulary size test has been widely used because there is no other alternative. To prevent students from guessing, they can be asked to translate the target words into L1 instead of selecting an answer in multiple-choice format. In addition, Sentürk (2016, p. 92) reminded students that "If you have no idea about the meaning of a word, do not guess. If you think you might know the meaning, then you should try to," and found that students followed it.

2.3. Homework in the teaching and learning process

The origin of homework is currently unknown, but it is suggested that it has existed in education since before the 19th century (Gill & Schlossman, 2004, p. 174). According to Smolira (2008, p. 93), the purpose of homework is to "improve students' knowledge and retention of the material." Teachers and students are convinced that homework is necessary to support the teaching and learning process both in formal and informal education (Williams, 2012, p. 1). In the EFL classroom, such as an EAP class in Iran, the main concern perceived by students regarding success is the limited time to learn English in the classroom (Afshar &

Movassagh, 2016, p. 139). Therefore, language teachers use homework as a solution for limited classroom interaction (Costa et al., 2016, p. 142; Gómez, 2000, p. 45).

However, teachers encounter many problems in delivering homework to their students. First, over the years class sizes have increased, making the grading of homework a very time-consuming process (Jonsdottir, Bjornsdottir & Stefansson, 2017, p. 13). Second, feedback is usually delayed, which, according to Smolira (2008, p. 91), may reduce "the usefulness of feedback for learning." Third, teachers do not know whether or not a student completed the homework honestly. Therefore, many experts proposed to change the delivery system of homework to a web-based system. Web-based homework does not need to be graded manually, and the feedback can be immediate (Richards-Babb, Drelick, Henry & Robertson-Honecker, 2011, p. 81). In addition, students can reattempt the homework several times, which can increase the retention of the material. The duration of exercise completion can also be used as an indicator of whether students cheat or complete the exercise with their own effort and whether they are serious in completing the homework.

Several studies have investigated homework delivery systems (Chen, Cannon & Taylor, 2017; Jonsdottir, Bjornsdottir & Stefansson, 2017; Smithrud & Pinhas, 2015; Williams, 2012). The studies compared paper-and-pencil based homework (PPBH) and web-based homework (WBH). Many found that the homework delivery system did not correlate with the students' achievement (Bonham, Deardorff & Beichner, 2003, p. 1066; Chen, Cannon & Taylor, 2017, pp. 1065-1066; Cole & Todd, 2003, p. 1342; Williams, 2012, p. 14). However, other studies found that students who were assigned homework delivered through online learning outperformed students who completed paper-and-pencil homework (Bonham, Deardorff & Beichner, 2003, p. 1066; Mendicino, Razzaq & Heffernan, 2009, p. 342).

3. Methodology

3.1. The aim of the study

The objective of this study was to examine whether vocabulary homework had a significant effect on reading comprehension and whether the mode of homework delivery gave a significantly different effect. Therefore, this research employed a quantitative method with a control group pre-test and post-test design by giving treatment for three groups, i.e., one no homework group (control group) and two homework groups (experimental groups). The three groups were given treatments through classroom face-to-face interaction, while only the experimental groups were assigned vocabulary homework. The experimental group 1 was

given paper-based homework, and the homework for the experimental group 2 was delivered through an e-learning platform. Descriptions of participants, treatments, tests, and analysis are provided in the following subsections.

3.2. Population and sample

The population of this research comprised senior students at Syiah Kuala University, Banda Aceh, Indonesia. They participated in TOEFL preparation training, a graduation requirement for students at the university. Three classes were chosen randomly with a cluster random sampling technique. Two classes were used as the treatment groups, and the other was the control group. Each group consisted of 23 students for the control group and the experimental group 2, while there were 21 students in experimental group 1. Eight females and 13 males were in the treatment group 1, while the treatment group 2 comprised 12 females and 11 males. In the control group, there were 13 female and ten male students. The participants were between 23 and 24 years of age and had studied English for at least 6.5 years, with a total of 672 classroom hours in high school and university. The following table summarizes the number of scores used in this study.

Table 1. Distribution on research participants

Groups	Participants (N = 67)		
	N	Male	Females
Control group (without homework)	23	10	13
Treatment group 1 (paper-based homework)	21	13	8
Treatment group 2 (online homework)	23	11	12

3.3. Design and procedure

The training for the three groups covered paper-based TOEFL subtests, i.e., listening comprehension, structure, written expression, and reading comprehension. In reading comprehension, all groups were taught reading skills including the main idea, stated and unstated details, implied details (inference), vocabulary in context, and pronoun referents. Ten meetings were dedicated to reading comprehension with 90 minutes for each meeting. The material used in the training was taken from the *Longman Introductory Course for the TOEFL Test* by Phillips (2001). This material was selected because it presented all the reading skills systematically with adequate reading strategies and practice devoted to each skill. The number of meetings for each topic is provided in the following table.

Table 2. Number of class meetings for each topic

No	Topics	No. of subtopics	No. of meetings
1	Vocabulary	7	4
2	Implied detail	1	1
3	Stated detail	1	1
4	Unstated detail	1	2
5	Pronoun reference	1	1
6	Main idea	1	1

In the training, the instructor explained the material, focusing on the reading technique which explained how each type of question was approached, accompanied with several examples. After that, the students were instructed to read one text and answer the following questions. The instructors discussed the questions and revealed the correct answers after students finished each text. Each subtopic consisted of three to four texts. Students were invited to ask questions when they did not understand the instructor's explanation.

Unlike the students in the control group, those in the experimental groups were assigned to complete vocabulary homework. The additional treatment, i.e., either online vocabulary homework or paper-based homework, was meant to encourage boosts to their vocabulary size. The homework covered vocabulary lessons followed by exercises related to the provided vocabulary. In each vocabulary lesson, ten words were provided in a list with their meaning, part of speech, and context, as in Figure 1.

