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Learning Dusun Language Application: Daily Conversation

by

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CERTIFICATION OF APPROVAL

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Approved by,

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken by unspecified sources of persons.

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FARHIZA ABDUL LAHIN

ABSTRACT

Dusun Learning Language Application is an Android Application developed to be used on smart phones and also desktops. It is designed to encourage the usage of Dusun Language in daily life conversation. It is because Dusun language has become an endangered language and will then reach to a point of extinction. This application will act as another alternative in order to preserve the dying language. Android application is chosen to be the teaching medium because the android application is proven to be fast, efficient and an easy access to any user. Rapid Application Development (RAD) are the methodology used in this project. The application uses Bunduliwan dialect as it is the most prominent Dusun dialect used in the region of Sabah. The database of the applications is obtained from www.edusun.org an online dictionary of Dusun language. The database are refined and simplified in order to fit with the design of android application. Usability testing has been conducted upon completion of the prototype. Positive feedbacks gathered from the respondents. Thus proves that the application could be new alternatives in preserving the Dusun language.

ACKNOWLEDGEMENT

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CHAPTER 1
PROJECT BACKGROUND

1.1 Introduction

Sabah, is the second largest state in Malaysia. The population in Sabah consists of 80% indigenous ethnicity (Herman, 2009). The largest ethnic found is Kadazandusun a combination of two ethnic which is Kadazan and Dusun. The ethnics unite after a political intervention in Sabah. The Kadazan and Dusun share large similarities in the culture, language, practices and tradition. These ethnics used their own language to converse and communicate within community. However the native's language usage among the teenagers now is eroding quickly. The bearing towards the less usage of both the natives language will lead to an extinction of the language. According to Hoffmann, "As many as half of the world's, nearly 7,000 languages are poised to become extinct the next century" (2009, p. 3). The language plays an important role in preserving the cultures of a community as the practices are passed down to the new generation for the culture to live on. The Kadazan and Dusun language are entering a phase where the amount of speakers is lowering down. The less usage of the language will bring the natives communities culture to extinction. The younger generation refuse to learn their mother tongue. It is because they do not see the benefits of learning the language towards their self development and apparently useless in conversation. However, if the language dies, the cultures will soon fall. The relationship between the language and the culture are very close.

Based on Herman (2006) the Kadazan and Dusun language are threatened by the usage of the national language. In the ARTICLE 152, it is stated that the national language of Malaysia is Bahasa Melayu. Bahasa Melayu is chosen to be the national language because the Malay race is the dominant race in Malaysia. Bahasa Melayu and English are then widely used in education and official purposes. In order to communicate between different races, Bahasa Melayu and English are use to reach

an understanding. It is because other races do not understand the Kadazandusun languages. In the end Kadazan and Dusun natives use Bahasa Melayu and English more than their own language.

A private association are established to preserve the culture and language of Kadazandusun which is Kadazandusun Cultural Association (KDCA). They actively involved in keeping the Kadazandusun language and culture to be practiced in the community. Primary schools have open unofficial class in teaching the language to students. Sabah's media also took an effort to preserve the language by publishing a Kadazandusun newspaper, all the news written inside are fully in Kadazandusun language. Another private association, Kadazandusun language Foundation (KLF) fighting in preserving, developing and promoting activities that values the cultural values of Kadazandusun.

Recently on an article in Borneo Insider, September of 2013, president of United Pasokmomogun Kadazandusun Murut Organisation (UPKO) Tan Sri Bernard Dompok stated that the government has taken alternatives in preserving the language by introducing Kadazandusun language in secondary school, Universiti Malaysia Sabah (UMS) and Universiti Pendidikan Sultan Idris (UPSI).

Despite the effort done by various parties, the amount Kadazandusun speakers is still depleting. Therefore Learning Dusun Language Application will be an alternative to preserve the language because the young generation are common with the android technology.

1.2 Problem Statement

Herman argues that the usage of Sabah's local language is quickly eroding in effect of Malaysia's national language (Herman, 2009). It is not only because of Bahasa Melayu has been officially selected as the nations language as per the ARTICLE 152, but also because of the indifference stance against preserving the Dusun heritage and culture. The indigenous minorities' mother languages are seen to be unbeneficial for the nation's development. This demeanour has lead Dusun language to its extinction.

Despite of many attempts done by the government and private sectors in order to preserve the dying language to a complete extinction, the Dusun natives' younger generation use Bahasa Melayu instead of Dusun Language in their daily conversation even among family members. Extra classes are added in Sabah's primary school syllabus in order to teach the youngsters the language, but the effects are seemingly insignificance.

This project prominent is to provide an easy access for the Dusun natives' youngsters to learn the basic Dusun Language at anytime and anywhere. By using this application in conversing daily may improve the mastery level of this dying language.

By using the "Dusun Learning Language Application" user may learn the language from the basis. The application will provide the users with direct translation of a word, from Dusun to Malay or English and vice versa. The correct pronunciation and spelling of the word will be provided in the application enables users to learn the language much faster.

1.3 Objectives

- To develop an Android Application in learning Dusun Language for daily conversation
- To conduct usability testing on the Dusun Language for daily conversation Android Application.

1.4 Scope of Study

This project is developed to be tools in learning Dusun language for Dusun natives born in 1980's and above. It is perceived that Dusun natives born after 1980's are having difficulties in learning the language because Bahasa Melayu and English language are the main medium in learning the school syllabus and the examination such as UPSR (Ujian Penilaian Sekolah Rendah / Primary School Evaluation Test), PMR (Penilaian Menengah Rendah/ Lower Secondary Assesment), SPM (Sijil Pelajaran Malaysia / Malaysian Certificate of Education) and STPM (Sijil Tinggi Persekolahan Malaysia / Malaysian Higher School Certificate).

Evidently, the scopes of range are familiar with the android application. Android applications are used widely to assist users in daily activities. Developing a Dusun Language learning Android application will be a go to application that can be easily accessed anywhere to converse in their daily life. Thus, any Dusun natives born after 1980 that use an Android Smartphone will be the scope of study for this project to test the applications usability.

