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The Impact of Smartphone Dictionary Apps on EFL Reading Comprehension

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Abstract

E-dictionaries are widely employed by EFL (English as a Foreign Language) learners and have shown significant effects on L2 learners' performance. The study tried to apply a smartphone dictionary in a two-week L2 reading practicum using Simple View of Reading (SVR) as a theoretical framework and adopted a mixed-method research approach. Students' motivations, behaviors, and challenges were triangulated for the correlation and evaluation of the impact of a smartphone dictionary on L2 reading learners. The findings revealed the applicability of the tool in L2 reading pedagogy. However, participants generally expressed their concern with the effective use of the information provided by the dictionary. This study prompted learners and educators to re-conceptualize e-dictionary using behaviors and provide pedagogical guidance for L2 educators.

Keywords: Dictionary apps, EFL learners, Reading comprehension, Mixed-method study

Introduction

Since the global COVID-19 (Coronavirus) pandemic began in 2020, more people have started reading on their mobile devices. Online reading, especially on mobile devices, has significantly increased in many nations, while printed book sales have dramatically decreased due to the lockdown and social isolation (Global English Editing, 2020). The propensity for reading on phones may be explained by the ease with which this small device allows quick internet access to widely disseminated news and information. Smartphone dictionaries are an essential tool for EFL learners in reading comprehension due to the rising trend of English reading on smartphones.

Dictionaries are typically described as tools designed primarily to assist human users with language-related tasks (Lew, 2015), because they give students access to a variety of information, including phonological, morphological, syntactical, semantic, etymological, and usage information. Dictionaries have long been regarded as an important resource and learning tool in the study of foreign languages (L2) (Hamouda, 2013). Most university students

prefer smartphone dictionaries because of their speed, affordability, and amount of information. Several smartphone dictionaries have been produced and integrated into learners' English studies.

Since the implementation of smartphone dictionary apps in English learning, recent years have witnessed a growing interest in smartphone dictionary apps in the study of dictionary use habits (Knežević et al., 2021), critical comments and suggestions for improvement (Huang & Tarp, 2021), learners' attitudes (Tian et al., 2022), and students' perceptions of mobile applications (Klimova & Polakova, 2020). However, a critical analysis of the literature on smartphone dictionary apps reveals several gaps and shortcomings. These studies are predominantly focused on user behavior, perceptions, and evaluation. On the other hand, reading is the main section that requires dictionary use (Koca et al., 2014), and the use of smartphone dictionary apps in reading is significant. However, there is very limited research on the use of smartphone dictionaries in reading. This study will attempt to explore the user behavior, learning motivations, and challenges of learners who use smartphone dictionaries in reading as well as the relationship between smartphone dictionary apps and reading comprehension.

A mixed method approach was adopted in this study so that the strengths of quantitative and qualitative, in tandem, could be utilized (Sun & Buripakdi, 2021) to better understand the use of smartphone dictionary apps for reading comprehension learning by EFL learners. Quantitative research is used to understand students' user behaviors of smartphone dictionary apps, and qualitative research provides information about students' motivations and challenges for using smartphone dictionary apps in reading comprehension. The findings of this study would enable educators to develop more meaningful learning and teaching practices via smartphone dictionary apps.

Literature review

Smartphone Dictionary Apps Used in L2 Education

The use of dictionaries in foreign language learning has been and will continue to be a useful strategy and an essential tool to provide quick and direct access to the mastering of unknown words, and English vocabulary in general. This is among the wide variety of vocabulary learning methods, either intentionally or incidentally. They offer trustworthy sources of knowledge about words, which are important for learning languages (Koca, et al., 2014). While the way we acquire and interpret information from numerous sources today has undergone a significant transformation, this includes how we utilize dictionaries. Both the status of the dictionary and user behavior patterns are changing in the digital age. Nowadays, using a dictionary is increasingly dependent on digital technologies and internet resources (Kneevi et al., 2021).

