Jurnal Teknologi

INTERACTIVE MULTIMEDIA-BASED MOBILE APPLICATION FOR LEARNING IBAN LANGUAGE

Ketty Chachil*, Riaza Mohd Rias, Adeline Engkamat, Adib Sarkawi

Faculty of Computer Science and Mathematics, University Technology MARA, Selangor, Malaysia

*Corresponding author
ketty@sarawak.uitm.edu.my

Graphical abstract

Abstract

The emergence of mobile technological devices has brought along new possibilities to all walks of life in various communities. As mobile devices with highest capabilities extend into all areas of human life, they also affected language learning and mobile education. There are many mobile applications created for most of the major languages in the world and lesser amount is available for the far less used languages. Iban language is an example of those languages given far less attention as it is not as practical as other world languages. Iban language has been chosen to be implemented as a multimedia-based mobile application to promote language learning due to its richness in unique culture and language. The application, I-MMAPPS for learning Iban language was designed and developed by adopting conversational method and constructivism learning theory to provide learners a different approach in learning language based on various environments and situations. Since Iban pronunciations are different from any Malaysians local dialects, thus the correct pronunciations are vital to assist the learners. 30 non native speakers were chosen to test the application. The outcomes of this research shown that, most of the respondents were satisfied when they learn Iban language using the application. This application also has a promising development in future research.

Keywords: m-learning, Iban language, conversational, language learning, constructivism

1.0 INTRODUCTION

In the world where emerging technology-supported devices are rapidly growing, wireless communication technology is not an exception in this respect. As mobile devices with higher capabilities extend into all areas of human life, it also gives impact to the education field, especially in language learning and mobile education. These two areas have been intersecting into an enhanced way of e-learning called m-learning [1]. Mobile learning is characterized by its potential for learning to be spontaneous, informal, personalized and ubiquitous. Mobile learning is a growing area of e-learning due to the continuously increasing demand from learners, in addition to the increasing multimedia and networking capabilities of mobile devices. With its widespread use and its features and functions such as mobility, localization and personalization, mobile devices offer a great potential in a more exciting learning environment for language learning. Iban language is chosen in this research as the Ibans form the major ethnic group in Sarawak and Iban language is among the most spoken language in the state [5]. The number of tourists coming to Sarawak is increasing every year; most of them are very interested in Iban culture and visiting Iban longhouses to learn and to experience the culture and life of the Iban ethnic themselves but they are having some difficulties in communicating with the native speakers who are not well versed in other languages. Apart from these, the currently available means to learn Iban language is only through limited Iban text books or attending classes which are offered only in selected primary and secondary schools in Sarawak. Based on a quick observation search on Google Play market, the

keywords "Iban and Language" did not yield any results. Currently, most of the mobile applications were designed and developed to introduce foreign languages such as English, Mandarin and Spanish. Therefore, this research is conducted in order to design and develop an interactive multimedia-based mobile application that introduces the Iban language to non-native speakers. Lastly, the evaluation is done to measure the satisfaction levels among users towards the Interactive multimedia-based mobile application for Iban language learning.

2.0 LITERATURE REVIEW

2.1 Iban Ethnics

Sarawak is the home to 28 ethnic groups; each with their own distinct language, culture and lifestyle. The Ibans form the major ethnic group on this land with about 30.1% of the total population based on the year 2000 census [5]. Reputed to be the most formidable headhunters on the island of Borneo, the Ibans of today are generous, hospitable and calm people. Because of their history as pirates and fishermen, they were conventionally referred to as the "Sea Dayaks" [5].

