Experiences and Preferences of Chinese EFL Students in Vocabulary Learning and Mobile Applications in Vocabulary Learning in a Private International University in China

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Abstract

With the acceleration of technology and social information, mobile phones have become an indispensable part of college students' life and studies. The use of mobile applications renders benefits to vocabulary learning and teaching. This study aimed to investigate the experiences and preferences of Chinese EFL students in a private international university in China using mobile phone applications in vocabulary learning. The participants included 123 second-year English major volunteer students who responded to the needs analysis questionnaire. The results revealed that, for the students' experiences, despite a mandatory requirement to achieve the national vocabulary test level-4, the *Test of English Major Band-4 (TEM-4)*, students had poor performance in vocabulary, both receptive and productive due to the lack of learning tenacity and functional learning methods of vocabulary. They showed the

requisites to master a proper way to learn words using mobile applications. For their preferences, the students preferred learning words through activities combined with audio-video and notes. At the same time, students also liked to use learning-oriented mobile applications, *E-dictionary* and *WeChat*, to learn vocabulary. The current research would lay the foundation for the subsequent research on designing a teaching mode by using mobile applications to improve students' vocabulary size.

Keyword: Chinese EFL undergraduate students, experiences and preferences, Needs Analysis, vocabulary learning, mobile applications, Test of English Major Band-4 (TEM-4)

Introduction

The Chinese government proposed the national policy of Belt and Road Initiative in 2013, which promoted economic cooperation and development and cultural communication among countries along the Silk Road. Hence, cultivating English talents has become particularly important for national economies to communicate and reach an agreement. As for that, in 2018, the Teaching Guidance Committee of Higher Schools of the Ministry of Education issued the National Standards for the Teaching Quality of Foreign Languages and Literature to determine specific requirements for all aspects of English talent training. Since then, the requirements of training for vocabulary acquisition, cognitive vocabulary or word knowledge and vocabulary in use or word knowledge in applications, have been stressed. All Chinese English major students must take the authoritative national English proficiency tests twice. One is the Test of English Major Band-4 (TEM-4) when students are in the second year of university, and the other is the Test of English Major Band-8 (TEM-8) when students are in the fourth year of university. As the participants of the current study were second-year university students, they then needed to attend the TEM-4 national test. The specified conditions of TEM-4 included that students know 5,500-6,500 words as their cognitive vocabulary and 3,000 words as their vocabulary in use. The TEM-4 test format usually

included dictation, listening comprehension, vocabulary, and grammar in language usage, reading comprehension and cloze with a composition writing and an oral test.

From 2009 to 2019, the pass rates of TEM-4 and TEM-8 were low. Especially for TEM-4, the pass rates for the period of the specified ten years' time were only approximately 57% on average (Pan & Zou, 2020). There were many reasons for the low pass rate, but the low vocabulary competence was a cause which was detrimental to the pass rate. To meet the national educational and pre-professional requirements, Chinese English majors need to strengthen their vocabulary mastery further.

With the advent of the 5G era, intelligent devices (smartphones, tablets, etc.) have been widely used among college students in China. Just as the features of mobile devices were "portability, social connectivity, context sensitivity, and individuality" (Sung, Chang, & Yang, 2015), so were the feasibility and possibility of utilizing them in vocabulary instruction. Mobile applications (or mobile apps for short), which are different kinds of software designed to run computer programs on a mobile device, such as a smartphone or tablet. Mobile apps can be employed to conduct research regarding vocabulary instruction, as for example, Heidari (2019) who used KEKE English, a mobile app to provide contexts through video examples and ÇELİK and Yavuz (2018) who used Fif and Flashcard, a mobile app with various flashcards and practical functions.

The current research was conducted on EFL Chinese students who could earn benefits of the mobile phones and mobile apps through their familiarity with using the tools for communication, social media, and entertainment. Amidst the necessity that they had to attend the national test as the requirement for graduation, it was accommodating to them to make use of the mobile apps in their English vocabulary learning because of their daily habitual use of mobile phones. The investigation into the students' experiences with English vocabulary learning using mobile apps would render the teacher's knowledge about their deficiencies and

the needs to fill up the gap to develop their English vocabulary. Also, acknowledgment of their preferences towards language learning was conducive to selecting teaching content, teaching strategy, and methods. Therefore, the present study explored Chinese English-major students' experiences and preferences in learning TEM-4 vocabulary using mobile apps.

Review of Literature

Learners' experiences and preferences derived from learner analysis can yield benefits for instructional design in which they can assist in designing an instruction which is tailored for students and making student-centered teaching objectives (Macalister & Nation, 2019). The current study investigated the experiences and preferences of the undergraduate Chinese EFL English major students with an intention to apply the findings for the design of a vocabulary instruction using mobile apps that was applicable to the English majors. The literature related to the current study is as follows.

