

Effects of a Pop-up Dictionary Interface on Students' Vocabulary Retention and Attitudes towards Reading Literary Works

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ABSTRACT

This study investigated how intermediate-level English as a Foreign Language (EFL) students' attitudes toward literary works were impacted by employing an online English pop-up dictionary (PD) function for every unknown word in the text. To that end, an attitude questionnaire and a semi-structured interview were employed. Moreover, a pre-test post-test quasi-experimental design was adopted to examine students' immediate and long-term vocabulary retention after receiving their specified treatments. The control group was provided with an electronic dictionary (ED) software for use while reading through their documents, whereas the experimental group tracked the texts enjoying the benefit of a PD feature. The findings suggested that both PD and ED are useful tools for intermediate level EFL students' immediate vocabulary retention, yet not of significant efficacy for long-term recall. Furthermore, in terms of the two forms of vocabulary retention, the PD users showed no significant difference from the ED users. With respect to students' attitudes, the results revealed that both the PD and ED users fostered a better attitude toward reading literary works, yet as compared with ED, PD proved statistically more significant to the betterment of students' attitudes. The present study has implications for considering the facilitative role of English pop-up dictionary interfaces in online language pedagogy.

Key words: Reading, Literary works, Pop-up Dictionaries, Attitude

INTRODUCTION

It is widely acknowledged that reading proficiency plays a pivotal role at all academic levels. Generally, the frequent practice of reading enhances the development of skills for increased mastery of texts and thus, quality comprehension. Brumfit and Carter (1986) hold that works of literature, in addition to being motivational, treasured, and authentic, pave the way for the learners' linguistic progress, individual growth, and cultural improvement. Employing literary works in language classes has received considerable attention in many studies (Brumfit & Carter, 1986; Hismanoğlu, 2005; Lazar, 1993). Successful comprehension of authentic L2 texts necessitates learners to mechanically identify and decipher 95%–99% of the words in any texts (Laufer, 1997; Nation, 2001). That is, unfamiliarity with the meaning of unknown words in authentic texts poses an enormous obstacle in the way of text comprehension for the readers, as many of them stand in need of adequate word knowledge to attain successful guessing (Chen, 1998; Grabe & Stoller, 1997; Groot, 2000; Hiebert & Kamil, 2005). The lexicon of literary works raises demanding challenges for the readers. Consequently, students are at risk of misunderstanding key words and getting distracted by the less central portion of a text (Fecteau, 1999). The existence of a worrying rate of

word-knowledge gap among students coming from different backgrounds is beyond question (Hart & Risley, 1995; Arvidson & Blanco, 2004). As expected, this alarming gap exerts its effect on readers' text comprehension and might affect their attitudes toward reading.

Attitude is an affective variable that contributes to students' achievement or failure (Candlin & Mercer, 2001). Fortunately, attitudes are not set in stone as they are likely to be reformed through the appropriate learning processes. Therefore, a healthy attitude can be fostered if students are well taught. (Choy & Troudi, 2006).

Dictionaries are considered an empowering aid in readers' learning toolbox (Prichard, 2008). Recently, the considerable efforts devoted to the betterment of the process of language learning through the agency of computer technology gave credence to the fact that this popular phenomenon offers tremendous potential for language learning, resulting in what is acknowledged as Computer-Assisted Language Learning (CALL). One of the noteworthy benefits of e-learning in the realm of online reading is the effective employment of electronic and online dictionaries. As compared to paper dictionaries, they are super-fast and hence, very time-saving. Among different electronic and online dictionaries, pop-up dictionaries (PDs) as add-ons installed on different browsers are of monumental support to readers, as they provide users

with the benefits of knowing the meaning of unfamiliar words simply with a double-click function. Besides, PDs are substantially reader-friendly as readers do not need to lose track of reading the passage to look up the unknown words in their dictionary. These distinctive features considerably reduce the extraneous cognitive load in online reading (Liu & Lin, 2011).

