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Surveying on English Mobile Learning Among University Students: Current State and Influencing Factors

ZHU Haihua, CHEN Yifan, REN Yanyan, ZHI Yuying
University of Shanghai for Science and Technology, Shanghai, China

Mobile learning integrates mobile technology with digital learning, offering flexible, personalized content and portable equipment. It enables access to rich content and enhances learning efficiency. Therefore, it has become mainstream to utilize mobile devices for English learning among university students' English learning. The current study aims to examine the current situation and influencing factors of university students' English mobile learning. 98 university students in one university of Shanghai participated the study and the questionnaire was used to collect the data. The results indicated that most university students already have electronic devices to support mobile learning. Personal factors, environmental factors, digital literacy, and technological capabilities are the main factors affecting university students' English mobile learning. The current study has implications for learners, teachers, and software developers. Learners should adjust their learning motivation, play an active role, and fully utilize the mobile platform to obtain resources and improve learning efficiency. Teachers should incorporate the advantages of mobile teaching and promote categorized and tiered teaching. Software developers should add new functions on the basis of meeting the basic needs of learners and continuously innovate the mobile learning platform.

Keywords: English learning, mobile learning, university students

Current Situation of University Students' English Learning

University Students' English Learning Anxiety and Motivation

For non-English majors, English learning anxiety among university students has become a common phenomenon due to the existence of mandatory requirements, such as passing the College English Level 4 or 6 exam (Xu & Kou, 2015). As a compulsory public course, university English teaching has long been criticized as "time-consuming and ineffective", "only learning but not using", and "mute English" (Fu, 2022, p. 1). This shows that there is a gap between university English teaching for non-English majors and the national requirements for foreign languages and foreign language talents (Fu, 2022). Xiu Wei and Wang Xuemei (2023, p. 5) mentioned that for English majors, there is still a gap between the education they receive and the goal of cultivating

ZHU Haihua, undergraduate, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.
CHEN Yifan, undergraduate, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.
REN Yanyan, undergraduate, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.
ZHI Yuying (Corresponding author), Ph.D., lecturer, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.

multilingual + "excellent internationalized talents" who "know the language, know the country, and know the field well" in the cultivation goal plan.

In terms of learning motivation, Lv Zhongshe and Yang Yuanchen (2013) proposed to categorize students' English learning motivation into six different types of learning motivation: "intrinsic interest", "external requirements", "cultural exchange", "social responsibility", "auxiliary tools", and "personal development". Based on this, Zheng Chunping, Gao Mengya, Xu Lingyu, and Chen Xu (2022) suggested that different English learners can be categorized into four types of motivation, namely, "high commitment", "interest-oriented", "tool-driven", and "low-driven" according to the differences in motivation and performance, and suggested that self-regulation of English learning requires the use of certain intermediary tools, and efficient English learners are good at utilizing various types of software and online platforms for English learning.

Studies of Mobile English Learning

In the era of "Internet +", the integration of technology and education has led to a great change in the way of learning, and mobile learning (m-learning) is a new type of learning that combines mobile technology with digital learning. According to Alexzander Dye, mobile learning is a kind of learning that can happen at any time and any place with the help of mobile terminal devices. The mobile devices used for mobile learning must be able to present the learning content effectively and provide two-way communication between the teacher and the learner (Yang, 2012). There has been sufficient research to take a positive view of the role of mobile learning, and there have been research results on the characteristics and development of mobile learning. Kearney and Maher (2013) emphasized the three core characteristics of mobile learning: authenticity, collaboration, and personalization, and previously Yuan-Kai Wang (2004) also proposed the importance of context awareness and adaptation in mobile learning. Overseas research on mobile learning focuses on system development, learning mode, and effect, and research from the perspective of learners has become one of the trends of mobile learning.

