

## Paper or Electronic Dictionaries: A Comparison

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The use of dictionaries in English language classrooms is common and has been widely discussed in EFL literature. However, with rapidly developing technology, the choice of available dictionaries is expanding. Despite an apparent shift towards mobile phone usage by learners, there are still a large number of learners using personal electronic dictionaries (PEDs) and even paper dictionaries (PDs; Chen, 2010; Dziemanko, 2010). In this paper I address how usage of dictionaries can affect L2 learners' word knowledge. This study was aimed at uncovering learners' attitudes towards both PEDs and PDs. Eight participants from a private Japanese university were selected to take part in interviews and a dictionary task. Findings from this study suggest that learners look more favourably on PED usage than on PD usage. Furthermore, the results suggest that neither dictionary has a significantly higher chance of increasing a learner's ability to understand a word.

英語学習の授業で辞書が一般的に使用されていることは、EFL研究でこれまでも広く議論されてきている分野である。しかしながら、急速なテクノロジーの進化とともに、用いる辞書の選択肢は増える一方である。ほとんどの学生がスマートフォンを使用しているにも関わらず、電子辞書 (PED) や、紙辞書 (PD) (Chen, 2010; Dziemanko, 2010) を用いる学生が多数存在する。この論文は、学生の PED や PD に対する考え方を明らかにし、辞書の使用が第二言語学習者の語彙知識にどう影響するか調査することを目的とする。日本の私立大学から8名の参加者が選出され、インタビュー及び辞書を使っての課題が与えられた。この調査の結果、学生は PED をより好んで用いることが明らかになり、さらに、どちらの辞書を使用しても、著しい語彙知識向上の可能性が見られないことも判明した。

With the emergence of portable electronic dictionaries (PEDs), learners have found themselves with an alternative to paper dictionaries (PDs). If, as the evidence seems to suggest, PEDs are becoming more popular with learners, the questions about how a learner's choice of dictionaries affects his or her ability to understand and therefore acquire knowledge of a word are becoming more important (Bower & McMillan, 2007). Laufer and Hill (2000) supported the use of PEDs in the language classroom because "if a pedagogical tool is popular with learners, the chances are that it will be beneficial for learning" (p. 68). However, there is also evidence from other researchers about some of the possible disadvantages of PEDs (Boonmoh & Nesi, 2008; Kobayashi, 2008).

This study was aimed at adding to the research in this area by investigating the usage of dictionaries, specifically English-English PEDs and PDs, by L2 learners. The study was designed to examine how the usage of PEDs and PDs affects learners' ability to identify and correctly use lexical items as well as to gain some insight into their attitudes towards both types of dictionaries.

### Review of the Literature

#### *Dictionaries and Vocabulary Knowledge*

To understand how learners' choice of dictionaries could affect how well they are able to acquire knowledge of new words it is first essential to understand what it means to know a word. Nation (2001, p. 27) divided word knowledge into three categories: form, meaning, and use. Table 1 displays what information a dictionary contains in relation to these categories of word knowledge.

**Table 1. Dictionary Information and What Is Involved in Knowing a Word**

Category	Subcategory	R or P	Dictionary information
Form	Spoken	R	
		P	pronunciation, alternative pronunciations
	Written	R	
		P	spelling, hyphenation (syllabification)
	Word parts	R	etymology
		P	inflections, derived forms
Meaning	Form and meaning	R	derived forms, etymology, examples
		P	
	Concepts and referents	R	meanings, illustrations
		P	examples
	Associations	R	examples
		P	synonyms, opposites, superordinates
Use	Grammatical functions	R	
		P	grammatical patterns, examples
	Collocations	R	
		P	collocations, examples
	Constraints on use	R	
		P	frequency, register, style, etc.

Note. R = receptive; P = productive; source: Nation (2001, p. 292).

Although it is rare for learners to gain complete knowledge of a word after a single encounter (Nagy, Herman, & Anderson, 1985), it is possible for them to gain significant knowledge about that word through that encounter. The information contained in a dictionary (such as the correct pronunciation of the word, common collocations and chunks of language that illustrate how the word is commonly used, and grammatical information about the word) can assist learners in understanding and using the word correctly. This is important because both receptive and productive word knowledge are required for learners to learn a word (Nation, 2001); this means that to truly know a word learners must be able

to recognize it in both written and oral forms (receptive knowledge) and also be able to use it effectively in both spoken and written English (productive knowledge).