Needs Analysis to Find Out Students' Experiences and Preferences

Needs analysis is collecting and analyzing information for a specific group of students to design a curriculum or a particular instruction (Macalister & Nation, 2019). Needs analysis generally begins by focusing on the essential role of learners' purpose, which is critical for making a curriculum or designing an instruction. Songhori (2008) reviewed several types of needs analysis, of which the three commonly used include Present Situation Analysis, Target Situation Analysis, and Learning Needs Analysis. The Present Situation Analysis is applied to analyze the students' current states at the beginning of the course; the Target Situation Analysis highlights the expected outcomes the students have acquired at the end of the course; and the Learning Needs Analysis informs the means and methods the students wish to learn rather than need to learn. Therefore, by doing needs analysis, teachers as researchers can have specific information about the learners for whom they intend to design an

instruction. Analyzing learners' present situations gives information about what they lack leading to the necessities to fulfil the lack; analyzing the target situations gives the information about how they are expected to become after attending the instruction; and analyzing the learning needs helps to discover the students' preferred means taken to achieve the goal. Therefore, analyzing the present needs, target needs, and learning needs or analyzing 'necessities,' 'lacks,' and 'wants' (Hutchinson &Waters, 1987; Macalister & Nation, 2019) can yield the answers for students' experiences and preferences.

As for the current study, the investigation of the experiences and preferences of the English major undergraduate students was conducted using the needs analysis principle (Macalister & Nation, 2019) comprising 'necessities,' 'lacks,' and 'wants' as the research framework. 'Necessities' refers to necessary knowledge for language learners to master; 'Lacks' refers to the current knowledge that the learners have mastered and have not yet mastered; 'Wants' refers to what the learners think they wish or would like to master or to use. 'Necessities' can then be construed as required knowledge, 'Lacks' as present knowledge; and 'Wants' as personalized needs. Regarding 'experiences and preference,' 'experiences' refers to things, events, or situations that happen to learners and affect them somehow, while 'preferences' refers to things, events, or situations that learners like more. Therefore, analyzing learners' 'lacks' and 'necessities' in this research gave information about the students' experiences which included their current state of insufficient vocabulary knowledge in passing the compulsory national test, their habitual vocabulary learning methods, use of mobile apps in vocabulary learning, and the obstacles of their vocabulary learning, while analyzing learners' 'wants' gave information about their preferences in vocabulary learning and use of mobile apps in vocabulary learning. Through investigation of students' experiences and preferences using needs analysis, teachers can master students' objectives, their present gap to the objective and their expected way to achieve it. The results

were conducive to the design of a highly relevant and practical vocabulary teaching plan, which affected the selection of the course content, course materials, and course objectives in the subsequent research (Tao, 2022).

Mobile Assisted Language Learning (MALL) and Vocabulary Learning

Mobile Learning (ML) is a form of learning activity that can be conducted at any time and any place. The widespread use of smartphones and tablets has dramatically promoted the successful development of mobile learning. ML can be applied to various learning fields, including language learning. Mobile Assisted Language Learning (MALL) integrated with English teaching methods generated a new English language teaching mode, which had the feature of mobility, expanding the space domain of classrooms, combining various cultural contexts and providing different function for language practice (Botero, Questier, Cincinnato, He, & Zhu, 2018).

Studies on vocabulary learning by MALL are classified into three categories according to the mobile device: 'Native', 'Downloadable', and 'Web-Based' (Aungst, Clauson, Misra, Lewis, & Husain, 2014). The 'Native' refers to the built-in features of the phone, which can provide the basic function of phones, such as a camera, short message services (SMS) and multimedia message services (MMS). For example, Wong and Looi (2010) got positive results by requiring the students to learn English prepositions and Chinese idioms by taking photos in an authentic context and making original sentences from such photos. Alemi, Sarab and Lari (2012) conducted empirical research on teaching academic words by comparing the experimental group's short message services (SMS) with a dictionary in the control group. The result showed that experimental group students outperformed in delayed post-test, so SMS was conducive to the extended vocabulary memory. Lin and Lin (2019) concluded that SMS, MMS and mobile apps (apps) were the dominating approaches supported by learning theories to conduct mobile-assisted L2 vocabulary learning.

The 'Downloadable' refers to the software not installed on the device but downloaded from another resource such as mobile application stores. Different mobile apps used in EFL research studies included, for example, Memrise (Fathi, Alipour, & Saeedian, 2018), Duolingo (Irawan, Wilson, & Sutrisno, 2020), WhatsApp (Hassan Taj, Ali, Sipra, & Ahmad, 2017), Quizlet (Davie & Hilber, 2015), and Ko-so (Al Yafei, & Osman, 2016). Besides, some researchers developed their apps; for example, Hao, Lee, Chen and Sim (2019) invented a mobile application to facilitate vocabulary learning, enhance students' confidence in vocabulary learning, and promote positive attitudes.

The 'Web-based' refers to downloading a portal to acquire material from the Internet. For example, Fithriani (2021) and Sanosi (2018) explored the effect of Quizlet on vocabulary acquisition. The findings confirmed the benefits of applying Quizlet into vocabulary instruction in three aspects: learning outcomes, enjoyment and motivation.