This study aims to cast light upon the effect of a PD on readers' attitudes toward reading literary works and hopes to answer the question as to whether looking up unfamiliar words by this type of dictionary helps the retention of the words.

Purpose of the Study

The growing popularity of technological tools in the third millennium is beyond the shadow of a doubt and thus integrating technology in language learning may bring immense benefits. Taking the previous studies into consideration, the current research aims to measure the efficacy of an online pop-up dictionary on students' attitudes toward reading literary works. Fostering a positive attitude might be of great help to unlocking the readers' potentials for the comprehension of literary works and thus, properly appreciating the value of reading literature.

Secondly, this study attempts to explore if looking up the definitions of unfamiliar words in the authentic literary works through PDs will be of significant benefit to the immediate and long-term retention of those vocabularies as compared to an electronic dictionary (in our case 'Longman Dictionary of Contemporary English 5th Edition').

Research Questions and Hypotheses

Based on the purposes of the current study, the following research questions are addressed:

- Q1. a: Does the use of a Google Pop-up Dictionary (PD) and a Longman Electronic Dictionary (ED) have any effect on students' immediate vocabulary retention, respectively?
b: In which dictionary application (PD or ED) is students' immediate retention more improved?
- Q2. a: Does the use of a PD and an ED have any effect on students' long-term vocabulary retention, respectively?
b: In which dictionary application (PD or ED) is students' long-term retention more improved?
- Q3. Does the use of a PD and an ED have any effect on students' attitudes, respectively?
b: In which dictionary application (PD or ED) is students' attitudes toward reading literary works more improved?
- H₁ 1-a: The use of a PD and an ED improves students' immediate vocabulary retention, respectively.
b: Students' immediate retention is improved in PD and ED applications differently.
- H₁ 2-a: The use of a PD and an ED improves students' long-term retention, respectively.
b: Students' long-term retention is improved in PD and ED applications differently.
- H₁ 3-a: The use of a PD and an ED improves students' attitudes toward reading literary works, respectively.
b: Students' attitudes toward reading literary works are expressed in PD and ED applications differently.

LITERATURE REVIEW

Different types of dictionaries are recommended in order to surmount the vocabulary obstacle. Yet, if a dictionary imposes an unwarranted cognitive load on its users all through the lookup process, it may divert learners' attention away from the target words, disturb fluent reading, and suppress learners' desire for searching new unknown words. The growing emergence of electronic dictionaries provided the ground for research on the utility of these dictionaries and their efficiency. The documented studies over the last two decades have revealed the relative effectiveness of computer-mediated glossaries as compared to the conventional methodologies (Abraham, 2008; Dziemianko, 2010; Knight, 1994; Leffa 1992; Lenders, 2008; Rezaei & Davoudi, 2016; Zandieh & Jafarigohar, 2012). The chief online learning tool studied in this research is an English pop-up dictionary installed as an extension on a web browser to facilitate the comprehension of authentic literary works. Accordingly, it is worth to review the key previous conducted research on the effectiveness of pop-up dictionaries in the literature.