Wang Shouren (2016) mentioned that the integration of information technology and university English courses is a correct and forward-looking teaching concept, and that university English should continue to play the important role of modern educational technology in foreign language teaching. A large number of studies have shown that contemporary university students' English learning is closely related to mobile learning, and learners gradually change to the vocabulary learning mode based on mobile learning after breaking through the traditional vocabulary learning mode (Yang, 2012). At present, there are abundant mobile vocabulary learning platforms on the market, commonly relying on mobile APPs on smart phones, tablets, and computers, such as Fanbei Word, Hujiang Happy Word Bank, Youdao Dictionary, and InkMo Memorize Vocabulary, etc. In the study of the effect of mobile learning on vocabulary learning, some scholars have taken "Baiwu Chop" APP as an example to investigate the evaluation of the mobile learning platform by students, and found that most of the learners who insisted on using the mobile APP thought that their vocabulary increased significantly, i.e., "Baiwu Chop" has a significant effect on the English vocabulary learning of university students and plays a positive role in university students' English vocabulary memorization (Cao & Deng, 2019). In terms of analyzing user feedback, so as to explore the mobile vocabulary APP development strategy, Quan Feng (2016) described the behavioral characteristics and tendencies of university students in using mobile APPs from the perspective of user's usage needs, which provides reference data for APP development strategy. Mobile learning is mainly carried by APP, which plays an important role in the field of English vocabulary learning for university students.

Studies on the Factors of Mobile English Learning

Individual Factors

Learning motivation and interest are important factors affecting the effectiveness of learners' mobile learning. Quantitative studies on English learners' motivation have shown that both superficial motivation from external sources and deep motivation originating from interests and hobbies can influence English learners' learning perceptions and strategies (Wen, 2001). According to Gao Yihong, Zhao Yuan, Cheng Ying, and Zhou Yan's (2003) survey of Chinese undergraduates' motivation to learn English, seven more specific types of motivation were derived: intrinsic interest motivation, achievement motivation, motivation to go abroad, motivation for learning situations, social responsibility motivation, motivation for personal development, and information media motivation. In addition, major and English proficiency have significant impact on motivation to learn. Improving learners' interest in English is one of the effective ways to stimulate learning motivation. On this basis, Zheng Chunping et al. (2022) proposed that different English learners can be categorized into four main types of motivation, namely, "high commitment", "interest-oriented", "tool-driven", and "low-driven", according to the differences in their motivation and performance.

Due to the expansion of enrollment in domestic universities, the teacher-student ratio has declined, and the average tutoring time of teachers for each student has decreased; it is more crucial to cultivate students' independent learning ability and correct their learning attitudes. On one hand, learner factors such as self-efficacy, goal orientation, and self-regulation of learning strategies have an impact on learners' independent learning ability (Shang & Kou, 2015); and on the other hand, the number of learning strategies used is related to the independent learning ability of English learners (Zhang, 2003), and this study also shows that the quality of strategies used by outstanding English learners differs from the normal English learners. For non-English majors, English learning anxiety among university students has become a common phenomenon due to the existence of mandatory requirements, such as passing the University English Test Band 4 and Band 6 exams (Xu & Kou, 2015). As a compulsory public course, compulsory university English course has long been criticized as "time-consuming and ineffective", "only learning but not using", and "mute English". This shows that there is an obvious gap between university English teaching for non-English majors and the national requirements for foreign languages and foreign language talents (Fu, 2022). Xiu Wei and Wang Xuemei (2023, p. 5) mentioned that for English majors, there is still a gap between the education they receive and the goal of cultivating "multilingual + excellent internationalized talents" who "know the language, know the country, and know the field well" in the cultivation goal plan. With regard to the learning ability of university students, Zhang Junchao and Liu Ru (2020) classified students into highly coordinated, environmentally dependent, independent development, and negative development through satisfaction and self-expectation, and the learning ability decreases step by step, but on the basis of the same, Peng Jingwen (2023) suggested that at present, university students still lack the internal motivation of independent learning, which is based on the prerequisite of perceiving the self-style and recognizing the reality of self-development as the driving force for the development of the university students.