In developing the application database, another scope of study will be used for testing purposes. Older generation of Dusun natives that was born in 1980's and below will be the target to test the validity of the application before the application are ready for usability testing.

The Dusun Language comprises of many slangs. It is different in every district.

Kadazan Dusun Cultural Association has conducted a symposium in 1989 entitled "Towards standardisation of Kadazan Language". The result of the symposium is the Bunduliwan dialect was chosen to be the Dusun Central Language. It is because the language is intelligible. It is also because the Bunduliwan dialect is spoken the most in Sabah compared to the other Dusun Language dialect.

This application uses the Dusun Central language because it is not prone to any district slangs.

1.5 Project Relevancy

Learning Dusun Language Android Application is relevant to the Dusun natives community in Sabah.. The application will be another alternative in order to preserve the dying language. It is convenient to the user because it is an easy to go teaching method that can be accessed at anytime and anywhere. The user of the application is targeted to be the Dusun natives that are born after the 1980. The target group is familiar and comfortable in using smartphone and android technology.

1.6 Project Feasibility

The android application is designed to help user to learn Dusun Language through Daily conversation. The conversation listed in the application is what used mostly in the users daily life. However the time given has become the limitation to conduct the process. The application database will be directly taken from e-dusun dictionary by Kadazan Dusun Cultural Association websites. The android application development will finish within the time limit of 29 week.

CHAPTER 2
LITERATURE REVIEW

2.1 Endangered Language of Dusun

Based on a paper written by Hoffmann, he quotes from Nettle and Romaine, stating that over 11% of languages around the world has between 150 speakers. He also quotes from Krauss that the usage half of languages around the world will deplete for the next century (2009, p. 6). This shows that the extinction of language is possible within century as the speakers' number of a language decreases. Based on the websites of Ethnologue, that collects the data of languages of the world labelled Dusun language as "Threatened". In other words Dusun language can be categorized as an endangered language. Endangered language can also be known as "moribund". "Moribund" is a language that is not preserve by teaching it as the first language and classified as an endangered language. (Hofmann, 2009, p. 12). The Dusun people have not used their language as their first language. Instead the natives speak mix of Bahasa Melayu and English in their daily conversation.

They are a few factors listed on the Ethnologue websites on the causes of language endangerment. The speaker population, the number of those who connect their identity with the language (whether or not they speak the language), the stability of and trends in that population size, residency and migration patterns of speakers, information about the use of second languages, language attitudes within the community, the age range of the speakers, the domains of use of the language, official recognition of languages within the nation or region, means of transmission (whether children are learning the language at home or being taught the language in

schools) and non-linguistic factors such as economic opportunity. However it is not solely one factor that would cause a language to be classified as endangered but the combination of several factors listed above.

Based on Hoffman research there are several reason of a language to be classified as endangered. The first reason is because the community ruptures as their language are replaced or overpowered by more dominant language. The second reason is because the amount of speaker decreases through natural disaster, death and genocide. The third reason stated are the usage of the media which includes the television, radio and printed media. The last reason on why the language is endangered is the language is force to be abandon. (2009, p. 14) The modern people of Dusun natives abandon their language because as they grew they are prone to the media that uses other language other than their mother tongue. The entertainment media especially has brought a big effect of kid's development in language. The reasons stated by Hoffman in categorizing a language as an endangered language relates to the Dusun Language scenario now. Based on Tangit's (2005, p. 35) studies;

"According to lasimbang (1996)", Kadazan and Dusun parents felt pressured by the Malay language requirement in education, as well as the government's strong focus on the English language. They confessed that they had to encourage the use of the Malay and English languages at home, so that their children can get a head-start with the learning of "School language"".

The Dusun native people believe that studying is important for their development. Therefore, teaching their native language to the youngsters is not helpful. They familiarize the kids with early education of Bahasa Melayu and English. The action taken by the parents refusing to teach the kids of the language has open up a bright future for them. By mastering Bahasa Melayu and English, they could communicate and gain more knowledge. Even after completing their education years most basic requirement of job application is the ability to speak Bahasa Melayu and English. The Dusun language has been replaced a more dominant language.

Based on a survey in 1985, (Ethonologue, 2013), the main reason of the language endangerment is the lack of conversation in the mother tongue. Mentioned in the survey also are few other points of Dusun language endangerment which is intermarriage. The interracial marriage is no longer an alien in the modern society.

Globalisation promotes interracial marriage in bringing the world or country together. Through this marriage a half-breed of Dusun bloodlines will be born. The number of pureblood of Dusun natives will then decrease.

Dusun language is an endangered language and it is classified to be so based on several reasons. The number of speaker is decreasing because of the displacement of more prominent language which is from Dusun to Bahasa Melayu or English. The Dusun language is abandon by its own people for the purpose of self development and survival.

2.2 Kadazan Language vs Dusun Language and Dialect Difference

There are a few studies that define the Kadazan and Dusun relationship. Based from a research by Lasimbang, Kadazan is a member of the Dusunic language family. The Dusunic language family consist of the North Borneon Stock, Malayo-Polynesian, and Western Austronesian superstock. The Kadazan or Dusun language in Sabah has a 13 prominent dialects based on different area concentrated with the natives. (Banker and Banker, 1984, cited by Lasimbang, 1994). From a total of 3.06 million of Sabahan Population in the year of 200, they are more 500,000 speakers of all the various Kadazan or Dusun from a total of 3.06 million Sabahan population. (Sabah Statistics Department Year 200, cited by Lasimbang, 1994).

Based from another research by Herman, Kadazandusun are originally two ethnics, the Kadazan and Dusun ethnics. Eventhough Kadazan and Dusun share a lot of similarities in their culture, language and beliefs the Kadazan and Dusun actually originate from different places. Herman has cites Dr Yabit Alas stating that Dusun language originate from south-central Phillipines in possibility of 10,000 years ago and Kadazan language are from the Southern China and reach the land of Sabah due to migration (2006).

