An Experiment Using Electronic Dictionaries with EFL Students

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This paper describes an experiment to find whether electronic dictionaries are faster to use than paper dictionaries. It also describes the results of a questionnaire to find out whether students are taking full advantage of their electronic dictionaries.

Introduction

The two outstanding differences between electronic dictionaries (EDs) and paper dictionaries (PDs) are size, weight and cost. For example, the Seiko TR-7700 ED contains the contents of the Kenkyusha New College English to Japanese and Japanese to English paper dictionaries. It weighs less than one eighth of its paper counterpart, and costs over 5 times as much. Do EDs have any other advantages that justify the extra cost? Should we recommend to students that they buy one?

An important factor for most learners is whether the dictionary is quick and easy to use. We set up a simple classroom experiment to compare the look-up speed of paper and electronic dictionaries.

The Look-up Speed Experiment

Objective

The objective of the experiment was purely look-up speed; i.e. how quickly students could find the definition(s) of an unknown word. We took no account of the quality or number of definitions, nor even students' ability to read and comprehend them.

Method

We divided a first year English conversation class into two groups. We gave a paper bilingual dictionary to each student in the PD group and an electronic dictionary to each student in the ED group.

Three lists of ten words were prepared with each list containing words with the same initial letters and the same number of letters per word.

Table 1: The word lists.

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List A          List B          List C
------          ------          ------
cool            cost            chop
fame            feel            fish
peel            pair            page
search          school          screen
coffee          cookie          copper
ladder          leader          letter
attitude        argument        approval
ignorant        illusion        immature
parallel        paranoid        parasite
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We gave students as much time as they needed to look up the words on List A. In practice, this was about ten minutes. This was to let students get used to the particular PD or ED they would use in the test. The actual test didn't begin until all students felt comfortable with their dictionary.

Then, we gave the PD students copies of List B and the ED students copies of List C, face down. At the start command, they turned over their papers and looked up each word in order. They were told not to take time to read any definitions. As each student finished the list, she raised her hand, and we recorded the time taken.

Finally, when all the students had finished, they changed places with a student in the other group, leaving the dictionaries and the word lists, face down, on their desks. They then looked up the ten words on the other list with the other type of dictionary.

The experiment was repeated with several first year English conversation classes.

Results

The average look-up time for ten words using a PD was 168 seconds (about 17 seconds per word); using an ED, 130 seconds (about 13 seconds per word) . In short, our students could look up words about 23% faster with an ED.

Student Survey and Questionnaire

Objective and Method

Our show-of-hands survey of 781 students at Kyoritsu Women's University and College found that 88 (about 11%) owned an ED. We asked those students to complete a questionnaire (Appendix 1) there and then, in class.

The questionnaire asked students how often, where, and when they use their EDs, and whether for English to Japanese translation or vice versa. It also asked students for their attitude to their ED's features, specifically the pronunciation feature, if present. The answers to these questions were impressionistic; we did not ask respondents to observe their dictionary use quantitatively before completing the questionnaire.

When we designed the questionnaire we were not investigating a particular hypothesis; what follows emerged clearly from the data gathered.

Results and Discussion

Six returns were invalid for various reasons; the results are based on the remaining 82 usable questionnaires.

Where?

Given that they are much smaller and lighter than content equivalent paper dictionaries (PDs), we were surprised to find that students rarely use their EDs on the move. Most students use them both at home and in the classroom, roughly 50% in each place. The heaviest users claim to use them slightly more at home. Over half of respondents claimed never to use their ED's while traveling. Well over half couldn't think of any other places they used them, with the most common exception (only 11 out of 82) being the library. Given the relatively high cost of EDs, it would be cheaper for most of our respondents to buy two PDs, and keep one at home and one in a locker at school. In hindsight, it would have been useful to know why these students own an ED - did they buy it themselves (why?) or was it an unsolicited gift?

When?

As our experiment demonstrated, EDs can be somewhat faster, but this small speed difference is probably not enough to justify their extra cost when looking up the words needed to understand an L2 reading passage or write a report in L2 for homework. However,

it is for precisely these activities that most of our respondents use their EDs the most.

On the other hand, the 23% speed difference could be a decisive factor when trying to follow the content of a conversation, lecture or TV program. However, the questionnaire showed that almost none of our respondents takes advantage of her ED's superior look-up speed when speaking in or listening to the L2.

It is interesting to compare the rank order of students' ED usage, as revealed by the questionnaire, to what is generally considered to be the natural order of language acquisition, at least in children learning their L1. They are opposite (see Table 2).

Table 2:Natural Order of Acquisition vs. Student Usage of EDs

Rank Order	Natural Order of Acquisition	Student Usage of EDs
1	Listening	Reading
2	Speaking	Writing
3	Reading	Speaking
4	Writing	Listening

If learners are trying to master English for communicative purposes, as many claim to be, then using their ED's counter to the natural order of acquisition is like swimming upstream.

