

Students' Self-reported Assessment of E-Dictionaries

Yoko Hirata and Yoshihiro Hirata

Hokkai-Gakuen University

Sapporo, Japan

{hira, hirata}@eli.hokkai-s-u.ac.jp

Abstract. In recent years e-dictionaries have been getting enormously popular in Japan. A variety of small pocket electronic dictionaries (PEDs) are gaining popularity, especially among high school and university students. Dictionaries which are contained in personal digital assistants (PDAs), including the iPhone and cellular phones, have also been used by students. In addition to these handy pocket-sized tools, dictionaries are now available online, free of charge, created by publishers and educational institutions. Recently, computers have become accessible to the public in Japan, these online dictionaries have recognized as useful tools for students to study with. However, little research has been conducted regarding how students view these different kinds of e-dictionaries. This study examines students' perceptions of different types of e-dictionaries and looks at what they think about various effects of dictionary use in different educational situations. The results of this study suggest that advantages and disadvantages of e-dictionaries are perceived differently in different educational contexts. The findings also suggest some important implications regarding how instructors should encourage students to utilize these dictionaries in the classroom.

Keywords: evaluation, electronic dictionaries, language learning.

1 Introduction

Recently more and more Japanese university students use websites as various resources to accomplish tasks and assignments. When reading English websites, in particular, students are always required to use English dictionaries. These dictionaries can be divided into three types of media: paper dictionaries, pocket electronic dictionaries (henceforth PEDs), and online dictionaries [1]. Online dictionaries include not only those on desktop computers, but also those in mobile phones which are regarded to have great benefits of being readily usable [2]. The number of mobile phones users has been increased and, accordingly, various educational applications of mobile phones have been researched [3] [4]. The data for mobile phones used in Japan in 2003 show that approximately 55 million mobile phones are capable of browsing internet [5]. However, the dictionaries in mobile phones are not those frequently used by Japanese secondary and tertiary students. There are two major reasons why consulting dictionaries on a mobile phone is not an easy task for such students. First of all, many dictionary publishers have provided paid consulting systems, such as 'Pocket Eijiro'

for mobile phone users [5]. Using this kind of fee-based service is a tremendous financial burden for students. Secondly, many mobile phones presently available still do not have traditional keyboards and even ones with small keypads are not convenient for users to consult dictionaries. Because of these limitations, desktop computers and PEDs are more widely used for consulting dictionaries than mobile phones. In secondary schools, in particular, PEDs are must-have items for students in preparation for taking the university admission test. The major reason for this is because PEDs are light-weight and portable 'with a large database of lexical entries from several dictionaries' [1]. On the contrary, in tertiary institutions, as students' use of the web has been dramatically increasing, many different types of online dictionaries have been gaining in popularity among students. This is because many institutions now provide computer facilities and online dictionaries are readily available for anyone for free of charge. Like PEDs, speed is also perceived as the main advantage of online dictionaries. These dictionary websites are, therefore, regarded as powerful language sources for language learners in second/foreign language acquisition [1]. Although this technology has been seen to enhance the students' learning, there are not many educators who understand the potential benefits of these e-dictionaries [6]. Despite the fact that there are various studies which focus on the comparison between the paper-based dictionaries and PEDs [7] [8], there is still little research addressing how different e-dictionaries can be best used for students to facilitate their learning. Because the dictionaries which are easy to use can allow students to have control over their learning [9], instructors should be aware of what kinds of dictionaries could be recommended to students and how they should be used in different educational situations.

2 Research Background

2.1 PEDs

As many Asian students do, almost all Japanese university students keep using PEDs as indispensable tools for their studies [9]. A study found that 88% of the 781 students surveyed were PED owners [8]. This students' preference of PEDs is due to the Japanese 'educational systems which put more emphasis on accuracy' [9]. There are various brands of PEDs available in Japan, for example, Casio, Seiko, and Sharp, and all of them contain at least three types of English dictionaries: English-Japanese bilingual, Japanese-English bilingual, and English monolingual. Many PEDs have the similar major features and some advantageous functions such as high-speed data retrieval and record keeping of the most recently looked-up entries [7]. PEDs also have the *jump* function which gets the user to change the dictionaries for cross referencing without losing the key word [10]. Another current common feature is the *voice* function which helps the user to check pronunciation. Other main features include a system that can identify the user's handwriting and voice [11] so that the user does not have to use the keyboards for input. In addition to these useful functions of dictionary consultation, the recent PEDs contain exercises, games, and even educational movies. Although PEDs with these various effective features are seen as a 'preferable alternative to paper dictionaries' [7], some instructors have a negative

