Smart Word Aplication Design for Learning Mandarin-Indonesia Vocabulary

Y Ying*, Fu Ruomei, and Putri Mustika Susilo

Chinese Department Faculty of Humanities, Bina Nusantara University, Jl. Kemanggisan Ilir III No. 45 Indonesia

*yi_ying@binus.edu

Abstract. The need for human resources who have Mandarin skills in Indonesia has increased along with the growth of Chinese investors in Indonesia. For this reason, the growth of Chinese language learners, especially in universities, also increases from time to time. Given that Chinese is a language that is difficult to learn, it is not enough to only face-to-face lessons in class, so that a tool is needed that can help students learn independently in a comfortable place and time. This research begins with a survey of what students need to face obstacles in learning Mandarin vocabulary and the applications needed to support their learning. From the results of the survey on 37 students who studied Mandarin for 4 months, the researchers designed learning applications based on the needs of students. The material from the application is taken from the subject matter in the textbook. Listening lessons are considered difficult by 83.49% of students because of vocabulary. As many as 73.38% of students consider the need for an application that helps vocabulary learning and as many as 83.78% of students need an application on a smartphone that can be used offline. From the student input, an application called "Smart Word" was designed. For the next research, the researcher suggestion is that the "Smart Word" application can be used to measure the results of student studies.

1. Introduction

MALL learning for foreign language learning has often been discussed and has become the object of research by experts. With the development of information technology and the increasingly common use of smart phones among students, it is appropriate to learn Mandarin in class as well as M-Learning. The aim is for students to be able to review the lessons received in class by study independently at any time and place through the material in the Mobile application that can be downloaded by students.

Students have difficulty memorizing Mandarin vocabulary and do not have many opportunities to use vocabulary to communicate with their classmates and native speakers. From the data obtained from Wal's research, there is a need for mobile applications that support listening and speaking learning among first-year students of Chinese Literature at Bina Nusantara University. Students expect that this vocabulary application can help them in learning Chinese and in recalling material or vocabulary that has been learned in class. This study discusses the concept of MALL in learning Mandarin specifically in listening and speaking. This study aims to examine whether M-Learning based applications will improve Mandarin scores or the ability to use Mandarin. MALL learning emphasizes learning with smart phone applications.

2.   Methodology

This research uses survey and experimental methods. The researchers first conduct a survey of 65 level 1 Chinese literature students at Binus University who learn listening and speaking. After the student feedback is obtained, the researchers and the team design a game containing vocabulary, the material is taken from Mandarin textbooks used by students. After the survey data is processed, the authors design the application. This application consists of 3 parts, namely: 1. Vocabulary, 2. Scars; 3. Quiz. The study was conducted in February to December 2019.

3.   Discussion

3.1 Language Learning Through Smart Phones

Research on language learning through the use of smart phones has been done before by several experts. Reference [1] explains the attitudes and readiness of 74 high school students to use mobile technology as an English learning tool in China. Students are placed in groups of three and four per group and for four weeks are given the task of using their mobile phones to capture images in English containing street logos and signs that will be used as a basis for PowerPoint presentations. The survey results confirm that students are ready and able to use cellphones to learn languages and feel that they have learned a lot from this activity.

The effectiveness of learning to memorize English vocabulary via mobile SMS compared to learning with print media. One group consisted of 32 students who studied 130 words delivered via SMS, 5 times at a time, and carried out twice a day for 26 days. A control group consisted of 30 students who received the same vocabulary on the printed word list. Participants learn by their own methods. The SMS group significantly outperformed the control group in the immediate post-test, but subsequent tests showed no significant differences in vocabulary recall levels [2].

The design and pilot testing of English language learning programs in Taiwan that exploit the communication and multimedia capabilities of smartphones to complete a set of problem solving tasks intended to produce authentic interactions, discussions, and negotiations between language learners. This was tested in 35 elementary school children. They work in groups, with each group consisting of three and four, who use cellphones from class to collect and share internet-based data and communicate with each other and their teacher to get information and guidance [3].

English learning system in Taiwan based on reading on a PDA or smartphone with RFID tag readers and WiFi network connectivity that provides text location that is suitable for students to read. This system offers translation, pronunciation and explanation of words, sentences, paragraphs, and articles. The reading guidance algorithm proposes texts based on students' portfolios that are dynamically maintained. The system was tested for eight weeks on 113 students, most of whom agreed on its usefulness [4].

Mobile phones with Android-based vocabulary games for teaching English vocabulary in Taiwan. This application was tested on nine students. Based on a comparison between them, before and after the test score, subjects were able to learn several new vocabulary items. A survey shows that students find mobile games to be helpful in increasing their vocabulary knowledge, and they also recommend ways that can be improved [5].

Three-month study that investigated the attitudes of 20 students towards the use of mobile phones to access the internet based on learning English in listening exercises. Students can refer to new vocabulary meanings and grammar points and discuss topics with other participants on a mobile discussion board. The attitude of students towards using sites on the mobile Internet changed after the experiment. Both positive and negative attitudes decrease and this makes the neutral response increase [6].

The changing attitudes of students in Korea towards the use of mobile phones to access the internet, to improve their understanding of listening to English. After 12 weeks of trial to 30 students to listen and understand from specially designed WAP sites, it showed an increase of 20% of those who were neutral,

with a decrease in positive and negative attitudes of 8% and 12%. This decrease in positive attitude was due to additional costs for internet connections and the limitations of mobile technology [7].

The attitude of language learners in using cell phones to browse WAP sites for English language learners in Korea towards understanding listening. A WAP site, accessible only via mobile phone, was tested on 30 students for 12 weeks. In addition to a list of understanding materials, this site also includes a discussion board that is used to exchange information in full and help with activities before and after listening. Overall, language learners expressed a positive attitude towards the use of WAP sites [8].

