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Android Application for Learning Javanese Language

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Abstract--- *Language is the medium of speech spoken daily for human communication. The Javanese language is a language commonly spoken by the Javanese people, particularly in Malaysia. However, the Javanese language is rarely spoken among the new generation due to the lack of effort to learn the language. Therefore, there is a need to help the current generation to learn about this hereditary language. This study aims to (i) develop and incorporate a Javanese language-learning application by embedding multimedia elements and (ii) assess the functionality of the application. This Javanese language learning android application was developed as one of the platforms for indirect learning to most users besides attracting them to learn. In this study, an android learning application was developed using Hannafin and Peck model which consists of three main phases, namely analysis, design, implementation phase followed by assesement-and-repetion phase. Adobe Flash Professional CS6 was chosen as the development platform. The application consists of four modules: "Let's Learn,""Games," "Quizzes," and "Guide." To test the functionality of the application, the developer collected data from three experts from the Faculty of Technical and Vocational Education and Center for Language Studies. These experts were selected through targeted sampling. The result concluded that the application was functionality smoothly and suitable for new learners to learn about the Javanese language.*

Keywords--- *Mobile Learning, Multimedia in Education, Android Application, Javanese Language*

I. INTRODUCTION

In this era, the use of technology has great impact on human life in various aspects, including commercial and education. In education, learning through mobile devices has become supplementary to the conventional method of teaching and learning. Learning through mobile devices offers a new way of teaching-and-learning (T&L) whereby students can use their mobile phone to explore information and knowledge. Such advancements can benefit student in terms of motivation and attract teachers and students to be active in T&L [1]. The use of technology also offers a wide opportunity on how people learn, gain knowledge, and how people customise information [2].

Mobile learning through application has a great potential of transforming the way of learning a language. The current trend of learning languages through mobile devices has been discussed in several studies, particularly in terms of the opportunities, varieties of application, and challenges [3,4] related to learning the English language. Nevertheless, the developments of applications for learning a local language, such as the Javanese language, have been limited. The authors consider the development of such application to be a necessity so as to preserve the practice of local languages, particularly the Javanese language.

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Javanese Language

The Javanese language is one of the languages most widely spoken by the Javanese people. One study states that the Javanese language is the language used in everyday life in the region of Java, particularly Banten, West Java, Central Java, and East Java in Indonesia [5]. The Javanese language is divided into *Ngoko* and *Kromo*. According to Geertz [6] in Dwiraharj [7], Javanese symbolises the Javanese system of ethics or decency, which in essence, follows the subtle to coarse axes seen in the level of the language. The Javanese language is the language of communication used to interact between individuals and for communication and transfer of information so that no one is outdated [8].

The Javanese language is also the mother tongue of the Javanese community. The language is one of the cultural heritages that must be preserved from extinction. In fact, in its position as a regional language, the Javanese language functions as a symbol of regional pride, a symbol of regional identity, and a means of communication within families and communities [9]. In this regard, the Javanese younger generation should be able to preserve the Javanese language in order to preserve the heritage; the language is a legacy that reflects the dignity of the language and the reflection of one's language. The Javanese language also has a high literary value and complex grammar. Speaking and understanding the language is not easy especially for the general public who have not the slightest knowledge of the language.

The Constructivisme Learning Theory

The fundamental of the theory of constructivism [10] lies in the constructivism of psychology theory by Piaget [11]. In contrast to teacher-centered learning, the constructivist learning theory stresses on individuals or a small group of learners who explore their own learning. The constructivism approaches allow students to be active gaining information rather than being passive learners. This theory emphasises students being on their own and proposes that learning is affected by context, belief, and attitude. Students are encouraged to find their own solutions and then build new knowledge upon their prior knowledge [12].

In the context of learning via applications, the theory of constructivism learning can be applied. With mobile applications, students can explore their own learning and build new knowledge. The module in a learning application allows students to set their own learning pace and adapt their existing knowledge. The exercises provided in an application allows students to test their understanding of what they have learned.