In addition, university students' digital literacy and technological capabilities fully affect their mobile learning efficiency. Contemporary university students grow up with the digital era and have a relatively high

degree of acceptance and familiarity with digital technology, but the rapid development of digital technology also poses a greater challenge to university students' entertainment control. University students have limited methods of searching for learning resources, which is also reflected in the neglect of using academic databases and the reliance on browsers such as Baidu (Ling, 2020), which is one of the manifestations of digital literacy that needs to be improved. Sun Shaowei (2023) suggested that at present, university students have improved in the number of APP mobile and the length of use, but there are still shortcomings in the content understanding and creativity of learning APP. In terms of English learning, Gu Xiaoying (2019) proposed that non-English majors in universities are gradually becoming more aware of the use of information technology, but still lack the ability to use it.

Socio-environmental Factors

Mobile learning is characterized by the dynamic nature of the learning environment, and the traditional learning resource recommendation model has the problem of low efficiency of the user similarity algorithm in this scenario, so a reasonable resource recommendation model for learning platforms can help learners obtain resources. According to the mobile learning resource recommendation model constructed by Li et al. (2020), the accuracy of learning resources recommended by course platforms to learners is improved based on learners' spatio-temporal characteristics. Therefore, the recommended resources are more in line with personalized needs. Previously, Ma et al. (2016) mentioned in her exploration of the development history of learning resources of education APP that the convenience of learning resources depends firstly on the development of mobile devices and related technologies, and the huge market potential of online education gradually attracts enterprises and companies to develop education APPs mediated by mobile devices, so that users can choose to download APPs through the application store and use the APP according to their own needs.

Xu and Zheng (2013) mentioned in her study on the factors of university students' acceptance of mobile learning that entertaining applications such as communication chat and music games can give users an enjoyable experience, and the entertaining nature of mobile learning can also stimulate learners' interest in learning through sensory stimulation and interaction design. Yao et al. (2022) found that peer dialogue feedback based on the interactive form of classroom performance can significantly weaken students' tendency towards superficial learning methods; the questioning behavior of peer dialogue, as well as the behavior of expressing opinions, is more conducive to promoting the deepening of students' learning methods.

Mobile Device and Technology Factors

Thanks to the development of network technology and the popularization of various mobile terminal devices, contemporary university students have commonly owned mobile devices and can skillfully use mobile devices and networks to serve their learning and life (Gu, 2019). Luo Yixin (2019) proposed that mobile depends on the network, such as unstable network environment can lead to learning inefficiency, too much learning content and complex use of the operation impede the depth of mobile learning. Mobile and mobile devices currently have powerful recognition functions that can enhance the reality function and intelligent object connection function, which help promote the development of deep mobile learning. However, mobile terminals still lack powerful arithmetic and a large amount of data training, and in the case of limited hardware performance, it needs computers to process big data to generate usable models (Li, 2023).

In terms of learning experience and results, the current use of mobile learning technology by university students is mainly focused on the use of websites and APPs to learn and obtain information, and a small number of students use network information technology to conduct mobile English writing and multimodal corpus query, which plays a greater role in promoting English learning (F. He, X. He, & Liu, 2018). With the development of the 5G information age, educational intelligent technology optimizes the presentation of teaching content by using virtual reality and holographic projection and other technologies from the aspects of environment perception, data acquisition, data security, etc., to help the development of education (Yang et al., 2021).

According to the previous research, university students' English learning anxiety and motivation are influenced by the gap between madatory requirements and national standards. Mobile learning, integrating technology and education, offers flexibility and personalized learning experiences. Factors affecting mobile English learning include individual factors like motivation and self-regulation, socio-environmental factors like resource recommendation models and peer interaction, and mobile device and technology factors like network stability and recognition functions. Effective integration of mobile technology into English learning requires addressing these multifaceted factors to enhance students' learning experiences and outcomes. Based on the background, this study intended to answer the following research questions:

1. What is the current status of English mobile learning among university students?
2. What are the factors affecting m- learning of English among university students?