Most EFL students at Chinese colleges utilize electronic dictionaries rather than print dictionaries as a learning aid both in and outside of class due to the growing popularity of electronic dictionaries. The speed of the dictionary is a significant benefit. Its rapid speed makes it easier to operate and tempts users to read more in a foreign language (Shen, 2013). Today's language learners rarely consult a paper dictionary; instead, they use a dictionary app that can be conveniently used on a smartphone device due to the widespread usage of smartphones. Nami (2020) conducted a descriptive survey study to examine the types of language learning apps that were most frequently used by 381 college students at Amir Kabir University of Technology and their perceptions of how efficient these apps were at helping them learn new languages. The findings show that lexicon and dictionary applications were

the most widely used application categories among participants (Nami, 2020). Additionally, dictionary apps play a crucial role by quickly assisting language learners in the current world where digital communication is widely employed through various digital communication platforms, including e-mails, text messages, blogs, Facebook, and Twitter.

Youdao Dictionary and Jinshan Dictionary are the most frequently used mobile English learning resources (MELR) for Chinese EFL learners, according to a study by Zhang and Pérez-Paredes (2019). Vocabulary was the area that students wanted to improve the most (64.21%), followed by reading and writing (28.42%) and grammar (6.31%). On the other hand, researchers have paid close attention to how mobile dictionaries are used. Integrated dictionaries are vital when students utilize L2 learning apps. Students can better understand the context and the entire course material by consulting the definition or grammar of words they do not know. One or two dictionaries are always included in these learning applications. When learning the course material, students frequently run into problems with terms or word forms that they do not know, are unsure about, or just want to be sure of. They can quickly use the integrated dictionary in these circumstances by just touching or clicking on the word they wish to look up (Huang & Tarp, 2021). It should be noted, nevertheless, that utilizing a dictionary app differs significantly from using a paper or electronic pocket dictionary. The linguistic information of a dictionary app is deployed within the functional framework of a smartphone operating system. Dictionary usage can vary depending on factors such as smartphone screen size and touch-sensitive screen displays. In other words, as learners' reading performance varies depending on the type of dictionary medium, a dictionary app's impact on students' reading may differ from that of a paper or electronic pocket dictionary (Choi & Park, 2013).

This brief review of research into dictionary app uses in L2 education shows that the area is still under-researched and that many of the findings are contradictory, leaving plenty of room for conducting further research. The impact of smartphone dictionary apps on reading may be a direction worthy of researchers' attention.

Reading Comprehension among EFL Learners

Reading is a process that is complicated by factors beyond the text level, such as language abilities, motivation, effect, and learner traits, as well as text-level factors, including topic familiarity, genre, and text arrangement (Alderson et al., 2006). Decoding, text-information building, and reader-model construction are the three elements that Koda (2007) describes as the "result of a complicated information-processing system". In recent years, reading on mobile devices and the internet has grown in popularity. Smartphones also exhibit significant reading potential in the EFL (English as a Foreign Language) context in China. The National Reading Research Group of China (NRRGC) reported on its 16th annual national reading survey in China in 2019 that the percentage of people reading on mobile devices is increasing more quickly than print reading each year and that most readers are young adults between the ages of 18 and 29.

Additionally, it appears that the current mobile learning setting is encouraging college users to adopt smartphones. Students have more opportunities to read on mobile devices due to the current online learning environment. Smartphones offer EFL students more portable and accessible English reading experiences, although occasionally being more difficult than reading from paper texts (Tian et al., 2022). 95% of the respondents said that reading English texts was their primary language activity that frequently needed the use of a dictionary, followed by translating (92.5%) and writing (82.5%). When required to speak in

English, students utilized dictionaries the least (8 out of 40 occasions, or 20%) (Koca, 2014). However, learners also face some challenges when using smartphone dictionary apps for reading comprehension.