2.2 Mobile Learning

Mobile learning is defined as a point interacted to provide mobile computer technologies and internet-based learning to be "anytime, anywhere" learning experience [3]. The major developments of mobile technology, combined with increasing technological capabilities, such as internet access, location detection and multimedia elements offers the possibility to create learning environments in accordance to the constructivist learning theory [13]. Mobile learning enables learners to connect to various sources of information and to conveniently communicate anywhere and anytime. This is possible with the wide-spread penetration of mobile technology, combined with increasing technological capabilities, such as internet access, location detection and multimedia presentation (text images, video and audio). One of the potential advantages of mobile learning is, the freedom to learn what, where, when and how one likes [4]. Beside these, m-learning also has become a popular alternative to traditional learning because of the increased mobility of young adult learners. Some of the mobile devices used in m-learning are servers, laptops, tablet computers, smart phones, PDAs, MP3/MP4 players, handheld gaming devices, mini notebooks or netbooks and others [6]. The use of mobile learning in the study of languages has been popular. Godwin, R. (2011) stated that, the responsive touchscreen interface in mobile applications for learning language seems to create more personal and intimate connection, as it becomes one's personal identity [16]. As personal devices, smartphones are ideal for individualized

informal learning. Another example is the use of mobile technology for learning English as a foreign language also has been popular in Japan [15].

2.3 Learning Theories

This study applies the principles of constructivism learning theory. Constructivism suggests that learning is an ever active process therefore educators should be more sensitive towards the learners' needs [7]. Modern learning theory stresses learning as an activity employed by the learner. Knowledge cannot be handed over from one person to another, i.e teacher to the student. Knowledge has to be constructed by the learner himself [8]. Constructivism looks via wider spectrums of affective factors which determine the learning process of a learner. It is very self-directed and the result of learning itself is achieved by the learner's self motivation. Perhaps the biggest difference in looking from the angle of constructivism in mobile learning is the variety in mobile application choices. A greater number of choices perhaps will contribute to a faster absorption process in learning.

2.4 User Satisfaction

User satisfaction is an important construct in measuring the success and effectiveness of an information system, and it is related to other important construct in system analysis and design [9]. According to Ong, C. S *et al.* (2007), user satisfaction is defined as the extent to which users believe that the information system available to them meets their information requirements [10]. The evaluation of user satisfaction is used to discover what people think and feel about using the application. The evaluation is done by asking people to share their experiences and opinions through interviews and questionnaires.

2.5 Related Works

M-Jako Iban is the first application that provides dialogue-based application which enable learners to learn basic vocabularies of Iban language [1]. Cognitive Theory from Bloom's Taxonomy is being used in designing this application since their target group is children age between 6–12 years old. CAMLES is an adaptive mobile learning system to assist Vietnamese students in learning English language as a foreign language for the preparation of TOEFL test. This application allows the students to use mobile devices such as mobile phones, Personal Digital Assistant (PDA) to learn English by topic and context [17]. Another application namely MicroMandarin is an application that supports micro-learning by leveraging the location-based service Foursquare to automatically provide contextually relevant content in the world's major cities. This application encourages the use of language in a meaningful interaction with native speakers. MicroMandarin supports 4 functions: studying language based on where the learners are, browsing all language that had been seen through

the application and taking progress by referring to statistics of flashcard seen, correct, learned and etc. [18]. TenseITS is another mobile intelligence tutoring system for learning the use of English tenses, designed for Chinese learners of English. This system focuses on the explanations and exercises for the tenses and the appropriate content or exercises are selected based on the user's knowledge state and their context. The system only uses multimedia elements and text in interaction with the users [19].

Based on existing works, mostly focus on the learning structure of language such as vocabulary, grammar and tenses. The existing works also focuses on popular languages such as English language and Mandarin only. Most of the interaction between the application and the users in learning languages are done using multimedia media elements: text, graphics, audio and video. Therefore this research give focus on developing multimedia-based application for learning Iban language on a wider scope which comprises of Iban vocabularies, phrases and actual conversation sentences, mainly meant for non native speakers to communicate with the Iban people. This research is developed to help a more meaningful learning experience by providing more authentic scenarios.