II. PROBLEM STATEMENT

Javanese is one of the languages spoken by the Javanese people in Malaysia. According to Mohamed [12], this language belongs to the subfamily of Hisperonesia, the Polynesian Malay family. History records that the ancient Javanese language was first used in the writing of an inscription from Bombay dating to 804 AD [13]. In everyday communication, the Javanese language is still used by the Javanese people in everyday speech, for example, in some areas including Johor. The Javanese language therefore is not consumed even though some of the people from the villages have moved to the city because of community factors. The standard language used in Java is the Java language *ngoko* (coarse language). Interpreting the Javanese language is a gradual transition froms *krama*, *madhya*, to *ngoko*.

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Although the Javanese language is still spoken, its use has gradually diminished [14], noted to be due to the increasing influence of the Malay language. Malay as the national language and official language of Malaysia has influenced the Javanese people to use the Malay language [15]. The Malay language has been noted to be easier to understand in terms of grammar and resulting accent. In fact, many Javanese of the present and third generation prefer using the Malay language to using the Javanese language.

In addition, the use of the Javanese language varies in different situations. Formal situations refer to the interactions at school and work. Informal situations refer to conversations in homes, grocery stores, stalls or eateries, festivals, or mosques, to list a few. In official events, some of the Javanese people are aware of the existence of the Malay language, and therefore, are uncomfortable using the Javanese language. This is because the intonation is a bit harsh and inappropriate in all official affairs. In the meantime, it can be difficult for one party to speak and deal well, particularly when the second party is an outsider who comes to deal with the first party. In this case, the communication will not work well and will make it difficult to interact with one another in the future. On the contrary, in unofficial situations, the Javanese language can be spoken casually or unrestrictedly, particularly by the previous generation. The Javanese people tend to prefer their native language for daily speech when they are among their ethnic group. Therefore, the position of the Javanese language has remained with the current generation, though not entirely. Other problems that arise from the influence of other languages include cultural clashes, such as marriage and the diversity of the people living in an area. For example, a marriage between a Javanese and a Banjari can cause difficulties for the two parties to converse [13,14]. These multi-racial couple may need to converse in Malay in order to understand each other.

Furthermore, the Javanese language spoken by the younger Javanese generation appears to be mixed with the Malay language. The cultural clashes in marriage has made it difficult or impossible to maintain the Javanese language, which is hereditary. As concluded by Alam [16] one of the factors affecting code mixing is the lack of proficiency and knowledge of translation in native languages. The first mode is used when speaking in one language while the second mode is used in conversations that require more than one language code. These issues require initiatives to ensure that the problem is solved. In the case of the present study, the initiative is the development of an Android application that can improve the level of understanding of the Javanese language. The purpose is to ensure that the use of the native language and the Malay language continues to be preserved.

Research Objectives

This study endeavours to achieve the following objectives:

To develop and incorporate a Javanese language-learning application with embedded multimedia elements, and

(i) To assess the functionality of the application through validation from experts.

III. RESEARCH METHODOLOGY

This study utilised Hannafin and Peck model [17] as a guideline to develop a learning application. The model is one of the product-oriented learning design models, usually in learning media [15] .The Hannafin and Peck model consists of three main phases: analysis, design, and implementation–followed by assessement and repetition phases. Adobe Flash Professional CS6 was chosen as the development platform.

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The analysis phase was the most vital phase in which the developer or researcher covered all the issues regarding the development of an Android learning application. The phase began with analysing the problems frequently faced by users in using the Javanese language. For this purpose, the developer observed Javanese language experts and Javanese-educated people who can converse well in Javanese. At the same time, the developer reviewed the existing literature and existing applications on learning language through a mobile application. The developer then detected some weaknesses of the existing applications and attempted to develop an application with improved features. Before the development process began, the developer studied the software to be used to develop the application. The developers then identified several software that can be used, including Microsoft Word, Adobe Photoshop CS6, Adobe Illustrator CS6, Audacity Sound Editor, and Adobe Flash CS6.