Theoretical Framework: Simple View of Reading

According to the simple view of reading (SVR), language comprehension and decoding, or word recognition, are prerequisites for reading comprehension, and they are both necessary for it to be achieved. R = D x C is the formula that expresses the model.

$$R = D \times C$$

$$\text{Reading Comprehension (R)} = \text{Decoding (D) x Language Comprehension (C)}$$

Word recognition, also known as decoding, was developed by Gough and Tunmer in 1986 (Hoover & Gough, 1990). It is the capacity to effectively identify written words (Silverman et al., 2013). According to Hoover and Tunmer (2018), accurate decoding is necessary because imprecise decoding can cause readers to interpret words differently than intended. Furthermore, efficient decoding is necessary since our cognitive resources are limited; the more resources needed for decoding; the fewer resources available for comprehension (Hoover & Tunmer, 2018). According to Hoover and Gough (1990), the second element, language comprehension, is the capacity to identify texts and phrases from lexical information. Notably, decoding and language comprehension are both related to vocabulary knowledge (Duke & Cartwright, 2021). Smartphone dictionaries may assist in vocabulary recognition; however, this can only constitute one factor in reading comprehension, and whether smartphone dictionaries are effective in facilitating readers' decoding has rarely been investigated, and this study will attempt to explore this relationship in an EFL context.

Challenges in Using Smartphone Dictionary Apps in Reading Comprehension.

The challenges posed by using mobile dictionaries have raised the concerns of some academics and educators. As discussed by Gouws and Tarp (2017), data overload in lexicographical products may lead to a time-consuming consultation with the risk of retrieving the wrong information or no information at all. Zou et al., (2015) focused on some inconveniences in using mobile phone dictionaries, mobile phone screens are too small to display all the information at once, and users find it challenging to receive a quick glance at all the target words' provided definitions. The inability to store many bits of information in short-term memory as a result of this inconvenience and the limitations on learners' language processing abilities prevent students from fully utilizing the extensive material supplied by mobile dictionaries. Additionally, many students admit that they struggled to utilize the information provided by mobile dictionaries, necessitating dictionary training. Barham (2022) raised similar issues regarding training; students' proficiency in using mobile dictionaries affects the effectiveness of mobile dictionary applications.

The aforementioned claims suggest that using mobile devices can contribute to language learning, but it also poses some challenges for users. To enable students to use their smartphone dictionaries in reading comprehension more effectively, teachers must take the lead, set an example for their students, and demonstrate how to integrate smartphone dictionaries into learning routines. Regarding this topic, the study described in this article addresses the following research questions:

RQ1: How are smartphone dictionary apps used in reading comprehension by EFL learners?

RQ2: Why do EFL learners employ smartphone dictionary Apps in reading comprehension?
RQ3: What is the correlation between the use of smartphone dictionary apps and reading comprehension?
RQ4: What are the challenges students encountered while using the smartphone dictionary apps in reading comprehension?

Method & Procedure

A mixed-method design was employed for this study. Qualitative and quantitative research methods were employed to triangulate the correlation and evaluation of the impact of a smartphone dictionary on L2 reading learners. For research purposes, a quantitative survey study explaining students' general practices and performance in using smartphone dictionaries in reading. The sampling strategy for this study is purposive sampling. Participants recruited in the study were 147 English majors ranging from freshmen to sophomores. Of the participants, 106 were female and 41 were male. The questionnaire was adapted from The Impact of E-dictionary Strategy Training on EFL Class (Koyama, 2015) (See Appendix 1). Five-point Likert Scales were employed in this survey. The time duration is from December 19th, 2022, to January 3rd, 2023. The questionnaire was administered to the students using WJX.CN (Wen Juan Xin is a professional online questionnaire platform used in China). A total of 112 complete and valid responses to the questionnaire were received. Upon the completion of the online investigation, 56 (Group 1) of the participants were informed by the Chaoxing App to take a model reading test without allowing the use of a smartphone dictionary. Meanwhile, another 56 participants (group 2) were allowed to use a smartphone dictionary for the same reading test. The test was adapted from TEM (Test for English Majors) sample exams (See appendix B). SPSS 26 was adopted to analyze the data.

Following the questionnaire, semi-structured interviews were also conducted. The same literature was reviewed to develop the questions for the interview. The questions of the interview were aimed at gaining an in-depth insight into the perceptions of EFL students about the use of smartphone dictionary Apps, the reason for the EFL students use smartphone dictionary Apps, and the challenges encountered by EFL students while using the smartphone dictionary Apps in reading comprehension. Another four participants (2 males and 2 females) who used the smartphone dictionary App more frequently than the others were chosen to provide valid data for the interview section. Students' willingness to participate in the interview process was considered before the commencement of the interview. They were also told that their responses remain confidential and would be used for research purposes only. Although the interviewer is a university lecturer, he and the interviewees did not know each other. The interviews were conducted in Chinese, and notes were taken during each interview. Each respondent's interview with a smartphone dictionary user lasted for 15-30 minutes, and the recordings were transcribed and confirmed by the respondents.

