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Effectiveness of Mobile-Assisted Language Learning in Enhancing the English Proficiency

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Abstract: In response to the significant impact of the widespread use of digital devices and mobile technologies on language teaching and learning in this time of Internet information technology, this study aims to investigate the effectiveness of Mobile-Assisted Language Learning (MALL) in enhancing the English proficiency of students, while exploring the potential advantages of mobile devices for assisted learning in the English learning environment in China and the potential for mobile applications to assist English learning to foster learner autonomy. Anchored with the design thinking approach, the researchers used the empirical analysis methodology in developing an efficient mobile-assisted language learning model. Usability testing was conducted using a case study of two mobile applications, WeLearn and Flipped English, in Heilongjiang University of Finance and Economics to measure the extent of usability and acceptability of MALL on English language acquisition among college students identified through surveys, interviews, and quantitative assessments. Mobile technology is a perfect tool for every student that enhances their experience and increases their joy while improving their English language skills. It adds new value and brings new opportunities for both English learners and the language education industry. Indeed, MALL is English learners' new ally.

Keywords: Mobile-Assisted Language Learning (MALL); English learner; College English; Mobile application

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1. Introduction

In the context of modernization and globalization, English, as a world language, is playing a pivotal role in the economic and cultural exchanges among countries, and with the growth of China's international trade, the demand for foreign communication in English is increasing day by day, which has put forward higher requirements for China's higher education course. However, there are currently some problems with English teaching in our universities. For example, the teaching methods are too traditional; classroom teaching is restricted by teaching resources; most universities cannot achieve stratified teaching and teaching according to students' abilities, thus neglecting the cultivation of learning personality. These problems directly affect the ability to cultivate talents with global vision and competitiveness. Therefore, we must deeply understand the significance and urgent need of English teaching reform in China, and explore the innovation of teaching

methods and practical methods, in order to mobilize students' interest in learning.

Taking Heilongjiang University of Finance and Economics as an example, this paper will demonstrate the role of Mobile-Assisted Language Learning (MALL) in the development of language learners' autonomy and the improvement of comprehensive language skills by analyzing the teaching data obtained during English teaching and learning process.

2. Literature review

MALL can be defined as the use of mobile devices for learning linguistics. UNESCO (2013) listed the use of active electronic training and education platforms as tablets, mobile devices, e-readers, handheld gaming consoles, digital audio players, notebooks, netbooks, and consoles. Due to its accessibility and universality, MALL, as an approach to learning English as a foreign language is considered in the learning environment as a promising technology for teaching a language [1]. In 1994, the Wire Andrew research project at Carnegie Mellon University pioneered mobile learning research. In the early 21st century, Stanford University pioneered research on applying mobile learning to language learning [2]. Mobile phones can provide language learners with understandable data through pre-custom programming, provide access to opportunities for exchange of meaning via the link with technology or teachers, and create a student-oriented learning environment [3]. Past research indicates that MALL has an effect on language, self-governance, and perception of literacy [4]. By 2012, 1.2 million individuals will use mobile applications globally, increasing to 4.4 million by 2017 [5].

Foreign research on mobile learning has a deep theoretical foundation and remarkable results. In contrast, the domestic research is still in its initial stage. Lu *et al.* introduced a mobile terminal-based foreign language teaching design model, which is based on short messages, browsers, and video calls for learning, from instructional design, learning resources, and video calls [6]. The model is a mobile-based design model for foreign language teaching. Yao *et al.* designed the "4A + 4S" model of university English teaching. The "4A + 4S" model transforms traditional teaching by shifting the roles of teachers and students in traditional teaching [7]. Under this teaching model, English learning in universities can make better use of mobile big data and Internet resources, expand the breadth of learning content, strengthen the depth of learning, and stimulate students' learning. Jing found that when students' overall acceptance of mobile teaching mode is higher, the teaching effect of mobile learning is better [8].

Some studies may focus more on specific aspects of mobile-assisted language learning, such as vocabulary acquisition or listening and speaking proficiency enhancement, while neglecting the development of MALL tools, which serve roles beyond language literacy functions. The important role played by MALL in the formation and development of students' comprehensive abilities and qualities needs to be further investigated.

3. Research design

3.1. Study design

The researchers used quantitative methods in a descriptive design. A descriptive design was used because the main purpose was to collect, present, analyze, and interpret the data collected from learners about the effectiveness of English learning.

This method dealt with a specific description of the English learning process experienced by the participants. Interviews and questionnaires were also used to collect and understand learners' feelings and feedback on their learning. More specifically, this approach allowed the researcher to track the entire process of learners' participation in mobile-assisted language learning, and showed the actual and realistic picture of the

impact of mobile-assisted language learning on English learners' language acquisition.

3.2. Population and locale of the study

The respondents in this study consisted of sophomores studying English as a second foreign language and currently assigned to pilot classes, in which a mobile-assisted language learning model was adopted with mobile apps, WeLearn and Flipped English, to assist English language learning. During the retrieval of the data, there were only 422 students, majoring in accounting, law, and business, responded to the survey.

3.3. Data collection procedure

The researchers conducted the study in Heilongjiang University of Finance and Economics, a private undergraduate university in China.