Research Method and Analysis

The participants of current study are sophomore and junior students of a university in Shanghai. In order to ensure the representativeness of the sample, this study collected data from university students of different majors. In the sample of university students, we categorized the participants into English majors, foreign language majors (non-English), and students of other majors. English majors are students who study mainly in English and have a high professional need and interest in English learning. Foreign language majors (non-English) are students who study other foreign languages and may have different challenges and needs in English learning. Most of the students from other majors' study science and technology related majors who may have their own specific learning styles and needs in English learning. The participants of this study represent a diverse group of university students from different backgrounds and subject areas. The statistic information of the participants is shown in Table 1:

Table 1

Statistic Information of Participants

	Options (as in computer software settings)	Frequency	Percentage (%)
Your specialty	English major	28	28.57
	Foreign language (non-English) majors	10	10.20
	Other majors	60	61.22
Your grade	Second-year university student	62	63.27
	Third-year university student	36	36.73

In this study, an online questionnaire was used to investigate the current status and influencing factors of English mobile learning among university students. 115 questionnaires were distributed and 98 valid questionnaires were returned, with a validity rate of 85.2%.

The Current Status of University Students' English Mobile Learning

Of the 98 valid questionnaires, a total of 89 participants who are sophomores and juniors have a certain understanding of mobile learning, accounting for 90.8%, which is consistent with the phenomenon that university students in contemporary universities now have a general awareness of the use of mobile devices for assisted learning (Gu, 2019). However, there are still nine participants who do not understand mobile learning at all, which also proves that some university students still rely on traditional learning, so the university needs to integrate traditional learning with mobile learning or even gradually transition to mobile learning to improve teaching efficiency.

In this study, it found that the top three mobile devices were smartphones, laptops, and tablets, whose usage percentages were 95.92%, 85.71%, and 62.24%, respectively. The result is consistent with the phenomenon that university students in universities commonly own mobile devices (Gu, 2019). However, with the popularity of dictionary-type mobile in mobile devices, the number of participants using electronic dictionaries is small, only accounting for 14.2% of the total number of participants.

Influencing Factors of Mobile Learning for University Students

According to the current situation of mobile learning of English among university students and their attitudes as proposed by Wu Lingfei (2020), we categorized university students' mobile learning influencing factors into three groups: individual factors, social factors, and mobile device factors.

Table 2

Individual Factor ANOVA Results

Items	Your major (mean ± standard deviation)			*F*	*p*
	English majors (*N* = 28)	Foreign language (non-English) majors (*N* = 10)	Other specialties (*N* = 60)		
1. You like English as a language or like the culture of English-speaking countries, so you learn English.	3.25 ± 1.21	3.30 ± 0.95	3.25 ± 1.05	0.009	0.991
2. You need to study other majors with the help of English, so study English.	3.21 ± 0.99	3.20 ± 1.03	3.58 ± 1.14	1.361	0.261
3. You need to pass the school exams, so learn English.	3.79 ± 0.99	4.30 ± 0.48	4.22 ± 0.67	3.439	0.036*
4. You need to go abroad for education and work opportunities, so learn English.	3.25 ± 1.17	3.20 ± 1.23	3.10 ± 1.22	0.156	0.856
5. You want to enrich your resume through English, so learn English.	3.61 ± 0.96	3.40 ± 0.97	3.90 ± 0.84	1.992	0.142
6. You want to acquire native English thinking after learning English, so learning English.	3.29 ± 1.18	3.30 ± 0.95	3.38 ± 1.04	0.089	0.915
7. You want to be more competitive in the entrance exams for higher education, so you learn English.	3.71 ± 0.98	3.60 ± 0.70	4.13 ± 0.70	3.853	0.025*
8. You learn English so that you can live up to your parents' expectations.	3.00 ± 1.15	3.10 ± 0.74	3.28 ± 1.08	0.701	0.498

Note. * $p < 0.05$.

According to Gao Yihong et al.'s (2003) motivational survey on Chinese undergraduates' English learning, we divided university students' English learning motivation into intrinsic interest motivation, achievement motivation, motivation to go abroad, motivation for learning situations, social responsibility motivation, and personal development motivation to develop our analysis.