Figure 1. Examples of paper-based vocabulary homework (left) and its online version (right)

There was a total of 400 words provided for the homework throughout the course of the treatment provided by Stafford-Yilmaz and Zwier (2005). Exercises for each lesson included 11-13 items. It was estimated that the students needed at least half an hour to complete each lesson along with the quizzes. The exercises were in the form of multiple-choice, completion, matching, and drag and drop as in Figure 2.
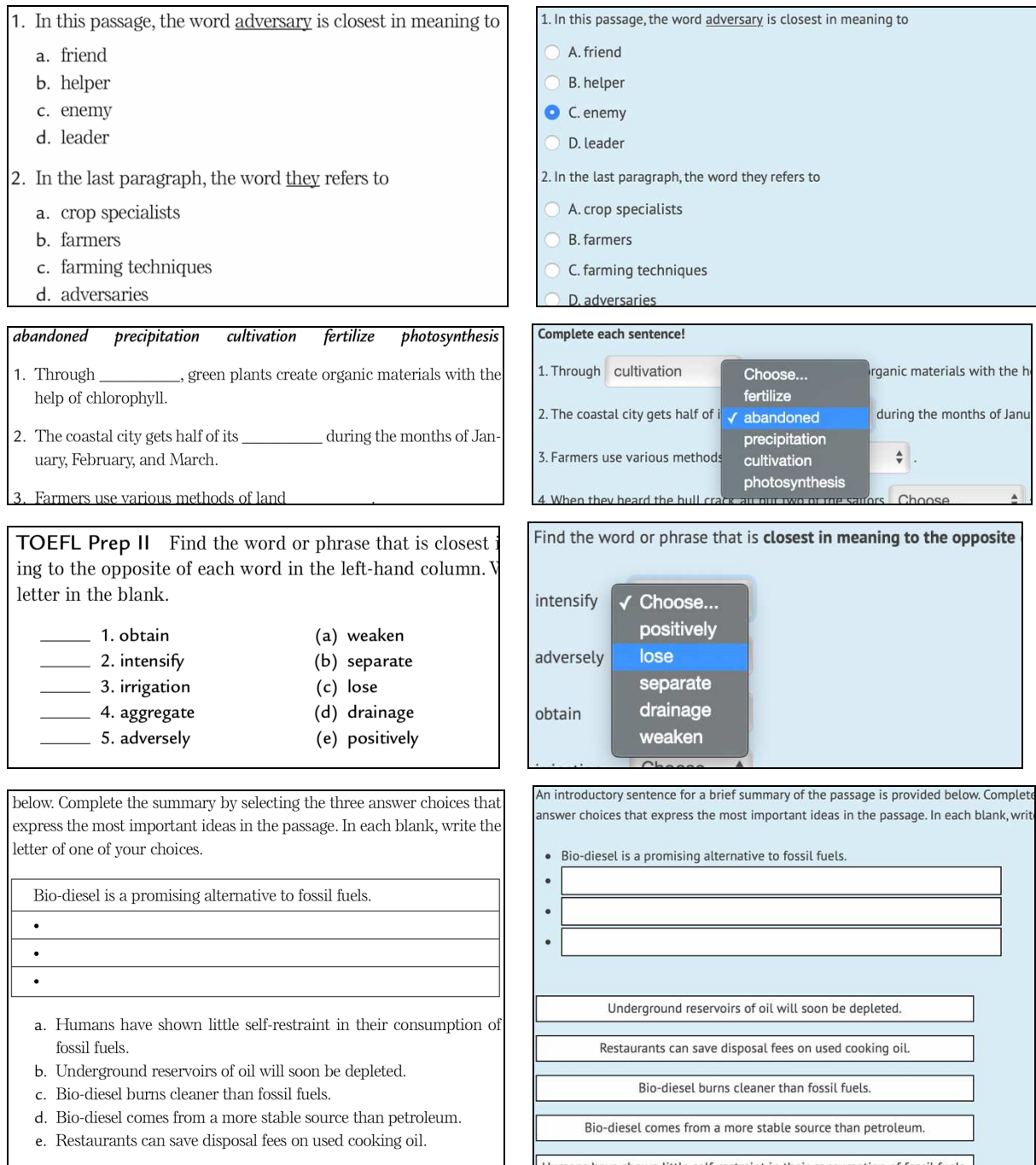
Figure 2. Types of exercises for paper-based homework (left) and online versions (right)

Figure 2 shows the types of exercises for vocabulary homework delivered on paper on the left and their online version equivalence on the right. The vocabulary homework was designed to be completed in 8 days. The vocabulary set was divided into themes, which covered nature (day 1), science (day 2), mind and body (day 3), society (day 4), money (day 5), government and justice (day 6), relationship (day 7), and culture (day 8).

Paper-based vocabulary homework was delivered each day to the class to be collected the next day, and the feedback was given one day after each submission. The online vocabulary

homework was delivered through the Moodle online application for learning management system (LMS), as also used in Bataineh and Mayyas (2017), Bower and Wittmann (2011), and Ghiglione, Aliberas, Vicent, and Dalziel (2009), which was installed on the institution website. To activate their access to the website, the students received account information from the e-learning supervisor.

In the program, students were obligated to complete all the lessons and exercises seriously. Their homework completion was monitored by the e-learning supervisor for both types of homework. For online vocabulary homework, they were scored for the way they completed the homework. The scoring system was different for lessons and exercises. The scoring system is provided below.