Wang and Upton (2012) studied the effect of using an online pop-up dictionary on Chinese beginning learners' reading processes. The findings revealed that the pop-up dictionary provided a significant improvement in the learners' ability to identify unfamiliar word definitions and their pronunciations. In another study, Wang (2014) investigated the reading strategies beginning learners of Chinese as a Foreign Language (CFL) employed while reading Chinese texts, with and without a pop-up dictionary. The results indicated that the use of the pop-up dictionary might not change the CFL learners' general use of reading strategies significantly, yet it played a facilitative role in meaning construction. Tabata-Sandom (2016) conducted a comparative analysis on the differences in how Japanese learners at different proficiency levels read target texts with the help of an online pop-up dictionary. The study reported that the advanced participants benefited from the pop-up dictionary without any disturbance in the flow of reading. However, less proficient readers found the dictionary as a hindrance to their comprehension. The researcher concluded that an appropriate reading threshold is needed to be reached in order to enjoy using pop-up dictionaries with the aim of better comprehension of the target texts. Moreover, the analysis of the data demonstrated that the online pop-up dictionary was useful for vocabulary learning while reading. In an interesting study, Liu and Lin (2011) compared the effect of using three types of dictionaries, namely a paper dictionary, a type-in dictionary, and a pop-up dictionary, on reading comprehension and vocabulary learning. Regarding reading comprehension, the results indicated that there was no significant difference whether participants used any types of dictionary. However, the pop-up dictionary proved to be the most beneficial to vocabulary learning, although the type-in and paper dictionaries also facilitated vocabulary learning, but to a lesser extent. Mekheimer (2015) also evaluated the efficacy of three different types of dictionaries, paper-based, pop-up and type-in electronic dictionaries, on improving EFL learners' reading comprehension and vocabulary retention. Findings shed light upon the superiority of the pop-up dictionary

over its rivals in being the most time-saving for word lookups and reading texts, yet in terms of frequency of use, the type-in dictionary group was ranked number one, with the pop-up in the second place, followed by the book dictionary. In addition, in line with the previous study, the results showed that all the dictionaries enhanced vocabulary retention, yet indicated the pop-up dictionary application as the most beneficial. Finally, the study reported that the participants chose the pop-up electronic dictionary as the most preferable.

Regarding the attitude aspect in the literature, Prasarn-tong and Dennis (2016) measured students' attitudes toward using a pop-up dictionary to improve English vocabulary learning. The results suggested that most of the participants fostered a positive attitude toward using these online dictionaries for vocabulary learning. Finally, in another recent study, Alharbi (2016), studied the effects of different types of dictionaries including pop-up dictionaries on EFL reading comprehension and vocabulary learning. Data analysis proved a higher improvement in vocabulary learning and reading comprehension for the group which used a pop-up dictionary as compared to the groups using other dictionary types. It also indicated that the pop-up dictionary participants showed slightly a more positive attitude toward dictionary use than the type-in group, and both demonstrated a significantly more positive attitude than participants employing the book dictionary. These findings lend weight to the great potential benefits of pop-up dictionaries. These time-saving and unobtrusive dictionaries are designed with powerful interfaces combined into the reading settings in which word definition can be promptly retrieved via a mouse click.

The previous research suffers from a lack of comparative analysis between a quality electronic dictionary software and a pop-up dictionary extension in reading, in particular, reading literary works that are considered lengthy and complicated. Most of the studies only focused on the comparison of paper dictionaries with their electronic peers. Besides, there's a dearth of research in the literature having investigated the readers' attitudes toward reading in general while using pop-up dictionaries, let alone reading literary works. In other words, all they reported was the attitude toward vocabulary learning, not the act of reading.

METHODOLOGY

Participants

A total number of 120 students (both male and female) from different English institutes were chosen for the study. They

were all intermediate students based upon the TOEFL proficiency test which was taken by the institutes. Since the students were going to read literary works, the intermediate level was considered appropriate. As it was consulted by TEFL experts, for the purpose of this study, the researchers approached intermediate subjects since the learners under this level of proficiency could not cope with literary works and vocabularies. Moreover, those with upper-intermediate and advanced levels were also not suitable subjects, as they normally have a larger vocabulary size and superior reading skills, and thus, render the results of the research invalid. Participants differed in terms of age. They were randomly divided into two groups of control and experimental (60 subjects in each group).

