

# A Mandarin Language Learning Mobile Application for Indonesian-Speaking using Computer Assisted Instruction (CAI) Method

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**Abstract** - Mandarin is the most widely used language, followed by Spanish, English, Arabic and more. Such Chinese language user trends encourage the increasing need of the community to learn it. This is supported by the number of Mandarin learning applications developed. However, existing applications do not meet the needs of basic Mandarin learning comprehensively. Some app content tends to be conversations or just certain material. Based on the problem, developed the application of Mandarin-based learning smartphone that the material starts from the basic level and is supported with complete pronunciation by native speakers. The CAI method applied to the Mandarin application consists of 4 models: (1) drills - & - practices, (2) tutorials, (3) simulations, and (4) games. Instructional computers are basically used in one of two ways: either they provide a straightforward presentation of data or they fill a tutorial role in which the student is tested on comprehension. Based on the respondent's statement, it is concluded that this Mandarin learning application makes it easy for users to learn basic Mandarin Language, and attract users to learn it.

**Keywords**— Mandarin, Computer Assisted Instruction (CAI), Android, Smartphone.

## I. INTRODUCTION

Language is a communication system that serves as an introduction to the message the speaker wants to convey to the listener or the intended person.[1] Furthermore, language also is expressive of the cultural heritage of a nation. Mandarin is the most widely used language in the world today based on the number of native speakers. Overall, all Chinese languages totaled 1,197 million native speakers [2] In addition, China is also the first rank in the economy. All the heads of state, ministers and business world of Asia Pacific countries incorporated in Asia Pacific Economic Cooperation (APEC) agreed to assess the importance of China to the world economy. According to Goldman Sachs projections, the world's three largest economies by 2050 are China, followed by the US and India, and Brazil, Mexico, Russia, and Indonesia. [3].

Some of these facts make Chinese mandarin necessary in the world and many want to learn it. But the limited time and

the density of activities of Mandarin enthusiasts became an obstacle to master this language[4]. Classical learning system and conventional that is learning in class, like in place of course or in college Mandarin language and others less able to give flexibility of study time for enthusiasts of Mandarin language. Therefore, the need for fast, practical, efficient, and facilitate learning media solutions that can facilitate the mobility of today's society[5]. This can be accommodated with mobile-based learning media that is learning media that can be accessed via smartphone[6].

Based on the above needs, then made a Mandarin learning application on Android smartphone. Application development applies the existing rules on computer-based learning method or better known Computer Assisted Instruction (CAI). CAI is a computer-assisted learning media that is very interesting and able to increase learning motivation[7]. The development of computers is not limited to personal computers, desktops, laptops but has developed in the form of mobile computer one of them: the smartphone.

## II. METHODOLOGY

Pre-survey data obtained from the results of the questionnaires distribution and literature studies. The purpose of distributing the questionnaires is to know the interest of the society to learn Mandarin and the difficulties in studying it. The respondents consisted of 16 students, 2 educators (teacher and instructor), and 16 general public. The sampling technique used is Accidental sampling. Accidental sampling is accidental sampling by taking a case or respondent who happens to exist or is available somewhere in accordance with the research context [8].

Mobile-based language learning applications developed in accordance with the four basic models of CAI, (1) Drill, (2) Tutorial, (3) Simulation, and (4) Games.

## III. MANDARIN LANGUAGE LEARNING MOBILE APPLICATION

The navigation structure of Mandarin learning application is as follows:

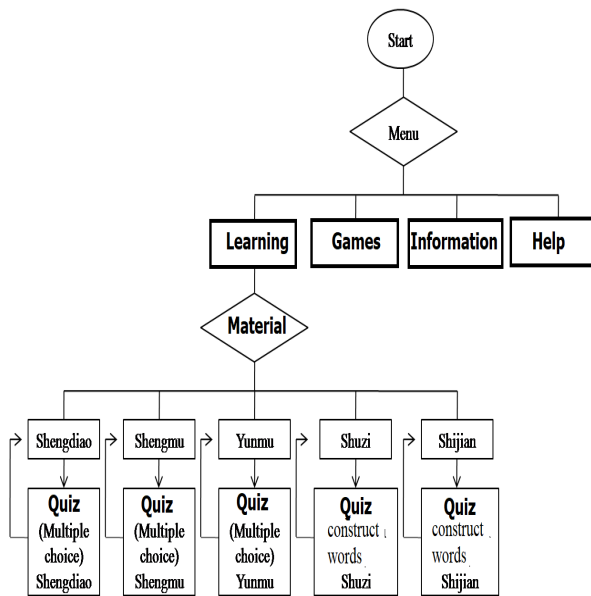


Figure 1. The Navigation Structure of Mandarin Learning Applications





Description:

1. **Pelajaran** (Learning): contains Mandarin material
2. **Game**: contains games to test the user's understanding of the material that has been learned
3. **Informasi** (Information): contains information about Mandarin learning application
4. **Bantuan** (Help): contains instructions / how to use the application.