The next phase proposed by the Hannafin and Peck model is the design phase, which describes the relevant products involved in a product development process, such as structural design, learning base, applied theories, and multimedia. In this study, the design phase involved sketching a storyboard, creating a flowchart, creating navigational structures, and designing a content structure, such as content design, interactivity design, and interface design. The flowchart and navigational structure served to determine the flow of the content of the application. The complete storyboard was prepared as a preliminary guideline for the developer during the implementation phase, which involved the use of Microsoft Word. The storyboard consisted of sketches about the placement of the multimedia elements, such as graphics, audio, animation, text, video, and interactivity. Other elements such as a button menu and theme were also determined during this phase. The following four main menus were incorporated into the learning application: "Let's Learn," "Games," "Quizzes," and "Guide," which convey some words in the Malay language in the Javanese languge, simple games, some quizzes to test the users' comprehension, and guideline for users to use the application.

The last stage was the implementation phase. The development of the application began after the analysis and design phases. The storyboards, flowchart, and navigational structures were used as the references for the development of the application. The application was developed part by part. The images and graphics were developed separately using Adobe Photoshop CS6 and Adobe Illustrator CS6. The process involved tracing, designing, and editing the images, for example, the button menu. For the purpose of editing the audio elements and recording voice, the developers used Audacity Sound Editor. The separate parts were then integrated using Adobe Flash CS6 and were then published as an application. Subsequently, the application was exported to an .apk format prior to installation to an Android mobile device and further testing.

A final assessment-and-repetition stage was added to the Hannafin and Peck model. In this phase, a set of questionnaire was developed by the researches according to the content of the application developed earlier for assessing the functionality of the application. The questionnaire, which seeks the validation of experts, consists of four main sections: Section A (demographic details), Section B (content design), Section C (interactivity design), and Section D (interaction design). Questions in Section B (content design) required the experts to rate the validity of the content in the application. While questions in Section C (interactivitiy design) and Section D (interaction design) required the experts to rate the validity of interactivity and interaction of the application. Through targeted sampling, three experts were chosen for the assessment stage, two of whom are lecturers at Faculty of Technical

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and Vocational Education, and another from Center for Language Studies. The selection criteria were because they had expertise in multimedia product development and expertise in language learning. The questionnaire contains checklist style questions for which the experts were required to rate their validation whether 'Yes' or 'No', and the data obtained were analysed using acceptance frequency. Results are presented in the following section.

Research Findings

The results of the assessment are presented in two parts, each pertaining respectively to the objectives of the study. As stated on the main interface, the application consists of four modules: "Let's Learn," "Games," "Quizzes," and "Guide," The "Let's Learn." The module is about learning common Malay words in Javanese, particularly in several categories including family and numbers. All of the items are equipped with audio pronunciation. The "Games" module enables users to play games, particularly puzzles, for which the users are required to drag separated pieces to the spaces provided. The "Quizzes" module tests users' comprehension after using the application. Nine questions are provided in this module. The last module, "Guide", was designed to guide users on how to use the application. Figure 1 and Figure 2 illustrate the interfaces of the application.

Figure 1: Main interface of Javanese language application

Figure 2: Interfaces for "Let's Learn", "Games", "Quizzes" and "Guide" modules

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In assessing the functionality of the Javanese Language application, the experts selected were required to complete Section A of the questionnaire and evaluate the content design (Section B), interactivity design (Section C), and interface design (Section D). However, only experts from the Center for Language Studies answered the content design section. The data obtained were then analysed in terms of frequencies and percentages.

Table 1 shows the assessment of the content design. The experts agreed that the content design was fulfilled. They ticked "yes" to all the items in this section (item 1 to item 9), thus indicating a 100% acceptance of the application in terms of content design.

Table 1: Acceptance for Content Design via Validation from Experts

No	Items	Frequency		Percentage %
		Yes	No	
1	Is the user guide given in this application easy to understand?	1	-	100%
2	Is the content of the mention for family members in this application easy to understand?	1	-	100%
3	Is the content of the pronunciation for others in this application easy to understand?	1	-	100%
4	Is the content of the pronunciation for this in application number easy to understand?	1	-	100%
5	Are the instructions on the game menu easy to understand?	1	-	100%
6	Are the questions in the quiz menu easy to understand?	1	-	100%
7	Is the meaning of the language used in this application easy to understand?	1	-	100%
8	Does the content of the application meet Javanese language learning needs?	1	-	100%
9	Do the contents of this application help users to master the Javanese language learning?	1	-	100%

Table 2 shows the assessment of the interactivity of the application. All the three experts agreed that the interactivity design aspect has been fulfilled and functions well. They ticked "yes" for all five items in this section, thus indicating a 100% agreement.