From the paper by Tangit, in some words of Kadazan and Dusun language it has a different orthography of a word. For example, the word 'neck', as translated in Kadazan it is 'tahanan' and in Dusun 'liou'. When the words 'neck' are translated to the natives language, both of the words are different. Other words for example are almost the same. For example the word 'big', when translated to Kadazan it is 'agazo' and when translated to Dusun it is "agayo". Note that the words sound almost the same as well as the ortography.

Kadazan or Dusun people are scattered around Sabah living in west coast, inland and east coast area. This demography has resulted in differences of the language. Based on a research by Tangit, if the district or areas occupied by the natives are close, the dialects are not much of a difference. If it is far from each other, the dialect is different. Ethnologue websites listed a few dialects in Dusun language which is Beaufort, Bundu (Taginambur), Dusun Sinulihan (Sinulihan), Kadazan-tagaro

(Tagaro), Kiundu, Kuala Monsok Dusun, Luba, Menggatal (Kiulu, Telipok), Pahu',
Ranau, sokid, and Tindal.

Combining both Kadazan and Dusun has caused a dilemma in the Kadazandusun
community because of the differences between the languages. The community are
confused on which language and dialect should they learn. The Kadazan and Dusun
language does not have a standardized dialect. The young generation learn their
native's language based on the area they live in. The dialect is different in different
areas. The languages are taught informally to the youngsters causing them to be
confused with what they learn in school. In school, they learn the Kadazandusun
language and in home they learn only Kadazan or only Dusun language.

The differences between Kadazan and Dusun have made it hard for the community to
preserve the dying language. The younger generation are confused with their
language identity and causes the language to be continuously endangered.

2.3 Teaching language through technologies

Modern technology such as computer, cell phone and smart phone has been utilized in teaching language. Align with a high number of experts agreements in the integration of ICT in foreign language learning will be very important, obtained from a report commissioned by the Directorate General of Education and Culture of Europe. Based on the same report, the manipulation of multimedia in teaching languages benefits in many ways such as, enhanced learning can still be achieved on different locations and institutions, the opportunities of students to learn at different rates and levels, repetition of learning is not affecting other learner, and it compensate the number of students that are learning the language which simultaneously be a cost saving in terms of physical learning of language that includes classroom and teachers.

A few hardware that has become the medium in learning language are, through cell phones, personal digital assistants and portable digital audio players. A several free language learning programme that stated in the paper are BBC World Service's Learning English, a lesson via SMS in Francophone West Africa and China (Godwin-Jones, 2005, as cited in Chinnery, 2006, p. 3).

Kvavik, (2005) studies has found that almost 82% students in higher education owned a cellphone. (as cited in Chinnery, 2006, p. 5). Mobile technologies are found to be less expensive than the standard equipment such as PC (personal computer). The portability of cell phones brings another benefit and students or users utilize the portability of the cell phones to learn and practice the language in their own free time. There are also challenges in using mobile in language learning such as the screen sizes are smaller which provides limited audiovisual quality, virtual keyboarding and one-finger data entry and also limited power. The learning process is limited from these challenges.

Another example of language taught using the technologies are android application. For example, 'Learn Spanish with Babble.com' seen on appendix 1. The android applications are downloadable to any smartphone that support the system and allow the students to have an access to the language learning programme. Babble.com provides several languages learning application and one of it is Spanish. The words are categorized into different module

The teaching method involves is categorizing the words. Students able to listen to the correct pronunciation of the words. Pictures are also added to help students memorize the words.

The technology has allowed students to have other alternatives to learn language besides attending class or hiring a tutor. With the help of computer, cell phone and smart phone, students are able to access the teaching programme at anytime based on the students pace themselves.

2.4 Learning Kadazan for Kids

A closely related project has been done previously by a UTP student, Hadymond. He has developed 'Learning Kadazan for Kids' android application. The application is targeted for users between 7 to 12 years old.

The relevance of choosing the age group is because the learning ability of the kids are much faster and it is proven to be the best stage of teaching them. The reason he develop the application is Android is to provide the children with a much more interactive and attractive way to learn the Kadazan Vocabulary.

In the Learning Kadazan for Kids application, they are a few content that has been inserted by Hadymond :

- Learn Basic Phrases in Kadazan
- Learn Common Greetings Phrases in Kadazan
- Learn Names and Numbers and Colours
- Learn Names of Animals

Android application has allowed an endangered language to be taught to the youngsters. It is because the youngsters are much more familiar with the technology. They use android application to help them in everyday activities. It is because it is accessible at anytime and anywhere. Examples of the 'Learning Kadazan for Kids' android application is seen on Appendix 4.

CHAPTER 3
METHODOLOGY

3.1 Research Methodology

The main methodology that is used in completing this project is the Rapid Application Development (RAD) and also pragmatic approach research.

The reasons of choosing RAD is due to the time constraint given to complete the project which is 29 weeks. In consequence of the time constraints the planning phase's time allocation are very minimum in favour of aiming at speeding application development.

This project development are divided to four main phase;

Analysis and Quick Design phase

Prototyping Cycles (Building, Refining, and Demonstrating process)