Data Collection & Analysis

Result of quantitative data analysis

According to the Cronbach's Alpha value shown in the Reliability Statistics Table 1. The value is .92, suggesting very good internal consistency reliability for the questionnaire. As to the validity, the construct validity analysis applied to this questionnaire was KMO and Bartlett's Test, according to Kaiser's criteria for determining the range of KMO values, a KMO value between 0.8 and 0.9 indicates that the questionnaire has good construct validity. The

data in Table 2 suggests that the questionnaire has good construct validity (KMO=0.906, P=0.000).

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.920	.924	28

Table 1.
Reliability statistics for the questionnaire

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.906
Bartlett's Test of Sphericity	Approx. Chi-Square	1927.837
	df	300
	Sig.	.000

Table 2. KMO and Bartlett's Test for questionnaire

Question items 4,6,7,8, and 16 were coded as cognitive strategies of reading (CSR). Question items 5,9,17,18, and 19 were coded as metacognitive strategies of reading (MCSR). Question items 20,21,22,23,24,25,26, and 28 were coded as technic literacy (TL). Pearson Correlation coefficient was tested for their correlation (see Table 3).

Correlation

		CSR	MCSR	TL	satisfactory of reading by SD
CSR	Pearson Correlation	1	.539**	.445**	.365**
MCSR	Pearson Correlation	.539**	1	.758**	.591**
TL	Pearson Correlation	.445**	.758**	1	.586**
satisfactory of reading by SD	Pearson Correlation	.365**	.591**	.586**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3. Correlation results for three factors (CSR, MCSR, TL) and satisfactory of reading by smartphone dictionary (SD)

The result indicates that three factors (CSR, MCSR, TL) significantly affect the satisfaction of reading by smartphone dictionary (SD). For MCSR, the Pearson Correlation r was calculated with a significant p-value (p = .591), meaning
MCSR is largely correlated with satisfactory of reading by SD. TL also is largely correlated with satisfactory of reading by SD (p=.586), and CSR is moderately correlated with satisfactory of reading by SD (p=.365).

However, Do smartphone dictionaries significantly affect students' reading performance? Based on the TEM4 test scores of Group 1 and Group 2, the researcher categorized the students' test scores according to four levels of performance, which are: A: 80--90; B: 60--79; C: 40--59; D: below 40 points. See the Chart 1.

