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## Mobile Learning Application for Children: Belajar Bersama Dino

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### Abstract

Mobile devices and services have the potential in the enhancement of learning and education field. Because of that, computer based learning application has become inappropriate to be used based on the fast development of mobile technology which means all activity was conducted by using mobile devices. This paper proposed the design and development process of Mobile Learning Application which is *Belajar Bersama Dino* that mainly suitable for children who aged four to six years old. This paper will explain in details in every stages of the design development process for this application.

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### 1. Introduction

Mobile devices and technologies have seen a rapid growth in the last few years. This growth in mobile technology development has lowered the prices for mobile devices allowing them to be available to the majority of people (Kinshuk, Frederique, Qing Tan, & Frederick, 2012). This majority of people included the children who start to use mobile devices at early age of their life. A research study from Common Sense Media (2013) have reveals that the percentage of U.S. children who have used a mobile device has exploded over the past few years, jumping to 89 percent of all children in 2013 up from just 38 percent in 2011. The survey polled American parents with a child ranging in age from new born to eight-years-old, covering smart phones, tablets and any other portable device with a screen. With this result, it's showed that the mobile devices have become part of children life and at the same time it

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also prior to the development process of the children especially in the education learning. Because of that, Mobile Learning (M-Learning) come into the modern's life and become the best way of learning mechanism that can improve children learning process by using mobile learning application(Liu, Diao & Tu, 2010). In this paper, the design and development of the Mobile Learning Application for children are discussed in detail. In Section 2, the definition about the mobile learning is explained. In the Section 3 the previous study and research of the mobile learning application for children are discussed. The methodology that has been used for the application is discussed in Section 4.Finally, in the last section, the conclusion of this study and feature work of the application in this area is stated.

## 2. Mobile Learning

Basically there are three different points of view about the meaning of mobile leaning in the current academic community (Liu et al., 2010). The first viewpoint define that the mobile learning as a new form in Distance Learning. The second view point defines that mobile learning as a new expansion of e-Learning. Beside in the third viewpoint, it defines that mobile learning as a new technology and a new way of learning by its characteristic such as mobility situation. According to (Liu et al., 2010), there are three distinctiveness of mobile learning such as follows:

- To provide learning environment anytime and anywhere.
- Learning activities are more situational.
- Provide Just –In-Time learning content.

Mobile learning now currently is most useful as a supplement to ICT, web learning and others traditional learning methods and can do much in order to enrich the learning experience of the user. In the future, mobile learning could be a huge factor in getting unsatisfied people in learning, where more traditional methods have failed. As mobile phones combine PDA functions with cameras, video and MP3 players, and as tablets combine the portability of PDAs with the functionality of desktops, mobile learning application surely becomes more exciting and flexible for user to interact with. (Winsen, Setiabudi & Tjahyana, 2013).

## 3. Previous research on mobile learning application for children

Mobile Learning Application is the latest learning mechanism that assists the understanding of user about education by using mobile devices anytime and anywhere. In this paper, we focused on the design and development of mobile learning application for children. There are some of the previous studies and research that has been done by others regarding on design and development stages in mobile learning platform as shows in Table 1:

Table 1 : Summaries of previous studies and research on Mobile Learning Application.

No	Author & Publication	Research Title	Significance of Study
1	Bujang, M.N.B&Riaz, R.P.M publish in 2012 IEEE Symposium on Humanities, Science and Engineering Research.	M-JakoIban: A Mobile Application to Introduce Iban Language.	Provide learner a different approach in learning language based on their situations and environments where Iban Language is applicable.
2	Kamaludin, H. , Kasim, S. ,Selamat, N. &Hui, B.C. publish in 2012 International Conference on Innovation, Management and Technology Research(ICIMTR2012)	M-Learning Application for Basic Computer Architecture.	The application involves modules for notes, flash card and quiz which enables user to learn fundamental topics of the course by using mobile devices while offline.
3	Winsen,Setiabudi, D.H. ,Tjahyana,L.J . (2013) publish in 2013 International Conference of ICT for Smart Society (ICISS)	Mobile Learning Application Based on Hybrid Mobile Application Technology Running on Android SmartPhone and Blackberry.	Focus to assist the teaching-learning process by developing a model of mobile e-learning application that can run on cross-platform, which is on Android and BlackBerry

		Platform.
4	Guoxin Miao publish in International Conference on Information Management, Innovation Management and Industrial Engineering.(ICIII).	Interactive Design and Realization of Mobile Learning Resources Through 3G Mobile Phones.
		Focus on the learning content interaction and human machine interface layout, multiple levels of design strategies and method for mobile learning application.