The above vocabulary research conducted by mobile phones provides references for the investigation of current research in terms of feasibility and possibility, both in terms of research objects (idioms, prepositional collocations, academic vocabulary) and research effectiveness. The current study investigated the experiences and preferences of Chinese English major undergraduate students in using mobile apps in their vocabulary learning.

Related Previous Studies

Analyzing and gaining a particular group of learners' language needs is an essential step for designing the language instruction which is conducive to acquiring satisfactory teaching effect. Needs analysis principle has therefore been applied in many studies aiming to learn about the actual conditions and affections of the particular group of students to plan to create an appropriate instruction, an inspirational teaching material, and/or a sensible curriculum which can directly benefit them.

As for vocabulary learning by mobile application, the previous researchers conducted a series of needs analyses. Moiinvaziri (2014) explored students' needs in learning contents, learning style, attitudes, motivation, and interests in learning General English through needs analysis and revealed that the most crucial thing in language learning was learning words and needed to take the most effort to practice. Badroeni, Nasrulloh and Suryaman (2022) reported the finding that the biggest obstacle in making sentences was that students could not find the words. The Vocabulary application (VocApp) not only promotes students' independent learning but also contributes to students' vocabulary building. Klímová and Berger (2018) developed a mobile application based on students' needs on learning vocabulary and phrases and proved the mobile application could promote students' mastery of vocabulary and phrases and contribute to independent learning. The needs analysis results of the above research only showed several aspects of vocabulary learning, and the needs for mobile apps were not investigated. Mahzan, Alias and Ismail (2020) explored the needs of Malaysian indigenous language learners from students' attitudes towards English as a Second Language, favorable language skills, topics of interest and preferable modes of learning, but the least of perfection was that they only investigated students' attitude towards using the digital game-based method to learn vocabulary and did not provide more information on using mobile application to learn vocabulary.

This research not only investigated students' experiences and preferences in vocabulary learning, including the learning contents, methods and habits but also in mobile app usage including commonly used mobile apps, favorite type of mobile app for learning vocabulary and using habits. Not only that, to date, not much research was done using the needs analysis principle to analyze students' experiences and preferences, especially in preparing the students for a national test. As specified by the Chinese government, enabling their Chinese EFL undergraduate students to achieve the required English vocabulary knowledge and

English vocabulary in use is one of the remarkably primary responsibilities of Chinese university instructors. The study of the student's experiences and preferences could therefore fulfil the gap, providing the analysis of learners in a specific Chinese EFL context, yielding the results that could be used specifically as a teaching plan applying mobile apps in a vocabulary instruction designed to broaden the students' vocabulary breadth in a way that was pertinent and motivational to the particular students. In addition, the findings could also be beneficial for general use as a guideline to better understand the nature and actual situations of Chinese undergraduates' vocabulary learning.

Research Methodology

The current research investigated English major students' experiences and preferences in using the mobile application in TEM-4 vocabulary learning at a private international university. The research employed a needs analysis questionnaire as an instrument to conduct the investigation and the results were analyzed by a computer program software 22.0.

Research Participants

The research population was 215 sophomores of English major from seven classes in a private international university in China. The research participants included 123 students who were from the seven classes and volunteered to take an online questionnaire. The 123 students were preparing to take TEM-4. They had at least 11-year English study experience, as Chinese students usually begin to have English classes in the third grade of the primary school. In China, all second-year English major students were required to take the exam of the TEM-4. They just had two chances to take the exam, so they took this exam seriously and hoped to get a certificate through it.

Research Instrument

The research instrument used in the current study included a needs analysis

questionnaire which was designed based on the research of Macalister and Nation (2019). Students' experiences and preferences on using mobile apps in vocabulary learning as preparation for the TEM-4 national test were investigated through a questionnaire. Students' experiences were reported through their necessities and lacks, while their preferences were reported through their wants. The questionnaire was designed into three parts: 1) personal information, 2) five-point Likert scale (Items 1-10), and 3) multiple-choice (Items11-19) and one open question (Items 20). Items 1-5, 8, 9, 11 were designed to investigate students' experiences and Items 6, 7, 10, 12-20 were designed to investigate students' preferences. The questionnaire was checked for its Item-Objective Congruence (IOC) index by three experts who were English major university teachers to ensure its validity. All the questionnaire items received the IOC scores higher than .05, which meant that the questionnaire could be used. However, some language and format adjustments were made as per their suggestions. Cronbach' s Alpha was used to examine the consistency and reliability of the questionnaire. The result of Cronbach's Alpha was 0.736, which meant the 'acceptable' internal consistency of the questionnaire.

Data Collection

Before data collection in the main study, a pilot study was conducted with 30 students of a different group from the main study. Due to Covid-19 in December 2021, the pilot study was conducted online through *wenjuan.com* which is a popular online questionnaire-making and distribution website in China. The pilot study aimed to ensure the unambiguity in the questionnaire for the use in the main study. According to the result, the researcher revised some items' expressions and redesigned some items' formats in the questionnaire. The main study was conducted in April 2022. 123 sophomores scanned the QR code by mobile phone provided by the questionnaire website (*wenjuan.com*) and answered 20 English questions. The website eventually received 123 valid questionnaires.