attitude towards the students' use of PEDs. A study indicates that there is a possibility that the speed and ease of PEDs is disadvantageous for learning vocabulary [9]. Another critical attitude towards PEDs includes the fact that these features are often created without thinking of users' actual preferences in different situations and some features are beyond the users' abilities to understand [1]. Although there is a study which shows that PEDs are not significantly different from paper-based dictionaries when students use them for acquiring vocabulary [7], studies on PEDs in language education are still relatively scarce and more in-depth research is needed.

2.2 Online English Dictionaries

The number of online English dictionaries has rapidly increased. Up until recently online dictionaries have been regarded mostly as supplementary resources for language learning. However, for Japanese students who have had a very limited exposure to authentic English in everyday life, online dictionaries have been well integrated into the classroom when reading English websites and the benefit of using these dictionaries is regarded to be of the utmost importance [12]. Other reasons also explain the increased use of online dictionaries in recent years. First of all, different types of online dictionaries have been developed for different types of users in various situations and they are easily accessible from almost everywhere. Students can easily consult them on the screen whenever they encounter an unknown word while reading online reading materials. Secondly, online dictionaries usually have major features which include a system with 'useful hyperlinks and speedy navigation' [1]. Because they are non-linear, the user can simultaneously consult idioms, phrasal verbs, and compound words, and get search results instantaneously. Thirdly, online dictionaries are suitable for any level of English because there are various kinds available to choose from. The dictionaries can also help the user look up definitions which are easy to understand and various examples in full sentences through several different dictionaries [11]. Despite these rather obvious benefits of using online dictionaries, there have been few studies which compare the different features the online dictionaries contain. In addition, not enough research has been conducted which examine online dictionaries from the perspective of Japanese students [11]. Investigating the positive and negative effects of using online dictionaries will help the student to make the most of them and the instructor to teach in a better way in the classroom.

3 Purpose of the Study

The purpose of this study was to examine Japanese university students' preferences of using different e-dictionaries in helping them accomplish different types of reading tasks. The focus was placed on the effectiveness of e-dictionaries viewed by individual students in different educational situations.

Research questions

1. How do students perceive two different types of e-dictionaries: PEDs and online dictionaries?

2. What are the relationships between the students' educational contexts and background, such as computer skills, and their perception of using different e-dictionaries?

Research hypotheses

1. The students will highly value PEDs rather than online dictionaries from every point of view.
2. The students, who are frequently reading English websites, will prefer using PEDs to online dictionaries and understand their effectiveness.

4 Methodology

4.1 The Setting and Student Profiles

The subjects of this study (n=30) were lower intermediate learners of English enrolled in a university English course. They consisted of 28 males and 2 females, who were full time students between the age of eighteen and twenty. The course was offered by the Department of Electronics and Information Engineering and it was a semester-long hybrid course which provided both a traditional face-to-face learning environment and an online environment. The course was held once a week for ninety minutes in a computer lab. The objective of this course was to help students develop their English skills. However, the emphasis was also placed on understanding how to use the navigational functions of web browsers and acquiring basic computer literacy. Although this was an English course, the course was conducted both in Japanese and English since the students' English communication skills were not high. Although the students were enrolled in the Department of Electronics and Information Engineering, the majority of them thought that they were not fully skilled in using computers. There were four students who stated that their computer skill was 'very low' and four students who stated that their computer skill was 'high'.

4.2 Procedures

The project described in this paper had two stages: searching for effective online dictionaries and evaluating the best of them. At the beginning of the first stage, the instructor explained the various uses of online English dictionaries in different contexts. This included a detailed introduction of online English dictionaries and their important features. Students were asked to examine some online English dictionaries as samples and to evaluate the quality and the appropriate use of the dictionaries for their own study. The criteria used for the evaluation at this stage were the measures for evaluating ESL/EFL materials [13]. The criteria were modified to fit the present study and were divided into three major sections: 'Navigability', 'Explanation & Examples', and 'Attractiveness'. These measures are seen as effective in that they provide students with a standard for evaluating websites [14]. On the second stage, the students were required to choose online English dictionaries on their own for their task and examine their preferences. The tasks included translating a paper-based textbook and computer-based text, as well as doing English exercises on the computer and in the textbook. If students didn't understand the meaning of the word or

expressions even though they consulted a dictionary, they were asked to change to another dictionary to try to find more suitable meaning.