In pilot classes, teachers take into account the students' English basics and the goals they need to achieve at the course design stage, combine the actual situation of students, make reasonable use of mobile software to assist English teaching, and set up learning programs. The WeLearn mobile app was used to set up pre-study tasks before class, launch classroom activities in class, and assign online discussions after class. Moreover, the mobile app Flipped English was introduced to improve their English language proficiency through independent learning after class.

The teaching tasks in Flipped English are highly targeted. Firstly, teachers can divide students into different groups based on the results of students' vocabulary tests, e.g., beginner, intermediate, advanced, and advanced reinforcement groups. Subsequently, a different number of tasks in different groups was released by the app every day based on the student's level and learning feedback. By quantifying daily learning tasks, students start to develop a good habit of independent learning, thereby improving the effectiveness of learning. The mobile app Flipped English simplifies the skills of listening, speaking, reading, writing, and translating in English. The modularized learning approach meets the different learning needs of students and helps them to improve their personal skills.

The pilot classes of 2020 have completed four semesters of College English courses. With the teacher's supervision and assistance, the students went from reluctance and lack of initiative in the beginning to acceptance and recognition of the learning tasks of Flipped English, and almost all students were able to complete 100% of the learning tasks on time. The findings of the studies are presented as follows in **Table 1**.

Table 1. Statistics on student learning in pilot classes

Group name	Cumulative completion rate	Average daily study hours	System test accuracy rate	System test coverage rate
18-WANGXINYING-Advanced group	100%	21	76%	100%
18-WANGXINYING-Intermediate group	100%	18	79%	100%
18-WANGXINYING-Beginner group	100%	8	67%	100%

3.4. Treatment of data

The researchers used a questionnaire with a four-point Likert scale and interview guide questions to obtain feedback from the students in the pilot classes to analyze whether MALL has a positive and supportive effect on the college English course and whether it has a positive impact on the formation of learners' language learning ability. The answer to the question "What are the English learning needs that you mainly use English learning

software to fulfill?" was vocabulary (75.6%), speaking (68.2%), listening (64.8%), reading (57.2%), writing (40.7%), and grammar (39.4%). The findings are presented as follows in **Figure 1**.

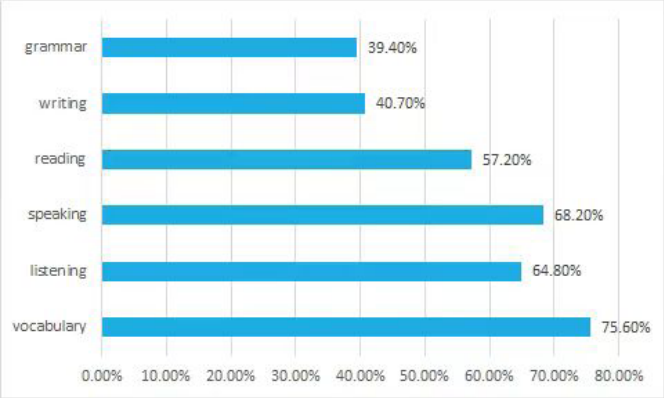

Figure 1. Students' use of English learning software for individual items

Furthermore, the researchers interviewed students based on an open-ended (general) question: "Has it been helpful for you for your teacher to use mobile apps in the classroom? If it is helpful, in what aspects of English learning are they helpful?" In response to the question, 88.71% of the students said it was helpful. Some students thought that it improved the efficiency of classroom roll call, they could speak freely online, and overcame the nervousness and shyness of facing the teacher and their classmates, and more students mentioned that the application of mobile-assisted language teaching in the university English classroom expanded the classroom's knowledge content, and they had more chances to participate in classroom activities. The fact that learners have a positive intention to use mobile phone applications for English learning in the future implies that using mobile phone applications has a potential value for language learners' self-directed learning in making their learning experience more sustainable [9].

4. Results and discussion

CET-4 (College English Test-4) is proof of the results of the pilot class and the application of MALL in university English teaching. Taking the students of class 2020 as an example, due to the epidemic, only a few students in the first three semesters of college English took CET-4, and most of them took CET-4 in June 2022 and December 2022. A total of 2903 students in the Class of 2020, of which 422 students in the pilot class, whose CET-4 passing rates are compared as follows.

The number of non-English majors in the entire school who participated in CET-4 was 2903, the cumulative number of students who passed in the past semesters was 410, and the cumulative passing rate was 14.12%; taking into account the special characteristics of art majors who have a weak foundation in English, and removing the 363 students who majored in the art major of the class of 2020, the number of participants in CET-4 of non-art majors was 2,540, with a cumulative number of students who passed of 407, and the cumulative passing rate was 16.02%.

The pilot class of the Class of 2020 had 11 classes with 422 references, and the cumulative number of people who passed CET-4 in multiple semesters was 102, with a cumulative passing rate of 24.17%. It can be seen that the cumulative passing rate of the pilot class is higher than the cumulative passing rate of the entire Class of 2020 by 10 percentage points, and higher than the cumulative passing rate of the non-art class by 8.15

percentage points.