Data Analysis

Statistical analysis tool of a computer software 22.0 was used to analyze data from the questionnaire. The results from the part of five-point Likert scale and the part of multiple-choice were presented with means, standard deviations, and interpretations. Percentage was also reported for the items that required ranking. For an open question, content analysis was used. Table 1 presents varied mean range interpretations according to different types of questions. The mean range was taken, the topmost and bottommost ranges as .49-.50 and the others in the middle as .99. The mean range interpretation was applied in the previous research by Brown (2000), Nemoto and Beglar (2014), and Sullivan and Artino (2013).

Table 1

Mean Range Interpretation for Questionnaire Items

Mean Range	Mean Range Interpretation		
	Items1-10	Items14-17	Items18
4.50-5.00	Strongly agree	Like very much	Almost always -Always
3.50-4.49	Agree	Like	Usually
2.50-3.49	Undecided (Neither agree nor disagree)	Undecided (Neither like nor dislike)	Sometimes
1.50-2.49	Disagree	Dislike	Rarely
1.00-1.49	Strongly disagree	Dislike very much	Almost never -Never

Findings

The findings of the current research included the students' experiences and their preferences in vocabulary learning using mobile apps.

Students' Experiences

As shown in Table 2, the findings revealed the students' states of experiencing doubts on

their effective vocabulary learning methods and their vocabulary ability. Students were not satisfied with their current vocabulary size, their uncertainty of ability in TEM-4 vocabulary input and output.

Table 2

Students' Experiences in Vocabulary Learning

Students' Experiences in Vocabulary Learning (N=123)	Mean	SD	Interpretation
Item-1. I think my vocabulary size is enough to pass TEM-4.	2.07	0.81	Disagree
Item-2. I think my technique of memorizing TEM-4 vocabulary is very effective.	2.98	0.89	Undecided (Neither agree nor disagree)
Item-3. When I'm listening to TEM-4 listening materials, I can understand the general meaning of the words.	2.96	0.86	Undecided (Neither agree nor disagree)
Item-4. When I am writing a composition, I often use the TEM-4 vocabulary I have learned to express my ideas.	2.94	0.93	Undecided (Neither agree nor disagree)
Item-5. I think the vocabulary involved in the content of General English can satisfy me to pass TEM-4.	2.92	0.81	Undecided (Neither agree nor disagree)
Item-8. I have fully mastered the method of mobile apps to learn TEM-4 words.	2.89	0.84	Undecided (Neither agree nor disagree)
Item-9. I need teachers or peers to share with me useful mobile apps or good ways to use mobile apps for TEM-4 vocabulary learning.	3.73	0.68	Agree

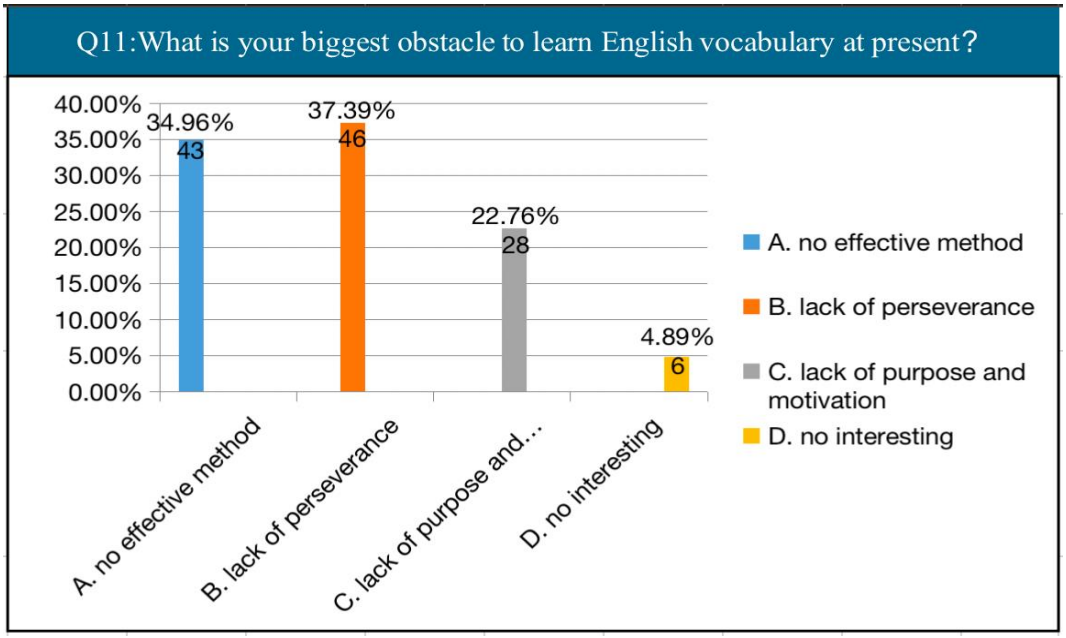
For the students' experiences, it was evident as specified in the curriculum that all the second-year Chinese EFL undergraduates had to achieve the TEM-4 national test. Mastering the required amount of vocabulary appeared to be a prerequisite for achieving it. As can be seen in Table 2, regarding the target vocabulary size that they required to master, the students chose 'disagree' to report that they did not master enough vocabulary to achieve the national test yet (Item1: M=2.07, S.D.=0.81). The students reported the experiences of lacks by delivering a suspicion with the 'undecided' response in every aspect regarding their current states of acquiring vocabulary knowledge in preparation for the necessities to achieve the national test, which included their present conventional vocabulary memorizing method (Item