The use of mobile audiobooks based on learning English outside the classroom in Korea for listening practices. In order to increase focus on form and meaning, this application raises the volume of each occurrence of grammatical features selected in the book. This system was tested for a week on 68 students. Most of them were enthusiastic about using mobile phones for learning. Some of the students found the volume change disturbing and they could not complete the reading assignment [9].

A study of Chinese learning needs via game learning for elementary students. The result is a game design for elementary students. Ying et al (2018a) [11] design Mandarin learning applications for students majoring in International Relations Bina Nusantara University based on the results of students' Mandarin exam scores. Ying et al (2018b) [12] also design Mandarin learning applications to help tour guides. This application is in three languages namely English, Indonesian and Mandarin [10].

3.2 Survey result

From an initial survey of 32 first-year students from Chinese Literature, 21 or 66% of students said that vocabulary learning in listening was difficult to learn. As many as 21 students or 66% said that there were a lot of vocabulary entries at every listening meeting. As many as 27 students or 84% thought that an application was needed to help remember vocabulary

As many as 27 students or 84% said that they needed applications that were equipped with strokes. As many as 25 students or 78% said that they needed applications that could be operated offline. As many as 29 students or 91% said that they needed an application that contained vocabulary quizzes. As many as 21 or 66% of students said that they needed applications containing pinyin. As many as 28 or 88% of students said that they needed applications that contained textbook vocabulary.

Based on the survey, the researchers then designed an application that was expected to suit the needs of students. The designed application contains Han letters, pinyin, strokes, meanings and ways to read words or vocabulary and quizzes. The following are application designs according to student input.

Figure 1. Front Display

The front display of the application contains three sections of the application. The "learn" section consists of the material to be learned. The "quiz" section includes exercises from the material that has been studied. While the "credits" section consists of the compiler of the Smart Word application.

Figure 2. Material Options

When the user touches "learn" then the choice of lessons will come out. The subject matter is adjusted to the material being studied by students in class and in accordance with the contents of the text book. The goal is that students can learn the subject matter at their convenient time and place. Thus, success in learning depends on the initiative and activeness of students to learn independently at their leisure time.
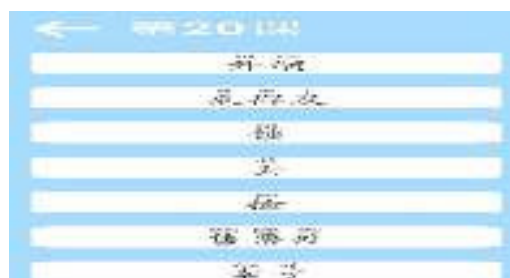

Figure 3. Vocabulary List

When the application user chooses the material to be studied, a vocabulary list will appear along with how to read it, as in figure 3

Figure 4. Vocabulary Sound

Figure 4 shows the vocabulary, how to read in Mandarin, the meaning and sound of the vocabulary. When pressing the microphone image, you will hear the sound of the vocabulary. Application users can learn how to read the vocabulary repeatedly to learn the accuracy in reading the vocabulary. If the vocabulary in the white box is touched, a display will appear as shown in Figure 5.

Figure 5. Guideline to Write

Figure 5 shows the letters that are equipped with how to read and how to sound them. In addition, the words "爱" include how to write the letters (Figure 6).

Figure 6. How to Write

Figure 6 shows how to write Han characters. Steps for writing strokes along with the number of strokes have been provided and can be learned in the application. This helps students to learn how to write a letter and avoid mistakes in writing a letter.

Figure 7. Quiz

This quiz is to help students recall the meaning of the vocabulary and letters they have learned. When vocabulary appears, application users can search for appropriate vocabulary synonyms.
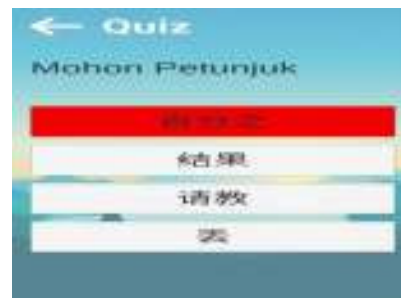

Figure 8. The Answer

If the answer is wrong, then the wrong answer will be highlighted in red. Thus, application users can choose the right answer again. If the answer is correct, the answer will be highlighted in green.

3.3 Student Opinions on Applications

This application was downloaded by 20 students and from 20 respondents who used this application, all of them answered that the Smart Word application can help them in learning vocabulary, in terms of learning and remembering the meaning of vocabulary. In addition, 20 respondents also thought that the Smart Word application helped them learn the Han strokes and learn Mandarin tones. This application which is equipped with text, images and sounds, helps students in learning Mandarin. Besides being easy to use, this application can also encourage students to learn independently. According to respondents, the advantage of this application is that it can be used at their convenient time and place. The weakness of this application is that there is no complete sentence training, only vocabulary exercises. So, it is suggested for the next development, there would be complete sentence training, so that students gain knowledge in composing sentences

4. Conclusion

From the research, all Chinese literature students see the need for learning Mandarin through applications that can be downloaded on their smart phones. Application material that contains their textbooks is considered to help them in learning Mandarin. The application can be used to prepare for future lessons and repeat lessons learned previously. The weakness of the application is the absence of example sentences. Students need examples of structuring sentences from the vocabulary as a reference for their learning material. Thus, it is expected that in the refinement of this application, it can add examples of structuring sentence. Fast and precise Mandarin learning is by imitating and replacing vocabulary from existing sentence patterns.

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