Testing Phase

Implementation Phase
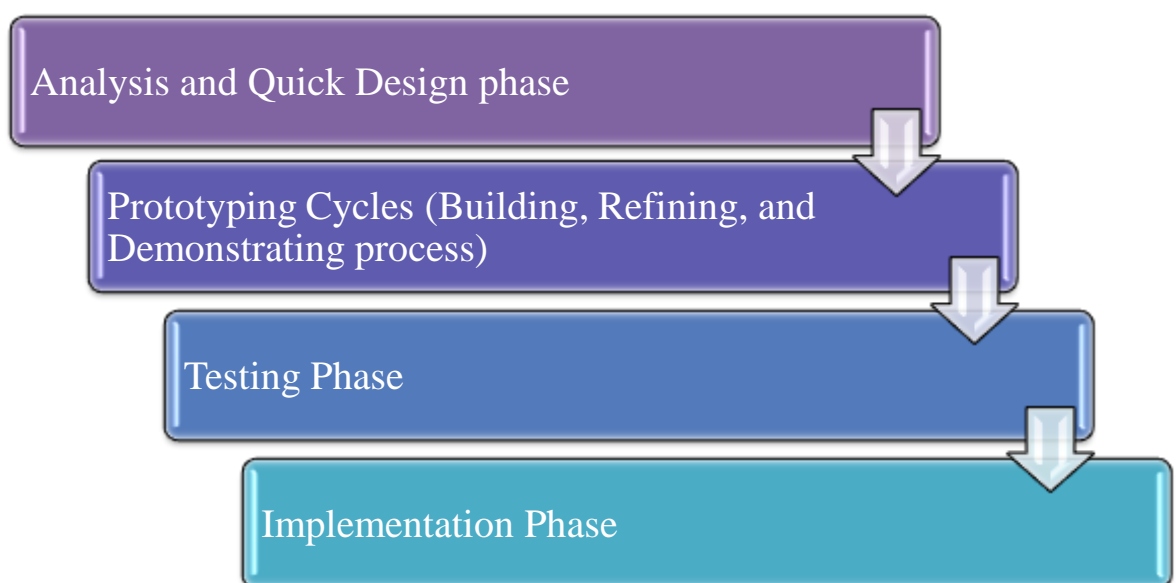
Figure 1: RAD methodology

Another research methodology used is the pragmatic approach research which is a mix method of quantitative and qualitative methods in finding the result. This methods may includes an interviews with the scope of study in a large scale for a statistical analysis either quantitative data or qualitative data. It is used in the testing phase of the RAD methodology.

3.2 Project Activities

The project use mainly the RAD methodology thus the project activities may follow to the project phase activities stated as follow:

- Analysis and Quick Design Phase
    - Project Planning and Data gathering
    - Determine main component of application
    - Sketching the interface of the system
    - Gather Database of language
- Prototyping Cycles (Building, Refining, and demonstrating process)
    - Develop System Architecture
    - Prototype development
    - Application development
    - Applications equip with language database
    - Refining application
- Testing Phase
    - Usability testing
    - Refining of application
    - Feedback
- Implementation Phase

3.2.1 Analysis and Quick Design Phase

In the first stage of the methodology, it consists of several activities which are:

- Project Planning and Data gathering
    - Project planning involves identifying the problem statement and listing the objectives of the project. Scope of study is identified in order to conduct usability testing upon completion of the application. The scope of study consists of the target user, the medium used as teaching method. The relevancy and the feasibility of the project are also indentified in this process.

- Determine main component of application
    - In this stage, several android applications are used as a guideline in order to determine the main component of the application. The android application is within the same function as the Dusun Language Android Application, where it teach language to its user.

- Sketching the interface of the system
    - Preliminary sketching of the application interface is done to identify the flow of the application. As seen in Figure 1, the interfaces are simple and consist of several type of conversation. The database of the android application followed a proved set of English or Malay to Dusun translation. The set of database are obtained from www.edusun.org.

Figure 2: Preliminary sketching interface

- Gather Database of language

  - The database of the android application is identified to come from e-Dusun website (www.edusun.org). The website comprises of words translation of Malay and English to Central Dusun Language. The language translated in the website is approved by Kadazan Dusun Cultural Association. Thus makes e-Dusun as a reliable source for the Learning Dusun Language Android Application. As seen in Figure 2, is the example of words translated in from Dusun to both Malay and English.

  - The database gathered from the websites are being translated from Dusun,to Bahasa Melayu and English. However the databases are incomplete. Some of the words consist of no translation in either Bahasa Melayu or English. With the help of an elders in the Dusun language. Few of the missing translation are finally translated to respective Bahasa Melayu

and English. For the words that have no translation, developer took a decision in taking out the words from the database.

- The language translation arrangement in the websites causing the extraction of the database to be hard. Because the arrangements are chaotic. Few of the translations are arrange perfectly but some are very hard to understand. Thus the process in extracting the database took longer that estimated.
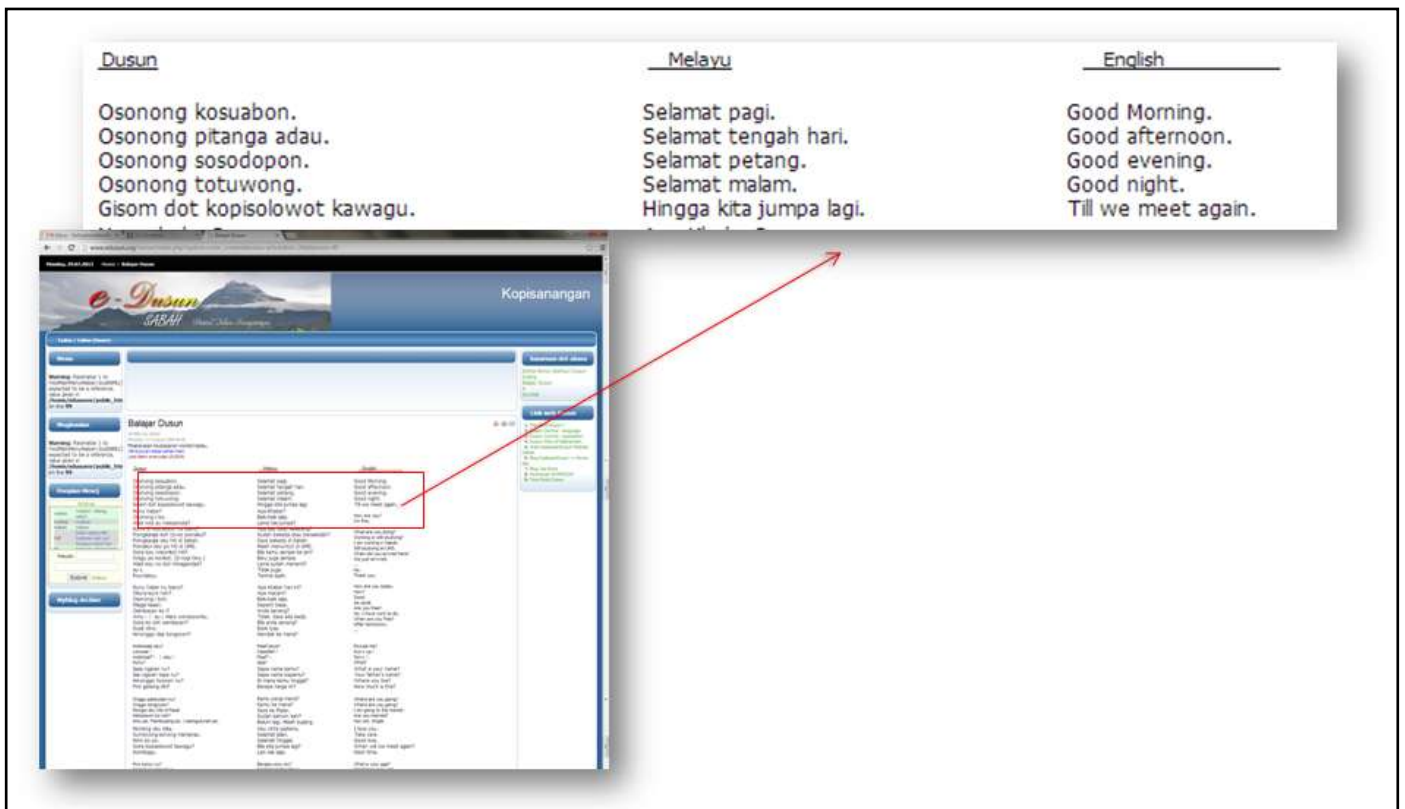

