

Mobile Learning Application to Support Mandarin Language Learning for High School student

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Abstract : *As people get to know technology, mobile device has functions and benefits which are very diverse. Coincide with that, the development of mobile users in Indonesia has increased strongly in case of facilitate their needs. Likewise as the learning of Mandarin language, the necessity of mobile media is very aiding to comprehend its material. Relate to that necessity, we build a system of Mandarin language mobile learning for senior high school students. This system is evolved by approaching Systems Development Life Cycle. After this system formed and conversed to android-based application, then it is disseminated through Google Play store. To obtain response of the users regarding this application's benefits, we explore an educational survey within the Mandarin lecturer and the students. The aim of this research is to manifest that this application has much benefits as the alternative of learning language. Based on the results and data analysis, the respondents have stated that this application is decent, specifically for students.*

Key words : Mobile device, Mobile learning, Mandarin language

1. Introduction

Nowadays, the development of information and communication technology has influenced various life aspects. In educational aspect, the internet usage alter the pattern of conventional learning into Learning Teaching Process (LTP) which is slowly intergrated. Meanwhile, the active internet users in Indonesia are about 28% (72,7 million) from the total population as 255,5 million. Which even surprising is, from the statistic that is announced by some research institution like *internet live stats*, *internet world stats*, *live internet GSMA intelligence*, the growth of mobile users in Indonesia exceed the total population, which is about 308,2 million, while those who are active in social media are about 62 million [A]

Since the utilization of mobil device as media learning becomes more common, it provides wider

opportunities for students to studying everywhere and anytime as they want. The tendency of technology is increasingly closer to the educational aspect, as well as the use of internet connectivity, *Video Classwork* and mobile device. The use of computerized mobile has become commonplace among high school students. Most students have access to their personal mobile devices in order to communicate, reading text, and resolving their assignments [B-trend teknologi]. So that, the cellular device is not only used for calling, sending message, and chatting, but it can also utilized as learning resources aside from school [6].

The use of learning media in LTP is an attempt to produce a more effective learning and improving the quality of learning [11-lahteru]. Therefore, the learning media that is used must get to attract many people and also able to assiting student's learning activity. There are many educational application in the android platform which provide an interesting and interactive learning system [1-asalnya].

Unlike the learning system that is still tend to be conventional, media which commonly used is a textbook, likewise as Mandarin language learning. Some senior high schools in East Java have offered Mandarin language as regular content in their curriculum. Aside from English, Mandarin language is an alternative subject to develop student's interest and skill in case of mastering foreign language.

In general, the teaching of Mandarin language for high school students is done by face to face interaction in which the teachers will present the materials, then involve students along in their lecturing and let them interact within limited time and media [IBM]. Media that is ususally used is textbook, Power Point, Compact Disk (CD) of Mandarin language learning for high school students. Normally, students will be enthusiast and interactive in the first 20 minutes during LTP, however after 20 minutes pass, they tend to be less enthusiast in following the rest of materials. It can be happened because of the scale of difficulty factor; the student's interest or memory by pronouncing Mandarin's vocabulary (*Hanyu Pinyin*) along with the right intonation. Moreover, Mandarin language has unique characteristics as well as its letters,

Table 1: Basic competence, indicator and Mandarin language learning activities for tenth grade of senior high school students.

