Design of a WeChat Mobile Learning Platform for Multi-modal Language Learning and its Application

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Abstract. To follow the increasingly popularity of MALL (Mobile Assisted Language Learning) in the mobile multi-media era, the study probes into the design of a multi-modal language mobile learning platform supported by WeChat. The study also practically applies the platform to an English course for mobile learning and analyses the learning results with the quasi experimental research method. The experiment shows that the platform can effectively improve learners' language ability, especially listening, writing and speaking skills.

1. Introduction
In the mobile multi-media era, mobile phone has become a necessary mobile communication tool, and the trend of intelligent development is increasingly obvious. With the help of Android (Google), IOS (Apple), Windows Phone (Microsoft) and other operating systems and application software, smart phones have successfully become a powerful mobile terminal. WeChat is a mobile phone communication software with typical characteristics launched by Tencent in 2011, which breaks through the boundary between traditional telecom communication and mobile Internet, realizes information dissemination across communication operators and system platforms, brings new changes in user relationship, communication form and communication mode, creates a new mobile communication experience, and becomes an important mobile Internet entrance.

With the rapid popularization of mobile portable devices and the arrival of big-data era, the mobile learning needs of learners are increasingly significant. Mobile learning has two basic characteristics: providing short and concise learning contents based on mobile learning terminal; satisfying various learning purposes to help solve problems by practical and exquisite learning contents given. Thus, mobile learning has got rid of the limitations of traditional learning mode, and has increasingly highlighted the advantages of individualization, intelligence, timeliness and portability. With the support of network and terminal equipment, learners can obtain information, resources or services at any place and at any time according to their own needs.

This research aims to make full use of the characteristics and functions of WeChat to develop and design a mobile learning platform for multi-modal language learners, and apply the platform in language learning experiments. Taking advantage of mobile technology to assist language teaching and learning, the platform provides learners with pictures, sounds, videos, animations, discussions and interactions and other channels to mobilize learners' various senses, make various modes participate in language learning.

2. Design of Mobile Learning Platform Supported by WeChat
2.1. Functions of WeChat

WeChat is a free application launched by Tencent in 2011, supporting instant messaging services for intelligent terminals by means of cross communication operators and cross operating system platforms. According to a survey shown in “Report on WeChat Users’ Behaviour Analysis” in 2017, WeChat totals 18 functions, including “Functions of WeChat”, “Creating and Operating an Official Account”, “Voice Reminder”, “WeChat on Web”, “Starting a Video Call”, “QQ e-mail reminder”, “Sending Current Geographic Information”, “Subscribing to an Official Account”, “Floating Bottles”, “Scanning QR Code”, “WeChat Group Chatting”, “Watching Tencent News”, “Shaking for a Friend”, “Searching for people in the Neighborhood”, “Receiving QQ Offline Message”, “Sharing Pictures with Friends”, “Viewing Pictures from Circle of Friends”, “Sending Current Geographic Information”, “Subscribing to an Official Account”, “Floating Bottles”, “Scanning QR Code”, “WeChat Group Chatting”, “Watching Tencent News”, “Shaking for a Friend”, “Searching for people in the Neighborhood”, “Receiving QQ Offline Message”, “Sharing Pictures with Friends”, “Viewing Pictures from Circle of Friends”, “Sending Pictures”, “Voice Chatting”.

In general, WeChat has powerful communication function, social function and platform function. In terms of communication function, WeChat can send texts, pictures, voices and videos, and support real-time intercom, multi-group chat and video communication, which improves the communication efficiency and reduces the communication cost. In terms of social function, WeChat can communicate with friends in circle, and support location-based service, microblog, email and other services, providing rich social scenes. Through the communication function and social function, WeChat provides a fully functional information exchange channel for ordinary users. In terms of platform function, WeChat provides WeChat public platform and open platform, offering a platform based business and technical structure for developers, and a complete operation mechanism of application functions.

2.2. WeChat’s support for mobile learning

WeChat is a lightweight application with great convenience, good experience, rich functions and simple development, which has its own unique advantages for mobile learning platform development (shown in Table 1) [1].

Table 1. Advantages of mobile learning platform development with the support of WeChat

| Functioning Platform | Mobile Terminal |
|----------------------|-----------------|
| Attribute            | communication tool, socialized network |
| Media                | pictures, texts, audio, video |
| Specificity of Contents | privacy, readability |
| Group Work           | WeChat group with strong introversion |
| Supporting Platform  | WeChat public platform, WeChat open platform |
| Educational Function Expansion | good usability of the public platform; development of a new platform with a certain technical foundation |
| Learning Context     | mobile learning |
| Supporting applications | WeChat group chatting, voice/text interaction, automatic reply, subscription push, content sharing |

Based on the functions and characteristics of WeChat, Wang Ping (2013) summarized the mobile learning support function of WeChat (shown in Table 2) [1]. The basic functions of WeChat provide voice text interaction and group chat, which can be applied to collaborative learning, group learning and interactive communication between teachers and students. Based on the information aggregation and push function of WeChat public platform, the subscription push function and automatic reply response function of learning contents can be developed to provide the publishing and retrieval for learners. The API interface based on the open platform can share contents in other mobile learning applications and facilitate resource sharing among learners.