The data in Table 2 show that exams are the main factor influencing the use of mobile learning by university English learners, with "To pass school exams, you study English" ($F = 3.439$, $p < 0.05$) and "To be more

competitive in the university entrance exam, you study English" ($F = 3.853$, $p < 0.05$) statistically significant. The data in Table 2 show that most of the English learners study towards English to take school exams or university entrance exams. The result is with a mean value of 3.95 or more, indicating that most of the learners in all majors still take achievement motivation as their main motivation for English learning. Enrichment of their personal resumes is also regarded as an important motivation for learning English, with a mean value of 3.76 or more. It indicates that English learners of all majors still stay at the surface level of motivation, i.e., achievement motivation and personal development motivation.

Learners from various majors hold diverse views on using English to learn other subjects and acquiring a native mindset through English language learning. Despite the average rating exceeding 3.34, the standard deviation is over one, indicating significant variability in opinions. This data reflects that different learners have different understandings of motivation for personal development.

Personal interest belongs to learning motivation and Table 3 shows that the number of participants who take English learning as an interest is relatively low, with a mean value of only 3.25, and a median of only three. This finding disagrees with previous studies claiming that personal interest is a deep-seated motivation (Zhang & Liu, 2020). It can be seen that most of the learners are less committed to English learning, and their motivation is still in the middle and low end of motivation, i.e., personal development, external requirements, social responsibility and other motivations, which is a clear gap between this and the national requirements for foreign languages and foreign language talents.

Table 3

Individual Factor ANOVA Results

	Your major (mean ± standard deviation)			*F*	*p*
	English majors (*N* = 28)	Foreign language (non-English) majors (*N* = 10)	Other specialties (*N* = 60)		
9. Exam tutoring APPs effectively improve your English learning performance and experience (Starfire, Huayan, TOEFL Station, etc.).	3.39 ± 0.92	2.90 ± 0.99	3.15 ± 1.04	1.041	0.357
10. Word memorization APPs effectively improve your English learning performance and experience (Fanbei words, Baiwu Chop, not memorize words, etc.).	3.64 ± 0.91	3.80 ± 0.79	3.78 ± 0.90	0.256	0.775
11. Classroom-supporting APPs effectively improve your English learning performance and experience (Foreign Studies, Love to Listen to Foreign Languages).	3.18 ± 0.86	3.30 ± 0.82	3.28 ± 1.04	0.122	0.885
12. Listening training applications effectively improve your English learning performance and experience (Daily English Listening, Fanbei Listening, etc.).	3.46 ± 0.74	3.00 ± 0.94	3.57 ± 0.98	1.646	0.198
13. Speaking training APPs effectively improve your English learning performance and experience (Fanbei Speaking, etc.).	3.18 ± 1.02	2.80 ± 0.79	3.25 ± 1.05	0.834	0.438
14. Dictionary APPs effectively improve your English learning performance and experience (Oulu Dictionary, Youdao Dictionary, etc.).	3.71 ± 0.90	3.70 ± 0.82	3.72 ± 0.99	0.001	0.999
15. Writing APPs effectively improve your English learning performance and experience (Critique.com, etc.).	3.46 ± 0.84	2.70 ± 0.67	3.12 ± 0.99	2.808	0.065
16. Tools APPs effectively improve your English learning performance and experience (Baidu.com, university mooc and other non-English apps).	3.46 ± 1.04	3.60 ± 0.84	3.23 ± 1.13	0.772	0.465

There are no items with *p*-values less than 0.01 in Table 3.

The data in Table 3 show that the effectiveness of the word recitation and dictionary categories in each specialty is higher, reaching more than 3.64, and most of the participants believe that the role of the mobile learning application is focused on the word recitation application and the dictionary application, which are in high demand.

The majority of participants believe that the use of mobile learning APPs for speaking and writing is ineffective in improving learning performance and experience. Universities should pay more attention to oral training apps, actively mobilize students to use the corresponding learning apps for learning activities, and at the same time give certain suggestions to app developers to improve the development and demand for the corresponding learning apps.