For some of the previous researched stated in Table 1 above, its summarizes the concept of the design and development fora good mobile learning application is basically related to the decision on selecting the authoring tools, the suitable methodology model and also the suitable designing approach which can be implement during the development of mobile learning application stages.

**4. The methodology**

In order to develop a successful application, ADDIE model is best applied since ADDIE model is a generic and classic process traditionally used by instructional designers and training developers that normally present a dynamic flexible guideline for building effective training and performance support tools (Huang, Yi, & Yu, 2005). This model consists of four stages as below:

*4.1. Analysis*

In this stage, the objective and the problem statements are being clarified in order to understand the project aim and goals. The target audience of this application is being analysed and children age four to six years old are chosen for this research.

In order to obtain specific data requirement for the application, observing, interview and questionnaire session has been conducted at *Tabika Perpaduan Changlun*. In this session, the question being asked is about the functionality and design specification of mobile learning application. On top of that, the investigation on preferred operating system for *Belajar Bersama Dino* application is conducted. This investigation is based on two most popular mobile operating systems which are: Android (Google) and iOS (Apple).

Table 2: Summary of preferred mobile operating system from 20 kids at Tabika Perpaduan Changlun.

Age (Years)	Google Android	Apple iOS
4	2	1
5	5	3
6	6	3
<b>Total</b>	13	7

Based on the Table 2, it showed that Google Android has become the preferred operating system of Smartphone for children learning application. Because of that, the operating system for *Belajar Bersama Dino* is selected and has been developed by using Google Android Operating System.

*4.2. Design and development*

In the design phase, the structure and flow of *Belajar Bersama Dino* application must be clearly stated in the framework. This framework includes the sketches and storyboards of the application.

- *Sketches & storyboard*

This is the process where designer sketch the main character, clarify the icon and also the interface layout of the application (see Figure 1).

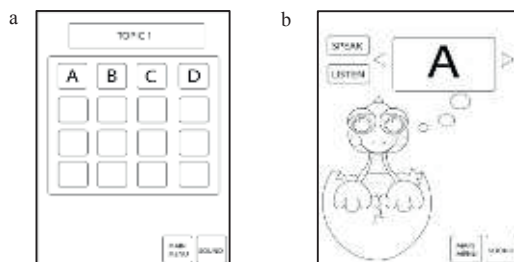


Fig.1. (a) Main menu interface; (b) Character design.

Once interface layout for *Belajar Bersama Dino* is created, button design and function are defined. This includes two major function of button in the application which is Listen button and Speak button. For Listen button, it allowed user to listen to voice narration of the content and for Speak button it allowed users to record their voice into the application. The detail is includes in Figure 2:

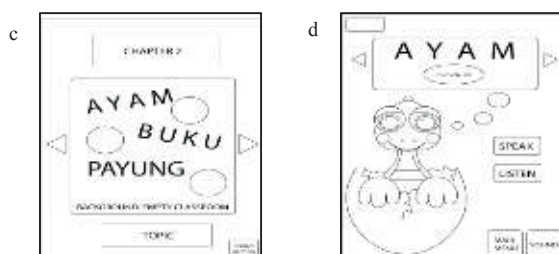


Fig.2. (c)(d) Button design and function of Belajar Bersama Dino application.

In order to design *Belajar Bersama Dino*, this study has focus on the user responsive control perspective. According to (Bujang et al., 2012) responsive control are important in order to give user an immersive feeling thus creating an enjoyable experience. In *Belajar Bersama Dino* application, user is allowed to choose desired content which divided into two categories as in Figure3.