Instruments

Vocabulary test

In order to gather quantitative data, a test of vocabulary was utilized. The test consisted of 40 vocabulary items which were all selected from the literary works that students were going to read during the term. But in order to minimize practice effect and measure their true size of vocabulary retention, each vocabulary item was given in a sentence different from what students read in the texts. The words were pilot-tested with 40 intermediate level students not participating in the study. The students were requested to mark the unknown words from a 60-item word list. The most frequently marked words were chosen as the original 40 target words. Multiple-choice test design was used to construct the test questions, since it is considered the most commonly used model for questions in vocabulary exams where students should select the correct answer from among four or five options (Taylor, 1934, cited in Madaus & Stofflebeam, 1988). Each test question contained four options, one correct answer, three distractors. The validity of the test was verified by experts in the literature and language teaching fields. Using KR-21 formula, the reliability of the test was calculated to be 0.81. These vocabulary test items were used for pretest, posttest and delayed posttest. Since the delayed posttest was administered six weeks after the immediate posttest to reduce the practice effect, the same target words as in the pretest and immediate posttest were put in a different sentence (context with almost the same difficulty level) and in a different order. The validity of the delayed posttest was confirmed by experts in the field and the reliability was measured to be 0.82. For example, as shown in Figure 1, the questions for the word 'indignation' as one of the 40 specified words to

Pretest and Immediate Posttest			
The government expressed its indignation over the way the incident had been handled.			
A) Gratitude	B) Anger	C) Grief	D) Concern
Delayed Posttest			
Susan's voice trembled with indignation			
A) Fear	B) Excitement	c) Anger	D) Anxiety

Figure 1. A sample question of the vocabulary test in the immediate and delayed posttests

be tested for short-term and long-term vocabulary retention were framed in two different sentences for the immediate and delayed posttests, respectively.

Attitude questionnaire

The students' attitudes toward literary works was measured employing a modified version of Yamashita (2007) attitude questionnaire. This five-point likert-scale questionnaire was basically designed to assess students' attitudes toward reading. Since the focus of the study was on the literary works, the phrase 'literary works' was added to all the items of the questionnaire as a modification. The validity of the questionnaire was verified by the experts in the field. Moreover, the reliability of the questionnaire was measured using Cronbach's Alpha formula to be 0.78. A translated version of the questionnaire was administered in order to facilitate comprehension.

Dictionaries

In the current study, two types of dictionaries were used by the participants: An Electronic Dictionary (ED) and a Pop-up Dictionary (PD). All of the readings were in electronic format. A CD-ROM dictionary called Longman Dictionary of Contemporary English (LDOCE, 5th Edition) was installed on the participants' laptops. For the other group, the texts were equipped with a pop-up dictionary, the Google dictionary extension for the Google Chrome browser that

provides definitions for 100% of the words. As illustrated in Figure 2, this dictionary shows a pop-up window with word definitions close to the word once users highlight the word or click/double-click on it. If in some cases, readers need the definition for the other senses of the word, they can simply click on the word 'more' in blue on the bottom right side of the popped-up window to immediately access other entries with their associated examples.

The definition for the same word by the electronic dictionary is depicted in Figure 3 as well.

It can be clearly noticed the definitions provided by the two dictionaries are adequate and comprehensible. Finally, regarding the PD, it is worth noting despite some potential drawbacks such as a lack of support for determining the appropriate contextual definition for a certain usage of an unknown word in a text, technically, it is expected that readers with an intermediate level of proficiency have developed sufficient ability to make an informed guess about the proper sense of the word based upon the context of a text. Corel Screen Capture Software was installed on all the laptops to keep a record of the participants' uses of the dictionaries. This software automatically records all actions taken by a user.

Interview

To obtain qualitative data, a semi-structured interview was conducted with 10 participants randomly chosen from the two groups. Semi-structured interviews were employed in L2/FL