3.0 METHODOLOGY

Since language learning requires a lot of involvement and practice, storytelling has been proven as one of the best method to implement language learning. In order to implement this in mobile learning, it counts to put importance in the authenticity of the learning content. Therefore, contextual dialogue audios were used in this project. These contextual dialogues are authentic situational conversations or dialogues captured and used as the examples and practices in this project. This mobile application contains samples of pronunciations and spellings of basic phrases and words in Iban language including eight categories of basic vocabulary for numbers, family members, animals, human body, weather, vegetables & fruits, directions and dates/month/year.

3.1 Analysis

An analysis had been done on several aspects. The important aspects in the analysis phase consist of requirement of the target audience, evaluation strategies and product delivery. Requirement analysis of the target audience should be known in the first place in terms of their learning mode, environment and social interactivity. The contents were selected by referring to experts, Iban vocabulary book by Tun Jugah Foundation [11] and Iban text books. Evaluation strategies include the types of element used to gather data from the audience, such as questionnaires and basic test on Iban vocabulary and conversation. The evaluation of the problem

statement was also being conducted and interview was chosen as the medium of data collection. Investigation on the availability of Iban mobile application for learning language was also conducted to prove that there is no existing application. And based on an investigation done on the three most popular mobile platforms namely Android, iPhone and Symbian, currently there are no existing applications to cater the need to learn Iban language.

3.2 Design

This phase involved the design of this mobile application based on the requirements and information gathered from the analysis phase. In this stage, Constructivism learning Theory is being used. Constructivism learning theory applied in this research focuses on how constructivist learning theory enables the mobile technology to focus on the users' ability to be self directed and the ability to draw conclusions. This learning theory allows users to work independently. The learning context had been divided into three parts and they are; vocabulary, basic phrases, and conversation as shown in Figure 1. The multimedia elements selected to be used in this application were text, audio, and still images.
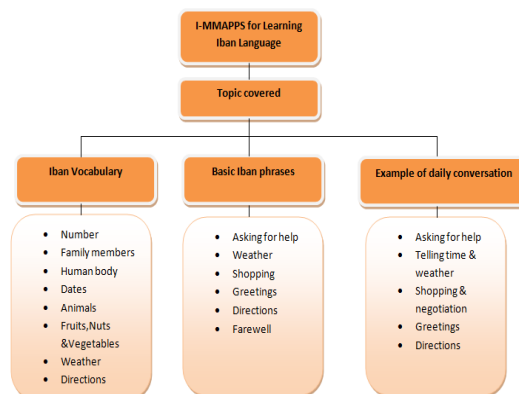

Figure 1 Topic breakdown

3.3 Development

Adobe Photoshop was used as an editing tool for graphics and Corona SDK was used to assemble the content of Iban language. Corona SDK is a tool where it uses one of Corona lab's HTML5-compliant WebViews combined with OpenGL-based graphics and effects. Development will be done on the Android version 2.2 to 4.2.2 to maintain compatibility across various Android devices.

3.4 Implementation

Upon the completion of I-MMAPPS for Learning Iban Language, it had been tested and it works smoothly. During this phase, the application is installed in the

mobile devices and handed to the target user. At start up, I-MMAPPS for learning Iban language displays an animated splash screen to introduce the application's name (Figure 2). After this animation it will automatically redirect to the next page which displays the brief history of Jaku Iban (Figure 3). This main menu will introduce the users about the origin of Iban language (Jaku Iban) and a brief history about the Ibans. From this page, there are four buttons for the users to choose from before going to a preferred screen. Users are able to choose from three main categories namely; Vocabulary, Phrases, Conversation and a Quit button to exit the application as shown in Figure 4.
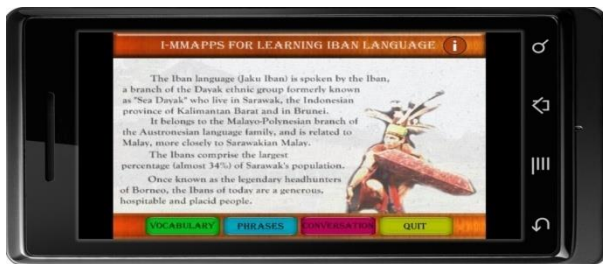

Figure 2 Splash screen

Figure 3 Main menu

Figure 4 Iban Vocabulary

Taping on any of the submenus under this category will direct the user to the contents under that particular submenu. For example when the users tap on the Animal button, it will direct the users to all content under the submenu named Animals (refer Figure 5).

