The Use of Smartphones as English Dictionaries by University Students in Japan and China

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Abstract

This paper describes the use of smartphones as dictionaries by university students studying English as a foreign language in Japan and China. Smartphone dictionary apps are compared with electronic dictionaries in terms of usefulness and function. The general smartphone use of Japanese university students is examined. The results of a dictionary and smartphone use survey given in 2015 to students at three universities in Japan (N=637) and 18 universities in China (N=366) are compared and discussed. Finally, recommendations for choosing the best smartphone dictionary apps and two examples are considered.

Keywords: TESOL, dictionary, smartphone, Japan, China

1. Introduction

As smartphones have become more advanced and multifunctional, they have become a substitute for standalone electronic devices such as point-and-shoot cameras, MP3 players, voice recorders, and electronic dictionaries. In recent years, there has been an observable change in the dictionary use of university students in the classroom. Fewer students bring a paper or electronic dictionary to their English classes, and there has been an increase in the number of students who use a smartphone as their primary dictionary resource, at least while on campus. University students quickly utilize and adapt to the latest technologies, and the convenience of carrying one device to do everything is often considered more important than the quality of any specific function.

This paper will examine the dictionary and smartphone use of university students based on a survey conducted in 2015 at three Japanese universities (N=637), and 18 Chinese universities (N=366). Additionally, the usefulness and quality of smartphones as dictionaries will be explored, and recommendations for the best possible use of smartphones as dictionaries will be discussed.

1.1 Dictionary forms

The question of how to use a dictionary can be considered a learning strategy (Prichard, 2008). When students need to consult a dictionary, they have a variety of forms to choose from: paper, electronic, PC software, smartphone apps, and online dictionaries. The quality of the dictionary is of major importance. Additionally, the form of the dictionary will affect the learner's experience and ease of use. Electronic dictionaries offer the advantage of rapid searching by typing in words. However, this advantage does not automatically result in greater vocabulary retention. In a comparison between electronic and paper dictionary use, Koyama and Takeuchi (2004) found that electronic dictionary use resulted in a higher word look-up frequency, but not necessarily a higher level of reading comprehension.

An advantage that electronic dictionaries do offer over single-volume paper dictionaries is that most models contain several types of dictionaries in one small device. These often include L1 (Japanese) -L2 (English), L2-L1, English-English, thesaurus, and collocation dictionaries. The dictionaries have been carefully selected by the manufacturer with the learner's needs in mind.

Smartphones provide greater potential advantages than electronic dictionaries in terms of memory storage capacity for multiple dictionaries, flexibility of use, and rapid access to contents. However, smartphone users must choose which dictionary apps to download or access online, and each type of dictionary must be selected individually. Therefore, users must make informed decisions to take full advantage of the smartphone technology.

1.2 Smartphones as dictionaries

In an examination of smartphone apps for English learners, Zilber (2013) discovered that it is difficult to find useful apps among the many that are offered. One reason for this is that online stores' rankings for apps are often more related to marketing than the quality of the apps themselves. Zilber suggests that English instructors research and try apps, as well as get feedback from learner experience with them to find the most useful options to recommend to their students.

In 2014, Winestock and Jeong published an analysis of the smartphone dictionary app market. They found that learner's English-English dictionaries are most popular in East and Southeast Asia. Sales are high for well-known dictionary publishers in their own country, for example, the Genius E-J dictionary in Japan. However, sometimes lesser-known dictionaries, such as the Wisdom E-J dictionary, sell better than others because of first availability. In 2013, 61 of the top 100 grossing apps for the "Reference" category of iPhone apps were dictionaries.

Dictionary apps available for the iPhone included 773 free apps and 4,873 paid apps. The greatest number of paid apps was in the price range between US$3.00 and US$4.99. For Android smartphones, there were 2,018 free dictionary apps and 2,160 paid apps, with the greatest number of paid apps between US$2.00 and US$2.99. Although most dictionary apps are relatively inexpensive when compared to the cost of an electronic dictionary, there are some that cost more than US$50.00. The influence of cost on university students' choice of dictionary apps will be discussed later in this paper.