Learner's dictionaries are one type of dictionary that can be especially beneficial for L2 learners because they contain information about a word that has been included specifically for the purpose of assisting language learners to understand and acquire new vocabulary. Although learner's dictionaries have been "influenced by what is thought to constitute 'complete' native speaker lexical knowledge" (Schofield, 1997, p. 281), there are significant differences between these dictionaries and dictionaries designed for native speakers. First, learner's dictionaries use simplified language in the definition of the word. This helps to reduce the possibility of a learner finding unknown words within definitions, as that would require them to look up additional words in order to understand the definition. Learner's dictionaries not only provide learners with clearer, simpler definitions and example sentences, they also contain "data that is of particular use for learners" (Thornbury, 2008, p. 61) such as information on the frequency of the word, more detailed grammatical information, or metalanguage explaining the usage of a word (Cowie, 1999). Thornbury (2008) added that learner's dictionaries can also offer learners advice on how to avoid typical learner errors. All these features significantly increase the opportunity for learners to get information about unfamiliar vocabulary items. This, in turn, makes it more likely that they will be able to learn the word.

### *A Comparison of PEDs and PDs*

As PEDs have become more popular in the classroom, a number of researchers have tried to determine the effectiveness of PEDs in relation to PDs for language learners. As a dictionary needs to contain a large amount of information about the word in order for the learner to be able to acquire sufficient knowledge about the word (see Table 1), one area that these researchers have focused on is the amount and type of information the different types of dictionaries contain. Chen (2010) claimed, "PEDs are thought to be inferior in quality to PDs for containing less detailed or accurate information" (p. 292). Boonmoh and Nesi (2008) supported this argument in their study that found that the information in PEDs was not as detailed as in PDs.

A further disadvantage of PEDs, in comparison to PDs, is that the relatively small size of the screen limits the amount of information that can be seen at one time. Kobayashi (2008) explained that this small screen size could potentially cause learners problems because they have to scroll down to see all the information given under one headword and, therefore, may fail to pick up incidental information, such as alternative meanings, included in the definition of that word. Stirling (2003) suggested that the size of the screen

could account for some of the criticism regarding PEDs' lack of information. She argued that PEDs may be able to handle the same amount of information as PDs, but that it is not easily displayed on PEDs because of the screen size. Koren (1997) further supported the argument that the easier access to information afforded by PDs' large pages makes them easier for learners to use than PEDs because larger page size "enables the user to see the word family, thereby exposing him or her to more varieties of the same word" (p. 12).

Despite these disadvantages of PEDs, there are a number of ways in which PEDs have been shown to be more beneficial to learners than PDs. The first and most apparent advantage of PEDs is their size and therefore their portability and convenience. Learners who participated in Tang's (1997) study pointed out that this was a major factor for why they chose a PED over a PD.

As well as being easier for learners to carry, many modern PEDs allow learners to hear how words should be pronounced. Research carried out by Stirling (2003) showed that learners appreciated the voice function of PEDs. She cautioned that the quality of the recording in some PEDs was questionable, but when the recording is of a decent quality it can aid the learner in acquiring knowledge of the spoken form of a word.

One final advantage of PEDs is the time taken to look up a word. Research overwhelmingly points to PEDs being quicker than PDs to use. Koyama and Takeuchi (2007) gave participants a reading task in which they used either a PED or a PD to look up unknown words. Participants using the PED were able to look up "a greater number of words in a shorter time owing to the superior search function of the PED" (p. 118). Dziemanko (2010) argued that this faster look-up time is a significant advantage for PEDs because "dictionary users grow daunted by the demanding consultation of a paper dictionary" (p. 266). She further argued that PEDs may help the reader process the information they are reading because they do not have to spend as much time and effort looking up unknown words.

## Research Questions

The research questions that this study was aimed at are as follows:

- RQ1. How does the use of a PED or PD affect a learners' ability to pick the correct definition of a word and use the word correctly in a sentence?
- RQ2. What are the learners' views on dictionary usage, with specific focus on their ideas about PEDs?

## Method

### Participants

Eight 2nd-year English majors studying at a private university in Japan were selected to take part in this study. Participants all owned and regularly used PEDs. The participants were all approximately at the B1 level on the Common European Framework of Reference for languages (CEFR).

### Procedure

The study was conducted in three stages. The first part of the study was a semistructured pretask interview (the questions can be found in Appendix A). This was followed by a dictionary task (Appendix B) that the participants completed on their own. Finally, the students were asked to participate in a posttask semistructured interview to determine what effect the dictionary task had on their perception of PDs and PEDs (the questions can be found in Appendix C).