The comparison of the exam passing rates of accounting majors and law majors is as follows. There were ten classes in the accounting major with a total of 385 students, of which Accounting Classes 1, 7, and 8 were the pilot classes. A comparison of cumulative passing rates for the pilot and non-pilot classes in the Department of Accounting for CET-4 is shown in **Figure 2** and **Table 2**.

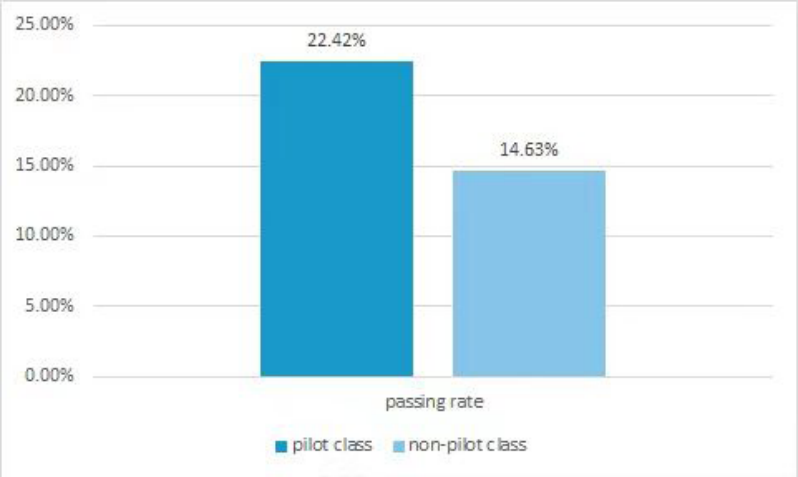

Figure 2. Comparison of passing rates of Accounting Classes

Table 2. Comparison of passing rates pilot classes and non-pilot classes

	Pilot classes (Classes 1, 7, 8)	**Non-pilot classes (Classes 2, 3, 4, 5, 6, 9, 10)**
Total participants	116	269
Total number of passed participants	26	46
Percentage of points above 400	47%	32%
Average score of CET-4	398	361

Furthermore, Law Class 1 is a pilot class, and Law Class 2 is a non-pilot class, and the comparison of the passing rate is as follows. 36 students took the exam in Law Class 1, and 16 students passed CET-4 cumulatively, with a passing rate of 44.40%; 36 students took the exam in Law Class 2, and 5 students passed cumulatively, with a passing rate of 13.90%, as shown in **Figure 3** and **Table 3**.

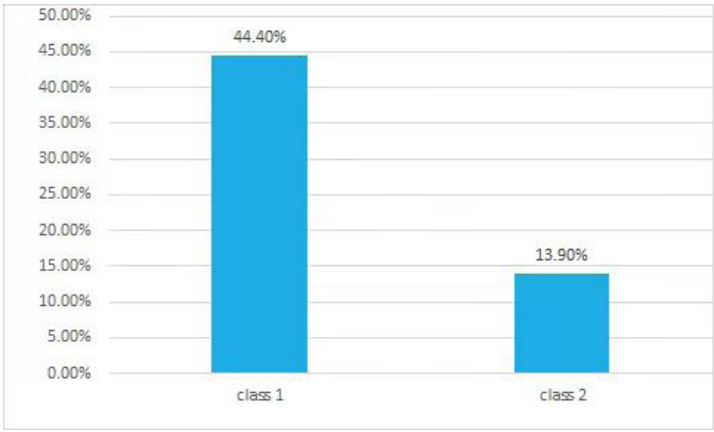

Figure 3. Comparison of passing rates of Law Classes

Table 3. Comparison of passing rates for Law Classes 1 and 2

	Pilot class (Class 1)	Non-pilot class (Class 2)
Total participants	36	36
Total number of passed participants	16	5
Percentage of points above 400	66.67%	27.78%
Average score of CET-4	419	354

The mobile apps such as Flipped English have increased the length of students' English learning after class, cultivated students' sense of independent learning, and enhanced students' enthusiasm and initiative in English learning, which has made great progress in English learning ability and learning effect.

However, the use of cell phones and other mobile devices is a double-edged sword, which can effectively improve students' classroom participation, mobilize students' interest in English learning, and effectively improve learners' time utilization, while at the same time, cell phones and other mobile devices may distract learners by attracting their attention. Ensuring learners' attention is not distracted by other games, entertainment, and other applications on mobile devices is a topic that teachers and researchers need to further explore.

5. Conclusion

The introduction of mobile devices has enabled students to overcome limitations related to time and space. They have the freedom to learn at their own convenience, regardless of where they are. The results of this study show the positive side of mobile-assisted language learning in helping to improve students' motivation and autonomy, and form their independent learning habits, while as a disadvantage, it was pointed out that the continuity and concentration of learning were reduced due to eye fatigue, and reduced readability due to the small screen size of their mobile devices [10]. We should make full use of the various advantages of mobile apps, while being mindful of their disadvantages, and actively develop and improve the functions of mobile apps to explore the potential of mobile-assisted language learning and provide sustainability in language learning.

Disclosure statement

The authors declare no conflict of interest.

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