Table 2. WeChat’s support for mobile learning

| WeChat Platform | Application Support | Learning Activity |
|----------------|---------------------|-------------------|
| Basic Function |                     |                   |
| WeChat group   | cooperative learning, interaction between teachers and students |
| voice/text interaction | cooperative learning, interaction between teachers and students |
2.3 Design of a WeChat mobile learning platform for multi-modal language learning

2.3.1. Design principles. Herrington, et al. (2009) pointed out the 11 design principles for mobile learning in higher education circumstances: related to the realistic environment; combined with the learners’ mobile behaviours; provide proper time for adapting to the mobile technology; go for blended learning by combining mobile technology with the non-mobile one; able to go for an immediate and spontaneous study at any time for learners; able to go for a study at any place for learners; able to go for an autonomous and cooperative study for learners; able to function well with various devices and technology; favourable for individualization; favourable for knowledge construction through mobile-learning; able to produce and consume knowledge through mobile-learning [2].

The 11 principles above are also desirable for the design of a WeChat mobile learning platform for multi-modal language learning. In addition, the design of mobile learning platform for language should follow the basic principle of “multi-modal interaction”.

With the development of information technology, the popularity of mobile terminals and the development of language diversity, the ways to exchange information and express meanings tend to present multi-modality. There is no doubt that we have entered the era of multi-modal communication. Many scholars and experts have different views on multimodality, including the following four views. Firstly, multimodality is a variety of symbolic resources; according to Baldry & Thibault, multimodality refers to a variety of symbolic resources used in a text, namely, spoken language, written language, image, space and other resources that can be used to construct a text [3]. Second, multimodality refers to people’s multiple senses. Kolb & Whishaw (2003:174) pointed out that the five senses of sight, hearing, touch, smell and taste should be regarded as “five modes” [4]. Third, multimodality refers to the interaction between multimodal signals. From the perspective of robot operating system, human-computer interaction is carried out through text, voice, vision, action, environment and other ways to fully simulate the interaction between people. Gu Yueguo (2007) pointed out that the interaction between human beings and the external environment through three or more senses is multimodal interaction [5].

With the help of mobile technology platform, this study provides learners with pictures, sound, video, animation, discussion and interaction and other channels to mobilize learners' various senses and make various modes participate in language learning.

In the process of modal-interaction design, we should adhere to the following specific principles: firstly, the mode should be enriched. In the design of learning resources, we mainly use video, audio and pictures, and add animation and tables to stimulate learners' senses, meet their diversified and personalized needs, and stimulate their learning enthusiasm. Secondly, mobile learning content presented by mobile platform should be short and concise. In this way, we can make full use of students' fragmented time, make students do a good job of preview and review after class, and better construct the second autonomous English classroom. Third, the difficulty of resources should be in line with students’ reality and language knowledge level, so as to avoid learners' resistance to this new teaching method.

2.3.2. Design framework. The design framework of WeChat mobile learning platform covers five major functional modules (shown in Figure 1): Micro communities, learners’ WeChat official account, micro
cloud, learning notes, and third-party applications. The modules have powerful functions, specifically as follows:

1) supporting flexible and diverse micro class learning forms which are embedded with short and exquisite learning contents;
2) supporting offline download function, which is convenient for learners to consolidate their professional knowledge and skills by using fragmented spare time;
3) Providing think-tank retrieval function, and enabling learners to improve the efficiency of knowledge search by fuzzy keyword search and keyword automatic reply;
4) Being equipped with learning map to help learners form good habits of planning learning and encourage the cultivation of autonomous learning ability;
5) Focusing on the development of game learning mode to stimulate the learning interest of mass learners;
6) Focusing on collaborative learning based on the classroom community, and realizes the common growth of learners through resource sharing, online discussion, online Question & Answer, etc.;
7) Evaluating after-class through tracking the learning process of students, monitoring the changes of their abilities and other ways to test the effect of teachers' information teaching and students' learning.

![Fig. 1 Framework of multi-modal language mobile-learning platform](image)

3. Case Application

3.1. Experimental methods
In this experiment, quasi experimental research method was used, and SPSS17.0 was used to analyze the experimental data. Before the experiment, a questionnaire survey was conducted to ensure the accuracy and efficiency of the experimental research; after the experiment, a questionnaire was also carried out to combine the survey data with the experimental data to analyze and summarize the experimental results more comprehensively. The two questionnaires were compiled with 5-level scale, and each question was assigned 1, 2, 3, 4, 5, and then entered into Spass17.0 for statistics.