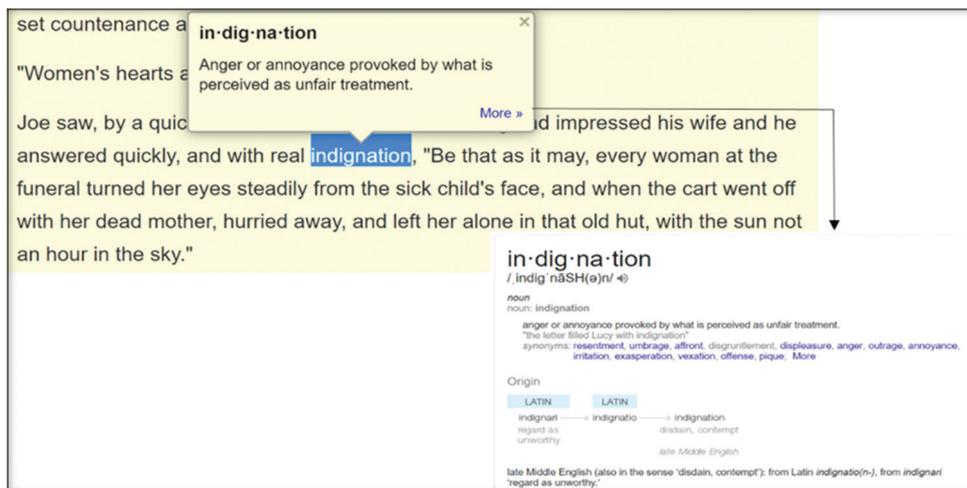


Figure 2. The Google pop-up dictionary with the text

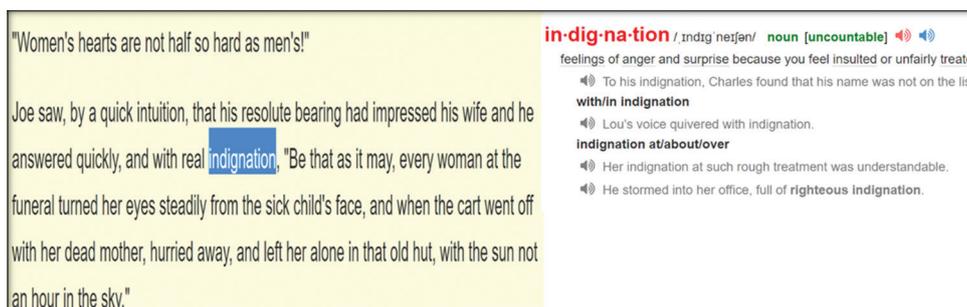


Figure 3. The Longman electronic dictionary with the text

research because they give the researcher the opportunity to investigate various sides of a learner's experience deeply (Brown, 2001; De Groot, 2002; Dörnyei, 2001). Five open-ended questions, based on the questionnaire, research questions, and the purpose of the study were utilized. The students were asked questions about whether they were used to read literary works before the course and how they felt about them, whether they were familiar with pop-up dictionaries before instruction, whether this technique helped them read the literary works more easily, and how they felt about literary works after the course. Answers were recorded and transcribed, and were read and re-read through for coding and categorizing in order to get an overall sense of the interviews.

Procedure

As a first step, the test of vocabulary was administered to all of the participants as the pretest to measure their knowledge of the words. Immediately after the vocabulary test, the questionnaire of attitude was given to assess students' attitudes toward reading literary works. Next, literary works were incorporated into the course. Same short stories from *www.americanliterature.com* were given to both the experimental and control groups. The presentation mode of the readings was on a computer screen for both of the groups but the experimental group had the privilege of using the PD while reading the short stories, whereas the control group employed the ED. The participants were encouraged to simply use the dictionaries at the definition level as the main purpose of looking up the unfamiliar words in the dictionary was to overcome the vocabulary obstacle for better comprehension of the stories. Otherwise, considering the dictionaries as learning tools and focusing on their specific content and construct during the act of reading, would potentially jeopardize the flow of reading to the point of comprehension failure within a reasonable time limit. After reading each story, students' comprehension was checked through class discussions. At the end of the semester, the test of vocabulary and the attitude questionnaire were administered again as the posttest to determine participants' vocabulary retention and attitudes toward reading literary works. It should be noted that throughout the course, there was no specified session to discuss the test items with the aim of teaching them the specified words. Therefore, the pre-test probably may not play a facilitative role in the vocabulary retention. Besides, there