Figure 3: e-Dusun website

anawau

Written by admin
Sunday, 07 June 2009 14:57

ANAWAU : terang,siang   bright, day light   . *Contoh ayat : example:*

Dusun	Melayu	English	gambar
anawahan	sampai siang	night until dawn	
kanawahon	timur	east	
minnanawau	subuh	dawn	
tanawau	terang	bright	

<<<gumuli

Figure 4: Word translation

As seen on Figure 6, is a word of "anawau" translated to Malay and English and also the synonyms of the words in Dusun language.

Balajar Dusun

Written by admin
Monday, 11 August 2008 06:00
Pibabarasan koubasanan monikid tadau.
Pertuturan biasa sehari-hari.
Lets learn everyday DUSUN.

Dusun	Melayu	English
Osonong kosuabon.	Selamat pagi.	Good Morning.
Osonong pitanga adau.	Selamat tengah hari.	Good afternoon.
Osonong sosodopon.	Selamat petang.	Good evening.
Osonong totuwong.	Selamat malam.	Good night.
Gisom dot kopisolowot kawagu.	Hingga kita jumpa lagi.	Till we meet again.
Nunu habar?	Apa Khabar?	How are you?
Osonong ii bo.	Baik-baik saja.	I'm fine.
Alaid nod au nokopiruba?	Lama tak jumpa?	...
Nunu di wonsoyon nu baino?	Apa kau buat sekarang?	What are you doing?
Poingkaraja koh toi ko poinsikul?	Sudah bekerja atau bersekolah?	Working or still studying?
Poingkaraja oku hiti id Sabah.	Saya bekerja di Sabah.	I am working in Sabah.
Poinsikul oku po hiti id UMS.	Masih menuntut di UMS.	Still studying at UMS.
Soira kou nokorikot hiti?	Bila kamu sampai ke sini?	When did you arrived here?
Wagu po korikot. (Ii nogi tiinu.)	Baru juga sampai.	We just arrrived.
Alaid kou no dot minagandad?	Lama sudah menanti?	...
au ii.	Tidak juga.	No.
Pounsikou.	Terima kasih.	Thank you.
Nunu habar nu baino?	Apa khabar hari ini?	How are you today.
Okuro-kuro noh?	Apa macam?	How?
Osonong i boh.	Baik-baik saja.	Good.
Miagal kasari.	Seperti biasa.	As usual.
Osimbayan ko i?	Anda senang?	Are you free?
Amu i / au i. Haro wonsoyonku.	Tidak. Saya ada kerja.	No. I have work to do.
Soira ko dot osimbayan?	Bila anda senang?	When are you free?
		After tommorow.

Figure 5: General Conversation translation

As seen in Figure 7 is the list of general conversation in daily life. Learning Dusun Language is filled with translation database obtain from e-Dusun.

Inside the Learning Dusun Language application, there will be 2 large module, the first one is Daily conversation and the second one is Alphabet. Under the daily conversation, the module will be divided into four large category which is obtained from www.edusun.org. While under the Alphabet is word translation arrange alphabetically.

Based on the previous design developers has decided to put various number of module in the application. However, to simplify the application and scores in the 'learnability' Usability testing scope. The developer has decided to choose three main module which is 'Daily Conversation', 'Alphabetically' and 'Number'. In relevance that the with many modules the time users need to browse the application to search for a word translation would be longer. Thus with only module the time is cut short.