3.2. Subject
In this experiment, two natural classes from Grade 2 and majored in Tourism Management in a higher vocational college are selected: the experimental group is class 1, with 48 students; the control group is
class 2, with 48 students in total. Before the experiment, the final English scores of the two classes in the last semester also showed that the students’ English level was similar (P = 1.02, > 0.05).

3.3. Experimental materials
This experiment takes tourism English course as a case study and selects “discussing the itinerary” as the teaching unit (from the textbook of tourism English (Third Edition) published by Higher Education Press, China). The selected content reflects the integration characteristics of the new form, with strong editing, openness and extensibility, which can meet the teaching needs of mobile terminals in this study, and also facilitate the application of the latest mobile technology in the research. The control class uses PPT display mode to carry out teaching, while the experimental class uses WeChat mobile platform to input texts, pictures, audio, graphics and other diversified resources to complete various language learning tasks on the platform.

3.4. Experimental tools
Tool 1: questionnaire of mobile information teaching satisfaction. The questionnaire was compiled with 5-level scale, and each question was assigned 1, 2, 3, 4 and 5. The main purpose of this questionnaire is to investigate the students' satisfaction with the mobile information teaching, and analyze the feasibility of using mobile WeChat platform to carry out the experimental research. A total of 270 questionnaires were distributed.

Tool 2: language proficiency test paper. The test paper is prepared by the researcher. The test content is related to the theme of unit 5 discussing the Itinerary. The content includes audio, video, pictures, tables and other presentation multi-modal forms. The test lasts 90 minutes and the score totals 100 points. The purpose of this test is to evaluate the students' language literacy, namely listening, speaking, reading, writing and translation.

3.5. Experimental results and enlightenment
3.5.1. Experimental results. (1) Results of survey on satisfaction of mobile information teaching.
Through the analysis of 232 valid questionnaires, the results showed that:
a. All students prefer mobile terminal teaching (M= 5);
b. Only about half of the students can adapt to the teaching method of mobile terminal (M=2.68);
c. The students are very satisfied with the mobile information terminal teaching (M=4.3);
d. Most of the students have the desire to improve their English performance with mobile new technology (M>4);
e. Among the e-learning resources, video, audio and pictures are very popular (M>4).
(2) Results of language proficiency test.
The scores are compared of listening, speaking, reading, writing and translating between the experimental group and the control group (shown in Table 3). In listening, writing and oral expression, the scores of the experimental group were significantly higher than those of the control group, and the difference was significant (P < 0.001, < 0.001 separately). However, there is no significant difference between translating and reading. This shows that mobile language teaching has certain advantages in listening, speaking and writing training, but it has no advantages in translation and reading comprehension compared with traditional teaching ways, but it also has no negative impact.

Table 3. Scores of language sub-skill items from experimental group and control group

| Sub-skill Items | Groups | Average | SD  | t     | P     |
|----------------|--------|---------|-----|-------|-------|
| Listening      | Experimental Group | 16.12   | 0.57 | 4.79  | 0.001 |
|                | Control Group      | 14.70   | 0.74 |       |       |
| Reading        | Experimental Group | 16.24   | 0.68 | 8.67  | 0.314 |
|                | Control Group      | 16.20   | 0.75 |       |       |
| Writing        | Experimental Group | 15.08   | 0.83 | 2.85  | < 0.001|
|                | Control Group      | 13.42   | 0.97 |       |       |
3.5.2. Experimental enlightenment. Based on the above experimental data, the following enlightenment can be summarized.

(1) Modern college students all have mobile devices, and they prefer video, audio, pictures and other learning resources. At the same time, they have a high acceptance of new technology. Therefore, it is feasible to carry out MALL teaching with the help of mobile technology and mobile terminals.

(2) Mobile terminal based MALL teaching can effectively improve students' language ability, especially listening, writing and oral expression. In this experiment, the students in the experimental class obtained rich learning resources through the WeChat mobile learning platform of tourism English course, and created a written, oral, visual, auditory and audio symbol space for learners in the effective interaction of resource input and output, which effectively changed the situation of "dumb English" and "no chance to listen, speak and write".

4. Summary

The rapid development of network cultural life will inevitably affect the learning style of the public. In particular, the mobile network life of young students shows typical characteristics such as "the universal use of mobile network", "popular ownness of mobile phones", "preference for social networking sites and social platforms". WeChat can be used to design the mobile learning platform in a lightweight way. Teachers can directly complete the design of a specified WeChat mobile learning platform for a course even without professional and technical personnel. Moreover, it does not need to download and install separately. It has the advantages of low cost, good user experience, easy operation and easy entry for learners. Therefore, it will effectively help realize mobile learning at the fingertips for the mass learners.

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