was a four-month interval between the two tests without any special vocabulary instruction, which can significantly decrease the practice effect. For the purpose of gathering in-depth qualitative data about participants' attitudes toward reading literary works, an interview was conducted. Data saturation was reached after interviewing 10 random participants. In order to measure the subjects' delayed retention after six weeks, which under experimental conditions is known as "long-term retention" (Gu, 2003, p. 12), a delayed posttest was utilized. Lyster and Saito (2010) also suggest the acceptable range for conducting a delayed posttest is 2 weeks up to 6 weeks after the immediate posttest. The same specified vocabulary test items as the pretest were used for the delayed posttest, but the order and context of the items were changed.

RESULTS AND DISCUSSION

Vocabulary Test

The first two research questions of the study were framed to probe whether the use of a Google pop-up dictionary and a Longman electronic dictionary improves students' immediate and long-term vocabulary retention, respectively; and if yes, in which dictionary application (PD or ED) students' immediate and long-term retention is more improved.

In order to gather data about students' retention of the words immediately after the course, and six weeks later, vocabulary pretest, posttest and delayed posttest were administered in both the PD and ED groups. Paired and independent sample t-tests were conducted to examine if there was any significant difference between the two dictionary applications in terms of vocabulary retention. To satisfy the assumption of normality, Shapiro-Wilk tests were used and P-value was greater than .05 in all cases.

Paired sample t-tests were conducted to compare participants' performance on immediate and delayed posttests, respectively; and independent sample t-tests were run to investigate whether the difference in retention of words between the two groups (the ED and PD users) were significant. A summary of the results is presented in Table 1 below:

The results of the t-tests indicate that there are statistically significant differences between the participants' scores on the pretest of vocabulary and their immediate posttest in PD group $t(59) = 31.89, p = .012$ as well as the ED group $t(59) = 39.37, p = .026$. This confirms hypothesis 1-a that the use of a Google pop-up dictionary and a Longman electronic dic-

Table 1. Summary of statistical analysis

Analysis	Response variables	t	df	Sig (2-tailed)
1.a	Immediate vocabulary scores			
	PD	31.897	59	0.012
	ED	39.370	59	0.026
2.a	Delayed vocabulary scores			
	PD	28.647	59	0.091
	ED	37.636	59	0.108
1.b	PD vs. ED immediate posttest scores	1.782	118	0.077
2.b	PD vs. ED delayed posttest scores	1.166	118	0.246

tionary improves students' immediate vocabulary retention, respectively. Hypothesis 1-b which states that students' immediate retention is improved in PD and ED applications differently, is not validated since the p-value is statistically not significant ($t(118) = 1.78, p = .077$). These findings indicate that although the use of PD and ED has a positive influence on participants' immediate vocabulary retention, there is no statistically significant difference between using any of the two types of the dictionaries.

Hypothesis 2-a is not supported as its associated statistics show that students' long-term retention is not significantly affected by using PD $t(59) = 28.64, p = .091$ and ED $t(59) = 37.63, p = .108$, respectively. Hypothesis 2-b is rejected as well ($t(118) = 1.16, p = .246$). The results suggest that there is no statistically significant difference between the two dictionary applications.

Attitude Questionnaire and Interview

Research question three was phrased to answer whether the use of a Google pop-up dictionary and a Longman electronic dictionary has any effect on students' attitudes toward reading literary works, respectively; if yes, in which dictionary application (PD or ED) students' attitudes toward reading literary works are more improved.