Table 3. Scoring system for the process of vocabulary lesson in vocabulary homework

No	As written on the page	Description	Score
1	No login yet	The student has not logged into the system.	0
2	Lesson started	The student has clicked on the lesson.	1
3	Course module viewed Content page viewed	The student has started to view the lesson but has not finished reading all the content in the lesson.	2
4	Lesson ended	The student has finished reading the lesson.	3

Table 4. Scoring system for exercise completion in vocabulary homework

No	As written on the page	Description	Score
1	No login yet	The student has not logged into the system.	0
2	Course module viewed	The student has clicked on the exercise.	0
3	Quiz attempt started	The student has started the exercise.	1
4	Quiz attempt viewed	The student has finished the exercises but has not clicked on the "submit" button.	2
5	Quiz attempt summary viewed	The student has reviewed the exercise before submission.	2
6	Quiz attempt submitted	The exercise was submitted.	3
	The exercise has been submitted, but the completion duration is too short.		1.5
	The submitted quiz is less than 80% correct, but the student did not reattempt the exercise.		1.75

Their homework progress was monitored daily. Students who scored less than 3 for most exercises after the first three days were invited to the training office, given motivation, and warned of training failure by the training coordinator. Those who scored less than 3 for some exercises were given a warning letter. There were six students who were invited to the office and another seven students who were warned in writing. As a result, they caught up with the homework and started completing the rest of the homework as expected. This type of supervision was not possible for the paper-based homework group. They could only be monitored based on whether or not they submitted the homework. No student in this group was invited to the office because they all submitted their homework.

3.4. Data collection procedures

To find out whether the training improved students' reading comprehension, the students were given a pre-test and post-test. The test material for both tests was reading the section in the TOEFL provided by the Educational Testing Service (ETS). This test was selected because it accommodates the nature of this research. First, it was designed for an academic purpose. Second, the test measured all reading comprehension skills focused on in this research, as presented in Table 5. It comprised five passages with 50 questions in total. The topics of the passages were varied. ETS (2009, p. 8) claimed that no background knowledge on specific topics is required to answer the questions in the test. The students were given 55 minutes to complete the test. The reading skills included in the test are presented in the following table.

Table 5. Skills tested in reading comprehension test of TOEFL

No	Reading Skills	No. of Items	Percentage
1	Vocabulary	17	34%
2	Implied detail	10	20%
3	Stated detail	10	20%
4	Unstated detail	5	10%
5	Reference	5	10%
6	Main idea	3	6%

To find out whether the students' reading scores improved significantly after the treatment, a statistical calculation was employed. To decide which formula suited the data, the data distribution was verified through a normality test, which was determined based on the Shapiro-Wilk Test. This type of normality test was used because it has been proven to be the most powerful normality test for the sample size in the range of $3 \leq n \leq 5000$ (Razali & Wah, 2011; Yap & Sim, 2011). The normal distribution was interpreted at the significance level 0.05 (Coolican, 2014, p. 453). The results of the normality tests are presented in Table 6.

Table 6. Tests of normality

		Shapiro-Wilk		
		n	Statistic	Sig.
Control Group Score	Pre-test	23	.95	.29
	Post-test	23	.98	.86
Experimental Group 1 Score	Pre-test	21	.94	.23
	Post-test	21	.90	.03
Experimental Group 2 Score	Pre-test	23	.93	.10
	Post-test	23	.97	.73

As the data were collected in the form of numeric variables and had been proven to have a normal distribution for the control group and the experimental group 2 (p>0.05), the proper technique to analyze the data was a Paired Sample T-Test. However, since the post-test scores for the experimental group 1 were not normally distributed (p<0.05), a Paired Sample Wilcoxon Test was used. The Paired Sample T-Test and Paired Sample Wilcoxon Test were used to reveal the mean difference in students' scores between the pre-test and post-test. The main concern of this research was to investigate if there was a significant improvement in scores after the treatment for each group. Our hypothesis for this study was that the mean scores between pretest and post-test were similar, or not significantly different, at the significance level of 5% (p>0.05).

3.5. Results

The research was intended to reveal whether there was a significant difference in reading achievement between the experimental and control groups. The pre-test and post-test scores of all participants are presented in Figure 3.
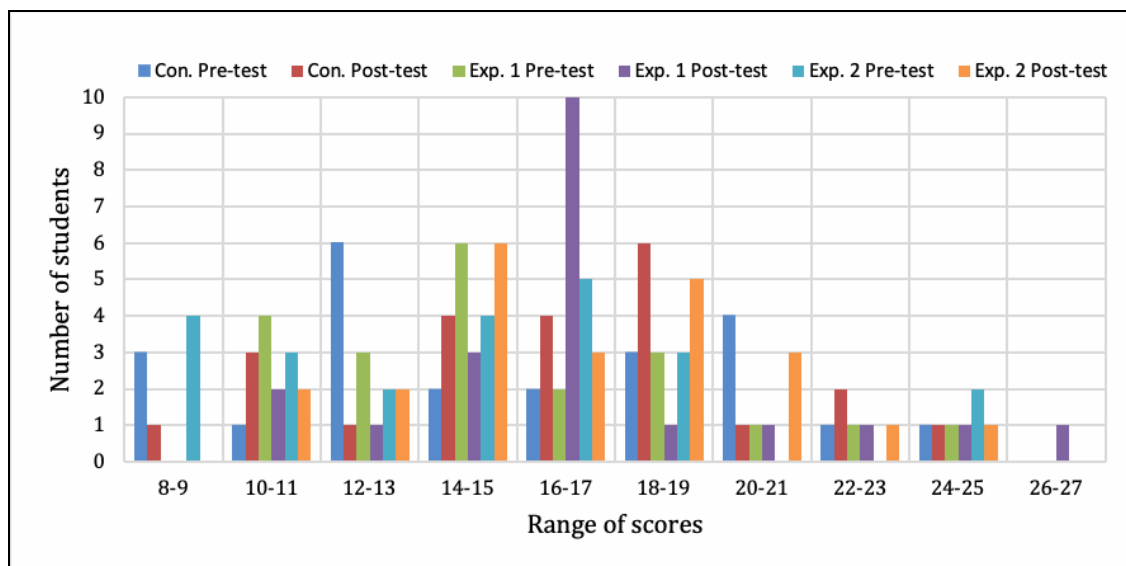

Figure 3. Students' scores from the pre-test and post-test

Figure 3 shows that both experimental groups exhibited more improvements, especially in the mid-tier to higher ranges, compared to the control group. The improvement is shown in all groups. However, some students, whose scores were already high in the pre-test, did not improve their scores, but the number of students having these static scores was very few. This shows that vocabulary homework helped students' ability in reading comprehension. Table 7

presents further descriptive statistics about the reading scores of the control and experimental groups.