2: M=2.98, S.D.=0.89), their receptive vocabulary knowledge (Item 3: M=2.96, S.D.=0.86), and their productive vocabulary knowledge (Item 4: M=2.94, S.D.=0.93). They also showed their uncertainty with the 'undecided' response on the content in the General English course (Item 5: M=2.92, SD=0.81), which showed the necessity to develop the existing content and/or the teaching method. For the use of mobile apps in learning, the students showed the doubts with the 'undecided' response in their ability to use mobile apps in vocabulary learning (Item 8: M=2.89, S.D.=0.84), while they expressed their needs of help and suggestions from teacher and peers (Item 9: M=3.73, S.D.=0.68), which also show the needs to conduct a vocabulary instruction using mobile apps for them.

Regarding their experiences on the obstacles to their vocabulary learning that caused insufficient mastery of vocabulary included, from the most to the least, lack of perseverance (37.39%), no effective learning methods (34.96%), lack of purpose and motivation (22.76%) and no interest (4.89%) (See Figure 1).

Figure 1

Obstacles of Vocabulary Learning



Students' Preferences

The findings regarding students' preferences included the students' reports on ways to learn vocabulary, mobile apps for vocabulary learning, and vocabulary learning activities.

Ways to Learn Vocabulary. As shown in Table 3, students were fond of improving vocabulary knowledge in multiple ways, among which watching videos was the most popular among students. Watching videos allows students to listen to the words and discuss the video contents with students by using words. Listening and speaking were two of the students' favorite skills to improve their vocabulary knowledge.

Table 3

Students' Preferences on Ways to Learn Vocabulary

Students' Preferences on Ways to Learn Vocabulary (N=123)		Mean	S.D.	Interpretation
Item-14 To what extent do you like using the following skills to improve your TEM-4 vocabulary?	Listening	3.66	0.80	Like
	Speaking	3.76	0.81	Like
	Reading	3.62	0.94	Like
	Writing	3.60	0.88	Like
Item-6. I was able to learn TEM-4 vocabulary better when it was presented in multiple ways (picture, sound, definitions and examples).		3.76	0.87	Agree
Item-15. To what extent do you like using the following methods to improve your TEM-4 vocabulary in daily life?	Socializing with native or other English language speakers	3.66	0.77	Like
	Newspapers/magazines	3.45	0.92	Like
	Making notes and writing down new words on a piece of paper	3.88	0.82	Like
	Having English language classes and learning from English language textbooks	3.85	0.67	Like
Item-16. To what extent do you like using the following tools to improve your TEM-4 vocabulary ?	Video website	3.84	0.79	Like
	News website	3.68	0.77	Like

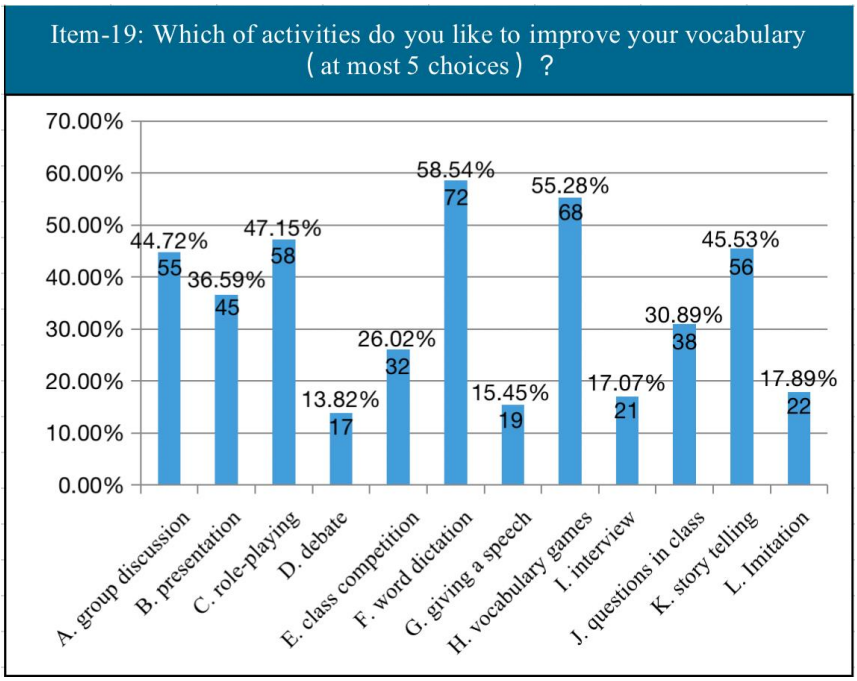
Students' Preferences on Ways to Learn Vocabulary (N=123)	Mean	S.D.	Interpretation
Online language learning website	3.58	0.70	Like
Mobile application	3.82	0.73	Like