The pretask interview consisted of five questions. Participants were asked what type of dictionary they usually used and to describe what they perceived to be the advantages and disadvantages of that dictionary. Then they were asked whether they thought that the definitions and example sentences found in the dictionary they normally used were clear. Finally, they were asked whether they believed their dictionary provided enough information for them to understand the words they were looking up. The interviews were recorded and then transcribed by the researcher after the interviews had been completed.

Following the pretask interviews, participants were given a copy of the *Cambridge Advanced Learner's Dictionary* and asked to only use the English-English function on their PEDs for the dictionary task. It was recognized that the participants would probably not be using the learner's dictionary function of their PED, but it was determined it would be easier for the learners to complete the task if they were able to use the dictionary that they were already familiar with. Learners were asked if they were familiar with the target vocabulary, as this would have affected the outcome of the task. None of the students reported being familiar with the target words or phrases. The researcher timed the participants while they completed the second part of the study, the dictionary task.

The task consisted of 10 questions separated into two sections. Questions 1-5 were to be completed using only the supplied PD. Questions 6-10 were to be completed using the learners' own PED. Each question contained two distinct parts. The first part was designed to uncover the learner's receptive knowledge of vocabulary. This consisted of a simple sentence with a word or words underlined. The underlined words were chosen

because of their infrequency. All the selected words were either words (such as *beavering* or *flimsy*) that do not occur on either the General Service List (GSL) or the Academic Word List (AWL; Cobb, 2016) or were common words used in an idiom that the learners would not be expected to understand (such as the expression *clear as mud*). Care was taken to ensure that the context of the sentence would not make the meaning of the word obvious. Each sentence was followed by a list of three possible definitions. One of the three choices was the correct answer, another was nearly correct but slightly different, and the final possible choice was completely wrong. The correct definitions were taken from a different but comparable dictionary to the one provided for the task, namely the *McMillan English Dictionary for Advanced Learners*. Beneath the multiple-choice answers a space was provided for the participants to write an example sentence of their own using the underlined word or words. During this stage of the task participants were told that they could not simply copy sentences directly from the dictionary, rather they had to use the dictionary to make their own sentences. This was designed to give participants the opportunity to demonstrate their productive knowledge of the given vocabulary item using the information provided in the dictionary.

For the receptive part of the dictionary task the participants' answers were marked as either right or wrong. For the productive part of the task it was necessary to grade the answers with regards to how well the students were able to use the word in a sentence. In this section the participants' example sentences were given a score of 1, 2, or 3. The criteria for grading the productive part are as follows:

- The participant has demonstrated little or no semantic understanding of the lexical item.
- The participant has demonstrated some semantic understanding of the lexical item.
- The participant has demonstrated good semantic understanding of the lexical item.

The posttask interview consisted of two questions related to the dictionary task. First, learners were asked to comment on which dictionary they had found most useful for the task and why. Then they were asked to look at the headword of one of the underlined words (*beaver away*) in both PD and PED and compare them.

The posttask interviews took place immediately after completion of the dictionary task. These interviews were also recorded and transcribed by the researcher after being completed.

## Results

### Pretask Interview

Having established the type of dictionary participants used in question one, questions two and three were focused on the learners' general attitudes, both positive and negative, towards PEDs. Predictably, the most frequently mentioned advantage of PEDs was the speed at which they could look up words (four participants listed this as an advantage of PEDs). Two participants said that the chance to hear the word's pronunciation was a benefit. The remaining comments were all mentioned once. Table 2 is a summary of the main points raised by the participants.

Table 2. Participants' Responses: Advantages and Disadvantages of PEDs (N = 8)

Advantages of PEDs	Disadvantages of PEDs
<ul style="list-style-type: none"> <li>• speed (4 mentions)</li> <li>• useful to hear the pronunciation (2 mentions)</li> <li>• it has many dictionaries in it</li> <li>• simple to use</li> <li>• very easy to carry</li> </ul>	<ul style="list-style-type: none"> <li>• sometimes I use it too much . . . stops me thinking about it for myself</li> <li>• does not include all the words</li> <li>• sometimes I can't find the meaning</li> <li>• I can forget things easier with a PED than PD</li> </ul>

Note. Unless stated otherwise, the advantages or disadvantages listed in the table were mentioned one time.

In Question 4, participants were asked whether they thought that the definitions and example sentences in their PEDs were clear. One participant said no, three said sometimes, and four said yes. Two of the most interesting comments were "the meaning in the PD is not easy to understand and I am more confused" and "it is clear because the PED copies the Oxford Dictionary."