Table 7. Descriptive statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Control Group (Pre-Test)	15.48	23	4.49	.94
	Control Group (Post-Test)	16.65	23	4.15	.87
Pair 2	Experimental Group 1 (Pre-Test)	15.24	21	3.85	.84
	Experimental Group 1 (Post-Test)	16.76	21	3.92	.86
Pair 3	Experimental Group 2 (Pre-Test)	14.65	23	4.47	.93
	Experimental Group 2 (Post-Test)	16.83	23	3.71	.77

Table 7 reveals that the students in all groups scored higher in the post-tests, with more improvement shown by the online homework group. In order to determine the statistical significance, a Paired Sample T-Test (for Pair 1 and Pair 3) and Paired Sample Wilcoxon Test (for Pair 2) were employed. The results of the tests for each group are presented in Table 8 and Table 9.

Table 8. Paired Sample T-Test for Pair 1 and Pair 3

		t	df	p-value
Pair 1	Control group pretest – posttest	-.98	22	.338
Pair 3	Experimental group 2 (Internet-based) pretest – posttest	-2.13	22	.045

Table 9. Paired Sample Wilcoxon Test for Pair 2

		V	df	p-value
Pair 2	Experimental group 1 (paper-based) pretest – posttest	45.5	21	.047

The Paired Sample T-Test presented in Table 8 and Paired Sample Wilcoxon Test in Table 9 revealed that the mean differences before and after the treatment resulted in p-values of 0.047 for the paper-based homework group and 0.045 for the online homework group. The improvement was significant when the p-value was lower than the critical, significant value, which is 0.05. Since the p-values of both experimental groups were lower than 0.05 ($p<.05$), the hypothesis that the scores of both tests would be similar was rejected. These results suggested that there was indeed a significant improvement in students' reading scores after they were

given reading skill training with the addition of vocabulary homework, regardless of the delivery mode. Furthermore, the control group students failed to show a significant difference in their reading scores between the pre-test and the post-test. The result of the Paired Sample T-Test for the control group was 0.338 (p>0.05), accepting the hypothesis that the scores of both pretest and post-tests were similar. Therefore, the results indicated that the improvements in mean scores between the tests of the experimental groups were insignificant.

4. Discussion

Several reports have shown that homework is a pivotal component in language learning (Costa et al., 2016, p. 142; Gómez, 2000, p. 45). It was hypothesized that participants who completed homework performed better than those who only participated in face-to-face classroom instruction. The research results presented above have shown a significant difference in achievement between students who were assigned homework, regardless of the mode of delivery, and those who were not, even though both received similar classroom vocabulary instruction. The p-values in the Paired Sample T-Test or Paired Sample Wilcoxon Test, which were lower than 0.05 for each experimental group and higher than 0.05 for the control group, confirmed that reading skill training within a short period of time, i.e., two weeks, did not have any significant effect on reading comprehension of academic texts without vocabulary homework. In addition, these results also suggested that vocabulary homework is beneficial to improve students' reading comprehension, be it delivered on paper or through an online platform.

Vocabulary instruction has been found to improve reading comprehension in most previous studies (McKeown, Beck, Omanson, & Perfetti, 1983; Sonbul & Schmitt, 2009; Stahl & Fairbanks, 1986). However, although the three groups were given explicit and implicit vocabulary instruction in the classroom interaction, the current study did not show any statistical evidence of improvement for the non-homework group. Previous research on the subject was often restricted to general vocabulary while the current study focused on academic vocabulary. Ono (2002) found that learning academic vocabulary was more problematic for students than learning general vocabulary. The passages in the pre-test and the post-test were intended to measure students' comprehension of texts in academic English. Therefore, the research results suggested that homework that was made compulsory is essential for students to learn and retain academic vocabulary. The fact that reading skill training failed to improve students' reading comprehension of academic texts, where vocabulary instruction was the focus of the training, confirmed that deliberate vocabulary instruction in the classroom is ineffective,

a belief shared by Miller and Galdea (1987). In our study, the vocabulary instruction also covered word-part analysis strategy (WPAS), which has also been proven unhelpful for academic vocabulary learning because, according to Taie (2015, pp. 6-7), the learners needed strong inferential skill, i.e., a sub-skill of critical thinking, in order for WPAS to be effectively applied.

Contrary to expectations, nine students (39%) in the online homework group and six students (29%) in the paper-based homework group did not obtain higher scores in the post-test compared to the pre-test. Six of the students (67%) in the online homework group did not complete the homework as seriously as the rest of the class, either for the vocabulary lesson or the vocabulary quiz. However, the lack of improvement in scores obtained by those students did not negatively affect the group scores in the statistical analysis because the proportion of students who did not improve their scores was small, and the improvements by successful students were very significant. This unexpected finding emphasized that students who completed the vocabulary homework seriously demonstrated significant improvement in their reading comprehension of academic texts.

The generalizability of these results was subject to certain limitations. For instance, the treatment was conducted intensively, where the students received five hours of instruction a day, with an additional 1.4-1.8 hours of homework. The overall exposure time to the material was much shorter than the time students spent in Williams's (2012) study. In addition, most students who participated in the research were simultaneously working on their undergraduate dissertation, which requires many hours of work per day. In a more relaxed learning environment, the students' achievement is likely to be different.