Some examples of online English dictionaries the students chose were as follows.

- <http://www.yourdictionary.com/>
- <http://www.wordcentral.com/>
- <http://www.onelook.com/>
- <http://www.merriam-webster.com/>
- <http://dictionary.cambridge.org/>
- <http://www.ldoceonline.com/>

A student’s sample evaluation is shown below in Table 1, 2, and 3.

Table 1. A student’s sample evaluation: Navigability

Navigability		Comments
Is everything clearly indicated? Easy to use? Are the icons easy to follow?	4	Examples which contained the key word and the usages are displayed without too much inconvenient scrolling.
Does the website link to other dictionaries, for example thesaurus, or language information? Is the dictionary based on large language sources?	4	This dictionary site is based on the database containing Webster’s New World Law Dictionary, Science Dictionary, Webster’s New World College Dictionary, Wall Street Words. It is convenient for me to choose what I want to consult directly from the websites.
Is the dictionary well organized? Does it produce audible pronunciation of the word? American English or British English? Does it help you notice the correct pronunciation of a word?	3	This dictionary has the spoken pronunciation function. I can check the pronunciation of the word and also repeat what I have heard. However, the voice is very artificial and I think it is ideal that I can slow down the speed of the voice to make it clearer for me.

The students’ evaluation ranged from a simple, superficial explanation to comprehensive, detailed explanations. Although each major section was subdivided into three categories with each subsection worth 5 points, the point the students gave for each subsection was generally 3. After evaluating some online dictionaries, the students filled in the evaluation forms and submitted them to the instructor through a learning management system.

At the end of the course, the students were provided with a questionnaire which attempted to find out how the students perceive online dictionaries they consulted and a PED that they have. The questions in the questionnaire were based on the previous study examining students’ attitudes to learning grammar with web- and book-based contexts [15]. Twenty six questions from the questionnaire referred to the evaluation

based on the difference between the online dictionaries and the PEDs. Most of the questions had a 10-point Likert scale, with "1" representing "strongly disagree" and "10" representing "strongly agree". The points were totaled and averaged, and a standard deviation was also attained. The data is presented in this paper as mean \pm SD.

Table 2. A student's sample evaluation: Explanation & Examples

Explanation & Examples		Comments
Is the definition or the meanings of the target word clearly shown? Are they written in plain English?	3	The definition and the meanings of the words I have consulted are easy to understand. But I had some problems understanding the meaning of some definitions, so that I had to consult another dictionary to make it clear.
Does it contain many useful explanations of how to use the word? Does it provide you with a variety of examples? Is it easy to find out common usage of the word or phrase and how it is used with other words?	3	Examples are abundant but the information of common usage of the word or phrase is insufficient. I have noticed that there are many over-simplified explanations for lower-level students like me.
Does it have idioms, phrasal verbs or sentences including the target word?	2	This dictionary does not contain many idioms nor phrasal verbs.

Table 3. A student's sample evaluation: Attractiveness

Attractiveness		Comments
Does the dictionary attract your interest? Is the dictionary interesting to explore?	4	Unlike my portable electronic dictionary, this online dictionary has a wide range of features. Although this dictionary doesn't have any activities for the users to test themselves on the key words, I am happy to use it more like a paper dictionary based on its large database.
Does the website contain attractive visuals? Does it have pictures or illustrations?	2	This dictionary doesn't have any attractive visuals. It doesn't have pictures or illustrations. Like a paper dictionary for advanced learners, this dictionary seems to be more suitable for students with high English proficiency levels.
Who is the intended reader? Is the word level clearly shown? Is it graded, for example, with stars, to show its frequency?	3	The intended reader is probably an advanced learner of English, because the definition of some key words I consulted contained difficult words that I didn't know. This dictionary wasn't graded with stars, either, so that I couldn't find out the frequency of the word.