Table 4

ANOVA Results for Mobile Device Factors and Social Factors

	Your major (mean ± standard deviation)				
	English majors (*N* = 28)	Foreign language (non-English) majors (*N* = 10)	Other specialties (*N* = 60)	*F*	*p*
17. You agree that teachers should have a plan to guide university students' English mobile learning.	3.54 ± 0.96	3.40 ± 0.70	3.83 ± 0.85	1.803	0.170
18. You can develop reasonable learning strategies based on your English learning expectations.	3.64 ± 0.78	3.20 ± 0.63	3.72 ± 0.76	2.005	0.140
19. You tend to actively explore rather than passively input during the mobile learning process.	3.57 ± 1.00	3.30 ± 0.67	3.58 ± 1.08	0.336	0.715
20. You are able to maximize the use of mobile English learning materials outside the classroom based on the amount of English input in the classroom.	3.32 ± 0.94	3.40 ± 0.70	3.35 ± 0.94	0.028	0.973

The data in Table 4 show that most of the English language learners are able to develop reasonable learning strategies according to their English learning expectations with a mean value of 3.64 or above. The results indicate that learners are in favor of the school teacher's planned guidance of university students' English mobile learning. It shows that the English learners currently have some plans for independent English mobile learning and hope that school teachers will intervene and help with the planning. However, in the process of mobile learning, some English learners still rely on passive input learning, with a mean value of 3.55 but a variance value of 1.01, which is still different from the "high input" and "intrinsic interest-driven" talents proposed by authoritative researchers. There is still a gap between the "highly engaged" and "intrinsically interest driven" talents proposed by authoritative researchers.

The data in Table 5 show that most English learners are willing to use mobile devices to access resources and assist English learning, with a mean value of more than 3.94. Learners generally recognize that the advantage of mobile learning lies in the flexibility of learning time and location. Network and device proficiency are generally considered to affect the accessibility of learning resources, with a mean value of more than 3.85, and compared to the device operation proficiency, network environment has a greater accessibility which is more influential. It indicates that most English learners in all majors have the awareness of using mobile platforms for English learning and apply them in their daily life, and they can also fully recognize the advantages of mobile learning and the dependent conditions for resource access.

Table 5

ANOVA Results for Mobile Device Factors and Social Factors

Items	Average	Standard deviation	Median
21. Do you agree that English computer games can be useful for learning English?	3.643	0.977	4.000
22. You often use APPs or other platforms on your phone to help you learn English.	3.704	0.864	4.000
23. You can use music and movie resources to support your learning in English.	3.959	0.836	4.000
24. You can use the Globalized Language Learning mobile software to improve your expressive skills through video or text chat with native speakers.	3.408	1.014	4.000
25. Compared with traditional book learning, you prefer to use mobile devices for English learning.	3.694	0.901	4.000
26. The advantage of learning English on mobile devices is that they can make full use of fractions of time and do not limit the place of study.	3.939	0.757	4.000
27. You can access the English learning resources you need on your mobile device.	3.959	0.745	4.000
28. You think the use of mobile devices can assist English learning.	3.949	0.817	4.000
29. The online environment has a greater impact on your ability to access mobile learning resources.	3.949	0.751	4.000
30. Proficiency in operating mobile devices affects your access to resources.	3.857	0.825	4.000
31. You can skillfully use browsers and APPs to learn English.	3.918	0.742	4.000
32. You are proficient in using academic corpora, dissertation academic websites to learn English.	3.214	0.900	3.000

Most of the learners held a relatively consistent attitude towards the use of English computer games, audio-visual resources, and language chatting software. Among them, the highest one is “using audio-visual resources to assist English learning”, with an average value as high as 3.95, which also positively reflects that, with the development of the 5G information age, the use of audio-visual resources not only enriches the presentation of classroom content, but also effectively improves the motivation of university students in classroom learning and the absorption of classroom content; various mobile APPs and learning platforms can also make full use of the fun of audio-visual resources to enrich the learning content and gain more attention. Mobile APPs and learning platforms can also make full use of the interesting nature of audio-visual resources to enrich learning content and gain more student users.