In response to the question which language-skill they preferred for the vocabulary learning activities, the students preferred speaking skill (M=3.76, S.D.=0.81) the most, followed by listening, reading, and writing. Students liked to learn words in a variety of ways including pictures, audio, videos, definitions, and reading materials (M=3.76, S.D.=0.87) as shown in Item-6. Among various methods, students liked vocabulary learning by taking notes most (M=3.88, S.D.=0.82), followed by having English classes with textbooks, communicating with native speakers, and reading newspapers and magazines. As for the modern technology in vocabulary learning in Item-16, students liked video websites most (M=3.84, S.D.=0.79), followed by mobile apps, news websites, and online language learning websites (See Table 3).

The top five reported to be the students' preferred vocabulary learning activities included word dictation (58.54%), vocabulary game (55.28%), role-playing (47.15%), group discussion (45.53 %), and storytelling (44.72%) (See Figure 2).

Figure 2

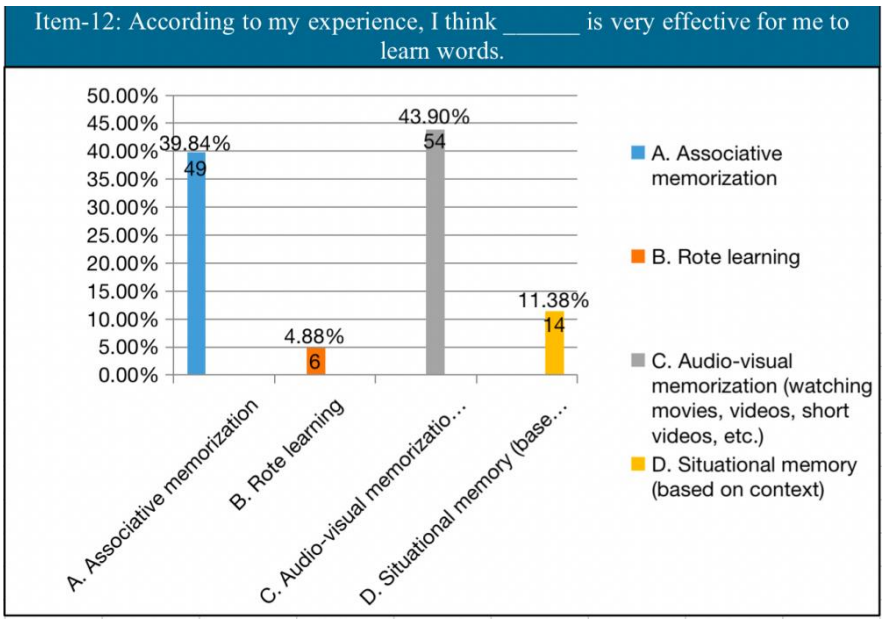
Students Preferred Vocabulary Learning Activities



As for their preferred methods to memorize vocabulary, the students showed a special preference on audio-video by reporting they liked audio-visual memorization the most (43.90%), followed by the technique of associative memorizations (39.84%), situational memory (11.38%), and rote learning (4.88%) (See Figure 3).

Figure 3

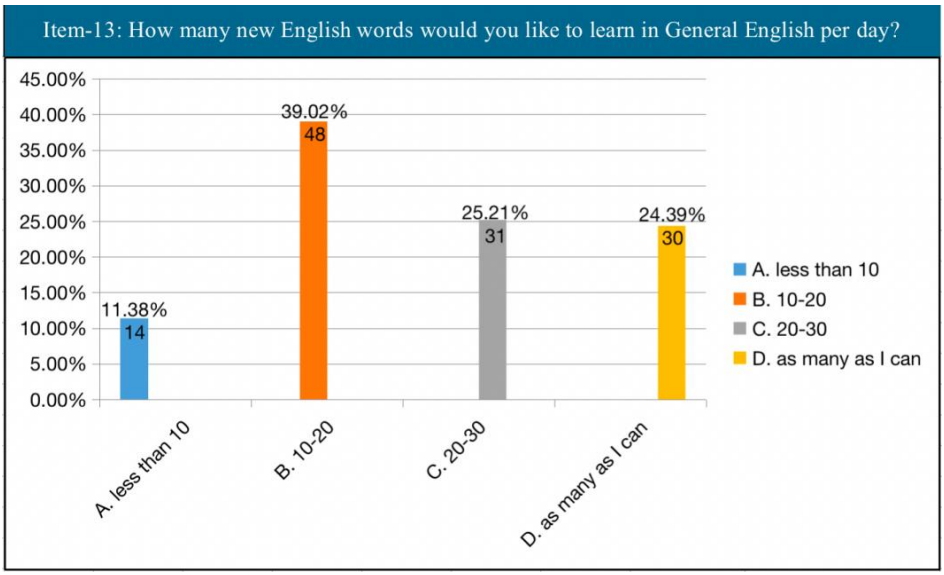
Students' Preferred Vocabulary Memorization Methods



For the number of new words to be learned each day, the findings revealed that, of the 123 students, 48 students (39.02%) preferred to learn 10-20 new words per day, 31 students (25.21%) chose 20-30, 30 students (24.39%) liked to learn as many words as possible per day and only 14 students (11.38%) reported to learn less ten new words per day (See Figure 4).