These findings have significant implications for the teaching of vocabulary. The current research has found that both monitor-enabled vocabulary homework and traditional homework had a significant effect on reading comprehension. The findings suggested that EFL and ESL teachers can adopt the method provided in this study to improve vocabulary acquisition and reading comprehension of their students. Although both modes of homework delivery appeared to yield a similar effect on students' achievement, online-delivered homework is always more effective. The teacher can monitor how the students complete the homework. The combination of low scores and fast completion can inform teachers that the students do the homework only for the purpose of completion. In addition, automatic grading saves a lot of teachers' time. Such scoring also enables students to reattempt the homework, which can bring benefits for students' learning. The platform used in delivering the web-based homework in the current study was Moodle, which was installed on the institution website. This system is unfeasible in schools or

universities that do not have an institutional website domain and skilled IT staff. However, there are many other free platforms that do not need to be installed with a specified domain, one of which is Edmodo. Edmodo treats the whole world as a single educational entity, allowing anyone to register as a teacher to create classes or as a student to join classes. Due to the preference of students, this platform was also recommended by Balasubramanian, Jaykumar, and Fukey (2014, p. 421).

5. Conclusion

Web-based homework has been popular in English language classes because teachers can monitor how their students complete the work. This research investigated the role of web-based homework in improving students' reading comprehension of academic texts in reading classes. The mean scores of three groups, one with web-based vocabulary homework, one with paper-based vocabulary homework, and the other without any vocabulary homework, were compared by using a Paired Sample T-Test or Paired Sample Wilcoxon Test, depending on the data distribution. Based on the results of this research, the students who were given reading skill training which focused on vocabulary instruction could not achieve significant improvement in their academic reading comprehension score (p=.338). Only when the training was accompanied by vocabulary homework, be it delivered in a paper-based version or through an e-learning platform, did the scores improve (p<0.05). Therefore, EFL and ESL teachers are encouraged to assign vocabulary homework as a compulsory learning requirement in teaching reading comprehension.

Notwithstanding the results, this research does not reveal the percentage of words the students were able to retain through this homework delivery system after a certain period of time. A future study could assess the students' vocabulary mastery after the treatment so that modification in vocabulary homework can be made. Thus, innovation in vocabulary teaching can better help students improve their skills in this most pivotal aspect of reading comprehension.

References

Afshar, H. S., & Movassagh, H. (2016). EAP education in Iran: Where does the problem lie? Where are we heading? *Journal of English for Academic Purposes*, *22*, 132-151. https://doi.org/10.1016/j.jeap.2016.04.002

Aghlara, L., & Tamjid, N. H. (2011). The effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. *Procedia - Social and Behavioral Sciences, 29*, 552-560. https://doi.org/10.1016/j.sbspro.2011.11.275

American Classical League (1933). Methods in teaching Latin. *Latin Notes*, *10*(5), 2-3.

Atai, M. R., & Nazari, O. (2011). Exploring reading comprehension needs of Iranian EAP students of health information management (HIM): A triangulated approach. *System*, *39*(1), 30-43. https://doi.org/10.1016/j.system.2011.01.015

Balasubramanian, K., Jaykumar, V., & Fukey, L. N. (2014). A study on student preference towards the use of Edmodo as a learning platform to create responsible learning environment. *Procedia - Social and Behavioral Sciences, 144*, 416-422. https://doi.org/10.1016/j.sbspro.2014.07.311

Bataineh, R. F., & Mayyas, M. B. (2017). The utility of blended learning in EFL reading and grammar: A case for Moodle. *Teaching English with Technology, 17*(3), 35-49.

Bazo, P., Rodríguez, R., & Fumero, D. (2016). Vocabulary notebook: A digital solution to general and specific vocabulary learning problems in a CLIL context. In A. Pareja-Lora, C. Calle-Martínez, & P. Rodríguez-Arancón (Eds), *New Perspectives on Teaching and Working with Languages in the Digital Era* (pp. 269-279). Dublin: Research-publishing.net. http://dx.doi.org/10.14705/rpnet.2016.tislid2014.440

Bonham, S. W., Deardorff, D. L., & Beichner, R. J. (2003). Comparison of student performance using web and paper-based homework in college-level Physics. *Journal of Research in Science Teaching, 40*(10), 1050-1071. https://doi.org/10.1002/tea.10120

Bower, M., & Wittmann, M. (2011). A comparison of LAMS and Moodle as learning design technologies - teacher education students' perspective. *Teaching English with Technology, 11*(1), 62-80.

Brown, D. (2004). *Language Assessment: Principles and Classroom Practices*. New York: Longman.

Calvo, M. G., Estevez, A., & Dowens, M. G. (2003). Time course of elaborative inferences in reading as a function of prior vocabulary knowledge. *Learning and Instruction*, *13*(6), 611-631. https://doi.org/10.1016/S0959-4752(02)00055-5

Chen, H., Cannon, A. R., & Taylor, M. C. (2017). Impact of homework assignment delivery systems on student learning outcomes in operations management courses. *Journal of the Academy of Business Education, 18*, 201-212.

Choi, S. (2016). Effects of L1 and L2 glosses on incidental vocabulary acquisition and lexical representations. *Learning and Individual Differences, 45*, 137-143. https://doi.org/10.1016/j.lindif.2015.11.018

Chun, E., Choi, S., & Kim, J. (2012). The effect of extensive reading and paired-associate learning on long-term vocabulary retention: An event-related potential study. *Neuroscience Letters, 521*(2), 125-129. https://doi.org/10.1016/j.neulet.2012.05.069

Clift, R. T. (1991). Learning to teach English - maybe: A study of knowledge development. *Journal of Teacher Education, 42*(5), 357-372.

