The use of monolingual mobile dictionaries in the context of reading by intermediate Cantonese EFL learners in Hong Kong

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Abstract. Previous studies on dictionary consultation investigated mainly online dictionaries or simple pocket electronic dictionaries as they were commonly used among learners back then, yet the more updated mobile dictionaries were superficially investigated though they have already replaced the pocket electronic dictionaries. These studies are also limited in that they concentrated generally on intentional learning and have not much inspected the significance of dictionary consultation for incidental learning. Moreover, most of them selected monosemous words as target lexical items, yet the learning of polysemous words has not been examined in depth. Therefore, in response to the call for research on the effectiveness of mobile dictionary consultation in promoting incidental learning of polysemy, we conducted an experiment among 82 intermediate Cantonese English as a Foreign Language (EFL) learners in Hong Kong, attempting to figure out what challenges these learners encountered while learning target words in the context of reading through consulting mobile dictionaries. These subjects were asked to comprehend a reading text with ten underlined target words, 32 of whom inferred meanings of these words and 50 looked them up using mobile dictionaries. The results of the study showed that mobile dictionaries facilitate word learning significantly, yet the format of these dictionaries is significant, and dictionary training is indispensable.

Keywords: vocabulary acquisition, mobile dictionary, incidental learning, mobile-assisted language learning.

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1. Introduction

Playing a significant role in vocabulary acquisition, dictionary use has been the focus of researchers for nearly one hundred years (Lew, 2011). Numerous studies have been conducted and various topics have been explored. With the development of electronic dictionaries, research in their use is abundant. However, previous studies, which were mostly done in the last decade, examined mainly simple pocket electronic dictionaries as they were commonly used among learners then, yet not much research has been conducted to investigate the use of the more updated mobile dictionaries, although they have already replaced the outdated pocket electronic dictionaries. Previous studies are also limited in that they concentrated generally on intentional learning and did not explore the significance of dictionary consultation in the field of incidental learning. Moreover, few studies inspected the facilitative effects of mobile dictionaries for learners' identification of meanings of polysemy in certain contexts. Therefore, in response to the call for research on the effectiveness of mobile dictionary consultation in promoting incidental learning of polysemous words, we conducted a research among Cantonese English learners in Hong Kong.

2. Method

2.1. Research questions

Three questions were raised in this research: (1) does the task of reading and consulting polysemous words in mobile dictionaries and the task of reading and inferencing the meanings of these words significantly promote initial learning and retention of the target words? (2) Are these two tasks similarly effective? (3) From what aspects are they similar or different?

2.2. Participants

82 intermediate Cantonese EFL learners in Hong Kong were involved, 39 females and 43 males. Their ages ranged from 18 to 20, and they had learned English for approximately 10 years.

2.3. The reading text and target words

The text "Coping with Procrastination" from Arlov's (2000) book was adapted. Based on its context, a total of ten polysemous words were selected as the target words. These words (*agitate*, *bromide*, *camouflage*, *catastrophe*, *eclipse*, *lapse*,

perpetual, *persecute*, *ticklish*, and *sterile*) were chosen because they have more than one meaning and all convey familiar concepts to the participants.

2.4. Procedure

All participants were pre-tested to ensure that they had little pre-knowledge of the meanings of the target words in the contexts given by this research. In the experiment, these subjects were asked to comprehend a reading text in which the ten target words were underlined. 32 students inferred the meanings of these words and 50 looked them up using mobile dictionaries. Three dictionary apps were most frequently used, namely: LDOCE 5 (the mobile app of the Longman Dictionary of Contemporary English), Dictionary (the mobile app of dictionary.com) and Oxford Dictionary Quick Search.

To tap into how learners identify the exact meanings of target words using mobile dictionaries, 12 subjects among those who consulted dictionaries were asked to report their thinking processes using different self-reporting protocols. Six of them were trained and asked to do think-aloud while completing the assigned reading and dictionary consultation tasks. The other six were interviewed after their task completion. The remaining 38 subjects were tested immediately after their task completion to measure their initial learning of the target words, and unexpectedly tested again using the same assessment to measure their retention one week later. These two post-tests, which asked the subjects to provide meanings of the target words in given contexts, utilized the same assessment tool. Ten sentences in which the target words have the same meanings as in the reading text were given to the subjects. Two of the researchers graded the answers, giving a score of "1" to a correct answer and a score of "0" to an incorrect one.