Figure 4

The Number of New Words Students are Expected to Learn Each Day



Mobile Applications for Vocabulary Learning. As shown in Table-4, students reported that it was effective to use mobile apps for vocabulary learning and they expected to conduct vocabulary learning activities by using mobile apps. Among all kinds of mobile apps including apps for learning vocabulary, apps for entertainment, etc., the students reported their preferences in using vocabulary learning mobile apps the most.

Table 4

Students' Preferences on Mobile Applications

Students' Preferences on Mobile Applications (N=123)		Mean	SD	Interpretation
Item-7. Mobile apps are more helpful when it comes to vocabulary learning than conventional approaches, e.g., using mobile phone dictionaries to replace paper dictionaries .		3.84	0.85	Agree
Item-10. I would like to participate in some activities designed with mobile apps to improve my TEM-4 vocabulary.		3.65	0.89	Agree
Item-17. To what extent do you like using the following mobile apps for learning TEM-4 vocabulary?	Social mobile apps	3.83	0.74	Like
	Learning mobile apps	3.87	0.71	Like
	Entertainment mobile apps	3.82	0.78	Like
	Tool-based mobile apps	3.59	1.06	Like
Item-18. How often do you use these apps?	E-Dictionary	4.18	0.91	Usually
	English language learning apps	3.72	0.89	Usually
	WeChat	4.68	0.64	Usually
	Video application	3.72	1.04	Usually

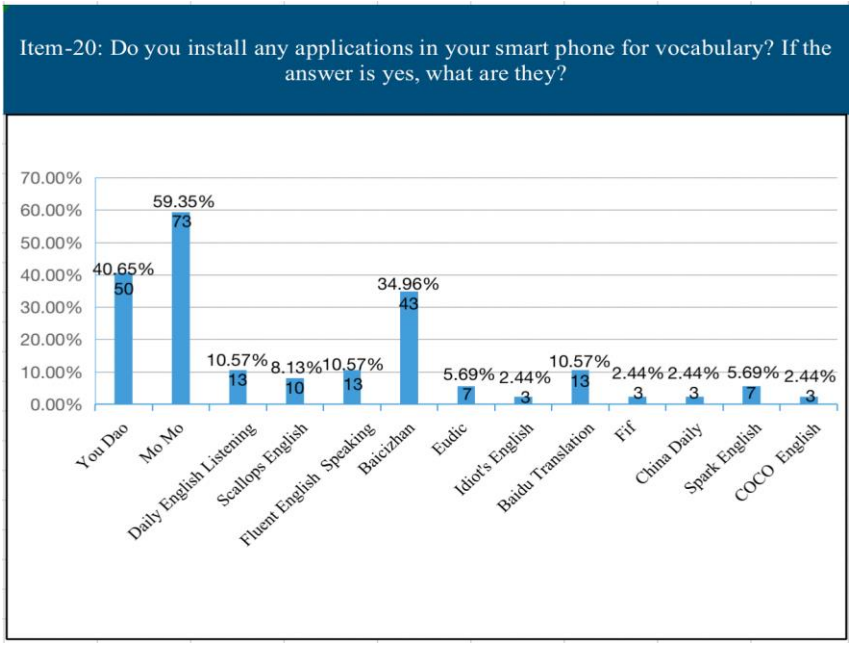
The students reported their preferences in learning vocabulary by mobile apps more than the conventional method which was without support from the mobile apps (M=3.84, S.D.=0.85). That was confirmed by their responses about their preferences to participate in learning activities designed with the use of mobile apps. Among mobile apps, learning mobile apps (M=3.87, S.D.=0.71) was their favorite, and they showed similar preferences for mobile social apps and mobile entertainment apps. The tool-based mobile apps ranked last. In terms of usage frequency of the apps, students had the highest level of usage frequency of WeChat in their daily life (Item-18: M=4.68, S.D.=0.64), followed by e-dictionaries, English language learning apps, and Video apps. It suggests that designing vocabulary learning instructions should make full use of WeChat and consider using e-dictionaries.

In addition, the analysis results of the open question revealed about the mobile apps for

vocabulary learning that students liked and often used at the time being, which provided a reference for the use of mobile apps to instruct students to learn vocabulary. The top three apps installed by students were Mo Mo (59.46%), You Dao (40.54%) and Baicizhan (35.14%). Mo Mo and Baicizhan were mobile apps for vocabulary retention and You Dao was an e-dictionary (See Figure5).

Figure 5

Mobile Applications Installed for Vocabulary Learning



Discussion and Conclusion

This research utilized a needs analysis questionnaire to investigate the situation of a private international university English major students using mobile phone apps in their vocabulary learning with a plan to design an instruction for the particular learners in a subsequent study. The questionnaire comprised the students' past and present states showing their experiences and their desired learning activities, methods, and materials showing their preferences.