Figure 5 Submenu for vocabulary

Figure 6 Iban phrases

Figure 7 Sample of Iban conversation

Figure 6 and Figure 7 are examples of Iban phrases and Sample of Iban Conversation. There are six different submenus/buttons that the users can choose from. The buttons are Help, Weather, Shopping, Greetings, Directions and Farewell. All the listings under these categories are based on Conversations *for Tourist* book, written by Willy, J. [14].

3.5 Testing and Evaluation

An experiment was carried out with 30 respondents who are non native speakers in order to evaluate the user satisfaction level towards the application. During the testing, the application is installed in a mobile device and then handed to the respondents. They were given brief explanation about the application and the objectives of the testing. Table 1 is the overall user satisfaction towards I-MMAPPS for Learning Iban Language.

Table 1 Mean score of overall user satisfaction towards i-mmapps for learning Iban

Section	Mean Score
Content	4.41
Ease of use	4.61
Accuracy	4.38
User Satisfaction	4.46

The user satisfaction is determined based on four constructs of I-MMAPPS for Learning Iban Language. The four constructs are content, ease of use, accuracy and satisfaction with I-MMAPPS for learning Iban Language. Based on Table 1, the user satisfaction levels towards the application is fairly high, which means most of the time the users are satisfied with the application as reflected by the mean scores ranging from 4 to 5. The highest mean score is from *ease of use* with the mean score of 4.61 out of 5 points highest. This score indicates the "Very Good" category. Second highest is followed by the *user satisfaction* towards I-MMAPPS for learning Iban language with the mean score of 4.46. *Content* is also obtaining satisfaction levels at "Good", with a mean score of 4.41. The smallest mean score is *accuracy* with 4.38 but still nearing the *good* scale. Thus it confirms that most of the respondents are satisfied with the application's accuracy.

4.0 DISCUSSION AND CONCLUSION

This research is conducted in order to design and develop an interactive multimedia-based mobile application based on the conversational method and the principles of constructivism learning theory. This application introduces the Iban language to non native speakers. The design was based on the constructivism theory where users could use past knowledge or experiences when acquiring new knowledge. Based on previous research done by Syazwan Noordin and Wan Fatimah [12], learner would try to understand something new via past experiences or prior knowledge and build the new knowledge upon these experiences. Constructivism in mobile learning is the variety of mobile application choices. A greater number of choices will contribute to a faster absorption process in learning where it provides a self discovery opportunity. The availability of audio of native speaker can teach the users the correct Iban pronunciation. The evaluation is done to measure the satisfaction levels among users towards the Interactive Multimedia-based Mobile Application for learning Iban language, and it is done to get some feedbacks from users based on four constructs: content, ease of use, accuracy and satisfaction. The findings of the evaluation show that, the average mean scores for all the constructs are all above 4. Thus most of the respondents reported that the application helps them in their self-learning and motivate them to learn language via mobile devices. It was also found

that the sounds used in the application gave them meaningful feedback. [2] stated that the interface can improve a user's satisfaction and in order to improve user's experience, the background music, sound effects and well organized menu can assist users to become more immersed in the application. These can help the users to develop an understanding towards the knowledge from the presentation of this mobile content. Based on the findings, it can be concluded that the users' satisfaction towards the application is fairly high. The findings obtained from this research have shown that I-MMAPPS for learning Iban language are helpful in developing positive interest and useful for the non native speakers to understand Iban language. However further studies need to be done to enhance the design and functions such as the search function that could have enable the users to search for their desired words or phrases.