Why Do Our Students Make so Little Use of EDs When Listening?

The most obvious explanation is that they do very little listening anyhow. Although this is impossible to verify from our questionnaire results, we know that most of the respondents are literature or international studies majors, not conversation school students. Consequently, they are following curricula which require much more reading and writing than listening or speaking. Habits acquired in school would also tend to bias students towards a preference for reading and writing. Further, practical considerations (e.g., living in an L1 environment) minimize the need to deal with aural input.

A second explanation is that students do not trust their ability to catch correctly the words that they do hear; perhaps rightly so. For example:

- I say, "I feel empathy. "
- She hears, "I feel empty. "
- I offer, "Ice cream ? "
- She wonders, "I scream ? "

What Good Does It Do to Look Up an Unknown Word if the Word Itself is Misunderstood?

A third explanation involves the irrational English spelling system. Even if the listener hears the unknown word correctly, she cannot necessarily spell it correctly. This is less of an obstacle these days thanks to the error tolerant and similar input functions of modern EDs (known in Japanese variously as aimai superu chekku, burankuwaado saachi, etc.). These features allow the user to input her best guess as to a word's spelling, then choose the target word from a list of likely candidates displayed on the screen.

English to Japanese or Japanese to English?

51% of the respondents (42) claimed to use their EDs to translate primarily from English to Japanese, i.e. for receptive purposes (as we have seen, much more for reading than listening). We call this tendency "the absorbing sponge syndrome". 32% of the respondents (26) claimed to use their EDs to translate to translate both ways, and only 17% (14) claim use their ED to translate primarily from Japanese to English, i.e. for productive purposes. It seems that the sponge is rarely squeezed .

Pronunciation Function

Respondents' enthusiasm for hearing their ED pronounce words was not high. While a few felt this function was "very important", the vast majority felt it was only "somewhat important" or "not important", suggesting that few students have any intention of actually

trying to say their newly acquired words.

Conclusion

A new technology tends to be used in the same way as the traditional technology it supersedes. For many years during the twenties and thirties, movies were vaudeville and stage shows on a big screen. The earliest computer assisted language learning packages were little more than textbooks on a small screen.

At present, electronic dictionaries are still fundamentally paper dictionaries on a microchip. They have certain unique functions, such as error tolerant input, cross-referencing (e.g. synonyms and antonyms), and word and spelling games, and they are probably faster to use. On the other hand, some people simply prefer the feel and legibility of paper. LCD can be hard to read in some lighting conditions, and it takes time to learn to use the functions of an ED.

Should We Recommend that Our Students Buy an Electronic Dictionary?

It looks as though here in Japan, for several reasons, our university and college students at least are using their ED's in the same way as they used PDs, and that they are not taking advantage of either the portability or the extra speed that they (or a doting relative) paid for. For this kind of student, or for this pattern of use, it seems that an ED is not a wise investment. However, for a more autonomous student who wants to translate or study on the move, or who wants to learn from aural input, it may be a shrewd purchase.

Thanks largely to communications technology, we are about to see a revolution in the development of aids to autonomous learning. This will enable students to immerse themselves in the target language in a virtual language laboratory, wherever they are physically. This revolution is the topic of our next paper.

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Appendix 1: Student Usage Questionaire

The Use of Electronic Dictionaries

- Your Name (Optional):_____
- Your Year in School (Circle one): 1 2 3 4

1. What is the brand name and model of your dictionary ?

(for example: Canon Wordtank IDJ-9000):_____

2. About how often do you look up a word in your electronic dictionary (check one)?
   ( ) More than 20 times per day
   ( ) Between 10 and 20 times per day
   ( ) Between 1 and 10 times per day
   ( ) Between 1 and 10 times per week
   ( ) Less than 1 time per week
   (Note: For questions #2, #3 and #4 below, fill in the blanks with multiples of 10; for example: 10% or 20% ..... 90% or 100%)

3. Where do you use your dictionary?
   _____ % in the classroom
   _____ % while on the trains (or buses, etc.)
   _____ % at home
   _____ % in other places (mainly where?_____)
   100 % (total)

4. When do you use your dictionary ?
   _____ % listening (to conversations, lectures, TV, etc.)
   _____ % reading (books, newspapers, etc.)
   _____ % speaking (to look up words you want to say)
   _____ % writing (to look up words you want to write)
   100 % (total)

5. In which direction do you use your dictionary to translate)?
   _____ % from English to Japanese
   _____ % from Japanese to English
   100 % (total)

6. Many newer models have a "pronunciation" feature that allows you to hear the word(s) printed on the screen? How important is that feature to you?
   ( ) Very important
   ( ) Somewhat important
   ( ) Not important
   ( ) Depends on the price

7. What features do you most like?: _____

8. What features do you never use?: _____

9. Any other comments? (For example: What features would you like to see on future models?)
   (Feel free to write on the back of this paper.)