Although, initially the students' computer levels were divided into four groups: 'very low', 'low', 'high', and 'very high', in the analysis, the levels of computer skills were divided into two groups: 'high' and 'low'. The different computer levels were compared by *t*-test with the results of the students' ratings based on the 26 questions mentioned above. In addition, the results of the students' ratings were analyzed by using Spearman's correlation to determine correlations between responses and significant factors underlying their responses. Correlation is significant at the .01 level (2-tailed).

5 Findings

The findings obtained by the questionnaire are shown below. As shown in Figure 1, with regard to the students' views on reading English websites, more than half of them (26 students) thought reading English websites was difficult. On the other hand, about half of the students (15 students) thought reading English websites was necessary. In addition, there was only one student who thought reading English websites was boring.

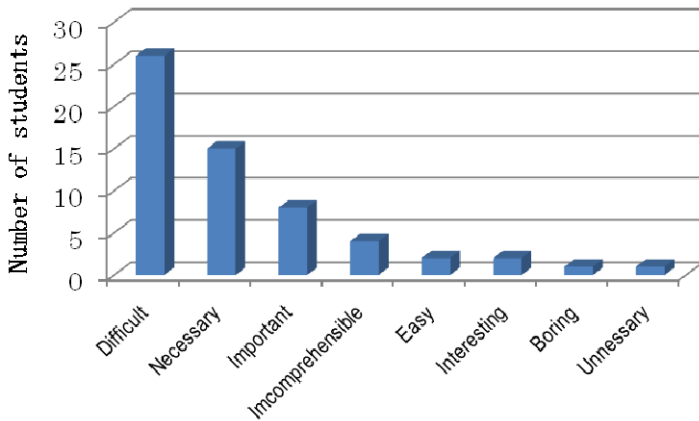


Fig. 1. Students' views on reading English websites

With regard to the frequency of reading English websites, almost 85% of students stated that they didn't read them even once a week. None of the students read English websites every day.

Table 4. Dictionaries used with a paper-based traditional textbook in a computer lab (%)

Dictionary types	Online	PEDs
Percentage of students	4.48	6.07

Table 4 and 5 show that the dictionary the students preferred to use when they read different types of texts. When they read paper-based textbook, approximately half of the students preferred online dictionaries and the other half prefer PEDs. When they read English websites, more than 93% of the students preferred online dictionaries. Table 6 and 7 show that the dictionary the students preferred to use when they take different types of examinations. In terms of the paper-based English examinations, approximately half of the students preferred online dictionaries and the other half preferred PEDs. In terms of the computer-based English examinations, more than 83% of the students preferred online dictionaries.

Table 5. Dictionaries used when students read English websites (%)

Dictionary types	Online	PEDs
Percentage of students	6.6	93.4

Table 6. Dictionaries used when students answer paper-based English exercises (%)

Dictionary types	Online	PEDs
Percentage of students	53.4	46.6

Table 7. Dictionaries used when students answer computer-based English exercises (%)

Dictionary types	Online	PEDs
Percentage of students	16.6	83.4

Table 8 and 9 show the students' view on online dictionaries and PEDs respectively. When compared with these Tables, it is clear that not many students thought that online dictionaries were appropriate to their English level. Averages (\pm SD) of these responses were 4.87 (\pm 1.96) and 6.33 (\pm 1.81) respectively. In addition, many students thought that PEDs were more user-friendly and easier-to-use than online dictionaries. With regard to language examples and usages and detailed instructions about them, the students highly valued online dictionaries. The students also highly valued online dictionaries in that they thought the dictionaries would help them understand the importance of learning English, and therefore, enjoy studying English. The Tables also show that the students thought that online dictionaries had simpler and clearer screen layout than the PEDs. The Average (\pm SD) of this response was 6.45 (\pm 1.95).

Table 8. Students' view on online dictionaries

	Mean (SD)
1. The online dictionaries were appropriate to my English level.	4.87 (1.96)
2. The online dictionaries were appropriate to my study needs.	5.26 (1.98)
3. The online dictionaries provided me with various language examples and usages.	6.90 (1.78)
4. The online dictionaries helped me enjoy studying English.	6.10 (1.97)
5. The online dictionaries explained examples and usages in an easy way.	6.10 (1.81)
6. The online dictionaries gave me detailed instructions about examples and usages.	6.35 (1.78)
7. The online dictionaries helped me enhance the efficiency of my English study.	6.16 (2.21)
8. The online dictionaries helped me understand the importance of learning English.	6.00 (2.21)
9. The online dictionaries had a simple and clear screen layout.	6.45 (1.95)
10. The online dictionaries were easy to navigate.	5.84 (1.90)
11. The online dictionaries were user-friendly.	5.48 (2.43)
12. The online dictionaries were easier-to-use than PEDs.	5.39 (2.33)
13. The online dictionaries would help me improve my English proficiency level.	5.35 (2.04)

(N = 30).