### Dictionary Task

The first significant result was the time that was taken by participants using either the PDs or the PEDs. Using the PD, the average time taken for the first five questions was 12 minutes 25 seconds. Predictably, the average time for the PED was less: 10 minutes 3 seconds. Although some of the difference in speed could be attributed to the participants'

being more familiar with the PED than the PD, this result is similar to that of Koyama & Takeuchi (2007).

In terms of accuracy, the participants were able to answer 93% of the receptive questions correctly using the PD. This percentage rose slightly to 95% for the PED. However, these results are not statistically significant. For the productive part of the task, the participants achieved an average score of 86% when using PDs and 87% using PEDs. Again, this was not statistically significant. Table 4 shows a detailed breakdown of the results of the dictionary task.

Table 4. Results of the Dictionary Task

Participant	PD R		PD P		PED R		PED P		Totals	
	Total	Avg.	Total	Avg.	Total	Avg.	Total	Avg.	all R	all P
1	5		11	2.2	4		11	2.2	9	22
2	4		11	2.2	5		13	2.6	9	24
3	5		14	2.8	5		13	2.6	10	27
4	4		10	2	4		8	1.6	8	18
5	4		12	2.4	5		15	3	9	27
6	5		15	3	5		15	3	10	30
7	5		15	3	5		15	3	10	30
8	5		15	3	5		14	2.8	10	29
Total	39		103	2.7	38		104	2.0	69	186
%	93%		86%		95%		87%		86%	78%

Note. PD = paper dictionary; PED = personal electronic dictionary; R = receptive, P = productive. There were 5 questions in each part. R questions were graded right or wrong. P questions were graded as 1 = little or no semantic understanding; 2 = some semantic understanding; 3 = good semantic understanding.

### Posttask Interview

During the posttask interview participants were first asked to comment on which dictionary they felt had been the most useful. Six participants expressed their preference for using the PD. This was surprising given that all the students used PEDs as their daily

dictionary. Some reasons participants gave to justify their preference for PDs were “The screen on the PED is too small and I can’t see all the information,” “The PD has clearer example sentences,” “The definitions and example sentences are better in the PD,” “If I use an English-English dictionary, the PD is more useful,” and “I prefer the paper one because I have time and I am not in a hurry now.” The remaining two participants expressed a preference for using a PED for the task. They both said that the speed of looking up words on the PED was the main benefit that it had over the PD.

In the second question, participants were asked to compare the same lexical item *beaver away* in the PD and PED and comment. The following comments were made: “The definition in the PED is very difficult because there are other words I don’t know in the definition so I have to check their meaning”; “I didn’t know that my PED had a learner’s dictionary, I always just use the usual one, but it is hard to use”; “The PD and the PED have almost exactly the same information for this word”; and “There is not really a difference.”

### Discussion

With regards to the speed of looking up words, this study supported the findings of previous studies that found PEDs to be a faster and easier way for students to look up new words. However, unlike some previous studies, there was no indication that PEDs were less effective in teaching students how to understand or use vocabulary items. Although this study does not include a large enough sample group to say for certain if PEDs are more or less effective than PDs, the fact that the average scores for both the PD and PED parts of the dictionary task were very similar shows that neither type of dictionary significantly disadvantaged students. Despite initial researcher concerns regarding the effectiveness of using PEDs to learn about a new word, students were able to complete the dictionary task effectively with either type of dictionary.

Results from the pretask interviews suggest that PEDs are favoured by language learners over PDs. This outcome and the reasons given for this preference are in line with previous findings (Deng, 2005; Tang, 1997). Factors such as speed of use and convenience were said to be major advantages of PEDs. However, it should be noted that the participants were using their own PEDs, whereas the researcher provided the PDs. This difference in familiarity may have had some impact on the speed of use in favour of the PEDs.

The comments made by the participants in the posttask interview proved to be of great interest. The participants seemed more aware of the value of PDs after completing the dictionary task. Another interesting finding was that most of the participants were unaware of the variety of dictionaries available to them in their PED. For example, most

of them simply used the default English-English dictionary setting on their PED and were unaware that they were able to change this setting to have access to a more suitable learner's dictionary. Upon discovering the possibility of using a learner's dictionary on their PED, the participants showed surprise and seemed pleased to know that this option was available to them.

## Conclusion

This study was aimed at addressing the question of how useful PEDs and PDs are to students for looking up unknown words and being able to correctly understand and use those words. Although being able to correctly use a word in this context is not the same as learning a word, Nation's (2001) breakdown of the various aspects involved in word knowledge holds that in order to learn a word, learners need to be able to access this information. Therefore, it is important to address not just the amount of information given in PDs and PEDs but also how well learners are able to access this information and the effect that different types of dictionaries can have on a learner's ability to do this. These differences may have a significant effect on how well a learner is able to acquire both receptive and productive knowledge of that lexical item.