3.2.2 Prototyping Cycles (Building, refining and demonstrating process)

In the second stage there are few activities which are:

- Develop System Architecture
    - System architecture will outline the flow of the application function. As in Appendix 3. As the application launch the application Splash Screen will appear while loading the application. User will then be directed to the Home page and user will proceed to the module options. The module consists of three options, daily conversation, alphabetical and number. In the Daily conversation option several type of conversation are uploaded based on the database obtain from e-Dusun website. Module that will be uploaded is greetings, number, colours, and direction. User can choose another module to explore while exploring a module by hitting the back button. Once in the module, user can view the translation of the words either from Malay or English to Dusun language. The user can view other translation of the words by hitting the back button. Under the alphabetical option, list of words from A to Z will be listed along with the words translation. Upon finishing user can exit the application by hitting exit button. Below is the system architecture. A clear image of the figure can be seen in Appendix 3.
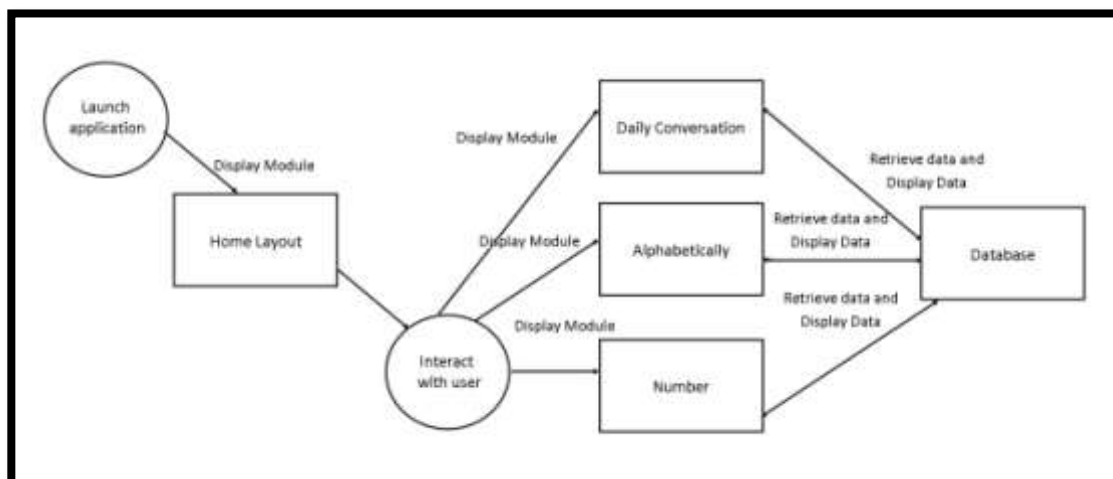
Figure 6: System Architecture

- Develop application
    - At the first prototype, Appinventor are used to develop the application. Since the application need a connection with the database. Eclipse is then chosen to be the tool to developed the apps.

    - Using the preliminary interface sketching, Eclipse software are used to code the prototype to an actual android application. Eclipse provides an Extensible Markup Language (XML) file which can be configured easily by the user. Eclipse supports the developer to code the application for it to be usable for the user. Which will later tested in the usability testing

- Applications equip with language database
    - After the prototype are coded, the prototype are then equip with databases obtain from the website which are then refined to suits the applications format. SQL database are use

- Refine application
    - Through an indirect testing with possible user of the applications, the applications are refined to increase its levels of usability. Few changes are made during the development, such as the database arrangement from Dusun to Malay and English are changed to Malay to Dusun and English.

3.2.3 Testing Phase

Throughout the development of the prototype there has been an indirect view obtains from the target user which is also a friends and family with the developer who had commented and review and as well as giving a few ideas. For example, changing the module layout to be simplified and fall into 3 categories. Daily Conversation, Alphabetically and Number.

In the third stage, after the prototype has been developed. The application had undergone the official usability testing. The application are already equip with database and fully functioning. This is to achieve the second objective of the project which is to conduct usability testing of the applications. Set of questionnaires are created as seen on the Appendix 2.The questionnaires are standardized to be in Bahasa Melayu as of the level of knowledge the respondent. The test are conducted via email and phone calls because the lack of number of Dusun natives in developer's current location. The application is send via emails, the target users are then asked to downloadthe application. Later the target users are called to collect their feedbacks through answering the questionnaires. Total of 30 respondents, 20 respondents are Dusun natives and 10 respondents are random user that are not tied to the actual target user. The 10 respondents represent the user that are not a Dusun natives but are interested in learning the language. Few aspects   are emphasized to be measure in the questionnaires. The questionnaires and findings of the usability testing are discussed in Chapter 4.

3.2.4 Data Analysis

The data gathered from the test are analyse and discussed. The findings of the test are discussed in Chapter 4.

3.2.5 Implementation

Upon the completion of the application and the project objectives are achieved. The application will run through the last steps which is implementation. In this section, the application are planned to be launched to android market for it to be used by the users. However before releasing it to the marker, the application at first needs to be inform to responsible organization that handles and cares of the Dusun culture and community. It is to obtained their review on the applications and it is based on their decision either the application has a valid language structure. It is because the organization are filled with the language experts that are responsible in gathering and the data mining of making the dictionary.

3.3 Gantt Chart

See appendix 5

3.4 Project Milestones

Key Milestones	Week
Project title proposal	Week 3
Extended Proposal	Week 6
Viva Proposal Defense	Week 10
Interim Report	Week 13
Application Testing	Week 20 (FYP 2)
Pre-Sedex	Week 26 (FYP 2)
System Release	Week 26 (FYP 2)
Submission of Draft report	Week 27 (FYP 2)
Submission of Dissertation (soft bound)	Week 28 (FYP 2)
Submission of technical paper	Week 28 (FYP 2)
Oral Presentation	Week 29 (FYP 2)
Submission of Dissertation (Hard Bound)	Week 30 (FYP 2)

Table 1 : Project Milestones

3.5 Tools

The tools needed to complete the project are:

1. JDK 1.6, Java Language
   - In order to develop the interface of the application, JAVA GUI can be used as a tool.

2. Eclipse
   - Eclipse is software to create the android application. It is equipped with SQLite database which App Inventor fail to have.