To address this two-part question, a Likert-scale questionnaire, as a generally accepted way of assessing attitudinal variable, was employed. Paired sample t-test and independent sample t-test were run, respectively. Furthermore, a semi-structured interview was conducted to substantiate and supplement the data gathered through the questionnaire. The inferential statistics regarding this question are shown in Table 2:

The results of paired sample t-test indicate that there were statistically significant differences between the students' attitudes toward literature, and reading literary works, before and after the experiment, both in the PD group ($t(59) = 8.017, p = .008$) and the ED group ($t(59) = 12.526, p = .033$). It can be concluded that using both types of dictionaries had a positive effect on participants' attitudes. Based on the information extracted from the interviews, this change in the attitude was mainly due to the students' better comprehension of the literary works. As mentioned by one of the participants "it was always difficult to keep track of the story, mainly because I couldn't understand most of the words. Using the dictionary helped me a lot, and now I like reading literary works". Another interviewee also said, "I used to get discouraged and give up reading because I couldn't understand the text". It clearly shows that employing the investigated dictionaries while reading literary works facilitates the task, thus changes

readers' attitudes for the better. Therefore, hypothesis 3-a is validated. The Table also manifests that participants' attitudes toward reading literary works were differently affected in the two dictionary applications and this difference was statistically significant ($t(118) = 1.134, p = .012$), hence supporting hypothesis 3-b stating that students' attitudes toward reading literary works are improved in the PD and ED applications differently. In search of the reason for this difference, the interviews were deeply analyzed. Most of the interviewees reported that reading literary works while using the PD was much easier and enjoyable because they could understand the meaning of unknown words in just one click. It was also revealed from the interviews that using EDs in comparison to PDs were more time-consuming and distracting. That is, the information immediacy and the facilitative role of PDs in reading literary works were probably the key reasons for a more favorable attitude toward reading literary works.

DISCUSSION

The analysis of the data collected through vocabulary tests in L2 revealed that a significant difference was observed between the mean scores of the control and experimental groups from pretest to posttest on the vocabulary tests; In other words, both the experimental and the control groups significantly improved in terms of immediate vocabulary retention. Yet, using their specified dictionaries, the two groups failed to achieve significant improvement in long-term vocabulary retention. On the other hand, the comparative analysis of the experimental and control groups determined that there was no statistically significant difference between the posttest mean scores of the two with regard to either immediate or long-term vocabulary retention, that is, both the ED (in this case Longman electronic dictionary) and PD (in this case 'the Google pop-up dictionary') wielded relatively the same effect on immediate and long-term vocabulary retention. Notwithstanding all the attempts made to maximize the external validity of the research, one limiting factor hampered the investigation to yield an ideal outcome was the Google pop-up dictionary lack of support in searching for unknown phrases and idioms. Some of the interviewees highlighted this weak point. In addition, the integration of the Google pop-up dictionary into other reading environments, including PDF readers and Word processors might make a valuable contribution to the act of quality reading, in particular, reading of literary works.

The findings of this study are in keeping with some of the previous studies that determined the positive effect of electronic dictionaries and different pop-up dictionaries on vocabulary retention (Gettys, Imhof, & Kautz, 2001; LeLoup

Table 2. Summary of Statistical Analysis

Analysis	Response variables	t	df	Sig (2-tailed)
3.a	Attitude questionnaire scores	8.017	59	0.008
	PD			
	ED	12.526	59	0.033
3.b	PD vs. ED posttest scores	1.134	118	0.012

& Ponterio, 2005; Liu & Lin, 2011; Marie, Vinluan, Cruz, & Acuria, 2015; Mekheimer, 2012; Babaie Shalmani & Razmjoo, 2015). However, it is not in line with the findings of the study by Tabata-Sandom (2016), as the results of her delayed vocabulary posttest showed the pop-up dictionary is beneficial to long term vocabulary retention.