Although the participants initially demonstrated a preference towards using PEDs over PDs, they were able to use both types of dictionaries effectively. Furthermore, following the dictionary task, six out of eight participants felt there were some benefits to using PDs over PEDs. Furthermore, the revelation that participants were unaware of the availability of more appropriate learner dictionaries on their PEDs showed that learners might not be taking full advantage of the tools available to them. This has clear implications for L2 teachers and learners, in that it suggests that without guidance, learners may be using unsuitable dictionaries when a more appropriate one might be available to them.

In light of the positive reactions the participants had towards PDs, it may be useful for teachers to give their students the opportunity to try using PDs in the classroom as a way of allowing them to look at all the available options before choosing a dictionary. If both teachers and learners were more aware of the differences in the type and quality of dictionaries, learners would be better able to find the most suitable dictionary for themselves.

However, the small size of the sample limits the scope of the study. In addition, there is the possibility that the participants' familiarity with their own PEDs could have affected the results. Furthermore, there may have been a difference in the difficulty of the questions in the two parts of the dictionary task. However, I believe that the study provides insight into the dictionary usage of this specific group of students and can be used as a

starting point for future research involving a larger sample size and follow-up vocabulary tests to investigate the effect of PDs and PEDs on word retention. Furthermore, I have noticed a growing trend towards L2 learners using mobile phones with dictionary functions and recommend that this additional dictionary type be included in future research on this topic.

## Bio Data

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**Appendix A**

**Pretask Interview Questions**

1. What dictionaries do you use?
2. What are the advantages?
3. What are the disadvantages?
4. Are the definitions and example sentences clear?
5. Does your dictionary provide enough information?

**Appendix B**

**Dictionary Task**

- The following task has 10 sentences separated into 2 sections (1-5 and 6-10).
- You should use the paper dictionary provided for the first 5 questions (1-5).
- Then you should use your own dictionary for the final 5 questions (6-10).
- Read the sentence and use your dictionary to find the underlined word.
- Using the information given in your dictionary, choose the most appropriate definition from the 3 choices.

- Then write an example sentence of your own using this word. **Don't** copy the same example from the dictionary.
- If you have any questions during the task, please ask the researcher.

**SECTION 1: PAPER DICTIONARY ONLY:**

1. She is beavering away at the moment.
  - a. to work very hard at something
  - b. a small American animal
  - c. to create a lot of problems for someone

Example sentence: \_\_\_\_\_

2. His directions were as clear as mud.
  - a. very soft wet earth
  - b. very difficult to understand
  - c. very fast

Example sentence: \_\_\_\_\_

3. The new buildings were all very flimsy.
  - a. badly built and not very strong
  - b. too big
  - c. very heavy

Example sentence: \_\_\_\_\_

4. She won't stop nagging me.
  - a. when someone tells you to do something that you don't like
  - b. when you tell someone a secret
  - c. when you feel lonely.

Example sentence: \_\_\_\_\_

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5. She has quite large nostrils.

- a. a type of shoes used for sports
- b. the holes in your ears
- c. the holes in your nose

Example sentence: \_\_\_\_\_

**SECTION 2: OTHER DICTIONARY:**

6. Everyone in the class cracked up during his story.

- a. to suddenly laugh a lot
- b. to break things
- c. to fall asleep because something is very boring

Example sentence: \_\_\_\_\_

7. I think we are up the creek this time.

- a. to be swimming in the sea
- b. to be very lucky
- c. to be in a difficult situation

Example sentence: \_\_\_\_\_

8. My lifestyle is quite sedentary.

- a. not moving or doing much exercise
- b. very busy
- c. having a bad smell

Example sentence: \_\_\_\_\_

9. She loves doodling in class.

- a. drawing pictures because you are bored
- b. thinking about other things
- c. talking very loudly

Example sentence: \_\_\_\_\_

10. Can I borrow your dumbbells?

- a. a stupid person
- b. a bell used in church
- c. a heavy metal bar that people lift to increase their muscles

Example sentence: \_\_\_\_\_

**Appendix C**

***Posttask Interview***

1. Which dictionary did you find most useful?

2. (Researcher shows the participant the entry for *beaver away* in the PD and asks the participant to find it in their PED. Researcher then asks the participant to compare and comment.)