The findings revealed that the English major sophomore students who were about to

take TEM-4 believed they had insufficient vocabulary knowledge to achieve the compulsory national test. They expected that attending General English, a course provided for them by the university, would help them improve the situation. The results suggested that it was significant for the university curriculum to determine for each course the number of the vocabulary items to be learned each semester providing that the students could arm themselves with the sufficient vocabulary knowledge to accomplish the task. The result was of reference value to syllabus makers, because not many research papers had looked into the number of words taught on a daily basis. A proper scope (amount of content) and sequence (the order of the selected content) for a language curriculum can bring the teachers and students to achieve the educational objectives (Reigeluth, 1999).

Moreover, the students had an experience of uncertainty about their vocabulary knowledge in both receptive and productive skills in the current study is reflected in the previous studies which reported about students' problematic states: low receptive vocabulary (Teng, 2014) and not able to use words in the right contexts (Zhang & Zhang, 2020; Zhai, 2016). Only with sufficient vocabulary size and the ability to use vocabulary can students be sure of their 'input' and 'output' of vocabulary. Such experiences call for a need of proper learning and teaching to resolve the low receptive and productive vocabulary.

Students also revealed their uncertainty in their vocabulary learning techniques, especially how to learn and memorize new vocabulary and they reported that lack of perseverance was the major obstacle in their vocabulary learning. The students analyzed their barriers to learning vocabulary as lack of perseverance and lack of suitable learning methods was also reported by Bei (2011). Such findings can be explained by Prastiti (2020) who claimed that learning methods can affect or change students' learning perseverance, which means an insecure one can cause another one to be insecure. Ineffective word-learning methods are bound to affect students' perseverance and motivation and both can be one of the

reasons why students cannot listen and speak well.

For the experiences in using mobile apps for vocabulary learning, although they agreed with the benefits to be gained from using them with the learning, they still showed their needs of guidance from teachers and peers. The results were congruent with Klimova and Polakova (2020). This finding suggested that teachers should make use of practical and proper mobile apps to instruct vocabulary learning according to students' needs and preferences. At the same time, teachers should play an exemplary role in the use of mobile application functions to ensure that students can fully use the recommended mobile apps in and out of class.

The teaching design, combined with students' preferences, will make it easier for students to accept the teaching content and achieve satisfactory teaching results. It was interesting to find that students had also become more interested in learning words in multiple ways, especially audio-visual ones in this era of short videos. The findings on students' preferences can yield the information to design an appropriate vocabulary learning and teaching to the particular students. Teachers may increase the proportion of videos in the teaching process according to students' preferences (Montero Pérez, Peters, & Desmet, 2018). Teachers can guide students to learn words through KEKE English, Baicizhan, Bubeidanci and other mobile apps with the same audio and video function (Chen, Peng, Yang, & Cong, 2021; Li, Meng, Tian, Zhang, & Xiao, 2021; Wang, Zou, & Xing, 2014).

It is interesting that, although the students were weak in listening and speaking, they liked to improve their vocabulary by listening and speaking. The result showed that students expected to improve their listening and speaking skills by overcoming their lack of vocabulary. It can be done like in a learning activity proposed by Putri (2022) who conducted a feasibility study on improving students' vocabulary by Instagram with its function for speaking and listening. Preferred vocabulary learning through fun games, group discussions, and context (role-playing and story-telling) was also reported by many previous studies (e.g.,

Wulandari, 2021; Brosh, 2019; Dewi, Hasanah, & Huda, 2022, etc.).

Combined with students' preferences in vocabulary learning with mobile apps, a teaching plan about TEM-4 vocabulary instructed by mobile apps in General English should be designed in the form of learning activities. In the process of designing activities, the teacher should consider combining video and audio materials and utilize the learning and social apps (e.g., WeChat). Speaking and listening tasks should be included in the activity content, and the task or assignments should be conducted in group work. Teachers may choose the proper learning mobile app (e.g., KEKE English), preferably one that combines video and audio functions and allows students to practice listening and speaking. Vocabulary competitions conducted by mobile apps (e.g., Kahoot!) can stimulate students' interest and enthusiasm for vocabulary learning, just like vocabulary games.

The limitation of this study was the sampling scope. This questionnaire sample was only selected from the sophomore English major students from an international university in China. If the participants had expanded to cover the freshmen, the findings could have been more generalized in terms of providing better preparations to improve students' vocabulary knowledge from the first start. In that case, the syllabus designed according to the questionnaire results would better serve the vocabulary learning of junior students to help them improve their vocabulary ability and pass the TEM-4 successfully.

The findings of the current research revealed the experiences and preferences of Chinese EFL students in a private international university which embodied the lack, necessities, and wants in TEM-4 vocabulary learning using mobile apps. The results can be generalized to other types of needs analysis in the vocabulary instruction rendering help to English teachers to understand how to conduct and interpret the students' needs in vocabulary learning by using mobile apps and conducting appropriate instruction according to the students' needs.

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