The attitude change of the ED and PD users toward reading literary works was investigated as well. The results of the comparison of the mean scores of the control and experimental groups revealed that both the ED and PD users fostered a significantly healthier attitude toward reading literary works. Furthermore, the comparative analysis between the two groups, along with the in-depth analysis of the interview transcriptions, determined that there were statistically significant differences in the attitudes of the PD and ED users toward reading literary works. That is, as compared with the ED users, the students who enjoyed using the PD fostered a significantly more favorable attitude toward literary works. Therefore, this study is theoretically consistent with McKenna's (1994) model of reading attitude in that the use of a pop-up dictionary encouraged the belief that successful comprehension of literary works is viable and accordingly, provided the readers with a satisfying experience of reading.

The findings of the present research are in line with the conducted study by Fry and Gosky (2007) as they found out that pop-up dictionaries provide a supportive intervention for improving reading comprehension, hence they are beneficial to the betterment of students' attitudes. Nevertheless, the focus of the current study was on literary works as literature supplies genuineness and authenticity and enlarges students' knowledge span as to the culture of the target language they attempt to learn.

The function of an LNB (low-noise block downconverter) to a satellite dish system presents a perfect analogy with the facilitative role of a PD interface while reading literary works. An LNB is a vital element that ensures the quality of the satellite signals to a television. An appropriate setup with the satellite dish provides the user with powerful signals, thus they can enjoy watching their programs without any pauses and disconnection. PDs do the same process while reading, as they decrease the noise of unfamiliar words to guarantee continuous reading without the problem of long pauses. However, EDs fail to transmit such strong signals to the readers, as whenever they face an unknown vocabulary, they should take their time to decontextualize with the aim of looking up the definition in the specified dictionary. Therefore, these tedious pauses might make it difficult to appreciate reading literary works.

It is worth noting, this study employs an interdisciplinary approach seeing that it took practical advantage of technological tools to nurture an upbeat attitude as a psychological attribute toward literary works. That is, the field of English language pedagogy capitalizes on various valuable disciplines to establish the required synergy as a means to achieve combined quality interaction. Furthermore, through the application of a mixed method for the data collection process, this balanced integrated approach was pursued to enrich our findings both quantitywise and qualitywise.

CONCLUSIONS AND IMPLICATIONS

There is heightened awareness regarding the merits of employing literary works in classes but scholarly attention to its efficacy is fairly remiss. The reason might be undergoing an unsettling experience teaching literary works which Showalter refers to as "the anxiety of teaching literature". (Showalter, 2003, p.3). This issue could be attributed to the incomprehensibility of the literary works, especially its lexicon.

A way to foster a positive attitude toward reading literary works is through an empowering and time-saving dictionary to provide vocabulary support for such texts. In the current study, reading literary works while doing unfamiliar word lookups by the use of the pop-up dictionary interface, has made the whole process easier for the learners because the pop-up window feature is readily available in the very same context. For this reason, the entire reading process is less demanding and more likely to be without failure. That means the readers are well encouraged to keep reading without the fear of losing track as a result of encountering unfamiliar vocabulary obstacles. Furthermore, the findings revealed both electronic and pop-up applications contribute to immediate vocabulary retention, however, their effect on long-term retention was insignificant. It can be inferred that the sustained use of these dictionaries might exert higher influence on learners' long-term retention. As a result, it is strongly recommended to gain advantage from the benefits provided by the investigated interface and make purposeful strides in the development of dictionaries for EFL learners with various proficiency levels.

To sum up, the supremacy of technology, particularly amongst the up-to-date generations, dictates its incorporation into language teaching pedagogy. In this study, the pop-up dictionary as a key reference tool proved more efficient in facilitating students' reading comprehension and accordingly, cultivating a healthier attitude toward reading literary works. Online vocabulary helpers like the Google pop-up dictionary add-on provide immediate accessibility to the meanings of unfamiliar words and as a result set reader's memory capacity free for optimized processing. Nonetheless, as compared to the large society of English language learners, only a very modest number bite into the succulent fruit of pop-up dictionaries that are of great use to digesting the content of literary works. Therefore, it is recommended material developers and especially English language pedagogues introduce and include the superfast and efficient vocabulary web tools in their regular curriculum.

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