The results of the *t*-test indicate that, with regard to the difference between the students who preferred online dictionaries and who preferred PEDs, the students, who preferred online dictionaries when taking paper-based exercises, thought that they contained various examples and usages, and therefore the dictionaries would help improve their English skills ($t = 2.20$, $t = 2.12$ respectively; $p < .05$). On the other hand, the students who preferred PEDs highly valued the usability of the PEDs when they consult paper-based textbooks, even if online dictionaries were available ($t = 2.06$, $p < .05$). In addition, the students, who preferred PEDs when reading English websites, thought that the screen layout of the PEDs was not suitable ($t = 2.96$,

$p < .05$). With regard to online dictionaries, the students who frequently read English websites thought the dictionaries were appropriate to their study needs and therefore the dictionaries helped them enhance the efficiency of their English study ($t = 2.53$, $t = 2.08$ respectively; $p < .05$). With regard to PEDs, the students who frequently read English websites thought the PEDs had a simple and clear screen layout, and also the PEDs helped them understand the importance of learning English and therefore enjoy studying English ($t = 2.59$, $t = 2.83$, $t = 3.00$ respectively; $p < .05$). The results of the t -test showed that there were no significant differences between the students' frequency of reading English websites and the rest of the questions.

Table 9. Students' view on PEDs

	Mean (SD)
1. The PEDs were appropriate to my English level.	6.33 (1.81)
2. The PEDs were appropriate to my study needs.	5.97 (1.71)
3. The PEDs provided me with various language examples and usages.	5.90 (1.92)
4. The PEDs helped me enjoy studying English.	5.97 (2.06)
5. The PEDs explained examples and usages in an easy way.	5.90 (2.01)
6. The PEDs gave me detailed instructions about examples and usages.	5.70 (1.91)
7. The PEDs helped me enhance the efficiency of my English study.	6.23 (1.50)
8. The PEDs helped me understand the importance of learning English.	5.60 (1.73)
9. The PEDs had a simple and clear screen layout.	4.90 (2.17)
10. The PEDs were easy to navigate.	5.87 (2.06)
11. The PEDs were user-friendly.	6.21 (1.78)
12. The PEDs were easier-to-use than online dictionaries.	6.24 (2.01)
13. The PEDs would help me improve my English proficiency level.	5.43 (1.52)

(N = 30).

Table 10. Correlation between factors for using online dictionaries

Online dictionaries...	helped me enjoy studying English.	explained examples and usages in an easy way.	gave me detailed instructions about examples and usages.	helped me enhance the efficiency of my English study.	helped me understand the importance of learning English.
were appropriate to my study needs.	.697**	.627**	.482**	.695**	.691**
provided me with various language examples and usages.	.617**	.714**	.774**	.750**	.581**
explained examples and usages in an easy way.	.711**	1.00	.800**	.709**	.578**

Notes: Correlation Matrix ($N=30$), ** $p < .01$.

Table 10 shows that there was a strong correlation ($r < .8$) between those who thought the online dictionaries explained examples and usages in an easy way and those who thought the online dictionaries gave them detailed instructions about examples and usages ($r = .800$, $p < .01$). There was a moderate correlation ($r < .6$) between those who thought the online dictionaries were appropriate to their study needs and those who thought the online dictionaries helped them enhance the efficiency of their English studies ($r = .695$, $p < .01$). The correlation of .691 was also significant between those who thought the online dictionaries were appropriate to their study needs and those who helped them understand the importance of learning English. There was a moderate correlation between those who thought the online dictionaries provided them various language examples and usages and those who thought the online dictionaries gave them detailed instructions about examples and usages ($r = .774$, $p < .01$). There was also a moderate correlation between those who thought the online dictionaries provided them various language examples and usages and those who thought the online dictionaries helped them enhance the efficiency of their English study ($r = .750$, $p < .01$).