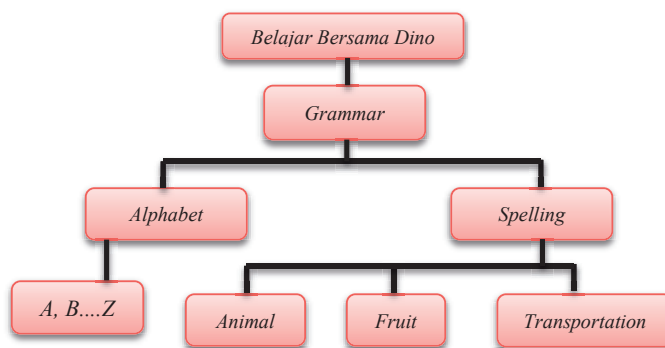


Fig. 3. Topic breakdown for *Belajar Bersama Dino*.

In development phase of the application, Adobe Flash CS6 is a medium that used to develop *Belajar Bersama Dino*. Adobe Flash CS6 is a program to create animation, advertisement, web pages and presentation since it has been introduced in 1996. This program has integrated with action script 3.0 which is powerful programming language that eases the development of highly complex and object-oriented applications.

- *Adobe flash CS6 environment.*

To develop mobile learning application, this program provide tools and virtual device that important during the development of application with Action Script 3.0. Adobe Photoshop and Illustrator CS6 has been used for drawing purposed due to the ability to create vector graphic which are smaller size and better quality compare to other images format like bitmap.



Fig.4. (e) Action Script 3.0 screenshot; (f) Adobe Air 3.2 for Android.

The development of *Belajar Bersama Dino* application is focus on Adobe Air 3.2 for Android (see Figure 4) since the result from the analysis stated that the children are prefers more to Android Operating System. Moreover, this publish setting is widely used in mobile application and most supported by flash applications.

### 4.3. The implementation of belajar bersama Dino application

Upon the completion of *Belajar Bersama Dino*, it has been tested and working smoothly. Then the application is installed into mobile phone which used Android operating system and handled to the target user. On the startup, *Belajar Bersama Dino* will display first interface that will introduces the application in form character animation (see Figure 5) with background music. Once user press play button, it will display main menu interface (see Figure 5) that display two different topic which is Alphabet and Spelling.



Fig. 5. (g) introduction interface; (h)(i) main menu interfaces.

When the Topic button is clicked, two sub menu (see Figure 6) which is Alphabet and Spelling button for the learn content will be displayed. In the sub menu interface, user will have ability to make choices based on the number of alphabet starting from A to Z.



Fig. 6: (j) alphabet interface; (k) spelling interface.

When one from twenty six buttons in Alphabet or Spelling sub menu is clicked, user will be lead to different interface of Learn sub menu (see Figure 7). In Alphabet topic, the learning takes place by applying voice narration at the start of the module and then followed by words or phrases related to the module. Audio and graphic are available in this application which is *Belajar Bersama Dino*.

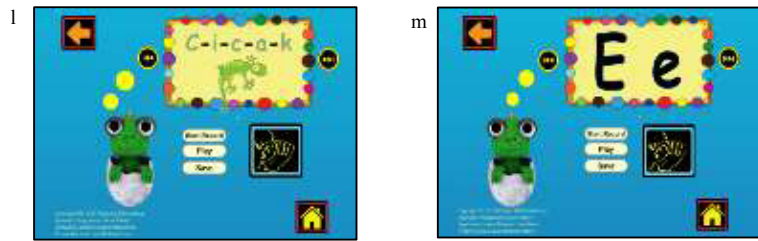


Fig. 7: (l) alphabet menu in learning content; (m) spelling sub menu in learning content.

#### 4.4. Testing and evaluation

During the testing, *Belajar Bersama Dino* is installed in a mobile phone and then handled to ten target user who aged four to six years old. They are given brief explanations about the application and objectives of testing. This testing basically covered in term of user interface, interactivity and the content of application. The following pie chart shows the finding of the testing.

- **Interactivity and User Interface**

From Figure 8, almost 80 percents of the target users find that *Belajar Bersama Dino* has very easy interactivity to be use while the rest felt that it is easy to be use.