1.3 Japanese university students and smartphones

White and Mills (2014) conducted a survey examining the attitudes of Japanese university students studying English as a foreign language toward the use of smartphone technology. They found that the smartphone was the most ubiquitous Internet-enabled device among these learners. However, they proposed that a lack of digital technology in Japanese education has resulted in a reluctance to use smartphones phones for learning. In their survey of 162 students in 2012, 43% of the participants reported that smartphones are 'Helpful' for English language learning, and 35% percent reported that they are 'Very Helpful.' By contrast, only 21% of students reported that they actually use their smartphones as a 'Dictionary,' and only 7% for 'Education.' Other uses of smartphones reported by the students were 'Games' at 27%, and 'Other' at 50%, which presumably indicated social media use. The dictionary use rate was an increase from 11% reported in their survey from 2011, and indicates a trend towards more dictionary app use, as is also shown in the results of the survey outlined in this paper.

In discussions with students who use a smartphone as a dictionary in the classroom, this researcher noted a general lack of strategy about how to choose or evaluate a dictionary app. Most students have made their selection based on a friend's recommendation or because the app was available for free. Additionally, many university students report that they are still using the same electronic dictionary that they used in junior high school. They wonder if they should invest in a new model to meet their needs for language study in university, or if their smartphone could be an adequate replacement. Certainly, smartphones have become an integral part of most university students' lives. They have their smartphones with them 24 hours a day, and the potential for using these devices as dictionaries deserves to be thoroughly explored.

2. Dictionary and smartphone survey and participants

To investigate university student dictionary and smartphone use, a nine-question voluntary survey was conducted in Japan (N=637) in April, 2015 (see appendix). The results of this survey were presented in May at The 2015 TESOL International Conference at Shanghai University (Hubert, 2015). Two conference participants, graduate students Ao Shuang and Wang Cong, expressed an interest in using the survey in China to compare the results with those of Japanese university students. With their collaboration, the survey was translated and administered in China (N=366) in September and October of 2015.

The survey contained three questions about general dictionary use, and six questions about smartphone use. The survey was administered in the students' native language, on paper in Japan and as an online survey in China. The Japanese participants were non-English major students at two private universities and one public university in western Japan. The Chinese participants were a mix of various majors from 18 public Chinese universities. The participants from both countries ranged from first through fourth-year students.

2.1 Survey questions and responses

Question 1: Do you have a smartphone?

The Japanese participants reported a 98% ownership rate, with only 13 students out of 637 not owning a smartphone. The Chinese participants were recruited through university class groups on the popular Chinese smartphone app WeChat. Therefore, all participants were smartphone owners.
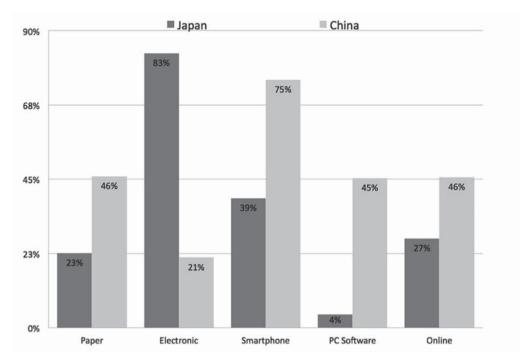
Question 2: If yes, what is the manufacturer?

The Apple iPhone was the most common model among the Japanese participants, with an ownership rate of 72%. Android phones made up 20% of the ownership, and 8% of the participants gave no response. By contrast, 54% of the Chinese participants reported owning an Android system smartphone, with 42% owning an Apple iPhone and 4% giving no response.