Figure 7: Eclipse Software
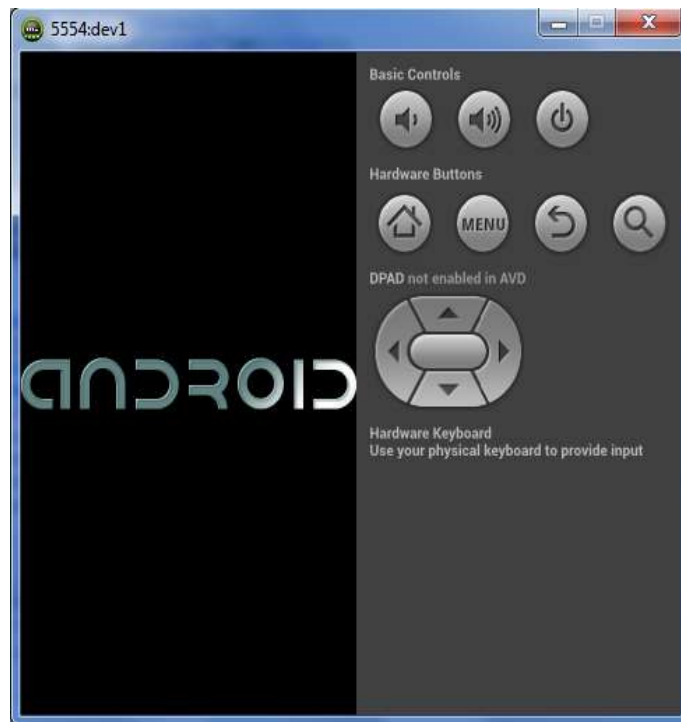
Figure 8: Eclipse Emulator

3. Personal Computer

 ▪ Personal computer are used for any documentation purposes, and coding software such as App Inventor and JDK 1.6 to be installed. Acer Aspire 4736Z.

4. App Inventor

 ▪ App Inventor is software to create the android application.

5. Android device

 ▪ Any smart phone that supports android are used for testing and implementation

 ▪ Samsung Galaxy S2 with and android version of Ice Cream Sandwich 4.0

Figure 9: Android device

CHAPTER 4
RESULT AND DISCUSSION

4.1 Preliminary prototype

In this section, the results of the project are displayed. During the quick and analysis design phase, the application main components are identified and preliminary sketching is done. Using the app inventor

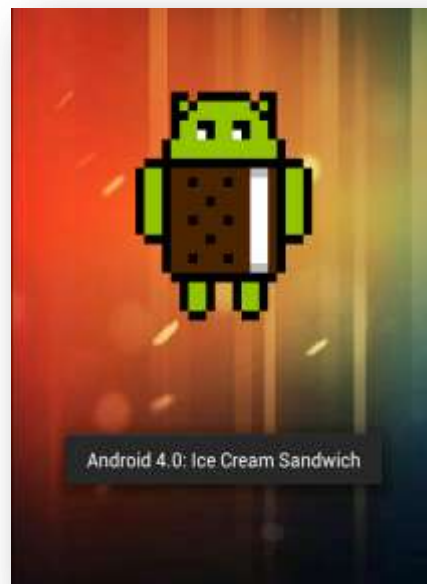As seen in Figure 2 is the preliminary interface design of the Learning Dusun Language Android Application. The design should be simple and easily understand by the user. Few of android applications in teaching language are set as an example to design the prototype. The few application set as an example is seen on Appendix 1. As seen in the research methodology,

Figure 10: Interface of the Learning Dusun Language Application

As seen in figure 4, the default translation of language is from English to Dusun only. Further in the process of developing the application. Translation from Malay to Dusun will be developed. Among the module first drafted to be in the application is the General Conversation, Greetings, Time & Date, Number, Direction, Colours, Animals, Plants and others. Others is a section of unfitted words in the others

category. The module will be refine based on the database gathered from the e-Dusun website.

Figure 11: App inventor

The application will be using the translation obtain from e-Dusun website which comprises of translation of Dusun language to Malay and English, as seen in Figure 6 and Figure 7. As you can see the colour are of blue and red with a black font. However from the indirect feedbacks obtain from the target user, the application designs are too shabby and dull. The Sabah map do portray the Dusun Language to be a part of Sabahan Culture however the designs are not attractive.

Thus, through research in various applications design of a language or dictionary based application. Developer finally had decided to use a three colour code to be the default scheme. Which is the Yellow, White and Black.

4.2 Final Prototype

Developer decides to use Eclipse in order to support the design of the applications. As Eclipse offer a more advance and secure database. The final prototype is as follows.

Figure 12: Front page application

The figure above is the home page of the application. It consists of three module which is "perbualan harian", "abjad" and "nombor". As translated from "daily conversation", "alphabetically" and "number". The whole applications are design with yellow and black background. It is inspire by the traditional clothes od Dusun natives which are of black fabric with a golden thread. This application mimics the clothes as a symbol or representation of the culture adapted in the application. The applications icon as seen in figure 10 is also implementing the same theme. With only a small bubble with white written words "Dusun" inside.

Figure 13: Icon
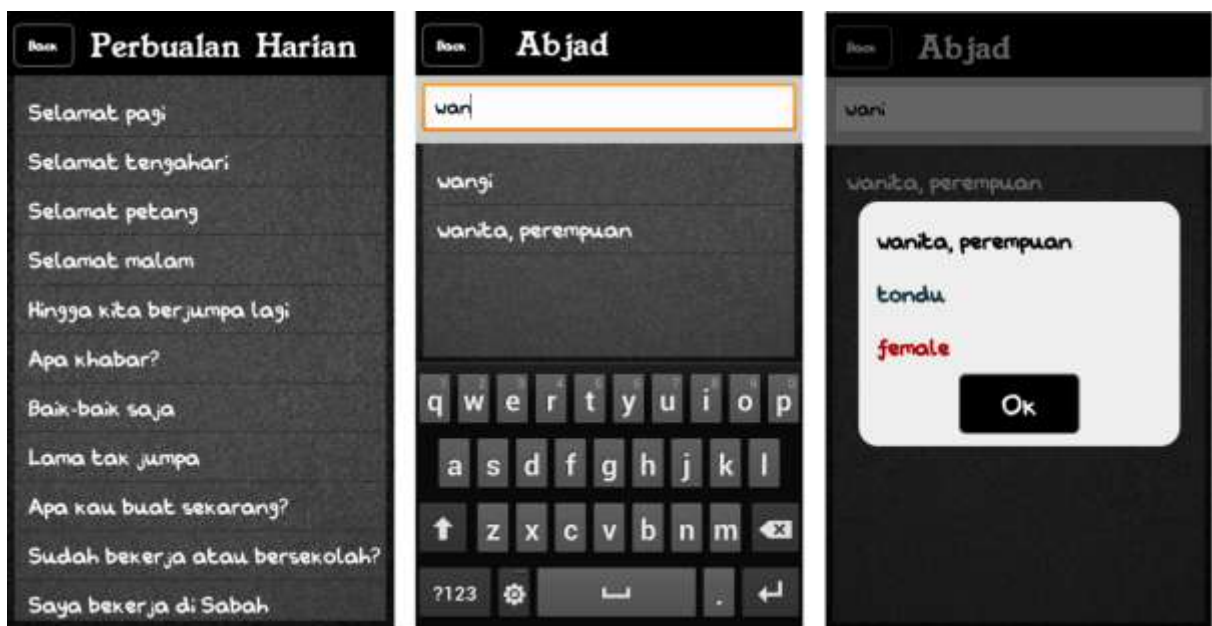
Figure 14: Module in the application