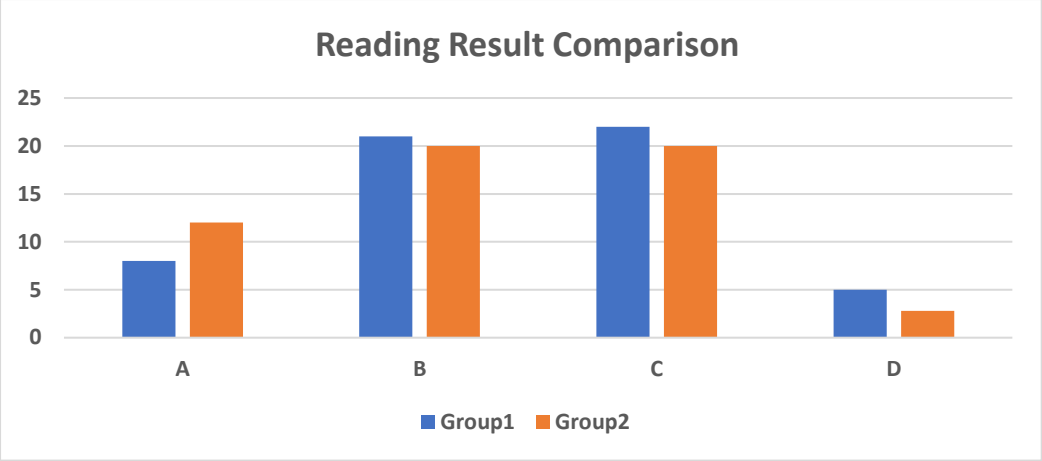

Chart 1. Reading result comparison of Group 1 and Group 2

According to Chart 1, there is no significant gap between Group 1 and Group 2 across the four score bands. To further analyze whether there was a significant difference between Group 1 and Group 2 in terms of reading results, we continued to run a T-test. See Table 4 of the independent T-test about the learners' results.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Equal variances assumed	0.101	0.752	-1.387	110	0.168	-4.018	2.897	-9.759	1.723
	Equal variances not assumed			-1.387	109.714	0.168	-4.018	2.897	-9.759	1.723

Table 4. Independent T-test of Group 1 and Group 2 on TEM4 score.

Table 4 demonstrates that there is no significant difference between group 1 and group 2 on TEM4 reading scores (t=1.716, df=110, p>0.05). This is counter-intuitive, but from the data, we can draw the same conclusion that the test scores have little association with the use of a smartphone dictionary (P >0.05).

Discussion

Discussion Of Quantitative Data

The use of smartphone dictionaries has become increasingly popular among language learners as a tool for improving vocabulary and understanding. Alharbi found that reading

comprehension and vocabulary learning were higher for the pop-up dictionary group than for other dictionary groups. The results showed that the group using the Pop-up dictionary had significantly better vocabulary retention and reading comprehension scores (Alharbi, 2016). Reviewing our research, question items No. 13 & 14, we can reach a similar conclusion.

Shen found that scores on vocabulary size, specific vocabulary knowledge, and reading comprehension are highly and positively correlated (Shen, 2013). Without a doubt, it had a positive impact on reading comprehension and vocabulary retention for EFL learners. In Alharbi's experiments, the use of a smartphone dictionary app can help learners improve their reading speed and fluency. The results showed that usage of the dictionary app helped the participants to improve their reading speed and fluency, as well as their overall comprehension of the passage(Alharbi, 2016). However, in the T-test of our research, the results illustrated that the reading scores are minimally related to the use of a smartphone dictionary. The reasons may be diversified. TEM is a difficult test for those EFL learners (even for ESL learners). Although readers can understand the passages by using a smartphone dictionary, the multiple choices are not a piece of cake. In-depth understanding and problem-solving competence are tested at the same time. Readers need to grasp the deep social and cultural information expressed behind the text through the analysis of the text language, which itself is a dynamic information construction process (Alderson, 2006). Therefore, reading needs the support of critical thinking ability, and the higher the level of reading comprehension is, the more critical thinking ability will be involved. We must be aware that the use of smartphone dictionaries should be employed in conjunction with language learning resources and activities.

Question item No. 6 shows that 94% of learners use smartphone dictionaries immediately when they encounter new vocabulary. To some degree, We have to admit that the smartphone dictionary addresses the problems of unfamiliar words and phrases. It helps learners better understand the reading materials. Whereas their reading speed is not improved while using a smartphone dictionary for a short period. Frequent use of a smartphone dictionary while reading is not always a good habit for EFL learners at least not working for the standard reading test. In conclusion, the use of smartphone dictionaries can be a valuable tool for language learners in acquiring new vocabularies. However, it should be used wisely rather than replace unfamiliar words or phrases directly with the first language by the shallow structure hypothesis (Dowens & Carreiras, 2006).

Results of Interviews and Discussion

Reasons for Using the Smartphone Dictionary

Mastering vocabulary is a fundamental aspect of English learning and an essential way to learn English vocabulary through mobile learning Apps. In general, the EFL students had positive attitudes toward the use of smartphone dictionaries in reading comprehension. The results of the interviews were consistent with the results of the questionnaires in many aspects. The EFL students identified the convenience of performing searches, portability, and time efficiency as the primary key advantages of using electronic dictionaries. "E-dictionaries are a useful tool for EFL students since they help them expand their vocabulary, increase their motivation, and encourage interactive learning (Amirian & Heshmatifer, 2013)."