Question 3: What form (s) of dictionary do you use when studying English? (check all that apply) [paper dictionary / electronic dictionary / smartphone dictionary application / PC dictionary application / online dictionary / other (please specify)]
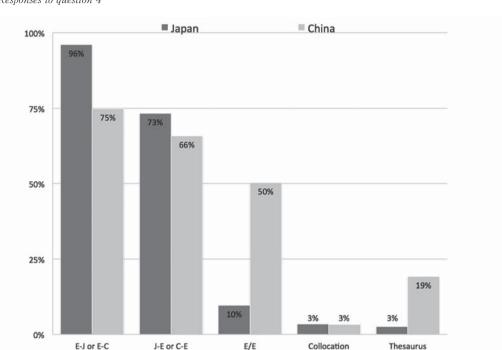
Chart 1

Responses to question 3

Significant differences between the forms of dictionaries used by the Japanese and Chinese participants were reported. The Chinese students had twice the level of paper dictionary use as Japanese students at 46%, and only 21% reported using an electronic dictionary. The Japanese students reported an 83% electronic dictionary usage rate. Smartphone dictionary use was also very different, with only 39% of Japanese students reporting using their smartphones as dictionaries, compared to 75% of the Chinese respondents. PC software and online dictionaries were also used significantly more by the Chinese participants.

Question 4: What types of dictionary do you use when studying English?

 (check all that apply) [English-Japanese or English-Chinese dictionary / English-English dictionary / Japanese-English or Chinese-English dictionary / Thesaurus / Collocation dictionary / other (please specify)]
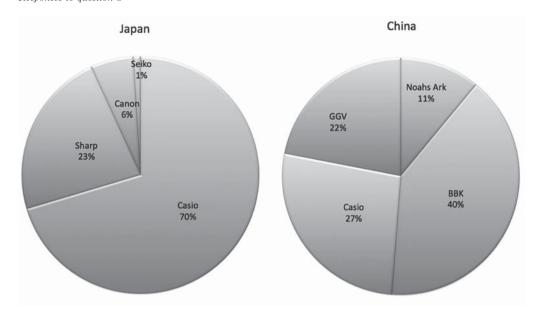
Chart 2

Responses to question 4

Both Japanese and Chinese participants used either an E-J or E-C dictionary more than any other type, at 96% for Japanese and 75% for Chinese participants. J-E or C-E dictionary use was second, with 73% of Japanese and 66% of Chinese reporting use. English-English dictionary use was much more common among Chinese participants at 50%, compared to only 10% of Japanese participants. Both groups of students only reported a low rate of 3% for collocation dictionaries. Thesaurus use was reported by 19% of Chinese participants, but by only 3% of Japanese participants.

Question 5: If you have an electronic dictionary, what is the manufacturer?

Chart 3

Responses to question 5

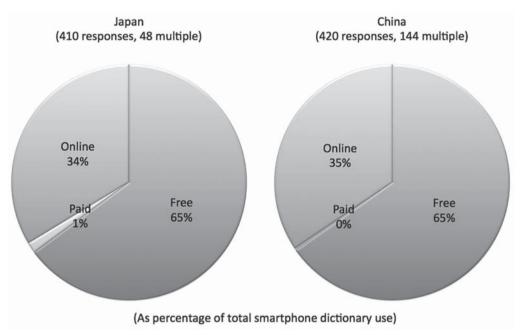Casio was the most common maker reported by Japanese participants that owned an electronic dictionary, at 70%. Sharp ownership was second at 23%. Canon and Seiko were also reported by fewer participants. The Chinese participants who owned electronic dictionaries reported a 27% Casio ownership rate. However, Chinese manufactures BBK, GGV, and Noah's Ark were also reported, with BBK being the most popular at 40%.

Question 6: If you use a smartphone dictionary, what type do you use?

 (check all that apply) [paid application / free application / online dictionary]

Chart 4

Responses to question 6

**Japan
(410 responses, 48 multiple)**

Online
34%

Paid
1%

Free
65%

**China
(420 responses, 144 multiple)**

Online
35%

Paid
0%

Free
65%

(As percentage of total smartphone dictionary use)

    Students from both groups of participants who reported using their smartphones as dictio-naries overwhelmingly relied on free apps, with both Japanese and Chinese students at 65%. Online dictionary use was reported by 34% of the Japanese participants and 35% of the Chi-nese participants. Only 1% of Japanese participants reported using paid smartphone apps, and 0% of Chinese participants reported using paid apps.