However, on the comparison of the proficiency level of mobile platforms between mass and specialized, the data show that even though the majority of learners use mobile platforms for learning, the proficiency level of using corpus and dissertation websites is still low. On the question “Can you skillfully use academic corpus, thesis academic website to learn English”, the mean value is 3.2, and the median is only three, i.e., “sometimes meets”; on the question “Can you skillfully use browser, APP to learn English”, the median is four, i.e., “more in line with”. It can be seen that university English learners are more familiar with obtaining learning resources from popular and easy-to-use platforms, and the resources obtained tend to be superficial, while academic websites have problems in operation and application due to the difficulty of searching or access limitations, etc. Therefore, universities need to strengthen the cultivation of students’ ability of obtaining resources from academic websites and follow the trend concept of open scientific research.

Conclusions

The purpose of this study is to examine the current situation of English mobile learning among university students, to understand the attitudes of university students toward English mobile learning, and the differences

in attitudes toward English mobile learning among English majors, foreign language majors (non-English) and students of other majors. The study found that university students now generally have electronic devices (smartphones, etc.) that can assist English mobile learning, but some of them still rely on traditional learning. Therefore, universities need to integrate traditional learning with mobile learning or even gradually transition to mobile learning to improve teaching efficiency. Another purpose of current study is to examine factors influencing English mobile learning. Factors affecting university students' English mobile learning mainly include individual factors and environmental factors. Individual factors include students' motivation and interest in English learning, learning attitude and independent learning ability, digital literacy and technical ability. External environmental factors involve course design, teacher support, and family support.

The study has implications for learners and teachers. There are two suggestions for learners: first, adjust the learning motivation from "passive input" to "active learning". Analysis shows that the main motivation for university students to use mobile for English learning is still to pass exams, and they are more dependent on vocabulary-reciting APPs. Therefore, when university students use English learning mobile to input words, they should utilize the text recording and audio recording functions of mobile devices to practice speaking and writing output, so as to check their English level in real time. Secondly, improve learning efficiency and search for "high-quality information". University students generally rely on websites and APPs to obtain learning resources directly, and their proficiency in using essay websites and corpora is low. In order to improve the quality of learning resources, university students should use thesis websites and corpora to filter the learning materials they use, which can not only avoid the interference of unknown information brought by websites and APPs, but also efficiently collect learning materials with the help of keywords, key phrases, and other search methods.

For teachers, the advantages of mobile learning should be incorporated into the teaching process to promote hierarchical teaching and to teach for "professional goals". Teachers need to teach students according to their majors, students' quality, and learning ability. Teachers can use the mobile platform to record the fluctuation of students' performance and carry out targeted teaching on the weak points of their ability and the personalized characteristics of the mobile learning section, and at the same time, they can use the mobile platform to interact with the students after class and answer their learning questions instantly. Teachers should select up-to-date and real content to enhance students' interest in learning through mobile devices. Through the mobile platform and other access to employment information, adjust the teaching content of English courses according to occupational needs and improve the quality of graduates.

At the same time, software developers should create high-quality mobile devices and develop software according to the "purpose of use". The quality of the existing learning APPs on the market varies, and some of them are even filled with fancy "advertisements for selling classes" and "a certain English exam must pass class" with high price and low quality. Developers should first consider the identity of the user, and use big data to collect and layer the personalized needs of users when they use the APP. For university students, most of the users are motivated by the purpose of studying on-campus English courses and preparing for the CET-4/CET-6 and IELTS/TOEFL. Accordingly, developers can add university English tutorials or vocabulary lists, past exam questions, listening audios and dictionaries, etc., to meet the basic learning needs of student users and greatly increase the utilization rate of users. On this basis, it is reasonable to add paid high-quality materials or courses to meet the needs of users for in-depth learning.

This study also has some limitations; in the further study, it is necessary to expand the samples of English majors, foreign language majors (non-English) students; and students of other majors respectively, and expand the surveyed grades from sophomore and junior years to all grades in order to improve the scientific validity of the results of the study; in this study, the foreign language majors (non-English) students only involved in the German and Japanese majors. Therefore, the sample size and diversity of the sample are insufficient.

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