These can be portrayed from their excerpts as follows:

"Err.., it helps me to easily understand the meaning of words in English. So, whenever I have no clue about that word while reading a passage, I immediately look for the definition in my mobile dictionary. It is also easy for me to refer to as the App is already stored there on my

phone, and I don't need to bring anything other than my phone. Thus, I spend less time compared to the printed dictionary which requires me to flip the pages and run through the list of words. I used to bring a bulky dictionary to class during my school days which I hated the most. It is lightweight and simple to use in my daily life." (*Student 1*)
"Well, I can choose which dictionary App I like. It saves my time mostly especially when I just need to use the speech-to-text ability to understand better in a fast mode. It helps me to learn more vocabulary. It is very convenient to use the dictionary App on my phone rather than carrying along a huge thick dictionary. I can see various examples of the words I search for. Perhaps, I can just filter my search or even look for several Apps that are available from Google or Baidu. I have never used a printed dictionary in my life!" (*Student 4*)

"Mostly, in my case... I really struggle when I come across any difficult words in my reading texts. So, I like to use my smartphone dictionary App to assist me with the understanding of words as well as the pronunciation. The App provides sufficient word input that could automatically translate the word faster than a printed dictionary. For example: English to Chinese. The size of the book dictionary also takes up a lot of space in my bag." (*Student 2*)

"Well, if you ask me…I like to use smartphone dictionary Apps because it meets my need to complete reading tasks. I can easily refer to my mobile phone to have a better knowledge of advanced vocabulary. Many free dictionary Apps can be found in the App Store. I just need an internet connection to download them. I find it to be more effective and motivating in reading comprehension. I feel motivated while using the dictionary App on my phone." (*Student 3*)

Other than that, the EFL students indicated that the features of the mobile dictionary Apps are impressive, and it is affordable for them as they are cost-free. It is motivating and exciting to learners and thus encourages them to look up more words.
"More importantly there are many dictionary Apps available, and it is user friendly. It is a free App as there is no subscription fee to be paid. It is fun to utilize such technology." (*Student 1*)
"To be honest, I enjoy using the dictionary App on my mobile phone because they are FREE. I can choose which dictionary App I like." (*Student 4*)
"If you look at the audio-visual features right… they are very interesting and can help me to learn new words easily. I feel motivated while using the dictionary App on my phone." (*Student 3*)

"Moreover, the features like videos, audio, and pictures are very exciting. I can't enjoy these kinds of features in the printed dictionary." (*Student 2*)
One of the respondents (*student 3*) mentioned that he or she is shy and afraid to ask for a teacher's assistance.
"Actually, the App helps me to learn new words independently without asking for my teacher's help as I am a shy student. If I face any difficulty, I can still click on the 'Help' option to get more information. Sometimes I can't understand the teacher's pronunciation and I am scared to ask the teacher. So, I listen to the sound in my phone App."

Challenges in Using Smartphone Dictionaries

Although students perceived using smartphone dictionary Apps as simple and easy, additional conversations on the subject showed that they had trouble choosing the correct

meaning from the variety that mobile dictionaries offer. The results demonstrated common patterns of dictionary use for word meaning, L2 students also use dictionaries for other information, such as pronunciation and spelling only not syntax. Thus, they face difficulty in understanding the overall structure or word order of the sentences. The addiction to mobile dictionaries also affects the flow of comprehension ability. The Apps at times do not provide accurate meanings.

Their responses are represented as follows:
"Well……sometimes I find the mobile dictionary App to be misleading at times, aggravating the lexical mistakes. It tends to interpret the meaning of the words in different contexts." (*Student 1*)

"There is also another challenge, for instance, some words have many meanings. I read the statement, try to figure out what it means, and then afterward realize that the choice I made is not what the author intended." (*Student 3*)

"The most challenging part while using the smartphone dictionary App is I could only understand the words or phrases. When I try to translate the whole paragraph or text, it gives a different meaning. At times, it provides wrong definitions that disabled me in finding the right answer or paraphrasing the sentences correctly." (*Student 4*)

"Emm…I usually use a monolingual dictionary App which made it difficult for me to explain the meaning of words in English when my teacher asked during lesson." (*Student 2*)

Furthermore, the interview results also indicated that the implication of dependency on mobile dictionaries has no significance for vocabulary knowledge. This is due to the short-term reference which makes the memory disappear from the student's mind after the completion of reading tasks.