Question 7: If you know the name of the smartphone application (s) or online dictionary that you use, please write it.

Table 5

Japanese participant responses to question 7

Name	# of Responses	Form	OS	Type	Price
Weblio英語翻訳	43	App	Both	J-E/E-J Trans.	Free
Google Translate	21	App	Both	J-E/E-J Trans.	Free
翻訳機	16	App	Both	J-E/E-J Trans.	Free
Line 英語通訳	14	Soc. Net. Service	Both	J-E/E-J Trans.	Free
辞書君	9	App	Both	J-E/E-J Dict.	Free
アルク英辞郎	6	App	Both	J-E/E-J Dict.	Free
Yahoo辞書	6	App	Android	J-E/E-J Dict.	Free
gogoNavi	4	App	iOS	J-E/E-J Dict.	Free
英和辞書 Lite	2	App	Both	J-E/E-J Dict.	Free
Weblio 英語辞書	2	App	Both	J-E/E-J Dict.	Free
ジニアス	1	App	Both	J-E/E-J Dict.	¥4,900

Table 6

Chinese participant responses to question 7

Name	# of Responses	Form	OS	Type	Price
Youdao	151	App	Both	E-C/C-E Trans.	Free
JinShan	66	App	iOS	E-C Dict.	Free
OuLu	25	App	iOS	E-C Trans.	Free
Oxford	6	App	Both	Various E-E	Various
Longman	4	App	Both	Various E-E	Various
Merriam-Webster	1	App	Both	Various E-E	Various
Bing	1	App	Android	E-C	Free
Biscuit	1	App	Both	Multi-Lang Dic.	Free

Specific application responses and their details are listed in tables 5 and 6 above. Many of the dictionaries are available in various forms and at different prices, ranging from free versions to paid versions. It is not known which versions the participants used from their survey responses. However, based on the low reported use of paid apps, it can be assumed that the participants used the free versions of these apps. It should be noted that the app market is volatile. New apps appear every day, and the availability and pricing of others often change.

Question 8: If you use a smartphone dictionary application, how satisfied are you with it? (check one)

Table 7

Responses to question 8

Of the participants who responded to this question, the majority from both groups reported being somewhat satisfied with smartphone applications, at 32% of Japanese participants and 50% of Chinese participants. Only 5% of Japanese participants and 18% of Chinese participants reported being very satisfied.

Question 9: If there were a very useful paid smartphone English dictionary application, how much would you consider paying for it?

[Japan: wouldn't pay / 100-500 JPY / 500-1,000 JPY / 1,000-1,500 JPY / 1,500-2,000 JPY]

[China: wouldn't pay / 10-20 CNY / 20-40 CNY / 40-60 CNY / 60-80 CNY / 80-100 CNY]

Table 8

Responses to question 9

Japan		China	
No Response	11%	Wouldn't Pay	51%
Wouldn't Pay	58%	10-20 CNY	36%
100-500 JPY	26%	20-40 CNY	8%
500-1,000 JPY	4%	40-60 CNY	2%
1,000-1,500 JPY	1%	60-80 CNY	2%
1,5000-2,000 JPY	<1%	80-100 CNY	1%

The majority of participants, 58% of Japanese and 51% of Chinese, reported that they would not pay for a useful smartphone English dictionary application. A smaller percentage, 26% of Japanese and 36% of Chinese, reported that they would pay the equivalent of 100-500 yen for a useful application. At the 500-1,000 yen price range, 4% of Japanese and 8% of Chinese responded that they would purchase an application. Fewer than 2% of students in both countries reported that they would consider purchasing apps costing more than 1,000 yen.