In Table 11 below, there was a strong correlation between those who thought the online dictionaries were easier-to-use than PEDs and those who thought the online dictionaries were user-friendly ($r = .850$, $p < .01$). There was also a strong correlation between those who thought the online dictionaries were easier-to-use than PEDs and those who thought the online dictionaries would help them improve their English proficiency level ($r = .823$, $p < .01$).

The correlation of .739 was significant between those who thought the online dictionaries were user-friendly and those who thought the online dictionaries would help them improve their English proficiency level.

Table 11. Correlation between factors for using online dictionaries

Online dictionaries...	were easier-to-use than PEDs.	would help them improve their English proficiency level.
were user-friendly.	.850**	.739**
were easier-to-use than PEDs.	1.00	.823**

Notes: Correlation Matrix (N=30), ** $p < .01$.

6 Discussion of Findings

Although the sample size of the present study was small, the findings revealed students' preferences of dictionary use in different contexts and their distinctive views on online dictionaries as compared with PEDs. The findings suggest that, although some students were totally new in consulting online dictionaries, the majority of students appeared to realize that these two different types of dictionaries had both advantages and disadvantages. This result is in accordance with a study by Chen [7]. In terms of the relationship between the educational situations where students were required to use the dictionaries and the students' preference of the dictionaries, there were several distinctive findings. First of all, when students engaged in the paper-based study, approximately half of the students preferred online dictionaries and the other half of the students preferred PEDs. However, when they engaged in computer-based study, the results indicated that the majority of students preferred online dictionaries. The findings also suggested that the students highly valued the various language examples and instructions provided by online dictionaries. They believed that these ample resources would help them choose the right meaning of the word and find synonyms or antonyms of a word [1], and, as a result, assist them with the improvement of their English skills.

Secondly, the results of the *t*-test indicated that the students who were accustomed to English websites thought that online dictionaries helped enhancing the efficiency of English study and, therefore, improving their English proficiency level. These students preferred online dictionaries whether they were doing paper-based or computer-based exercises. These results suggest that students' experiences using websites had an impact on the use of online dictionaries. It can readily be said that those who are not new in browsing websites benefit more from the use of these dictionaries. On the contrary, these students didn't deny the value of PEDs and stated that PEDs made them enjoy learning English as well. It is also important to note that the students who were accustomed to using PEDs thought that the screen layout of PEDs was not satisfactory while doing computer-based exercises. The findings also indicate that many students thought PEDs had less detailed information than online dictionaries. These results show that, as Chen suggested, 'a combined and complimentary use' of different types of dictionaries should be encouraged [7] depending on the situation where students use e-dictionaries.

Lastly, the findings revealed the students' problems of their inability to use online dictionaries efficiently. These students thought PEDs were more user-friendly and easier-to-use. User-friendliness seems to be the key factor to improve students' English levels. In addition, the findings suggest that choosing online dictionaries which are appropriate to their needs enables students to enhance the efficiency of their English study. These results suggest that the main cause of the problem appeared to be the students' lack of chance to be trained to find the right dictionaries from the websites. As the findings suggest, the evaluation of online dictionaries was one of the effective methods to develop students' awareness of how to choose the best dictionary for themselves. The criteria used in the evaluation in this study helped students assess the effectiveness of the dictionary they needed. This result is in accordance with the previous study [14]. Looking up a word or phrase in a dictionary is basically a rather passive process, and in order to make this process more active, the students' self-reported assessment employed in this study, including the translation tasks and exercises, seemed to be a perfect tool to encourage students to make maximum use of various online dictionaries. So far, there are not many suggestions available concerning how to evaluate and choose effective online dictionaries for students when they try to accomplish different language tasks and examinations using online resources. The instructor should provide students with detailed dictionary instruction and guidance [7] and encourage them to make better use of various functions of online dictionaries.

7 Conclusions

This study examines how Japanese university students evaluate the usefulness of PEDs and online English dictionaries in different study contexts. The results reveal their opinions on advantages and disadvantages of these two types of dictionaries. Although online dictionaries are a rather new development, the findings indicate that online dictionaries can be as effective as PEDs and there are different roles to play in different educational contexts. The students' evaluation of dictionaries enhances their awareness of how to find a suitable dictionary for themselves and improve their reference skills. Although this study had some limitations concerning the small number of respondents, the results shed light on how e-dictionaries can be used to support their online learning.

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