Cole, R. S., & Todd, J. B. (2003). Effects of web-based multimedia homework with immediate rich feedback on

student learning in general chemistry. *Journal of Chemical Education, 80*(11), 1338-1343. https://doi.org/10.1021/ed080p1338

Coolican, H. (2014). *Research Methods and Statistics in Psychology* (6th Ed.). New York: Psychology Press. https://doi.org/doi:10.4324/9780203769669

Costa, M., Cardoso, A. P., Lacerda, C., Lopes, A., & Gomes, C. (2016). Homework in primary education from the perspective of teachers and pupils. *Procedia - Social and Behavioral Sciences, 217*, 139-148.

Day, R. R., Omura, C., & Hiramatsu, M. (1991). Incidental EFL vocabulary learning and reading. *Reading in a Foreign Language, 7*(2), 541-551.

ETS. (2009). *ETS International Principles for Fairness Review of Assessments: A Manual for Developing Locally Appropriate Fairness Review Guidelines in Various Countries*. Princeton, NJ: Educational Testing Service.

Flunger, B., Trautwein, U., Nagengast, B., Lüdtke, O., Niggli, A., & Schnyder, I. (2017). A person-centered approach to homework behavior: Students' characteristics predict their homework learning type. *Contemporary Educational Psychology*, *48*, 1-15. https://doi.org/10.1016/j.cedpsych.2016.07.002

Freedle, R., & Kostin, I. (1993). The prediction of TOEFL reading item difficulty: Implications for construct validity. *Language Testing*, *10*(2), 133-170. https://doi.org/10.1177/026553229301000203

Furqon, F. (2013). Correlation between students' vocabulary mastery and their reading comprehension. *Journal of English and Education*, *1*(1), 68-80.

Ghiglione, E., Aliberas, M. R., Vicent, L., & Dalziel, J. R. (2009). Using Moodle activities within LAMS. *Teaching English with Technology, 9*(2), 32-39.

Gear, J., & Gear, R. (1996). *Cambridge Preparation for the TOEFL Test* (2nd ed.). Cambridge: Cambridge University Press.

Gill, B, P., & Schlossman, S, L. (2004). Villain or savior? The American discourse on homework, 1850-2003. *Theory into Practice, 43*(3), 174-181.

Gleeson, M., & Davison, C. (2016). A conflict between experience and professional learning: Subject teachers' beliefs about teaching English language learners. *RELC Journal, 47*(1), 43-57. https://doi.org/10.1177/0033688216631221

Gómez, S. M. (2000). Homework in the learning process. *Profile Issues in Teachers' Professional Development*, *1*(1), 45–47.

Grabe, W. (2009). *Reading in a Second Language.* New York: Cambridge University Press.

Grabe, W., & Stoller, F. L. (2011). *Teaching and Researching Reading*. New York: Routledge Taylor & Francis Group.

Graves, S. M. (2008). Student cheating habits: A predictor of workplace deviance. *Journal of Diversity Management*, *3*(1), 15-22.

Haddad, R. H. (2016). Developing learner autonomy in vocabulary learning in classroom: How and why can it be fostered? *Procedia - Social and Behavioral Sciences*, *232*, 784-791. https://doi.org/10.1016/j.sbspro.2016.10.106

Hashemi, Z., & Hadavi, M. (2015). Investigation of vocabulary learning strategies among EFL Iranian medical sciences students. *Procedia - Social and Behavioral Sciences*, *192*, 629-637. https://doi.org/10.1016/j.sbspro.2015.06.110

Hill, Y., & Liu, O. (2012). Is there any interaction between background knowledge and language proficiency that affects TOEFL iBT® Reading Performance? *TOEFL IBT® Research Report*, *18*. Retrieved 8 April 2019 from http://144.81.87.152/Media/Research/pdf/RR-12-22.pdf

Hirschel, R., & Fritz, E. (2013). Learning vocabulary: CALL program versus vocabulary notebook. *System*, *41*(3), 639-653. https://doi.org/10.1016/j.system.2013.07.016

Howatt, A. P. R., & Smith, R. (2014). The history of teaching English as a foreign language, from a British and European perspective. *Language & History, 57*(1), 75-95. https://doi.org/10.1179/1759753614z.00000000028

Huang, L. Li, & Lin, C. Cheng. (2014). Three approaches to glossing and their effects on vocabulary learning. *System*, *44*(1), 127-136. https://doi.org/10.1016/j.system.2014.03.006

Hudson T (1996) *Assessing Second Language Academic Reading from a Communicative Competence Perspective: Relevance for TOEFL 2000* (TOEFL Monograph Series MS-4). Princeton, NJ: Educational Testing Service

Jonsdottir, A. H., Bjornsdottir, A., & Stefansson, G. (2017). Difference in learning among students doing pen-and-paper homework compared to web-based homework in an introductory statistics course. *Journal of Statistics Education*, *25*(1), 12-20. https://doi.org/10.1080/10691898.2017.1291289

Kerfoot, J. F. (1965). Problems and research considerations in reading comprehension. *The Reading Teacher, 18*(4), 250-256.

Khezrlou, S. (in press). Form-focussed Instruction in CALL: What do learners think? *RELC Journal*. https://doi.org/10.1177/0033688217738820

Kheirzadeh, S., & Tavakoli, E. (2012). The causes of reading difficulty: The perception of Iranian EFL post-graduate and under-graduate students. *Journal of Language Teaching and Research*, *3*(1). https://doi.org/10.4304/jltr.3.1.147-152

Laufer, B., & Nation, P. (1999). A vocabulary-size test of controlled productive ability. *Language Testing, 16*(1), 33-51.

Madarsara, A. (2015). Intentional vs. incidental vocabulary learning through games by young EFL Persian speakers. *International Journal of Research Studies in Educational Technology, 4*(1), 23-34.