Basic competence	Indicators	Learning Activities
<p>Listening</p> <p>Identify the sound of <i>Hanyu Pinyin</i>, the utterance (word, phrase or sentence) within a context, and grasp verbal information discourse appropriately.</p>	<p>Identify <i>yunmu, shengmu, shengdiao, biandiao, qingsheng</i>, the sound of er and suffix-r.</p> <p>Differentiate the sound of Hanzi from the vocabulary.</p> <p>Match the utterance with the image, the writing or Hanzi properly. And specify the information from verbal discourse.</p>	<p>Listen and imitate the sound of <i>Hanyu pinyin</i> or the letter of <i>Hanzi</i> appropriately.</p> <p>Listen to verbal discourse with various media (the teacher's utterance, tape etc.)</p> <p>Discussing the contents of verbal discourse.</p>
<p>Speaking</p> <p>Deliver the information verbally with the pronunciation of <i>Hanyu pinyin</i> in a simple sentence depends on the context, and make a simple dialogue in a certain cases casually.</p>	<p>Utter the words with the sound of <i>yunmu, shengmu, shengdiao</i> etc or pronounce <i>Hanzi</i> properly, and deliver the information based on the context.</p>	<p>Listen and imitate the sound <i>Hanyu pinyin</i> or the letter of <i>Hanzi</i>.</p> <p>Repeating the utterance with the right pronunciation and correct intonation.</p> <p>Discussing the content of discourse.</p>
<p>Reading</p> <p>Identify the form and the theme of simple writing discourse and its information, and also be able to read <i>Hanyu Pinyin</i> and <i>Hanzi</i> in that discourse.</p>	<p>Determine the form of writing discourse, and its information, and also be able to interpret the meaning of the word based on the context.</p>	<p>Recognize the writing discourse and itemainya.</p> <p>Make an asosiogram and information discourse in a group, and also answer the questions.</p>
<p>Writing</p> <p>Reveal the information through writing in the form of paragraph or a simple dialogue about self-identity or activities in the school.</p>	<p>Writing <i>Hanyu Pinyin</i> and <i>Hanzi</i> according to the rule of <i>bihua</i> and <i>bishun</i>, and be able to deliver the information by writing them in a simple sentence depends on the context thoroughly.</p>	<p>Writing <i>Hanyu Pinyin</i> properly, be able to punctuate, writing <i>Hanzi</i> with <i>bihua</i> and <i>bishun</i> and capable to compose a word, phrase, sentence into paragraph.</p>

writing and the pronunciation in which understanding them requires extra process that must be repeated for several times.

Every intonation has each own meaning, meanwhile different intonation may cause false meaning [12]. The difference of pronunciation has a very significant effect towards the meaning of the words. Eventhough most students able to perceive what is said by their teachers, it does not mean that they can interact well. This case what makes students to be more passive.

For the matter of Mandarin language LTP, it will be supported by facilitating adequate learning media to be able to increasing students' interest and motivation. The media of mobile learning device like *smartphone* [1], *Personal Digital Assistants* (PDA), *Ipods*, *Padcast*, *Cell phone* has been used to assist English learning [ML-support english].

By seeing that condition, the utilization of mobile learning is very significant for supporting the requirements of Mandarin language learning. In general, mobile learning can be seen as a form of learning that occurs when the users interact through mobile device []. With its various fitures and multimedia components, this application can be function as an additional media [.] in an attempt of reaching standard competence in listening, speaking, reading or writing Mandarin language. The basic competence, indicator and Mandarin language learning activities for tenth grade of senior high school students in the first semester, can be seen in the table 1[1]. Suporting the learning activities, this mobile learning application can be applied as an alternative learning media, aside from studying in the class to aiding the achivement of competences which are expected. However, the creation of this mobile learning application cannot substitute the face to face lecturing which has been held on all this time [5].

2. Mobile Learning Application

Mobile learning application developed through the method of SDLC (System Development Life Cycle) through the stages of planning, analysis, design, implementation and evaluation [Mcleoad]. At the stage of planning and needs analysis, in identifying needs LEARNING PROCESS basic Mandarin high school students as well as the determination of the expected goals. Data and information needs of Chinese material, obtained from several public and private high school in Surabaya and Lamongan as research objects. Data collection through interviews and direct observation of the Mandarin learning process. In high school, Mandarin language learning material include Pinyin phonetic systems (*hanyu pinyin*), sentence structure, mandarin script writing, numeracy, time and day as well as basic introduction conversation about himself and life at school. Based on the needs analysis, developed a draft model of learning the Chinese

language media applications that include data models, activity models along with the user interface. In this mobile learning identified four main users involved. The user has access, as Administrator, Author, Registered User or Non-Registered User. A user author or teacher who has access to the manufacturing and process the Chinese language learning materials. While students who want to get learning materials and evaluation, can enroll as a Registered User. However, if only required course material, including the category of Non-Registered Users do not have to login to enter the system. An Administrator reserves the right to authorize each user to access mobile learning applications.

At the implementation stage, technically this application built using Android Studio combined with Apache Cordova as an engine of supporters. To support the needs of server and data maintenance, is used a combination package execution AMP (Apache / MySQL / PHP) with the Windows operating system [Senopati]. Open Source AMP package selected, to reduce license fees are relatively large [Olson].