3. Results

The scores of the 70 subjects in the immediate and delayed post-tests are shown in Table 1. The mean score of subjects who read and inferred meanings of target polysemous words based on their contexts was 3.48 in the immediate post-test and 2.45 in the delayed post-test. The mean score for those who read and consulted the target words in mobile dictionaries was 4.12 in the immediate post-test and 2.93 in the delayed post-test. The differences in scores of subjects doing different tasks in the pre-test, immediate and delayed post-test are shown in Figure 1.

To investigate whether these two tasks promoted significantly effective initial learning and retention of the target words, four paired samples t-tests were

conducted. These four t-tests had the pre-test scores of subjects doing Task 1 and Task 2 and their performances in the immediate and delayed post-tests as the paired variables respectively. Their results showed significant gains of knowledge about the target words, as the sig. values were all smaller than .05.

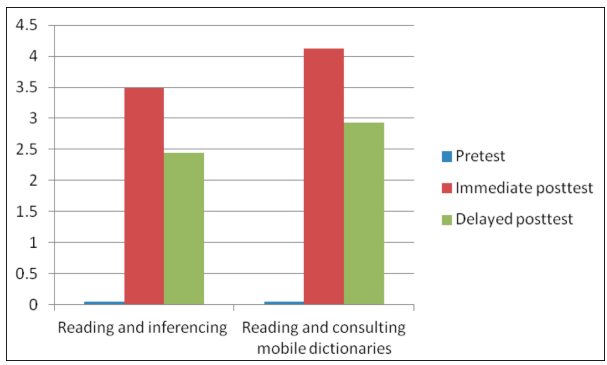
Table 1. Descriptive statistics of the subjects' scores

	N	Pretest	Immediate posttest		Delayed posttest	
			Mean	Std. dev	Mean	Std. dev
Reading and inferencing	32	0	3.48	4.67	2.45	4.96
Reading and consulting mobile dictionaries	38	0	4.12	4.81	2.93	5.07

To further examine whether significant differences existed between the post-test scores of subjects doing Task 1 and Task 2, two independent samples t-tests were conducted. The first independent samples t-test had the immediate post-test scores of subjects doing Task 1 and those of subjects doing Task 2 as the variables. Its results demonstrated a significant difference between these two sets of scores, as the value of the sig. (2-tailed) was smaller than the significance level of .05. It indicated, therefore, that T1 (paper dictionary) was significantly more effective than T2 (mobile dictionary) in promoting the initial learning of the target words.

The second independent samples t-test was similar to the first one in that it also compared the scores of subjects from these two groups, yet it was different in that the subjects' scores in the delayed post-test were compared. The two variables here were the delayed post-test scores of subjects doing Task 1 and Task 2. Significant difference was shown, as the value of the sig. (2-tailed) was smaller than .05, indicating that T1 (paper dictionary) was significantly more effective than T2 (mobile dictionary) in promoting the retention of the target words.

Figure 1. Subject scores in the immediate and delayed post-tests



4. Discussion

The results of the study show significant effectiveness of mobile dictionaries in facilitating incidental learning and retention of polysemous words, as the test scores of subjects using mobile dictionaries were significantly higher than those of subjects inferring meanings.

However, the facilitative effects are limited in that the screens of mobile phones are too small to show all the information at once, and users find it difficult to have a brief view of all listed meanings of the target words. Such inconvenience, together with the restriction of learners' language processing capabilities, results in the difficulty of storing several pieces of information in short-term memory, thus further hindering learners from making full use of the rich information provided by mobile dictionaries.

We also observed that some subjects wrote down candidate meanings to solve such problems and assist meaning determination. Our qualitative data collected through self-reporting protocols highlight the importance of dictionary format as learners revealed that they benefited more when dictionaries use diverse colors, fonts, sizes and categories to present different types of information.

Moreover, many learners acknowledge that they were not good at making use of the information provided by mobile dictionaries; dictionary training is therefore necessary. Also, the format is very important. It's important to use different colors, fonts, sizes, space and zones to highlight different parts of speech, meanings and collocations. These make it a lot easier for learners to categorize different information and should help them process it more efficiently.

5. Conclusions

Drawing on a literature review on vocabulary acquisition and dictionary consultation, the present paper noted limitations of previous studies in this field and reported on a corresponding research on monolingual mobile dictionaries in promoting incidental learning of polysemous words. The results, on the one hand, showed significant facilitative effects of mobile dictionaries in promoting word learning; on the other hand, they revealed limitations of mobile dictionaries. Nevertheless, this study is inherently limited in respect to possible influence of experimental conditions and scope of experiment. Future research is therefore suggested to take account of these factors and offer more insights into this issue.

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