Table 2. Acceptance of Interactivity Design Aspect of the Application

No	Items	Frequency		Percentage %
		Yes	No	
1	Does the navigation menu make it easy application? for users to use the application?	3	-	100%
2	Do the available options simplify the navigation process?	3	-	100%
3	Does this application allow you to start using its content easily?	3	-	100%
4	Does the link for users to handle from one page to one another make it easier the application?	3	-	100%
5	Are the buttons used interesting and easy to understand?	3	-	100%

Table 3 shows the assessment of the interface design of the application. All the three experts agreed that the interface design aspect has been fulfilled and that the interface of the application is well designed. The experts ticked "yes" to all the items in this section (item 1 to item 6), thus indicating a 100% acceptance of the interface design of the application.

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Table 3: Acceptance of the Interface Design of the Application

No	Items	Frequency		Percentage %
		Yes	No	
1	Are the color differences used in this application appealing?	3	-	100%
2	Is the type of writing used appropriate?	3	-	100%
3	Is the writing size used appropriately?	3	-	100%
4	Are the images for notes and games used clear?	3	-	100%
5	Is the background graphics application appealing and appropriate?	3	-	100%
6	Are the graphics for the game menu used make this application appealing?	3	-	100%

IV. DISCUSSION

The Hannafin and Peck [18] model was utilised in this study to guide the developer in developing the Javanese language learning application. This model proposes three consecutive phases, namely analysis, design, and implementation. The process was supplemented with another additional stage: evaluation. Several appropriate softwares were used for processing images, creating animation and editing audio, such as Adobe Flash CS6, Adobe Photoshop CS6, Adobe Illustrator CS6, Audacity Sound Editor, and Microsoft Word. The variety of software used served to produce multiple multimedia elements, including images, audio, animation, and graphics. The pieces of the work were then gathered to produce a complete application, which was then, published in an apk format.

Four modules were produced in the Javanese language application. "Lets Learn" contains the content for learning basic Javanese language such as the words for family members, numbers, and other items. "Games" enables users to learn through games while "Quizzes" test users' comprehension about what they have learned from the application. "Guide" is created to guide the users on using the application.

The functionality assessments involved three aspects: content design, interactive design, and interface design. The content design aspect was about delivering the learning content in the application. The contents of this applications are delivered in text and audio. The result showed that the experts agreed with the content design, which means that the content is well presented. The words presented complement the pronunciation audio thus enabling users to pronounce each word corrently. According to Hofstetter and Fred [19], text is one of the important multimedia elements in an application; it can deliver a content clearly. Another multimedia element for aiding correct pronounciation is audio. Audio in an multimedia application that can enhance learners' comprehension [20] thus resulting in effective learning.

The interactive design aspect of the application deals with the interactivity element in the Javanese language learning application. The result showed that all the experts agreed that the interactivity design of the application functions well. Interactivity is important in an application because it is related to how a user controls an application, such as navigation and browsing. An interactivity element is normally portrayed by the appearance of buttons or links. In this study, the developer used button as the medium for users to navigate through the application. Interactive elements can foster users' learning process because the feature enables users to access the application according to their need and control their learning pace [21].

Last but not least, an application's interface design relates to the layout and design of the whole presentation of the application. All the experts agreed that the interface of the application is well designed. All the multimedia elements

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are blended to produce an appealing interface. An appealing interface can further attract students to use the application more effectively. This notion is supported by a study which found that multimedia education tools could promote ease of use and provide better guideline with the help of sounds effect, video, and animation. Such integration can prove to be more effective than the traditional face-to-face lecture method [22].

V. CONCLUSION

In conclusion, the development of the Javenese language learning application is successful. The three stages proposed in the Hannafin and Peck [17] model provide a useful guidance for the developer in the development process. In terms of functionality, the application was assessed by experts who were satisfied with the requirements, althought some minor amendments are to be made later. A language learning application can serve as a new pedagogical method for learning a foreign language. The application can serve as a tool for teachers and learners to shift from the traditional method of learning to a more current method.

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