Furthermore, after the application is build and ready to be disseminated then distributed through the aid applications Google Play store. Container through the application of mobile learning Mandarin can be fitted to the user's mobile phone-based information system Android. Screenshot views on the Google Play Store can be seen in Figure 1 below.

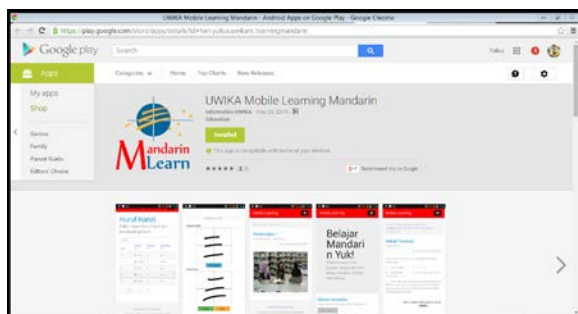


Figure 1. Publication in google play.

In the application menu an administrator can access each module available. He was instrumental to manage users and their rights by pointing, giving duties, privileges, roles, and operations of each module are related.

Menu presents the menu of the application materials and modules. Menu material grouped by category and sub-divided into the material along the material item. Each material can be accessed by any user or based levels, ranging from beginner (beginner) up to the expert (expert). A teacher acts as author Users can create materials, submateri, and evaluation through a submenu item contributors to the application. Contributor Mandarin language materials in this application comes from a limited circle high school teachers, vocational and Mandarin

language lecturers . The format of the material presented in the form of text, images, audio or video to help improve students' understanding of Chinese language content. Thus helping to achieve the competence of students in activities hear, read or pronounce pinyin pronunciation hanyu or hanzi letter. As seen in the example of the application materials and compound single phonetic content on Figure 2. In the picture, each phoneme given sound icon to read. Material simple conversation Mandarin, but displayed in text Indonesia, punctuation, capitalization hanzi also supported by video conversations, as an example in figure 3.

Berikut ini adalah 38 fonem vokal dalam bahasa Mandarin, termasuk fonem vokal tunggal dan fonem majemuk.

1. Kelompok a terdiri dari : a, ai, an, ang, ao.
2. Kelompok o terdiri dari : o, ou, ong.
3. Kelompok e terdiri dari : e, ei (juga disimbolkan dengan huruf è), eng, er (-r).
4. Kelompok i terdiri dari : i, ia, ian, iang, iao, ie, in, ing, io, iong, iou.
5. Kelompok u terdiri dari : u, ua, uai, uan, uang, uei, uen, ueng, uo.
6. Kelompok ü terdiri dari : |, |an, |e, |n .

Keterangan :
 Fonem Vokal Tunggal adalah fonem vokal terdiri dari hanya satu vokal.
 Fonem Vokal Majemuk adalah fonem vokal terdiri dari dua atau tiga vokal

Figure 2. Phonetic content learning

Percakapan Perkenalan di Tempat Perpustakaan

Perkenalan 1

Video Percakapan - Perkenalan 1

丽达	: 玛丽, 你好!
Li Da	: Ma Li, ni hao!
玛丽	: 你好, 丽达!
Ma Li	: Ni hao, Li Da!
丽达	: 她是你的朋友吗?
Li Da	: Ta shi ni de pengyou ma?

Figure 3. Introduction sample material

Presentation of the content in an effort to help students understand the forms and themes written discourse and dialogue is simple.

Besides, provided a training module, Handwriting, and modules for storing user achievement progress in learning the material. Handwriting module is a module to store, process

and test the students' ability to explore writing material. As an example of the module in question can be seen further in Figure 5 below.

Mobile Learning

Huruf Hanzi

Daftar materi huruf hanzi lain (handwriting) disini.

MENU			
ID	HURUF	STROKE	DESKRIPSI
1	一 (Ni)	4	Ni
4	三 (sān)	3	three
5	二 (èr)	2	two
6	四 (sì)	4	four
7	五 (wǔ)	4	Five

← 1 2 3 →

Replay Model

Play Again

Coba disini

Check Clear

Almost perfect!

Figure 4. Handwriting module

After testing and implementation on mobile learning application, then applied to the user through the stages of socialization and education operations. Through education is expected to provide knowledge both conceptually and technically so that media produced mandarin applications can be well understood. As a follow up of the education and implementation of applications need to be evaluated as a maintenance effort and feedback for further improvement.