When the application starts up, the user will see the app start page as follows:



Figure 2. Start of the Application page

1.  : Learning Menu
2.  : Game Menu
3.  : Information Menu
4.  : Help Menu

#### IV. IMPLEMENTATION OF CAI METHOD

The Mandarin application created has Mandarin learning material content for beginners. The scope includes *shengdiao* material (tone), *shengmu* (initial sound), *yunmu* (final sound), *shuzi* (number) and *shijian* (time).

##### A. Drills-&- Practices Model

Implementation of CAI Drills-&-Practices in Mandarin applications is with Quiz features in each subject matter. The quiz feature is tailored to the terms of the drills-&-practices model is to present problems in the form of exercise questions.



Figure 3. Quiz Page of Multiple Choice

On the home page, there are four icons that are shortcuts to the Mandarin application menu. The Icon:

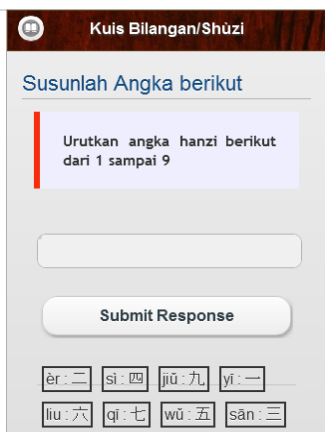


Figure 4. Quiz Page of Composing Sentences

In Figures 3 and 4, the user is asked to do quiz questions and the application will give feedback in the form of wrong or correct. If the user answers correctly the practice question then the application will proceed to the next question. If the user is wrong in answering, then the exercise question will be repeated or the user can request the application to display the correct answer.

**B. Tutorial Model**

The model in this app begins with the user selecting the material being studied.



Figure 5. Study Material Choices

Users can choose material by clicking on the material title, for example, **Shengdiao**. After selecting the material, the user will be guided by the application to the evaluation stage, Quiz for Shengdiao material.

**C. Simulation Model**

The simulation model of this application on Mandarin writing material. The following is a simulated example of Mandarin letter writing. Users can practice and repeat how to write Mandarin characters.



Figure 6. The Homepage of Mandarin Letter Writing



Figure 7. The First Step of Mandarin Letter Writing



Figure 8. The Second Step of Mandarin Letter Writing



Figure 9. The Fifth Step of Mandarin Letter Writing



Figure 10. The Sixth Step of Mandarin Letter Writing



Figure 11. The Last Step of Mandarin Letter Writing

#### D. Games Model

The game model is a modification of the existing game in the computer program, but the content is tailored to the Mandarin material. The game provided is a Puzzle game with material composing pictures of people, shapes and numbers / Mandarin characters. The game is also divided into levels of easy, medium and difficult.

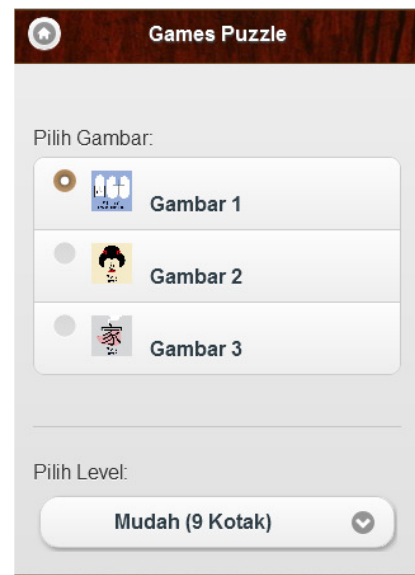


Figure 12. The Puzzle Game of Mandarin Learning

#### V. THE USERS PERCEPTIONS MANDARIN LANGUAGE LEARNING APPLICATIONS

Based on respondents who have tried to use the application 47% of respondents strongly agree and 53% agree that the use of words and languages on the menu is easy to understand. Respondents also stated that the menu and navigation provided can be run easily, according to the respondent's answer strongly agree by 53% and agree 39%. Respondents stated that the application can be used easily 58% answered strongly agree and Agree 33%. The statement that this application has no errors when used 39% answered strongly agree and 61% answered agreed. Response replied that the application helps in learning Mandarin 50% answered strongly agree, 47% agreed and 3% answered less agree.

Based on the exposure it can be seen that this application can be used easily. This can be seen from the good user interface, which menu and navigation can be run easily. In addition, the use of words and languages was easy to understand so that this application is very helpful in learning Mandarin. Even this application does not experience errors when used so that the user feels satisfied and helped this application.

## VI. CONCLUSION

In this paper, we discussed how computer-assisted instruction is provided in mobile devices. The findings of this research clearly indicate that more than 90 percent of the users feel comfortable about the mandarin learning mobile application. The application can increase users interest in learning Mandarin Language using it.

## VII. RECOMMENDATION

Based on the results of this study, researchers provide the following suggestions:

1. Material content is propagated for intermediate and advanced levels.
2. In the game menu, expected to be added variations of the game is not just a puzzle.
3. Further development of data contained in the application of dynamic, so that quiz and material content can be updated.
4. The application is expected to have a word search feature in the menu of the Indonesian language, pinyin, and hanzi so as to facilitate the user in finding the desired sentence.

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