Mcgraw, I., Yoshimoto, B., & Seneff, S. (2009). Speech-enabled card games for incidental vocabulary acquisition in a foreign language. *Speech Communication, 51*(10), 1006-1023. https://doi.org/10.1016/j.specom.2009.04.011

Mckeown, M. G., Beck, I. L., Omanson, R. C., & Perfetti, C. A. (1983). The effects of long-term vocabulary instruction on reading comprehension: A replication. *Journal of Reading Behavior, 15*(1), 3-18.

Mendicino, M., Razzaq, L., & Heffernan, N. T. (2009). A comparison of traditional homework to computer supported homework. *Journal of Research on Technology in Education, 41*(3), 331-359.

Mikulecky, B. S. (2008). Teaching reading in a second language. Retrieved from https://longmanhomeusa.com/content/FINAL-LO-RES-Mikulecky-Reading Monograph.pdf

Mikulecky, B. S., & Jeffries, L. (2007). *Advanced Reading Power*. New York: Pearson Education, Inc.

Miller, G. A., & Gildea, P. M. (1987). How children learn words. *Scientific American, 257*, 94-99.

Montelongo, J. A., & Hernández, A. C. (2007). Reinforcing expository reading and writing skills: A more versatile sentence completion task. *The Reading Teacher*, *60*(6), 538-546. https://doi.org/10.1598/RT.60.6.4

Mousavi, F., & Gholami, J. (2014). Effects of watching flash stories with or without subtitle and reading subtitles on incidental vocabulary acquisition. *Procedia - Social and Behavioral Sciences, 98*, 1273-1281. https://doi.org/10.1016/j.sbspro.2014.03.543

Mustafa, F. (2018). How much do high schools contribute to improving students' English proficiency? Seeking alumni's perception in Indonesia. *Asian EFL Journal*, *20*(2), 49-61.

Nation, I. S. P. (1983). Testing and teaching vocabulary. *Guidelines, 5*(1), 12-25.

Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.

Nation, I. S. P. (2006). How large a vocabulary is needed for reading and listening? *The Canadian Modern Language Review, 63*(1), 59-82. https://doi.org/10.3138/cmlr.63.1.59

Nation, P. (2013). Vocabulary acquisition in second language acquisition. In C. A. Chapelle (Ed.), *The Encyclopedia of Applied Linguistics*. Princeton, NJ: John Wiley & Sons, Inc. https://doi.org/10.1002/9781405198431.wbeal1265

Nation, I. S. P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher, 31*(7), 9-13.

Nation, I. S. P., & Waring, R. (1997). Vocabulary size, text coverage and word lists. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, Acquisition and Pedagogy* (pp. 6-20). Cambridge: Cambridge University Press.

Nikoopour, J., & Kazemi, A. (2014). Vocabulary learning through digitized & non-digitized flashcards delivery. *Procedia - Social and Behavioral Sciences*, *98*, 1366-1373. https://doi.org/10.1016/j.sbspro.2014.03.554

Oakhill, J. (1993). Children's difficulties in reading comprehension. *Educational Psychology Review, 5*(3), 223-237.

Ono, L. (2002). A needs analysis of the English Language Institute reading program at the University of Hawaii at Manoa. Unpublished manuscript, Honolulu, HI.

Orosz, G., Dombi, E., Tóth-Király, I., Bőthe, B., Jagodics, B., & Zimbardo, P. G. (2016). Academic cheating and time perspective: Cheaters live in the present instead of the future. *Learning and Individual Differences*, *52*, 39-45. https://doi.org/10.1016/j.lindif.2016.10.007

Park, E. J., Park, S., & Jang, I. S. (2013). Academic cheating among nursing students. *Nurse Education Today*, *33*(4), 346-352. https://doi.org/10.1016/j.nedt.2012.12.015

Pearson, P. D. (2009). The roots of reading comprehension instruction. In S. E. Israel & G. G. Duffy (Eds.), *Handbook of Research on Reading Comprehension* (pp. 3-31). New York: Taylor & Francis.

Phillips, D. (2001). *Longman Introductory Course for the TOEFL Test* (2nd Ed). New York: Pearson Education, Inc.

Putra, T. M., Kasim, U., & Mustafa, F. (2017). Reading comprehension in PBT TOEFL: What sub-skills deserve more intensive training? In *International Conference on the Teaching and Learning of Languages*. Sarawak, Malaysia.

Rapp, D. N., & Kendeou, P. (2007). Higher-order comprehension processes in struggling readers: A perspective for research and intervention. *Scientific Studies of Reading*, *11*(4), 289-312. https://doi.org/10.1080/10888430701530417

Razali, N. M., & Wah, Y. B. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics*, *2*(1), 21-33. https://doi.org/doi:10.1515/bile-2015-0008

Richards-Babb, M., Drelick, J., Henry, Z., & Robertson-Honecker, J. (2011). Online homework, help or hindrance? What students think and how they perform. *Journal of College Science Teaching*, *40*(4), 81-93. https://doi.org/10.3102/00346543076001001\r10.1021/ed081p441

Ricketts, J., Nation, K., & Bishop, D. V. M. (2007). Vocabulary is important for some, but not all reading skills. *Scientific Studies of Reading*, *11*(3), 235-257. https://doi.org/10.1080/10888430701344306

Schmitt, N., Schmitt, D., & Clapham, C. (2001). Developing and exploring the behaviour of two new versions of the vocabulary levels test. *Language Testing, 18*(1), 55-88.