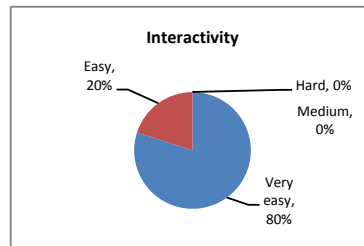


Fig. 8. Percentage of interactivity used in *Belajar Bersama Dino* application.

In term of user interface, 70 percent of users agree that the user interface of *Belajar Bersama Dino* is very good. From the observation and interview during the testing session, they also mention that the layout of the application is well design and easy to use. The detail is included in Figure 9:

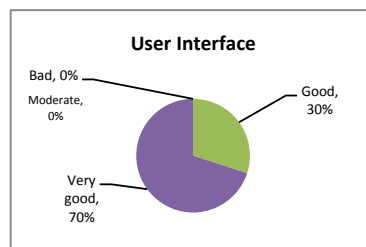


Fig. 9. Percentage of user interface for *Belajar Bersama Dino*.

- **Content**

Most of the user agrees that the content are well defined and clearly explained to the user. Users also find that *Belajar Bersama Dino* is very easy to understand due to users which have capability to control the selecting desired topics and content. From Figure 10, 90 percent of users have agreed that the content for this application are interesting and engaging.

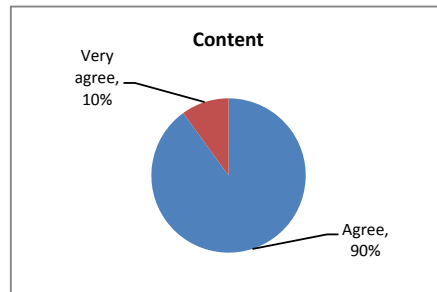


Fig. 10. Percentage of interesting content aspect in *Belajar Bersama Dino*.

## 5. Conclusion

*Belajar Bersama Dino* provides mobile application that enables users to immerse in learning environment anywhere and anytime. On top of that, it helps user to understand the basic alphabets and spelling by following twenty six different content that has been integrated in the application. During the testing, this application can perform the activity as expected without any bug and error. Moreover, users can handle the application without any problem as the interfaces are easy to use and learn. As the result from users' evaluation, *Belajar Bersama Dino* can inspire and motivate users to learn the basic alphabet and spelling via mobile phone as long it has Android Operating System. For the future work, more topic or content need to be added into the application so that it can be used by different ages of user.

## References

- Bujang, M.N.B., & Riaz, R.P.M. (2012). M-Jako Iban: A mobile Application to Introduce Iban. *IEEE Symposium on Humanities, Science and Engineering Research* (pp. 1177-1181). IEEE.
- Kamaludin, H., Kasim, S., Selamat, N., & Hui, B. C. (2012). M-Learning application for basic computer. *International Conference on Innovation, Management and Technology Research (ICIMTR2012)*, Malacca, Malaysia: (pp. 546 - 549). IEEE.
- Kinshuk., Frederique, C.P., Qing Tan., & Frederick, A.N. (2012). The 5R adaptive learning content generation platform for mobile technology. *IEEE Fourth International Conference on Technology for Education* (pp. 132-137). IEEE.
- Miao, G. (2012). Interactive design and realization of mobile learning resources through 3G. *International Conference on Information Management, Innovation Management and Industrial Engineering* (pp. 56-59). IEEE.
- Liu, Q., Diao, L., & Tu, G. (2010). The application of artificial intelligence in mobile learning. *International Conference on System Science, Engineering Design and Manufacturing Information* (pp. 80-83). IEEE.
- Huang, S.T., Yi, P.C., & Yu, J.L. (2005). ADDIE instruction design and cognitive apprenticeship for project-based. *2th Asia-Pacific Software Engineering Conference (APSEC'05)*. IEEE.
- Winsen., Setiabudi, D.H., & Tjahyana, L.J . (2013). Mobile learning application based on hybrid mobile application technology running on Android smartphone and Blackberry. *International Conference of ICT for Smart Society (ICISS)*. IEEE.