3. Discussion

The results of the survey indicated that 98% of the Japanese participants owned a smartphone. As previously stated, the Chinese participants were recruited through a smartphone chat app and all participants owned smartphones. The Pew Research Center Spring 2015 Global Attitudes survey reported that 58% of the total Chinese population owns a smartphone, compared with only 39% of the Japanese population (Poushter, 2016). Therefore, it is likely that the ownership rate among Chinese university students is as high or higher than in Japan. The Apple iPhone is the most popular model in Japan, but Android models have a larger market share in China than the iPhone. As can be seen in tables 5 and 6, some dictionary apps are available for both platforms, while others are only available in one format.

The Japanese participants reported almost four times greater use of electronic dictionaries than the Chinese participants, but only half the amount of paper dictionary use. This could be due to differences in the quality and availability of electronic models in each country and other educational factors, such as the recommendations of instructors. Interestingly, the Chinese participants recorded much higher rates of using smartphone, PC software, and online dictionaries, which suggests a greater inclination for using digital technology for educational pur-

poses.

The L2-L1 and L1-L2 dictionary use reported by the Japanese students was higher than that of the Chinese students. However, the Chinese students showed a much higher rate of E-E dictionary use and a higher percentage of thesaurus use. These higher usage rates may indicate a higher level of English proficiency or more experience using dictionaries among the Chinese participants, as Compulsory English language instruction has been included from the third year of primary education in most regions of China since 1978 (Hu, 2005). It is also possible that Chinese students receive more explicit instruction on dictionary selection and use from their English teachers. The need for incorporating this instruction into English education has been the topic of several recent research studies in China (Liu, 2014).

Although a much greater percentage of Chinese than Japanese participants reported using a smartphone dictionary, the types of dictionary were almost identical. Both groups reported a rate of 65% free app usage, with almost all the remaining percentage being online dictionaries. Online dictionaries are also free and can be accessed by a PC. Among the free apps reported by both groups, translation apps were some of the most popular. Translation apps do not provide the additional semantic and syntactic information that can be found in a regular dictionary entry. Thus, these translation apps would not be recommended for intensive study.

Of the participants who responded to question 8 about their satisfaction using smartphone dictionaries apps, the largest percentage in both groups reported being somewhat satisfied, with the level of satisfaction being lower among Japanese participants. This relatively low satisfaction level of Japanese students may be a result of their use of mainly translation apps rather than true dictionary apps, and their unwillingness to use potentially higher-quality inexpensive paid apps. The app that was most reported by Japanese participants, the free Weblio 英語翻訳, translates words and sentences and offers some word compound and sentence examples, but does not provide information about grammatical usage.

More than half the students from both countries reported that they would not pay for a useful dictionary application, regardless of price. More than one quarter of the Japanese and Chinese participants indicated that they would consider purchasing a useful dictionary app at a price between the equivalent of 100-500 yen. At higher price intervals, the rate for participants in both countries dropped to single digits. This reluctance to purchase a paid app could be due to several factors. Obviously, most university students have limited funds compared to working adults. Additionally, the proliferation of free digital media and apps may have created an expectation that free apps should be good enough. The risk factor may also be a deterrent. Although university students might purchase a popular game app because of the known

entertainment value, they might be unwilling to spend the same amount on an unfamiliar learning app such as a dictionary without knowing its quality. If English language instructors had a knowledge of smartphone dictionary apps and were able to recommend several quality free and paid apps, students would likely become more willing to purchase them, thereby increasing their level of satisfaction.

4. Recommended dictionary apps

Two recommendable E-E dictionary apps that were tested and reviewed during this study are the LexicEN Offline Dictionary and Thesaurus, and the Merriam-Webster Learner's Dictionary. Both have very high user ratings in online reviews and are examples of apps that meet the criteria of having a large amount of entries, additional semantic and syntactic information, ease of use, and a reasonable cost.

The LexicEN, developed by Phenomenal Elements, is fully functional in a free version, but has a small add banner. For ¥360, a banner-free version is available. The dictionary is available only for iOS (iPhone) and contains more than 150,000 words with definition, audio pronunciation, example sentences, synonyms, antonyms, and similar words. Other features include interactive text, which allows a user to tap on any word and jump to a definition, and a 50 word search history.