"I usually rely on the mobile App dictionary too frequently; I could only remember the meaning of the respective words and phrases for a short term. Thus, I struggled to answer my reading comprehension exam without the support of the e-dictionary. Meanwhile, I could not recall or remember the meaning of some words that I had seen in my reading tasks before. I feel stressed and frustrated." (*Student 3*)

Students 1 and 3 highlighted that he is not sure which is the most accurate mobile dictionary App as it was just downloaded as long it was available in my Play Store for free and did not have access to the updated version of the mobile dictionary App. In addition, *students 2,3* and *4* mentioned that they could not use the App when they experienced poor internet coverage during rain, or at times on campus and home. According to *student 4*, the audio that she used to hear the correct pronunciation distracted her classmates and teacher during the lesson. Moreover, she feels that mobile dictionary usage is time-consuming at times. "I get addicted to looking up for meaning of the word in the mobile App dictionary each time I see an alien word. This really makes me waste a lot of time for translation and delays my reading process."

Conclusion

The purpose of this study was to explore the impact of smartphone dictionary apps on EFL reading comprehension. The results revealed that students who are digital natives, enjoy using the mobile dictionary in reading comprehension compared to the printed dictionary. They find that the digital dictionary is convenient, portable, easy to access, provides a quick response, and most importantly cost-free. According to Steel (2012) as cited by Mehrak Rahimia & Seyed Ahahab (2014) "Students place a high value on using dictionaries among mobile apps since they save time, aid in vocabulary development, and verify verb conjugations for language learners". It helps them with instant translation which leads to active participation in class.

However, frequent use of smartphone dictionaries among EFL learners in EFL reading comprehension is not highly recommended due to several implications discovered in this study. The students check their dictionaries for word meaning and spelling, but they pay little attention to other information such as collocations. Thus, Mobile dictionaries have boosted learners' reliance on technology but decreased their need for outside assistance as a result. Learners might become overly dependent on their mobile dictionaries as a result, or even develop an addiction to them. As proven in Cronbach's Alpha analysis, this approach or frequent addiction could be detrimental to vocabulary retention. The learners' time management in completing their reading task is also affected. Hence, the students are not achieving high scores on their reading tests. Zou, D., Xie, H., & Wang, F. L. (2015) mentioned that learners' language processing capabilities, result in the difficulty of storing several pieces of information in short-term memory and leads to further hindering them from making full use of the rich information provided by mobile dictionaries.

Therefore, EFL teachers should supervise and guide their students accordingly, especially in the selection and use of the respective mobile dictionary Applications. Meanwhile, it would be advantageous for teachers to become familiar with the new technology for looking up words before instructing their students on how to use it. Teachers should concentrate on assisting students in comprehending grammar rules, word forms, and vocabulary collocations because these elements are not always evident to learners. A study conducted by Ayoub et al., (2017) draws further attention to the fact that Pakistani EFL students have difficulty utilizing dictionaries correctly due to a lack of teacher training and direction. Nevertheless, for many language learners, acquiring word information is a convenient procedure made possible by technology such as smartphones and dictionary applications. Furthermore, the ability to apply keywords in a clear, logical, and grammatically correct manner also becomes increasingly significant as students advance in their language proficiency. Li & Xu (2015) also recommended that dictionary skills training should be offered to students. In their citation, Asgari & Mustapha (2011), the body of research on vocabulary learning methodologies shows that language learners can pick up new vocabulary on their own by using mobile dictionaries. They must, however, get instruction on proper dictionary usage.

Limitations & Future Recommendation

This study provides insight into the impact of smartphone dictionary apps on EFL reading comprehension. However, it has some limitations. As the participants in groups 1 and 2 were in the same school, they literally may have influenced each other, although they were tested separately. The number of students involved in the interviews was limited and, in addition, the study only explored students' perceptions. Thus, an in-depth interview should be conducted with the EFL teachers to investigate their perceptions of the mobile dictionary App

among students, the impact on their reading performance, and the need for training. To conclude, future research should focus on a complete picture of the use of mobile dictionaries in language learning classes regarding curriculum development, classroom management, and its impact on students' language acquisition and retention in the EFL setting.

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