Sen, Y., & Kuleli, M. (2015). The effect of vocabulary size and vocabulary depth on reading in EFL context. *Procedia - Social and Behavioral Sciences, 199*, 555-562. https://doi.org/10.1016/j.sbspro.2015.07.546

Sentürk, B. (2016). Self-regulation strategies and vocabulary size of EFL Turkish University students. *Procedia - Social and Behavioral Sciences*, *232*, 90-97. https://doi.org/10.1016/j.sbspro.2016.10.023

Shams, I. E. (2013). Hybrid learning and Iranian EFL learners' autonomy in vocabulary learning. *Procedia - Social and Behavioral Sciences*, *93*, 1587-1592. https://doi.org/10.1016/j.sbspro.2013.10.086

Shuaiwen, X., Xiaoming, W., & Song, L. (2012). On-line homework management system. *Energy Procedia*, *17*, 690-693. https://doi.org/10.1016/j.egypro.2012.02.156

Sidek, H. M., & Rahim, H. A. (2015). The role of vocabulary knowledge in reading comprehension: A cross-linguistic study. *Procedia - Social and Behavioral Sciences, 197*, 50-56. https://doi.org/10.1016/j.sbspro.2015.07.046

Smithrud, D. B., & Pinhas, A. R. (2015). Pencil-paper learning should be combined with online homework software. *Journal of Chemical Education, 92*(12), 1965-1970. https://doi.org/10.1021/ed500594g

Smolira, J. C. (2008). Student perceptions of web-based homework in an introductory finance course. *Journal of Education for Business*, *84*(2), 90-95. https://doi.org/10.3200/JOEB.84.2.90-95

Soler, J. (2017). The politics of the teaching of reading. *Prospects*, 1-11. https://doi.org/10.1007/s11125-017-9415-8

Sonbul, S., & Schmitt, N. (2009). Direct teaching of vocabulary after reading: Is it worth the effort? *ELT Journal*, *64*(3), 253-260. https://doi.org/10.1093/elt/ccp059

Stafford-Yilmaz, L., & Zwier, L. J. (2005). *400 Must-have Words for the TOEFL®*. New York: Mcgraw-Hill, Inc.

Stahl, S. A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research, 56*(1), 72-110.

Stevens, E. A., Park, S., & Vaughn, S. (2018). A review of summarizing and main idea interventions for struggling readers in grades 3 through 12: 1978–2016. *Remedial and Special Education*, 1-19. https://doi.org/10.1177/0741932517749940

Taie, M. (2015). Critical thinking and discovering the meaning of unfamiliar terms through the word part analysis strategy: A study of Iranian medical students. *English for Specific Purposes, 40*, 1-10. https://doi.org/10.1016/j.esp.2015.05.001

Tarchi, C. (2010). Reading comprehension of informative texts in secondary school: A focus on direct and indirect effects of reader's prior knowledge. *Learning and Individual Differences*, *20*(5), 415-420. https://doi.org/10.1016/j.lindif.2010.04.002

Tarchi, C. (2015). Fostering reading comprehension of expository texts through the activation of readers' prior knowledge and inference-making skills. *International Journal of Educational Research*, *72*, 80-88.

https://doi.org/10.1016/j.ijer.2015.04.013

Teng, F. (2016). The effects of context and word exposure frequency on incidental vocabulary acquisition and retention through reading. *Language Learning Journal*. https://doi.org/10.1080/09571736.2016.1244217

van Zeeland, H., & Schmitt, N. (2013). Incidental vocabulary acquisition through L2 listening: A dimensions approach. *System, 41*(3), 609-624. https://doi.org/10.1016/j.system.2013.07.012

Vela, V., & Rushidi, J. (2016). The effect of keeping vocabulary notebooks on vocabulary acquisition and learner autonomy. *Procedia - Social and Behavioral Sciences*, *232*, 201-208. https://doi.org/10.1016/j.sbspro.2016.10.046

Wang, Y. (2013). Incidental vocabulary learning through extensive reading: A case of lower-level EFL Taiwanese learners. *The Journal of Asia TEFL, 10*(3), 59-80.

Waring, R., & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, *15*(2), 130-163. https://doi.org/10.1177/003368828501600214

Williams, A. (2012). Online homework vs. traditional homework: Statistics anxiety and self-efficacy in an educational statistics course. *Technology Innovations in Statistics Education, 6*(1), 1-19.

Williams, J. P. (1986). Teaching children to identify the main idea of expository texts. *Exceptional Children*, *53*(2), 163-168. https://doi.org/10.1177/001440298605300209

Woolley, G. (2011). *Reading Comprehension: Assisting Children with Learning Difficulties.* New York: Springer. https://doi.org/10.1007/978-94-007-1174-7

Wu, Q. (2015). Designing a smartphone app to teach English (L2) vocabulary. *Computers and Education*, *85*, 170-179. https://doi.org/10.1016/j.compedu.2015.02.013

Yamamoto, Y. (2014). Multidimensional vocabulary acquisition through deliberate vocabulary list learning. *System*, *42*(1), 232-243. https://doi.org/10.1016/j.system.2013.12.005

Yap, B. W., & Sim, C. H. (2011). Comparisons of various types of normality tests. *Journal of Statistical Computation and Simulation*, *81*(12), 2141-2155. https://doi.org/10.1080/00949655.2010.520163

Yussen, S. R., Rembold, K. L., & Mazor, A. (1989). Identifying main ideas in picture stories and written narratives. *Journal of Applied Developmental Psychology*, *10*(3), 313-335. https://doi.org/10.1016/0193-3973(89)90033-6

Zhang, D. (2012). Vocabulary and grammar knowledge in second language reading comprehension: A structural equation modeling study. *The Modern Language Journal, 96*(4), 558-575.

Zhang, L. J., & Anual, S. Bin. (2008). The role of vocabulary in reading comprehension: The case of secondary school students learning English in Singapore. *RELC Journal, 39*(1), 51-76. https://doi.org/10.1177/0033688208091140

Zuhra. (2015). Senior high school students' difficulties in reading comprehension. *English Education Journal*, *6*(3), 430-441.