The Merriam-Webster Learner's Dictionary is available for both iOS (¥600) and Android systems (¥542). The dictionary contains 100,000 words and phrases and 160,000 usage examples. Additional functions that are beneficial to learners are a collection of 22,000 idioms and verbal collocations, voice recognition search, audio pronunciation, and search history.

5. Conclusion

Smartphones have taken over the function of many other devices. University students in both Japan and China have a high rate of smartphone ownership. However, they may not fully utilize the capabilities of smartphones as learning tools. Using a smartphone as a dictionary for English learning is one example of this. Compared with other forms of dictionaries, the results of this survey indicate that a large percentage of university students in Japan and China use a smartphone dictionary app. The apps that they report using are mostly available for free, and may not offer the same quality of content or usability as electronic dictionaries or paid apps available for a minimal investment. Although dictionary apps may not yet be an ad-

equate substitute for other forms of dictionaries, most students have immediate access to them and have not realized their full potential. The smartphone app market changes rapidly, but instructors of English can provide valuable guidance to their students by taking time to evaluate and recommend currently available English dictionary apps.

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Appendix

Original Japanese survey

_____   回生   _____   組

このアンケートは，大学生の英語辞書活用状況について調査し，教員が学生に最も適した辞書と最新技術を指導する上で役立てるために実施します。

1. あなたは，スマートフォンを持っていますか？

_____   はい
_____   いいえ

2. はいと答えた人は，どのメーカーです？

_____

3. 英語を勉強する時，どのような辞書を使いますか？（複数回答有り）

_____ 書籍の辞書	_____ パソコンの辞書ソフト
_____ 電子辞書	_____ ネットの辞書

_____   スマートフォンの辞書アプリ
_____   その他（詳しく記入してください）_____

4. 英語を勉強する時，どのような種類の辞書を使いますか？（複数回答有り）

_____ 英和辞書	_____ 英英辞書
_____ 和英辞書	_____ シソーラス（類語辞典）

_____   連語辞典
_____   その他（詳しく記入してください）_____

5. 電子辞書を持っている人は，どのメーカーか教えてください。

_____ カシオ	_____ シャープ
_____ キャノン	_____ セイコー

_____   その他（詳しく記入してください）_____

6. スマートフォンの辞書アプリを使っている人は，どんなタイプを使っているか教えて
ください。（複数回答有り）

_____　　　有料アプリ

_____　　　無料アプリ

_____　　　オンライン辞書

7. スマートフォンのアプリやオンライン辞書を利用している人で，その名前を知っている人は
記入してください。（複数回答有り）

_____　　　_____

8. スマートフォンアプリの辞書を使っている人に，その使いやすさ満足度を伺います。

_____　　　とても満足している

_____　　　ある程度満足している

_____　　　少し不満である

_____　　　とても不満である

9. もし，有料のスマートフォンアプリでとても使いやすいものがあったら，いくらぐらいなら
支払うと思いますか？

_____　　　支払わない

_____　　　¥100-¥500

_____　　　¥500-¥1,000

_____　　　¥1,000-¥1,500

_____　　　¥1,500-¥2,000

_____　　　¥2,000-¥2,500

ご協力ありがとうございました。

日本と中国の大学生による英語辞書としての
スマートフォン活用状況

ヒューバート　ラッセル　ポール

要　旨

　本研究は，第二語学としての英語を学ぶ日本と中国の大学生が，スマートフォンを辞書として活用している現状を調査したものである。いわゆる“アプリ”と呼ばれるモバイル上の辞書機能は，以前まで多くの大学生が英語学習で活用していた電子辞書と，その使いやすさや機能性において，どのように異なっているかを比較検証した。まずは，日本の学生の一般的なスマートフォン利用状況について報告し，次に，日本の3つ大学（N = 637）と中国の18の大学（N = 366）の大学生を対象にした電子辞書とスマートフォンの活用に関して2015年度調査した結果を報告した。最後に，英語学習をする上で，最適なスマートフォン辞書アプリの選び方について，2つの事例とともに述べた。

キーワード：TESOL，辞書，スマートフォン，日本，中国