3. Result and Discussion

Media questionnaires were used to determine the user's perception regarding mobile learning applications. The questionnaire consists of a number of structured questions of the indicators functions, benefits or characteristics of mobile learning applications for Mandarin language learning high school students. Developed 10 questions in the questionnaire that is intended for two groups of respondents teachers and students. Item questions in the questionnaire for teachers and students is almost the same except the questions related to the role of teachers to treat and rejuvenate learning materials. List of the questionnaire to respondents include levels: 1) easy installation 2) the fulfillment of the material, 3) ease of use, 4) presentation function, 5) interaction module and creative formats, 6) limits (right) access, 7) efficiency, 8) attempts learn and operate, 9) rejuvenation material and 10) the complexity of the material processing m-learning applications. The respondents were asked the feedback after participating in the socialization and educational use of mobile learning apps for learning Mandarin. In addition to answers on the questionnaire, respondents were asked to respond, whether the application can be used as an alternative medium of learning Based on feedback from questionnaires distributed, the collected 37 respondents 50 respondents teachers and students are valid. Respondents questionnaires for this study consisted of teachers, aged between 23-42 years and vocational and high school students aged 16-20 years, who have a local content of Mandarin in Surabaya and Lamongan. The reseponden can choose the answer to every question with a scale of 1 (not attractive / unsatisfactory) to 5 (very interesting / satisfactory). Based on the data that has been received and processed, can be explained as follows. On the average, the teacher stated that this medium helps facilitate language learning Mandarin with a score of 3.576 (71.51%). They openly, at least 65% of the respondents teacher, stated that this device can help in learning process, facilitate the distribution and collection tasks, accelerate updated material, as well as help to achieve the learning process students remember the material presented already includes text format hanyu pinyin and font hanzi and can be equipped with audio and video sound.

Meanwhile the student respondents stated this media that practical and easier to learn Chinese anywhere without constrained timetable. An average of 3.515 (70.3%) said the media is exciting to be used as an alternative learning process mandarin. This mobile media can be used at any time as a learning support as well as help remembering vocabulary and pronunciation hanyu pinyin letters hanzi. Mandarin language materials or understanding everyday conversations either in the form of text, animation,

audio and video that can be repeated. In applications already presented text conversations that include characters hanzi and pinyin, which is a unit of sound to pronounce hanzi, with punctuation tone (shengdiao) and video, making it easier for students to understand speech and intonation tone than just information on the textbook. Simple conversation on any topic as well as an introductory greeting, get to know the day and time of activity, identity and family, incorporating new vocabulary to enrich perbendaraan Mandarin. Even to train write Chinese characters, on the application of these students are given the opportunity to try out a module handwriting hanzi letter. This module helps students recognize hanzi character-writing. Students can see the view simulation bagimana order or scratches hanzi letter writing, as well as number 5 (五), the letter I (我), and so on. Besides, students can also practice to write letters such hanzi repeatedly as well as to measure the approximate percentage of the truth. However, no more than 18% of respondents, found that not all homework assignments or students can be completed online. A form of exercise or Chinese language proficiency test not only in the form of multiple choice or essay as they appear in the application but is quite varied. As well as match practice and differentiate appropriately word, phrase or sentence in a Chinese language sentence context. Also convey information orally in simple sentences in context with Hanyu Pinyin pronunciation right. So the Chinese language more optimal in the form of face to face, because communication teachers and students better in learning process to achieve competence speak or pronounce the sentence orally.

4. Conclusion

This study on mobile application for learning Mandarin. Basically, students or teachers can access these applications via mobile learning devices, digital As pones, smartphones, Personal Digital Assistants (PDAs), tablet PCs etc. Based on the results kuesioner, according to the students and teachers, this application feasible or attractive to be used as an alternative medium of Mandarin language learning process. Make it easier for teachers to develop learning materials and help the achievement of student competence in the ability to hear, read, say or write in Mandarin base. For students feel that this device is practical, can increase confidence, self-learning knowledge, the motivation to practice and remember the material. They can take advantage of the device when they need help or support, especially to understand the pronunciation and tones of Mandarin. Applications are also felt by users of either the teacher or the student is an effective tool to improve interaction and communication learning. Nevertheless, it should support school facilities or

the user environment for the smooth konektiftas Internet network.

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