References

[1]   Bujang, M. N. and P. R. M. Riaz. 2012. M-Jako Iban: A Mobile Application to Introduce Iban Language. *2012 IEEE Symposium on Humanities, Science and Engineering Research*. Renaissance Hotel, Kuala Lumpur. 24-26 June 2012. 1177-1181.
[2]   Nesbitt, K. and I. Hoskens. 2008. Multi-Sensory Game Interface Improves Player Satisfaction but Not Performance. *The Ninth Australasian User Interface Conference (AUIC2008)*. Wollongong, Australia. January 2008. 13-18.
[3]   Korucu, A. T. and A. Alkan. 2011. Differences between m-learning (Mobile Learning) and e-learning, Basic Terminology and Usage of m-learning in Education. *Procedia-Social and Behavioral Sciences*. 15: 1925-1930.
[4]   Frasen, J. 2008. Mobile Learning: An Exploration; State of The Art and Expectations for the Near Future. Technical Report.
[5]   Discover Borneo. 2013. [Online]. From http://www.discoverborneo.com/.
[6]   Hashemi, M., M. Azizinezhad, V. Najafi, A. J. Nesari. 2011. What is Mobile Learning? Challenges and Capabilities. *Procedia-Social and Behavioral Sciences*. 30: 2477-2481.
[7]   Perry, W. G. 1999. *Forms of Ethical and Intellectual Development in the College Years*. San Francisco: Jossey-Bass Publishers.
[8]   Sandberg, J., M. Maris and K. Geus. 2011. Mobile English Learning: An Evidence-based Study with Fifth Graders. *Computers and Education*. 57(1): 1334-1347.
[9]   Zviran, M. and A.I. Glezer. 2006. User Satisfaction from Commercial Web Sites: The Effect of Design and Use. *Information and Management*. 43(2): 157-178.
[10] Ong, C. S. and J. Y. Lai. 2007. Measuring User Satisfaction with Knowledge Management Systems: Scale Development, Purification and Initial Test. *Computers in Human Behavior*. 23(3): 1329-1346.
[11] Linggi, L., L. Gerunsin, R. Janet, N. Alenxander, N. L. Jantan, U. Jimmy, D. Ronald, D.K. Vinson and J. Sutle. 2010. *A Handy Reference Dictionary of Iban and English*. Kuching: Tun Jugah Foundation.
[12] Noordin S. and W. F. W. Ahmad. 2010. Implementation of Design and Learning Theories in Multimedia Courseware Development: Lines and Planes in 3-Dimensions. *2010 International Conference on User Science and Engineering (i-User)*. 13-15 Dec. 2010. Shah Alam. 93-97.

[13]　[13] Sandberg, J., M. Maris and K. Geus. 2011. Mobile English Learning: An Evidence-based Study with Fifth Graders. *Computers and Education*. 57(1): 1334-1347.

[14]　Willy, J. 2012. *English, Mandarin and Chinese: Conversations for Tourist (Language in Use)*. Bilingual Edition. SSMB Book Publishers.

[15]　Morita, M. 2003. The Mobile-based Learning (MBL) in Japan. *First Conference on Creating, Connecting and Collaborating through Computing (C5'03)*. Kyoto, Japan. 31 Jan. 2003. 128-129.

[16]　Godwin, R. 2011. Emerging Technologies Mobile Apps for Language Learning. *Language Learning and Technology*. 5(2): 2-11.

[17]　Nguyen, V. A. and V. C. Pham. 2012. CAMLES: An Adaptive Mobile Learning System to Assist Student in Language Learning. *2012 IEEE Seventh International Conference on Wireless, Mobile and Ubiquitous Technology in Education (WMUTE)*. Takamatsu, Kagawa, Japan. 27-30 March 2012. 72-76.

[18]　Edge, D., E. Searle, K. Chiu, Z. Jing and A. L. James. 2011. MicroMandarin: Mobile Language Learning in Context. *Conference on Human Factors in Information Systems (CHI 2011)*. 7-12 May 2011. Vancouver, BC, Canada. 3169-3178.

[19]　Cui, Y. and S. Bull. 2005. Context and Learner Modelling for The Mobile Foreign Language Learner. *System*. 33(2): 353-367.