Figure above are the modules that are available in the applications. Which is "perbualan harian", "abjad" and "nombor". It is respectively translated as "Dily conversation", "Alphabetically" and "Number". The module under "Perbualan Harian" listed a few possible conversations that may occur on daily basis. It is a translation from Bahasa Melayu to Dusun and English. Under the "abjad", the words are arranged and sorted alphabetically. The translation is also from Bahasa Melayu to Dusun and English.

4.3 Usability Testing

Upon the completion of the prototype, the applications are ready for usability testing. The respondents are of 30 users which are 20 of them are Dusun natives and another 10 are not. The methods used are questionnaires. After using the prototype user will then be asked to answer the questionnaires. The questionnaires are in Bahasa Melayu as seen in Appendix 2, and as seen in Table 2, the questions are translated to English for future references.
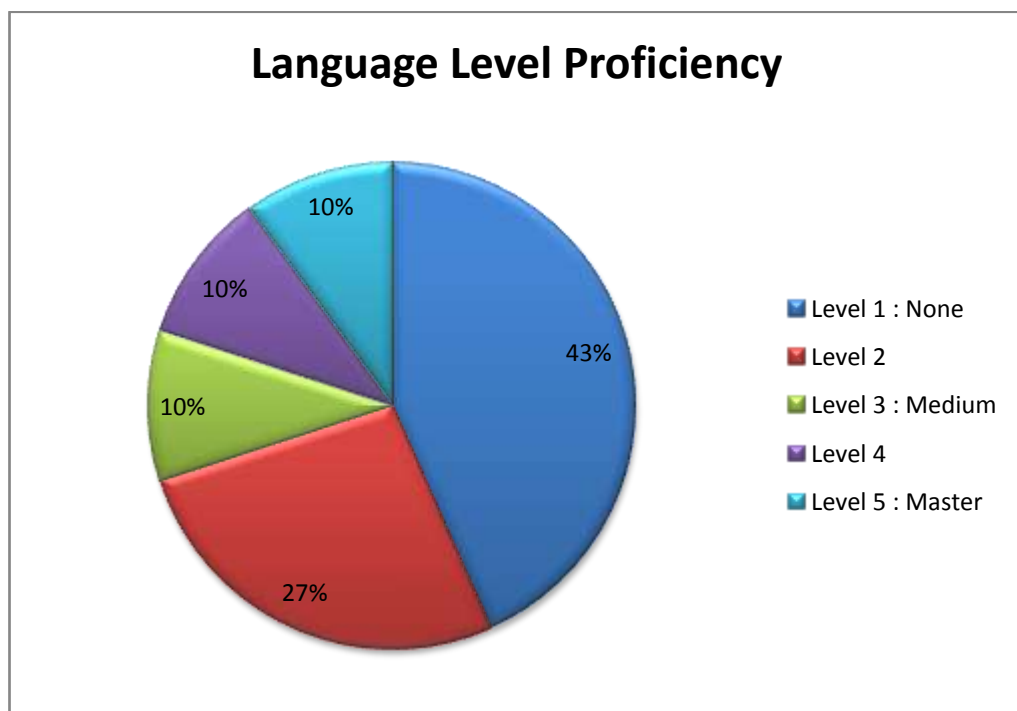
Figure 15: Language Level Proficiency

Figure above shows the 30 respondents proficiency level of Dusun Language. Most of the test users are on Level 1 with 43% with no knowledge of the language and are not able to understand nor speak the language. The large numbers of Level 1 are because of the non-Dusun respondents. However, the combinations of low language proficiency language level, which is Level 1, Level 2 and Level 3 a medium knowledge, the grand total holds at 80%. Thus to conclude, 80% of the respondents have a low level of the Dusun language.

Criteria	Soalan	Questions
A	Saya akan menggunakan aplikasi ini untuk mempelajari Bahasa Dusun	I will use this application to learn Dusun language
A	Saya mengesyorkan aplikasi ini untuk digunakan sebagai medium pengajaran Bahasa Dusun	I strongly recommend this application to be a teaching medium of Dusun language
A	Rujukan Bahasa Dusun dalam aplikasi ini sangat memuaskan	The language structure are valid
E	Reka bentuk and tema aplikasi ini sesuai dengan Bahasa Dusun	The design of this application suits with the language
E	Susunan reka bentuk aplikasi ini memuaskan hati saya	The arrangement of the design application are satisfying
E	Aplikasi ini berfungsi dengan lancar	This application works efficiently
L	Cara penggunaan aplikasi ini senang untuk dipelajari	This application is very easy to use
L	Aplikasi ini membantu saya mempelajari Bahasa Dusun	This applications helps me to learn Dusun
L	Saya mampu menggunakan aplikasi ini tanpa tunjuk ajar dan arahan penggunaan	I manage to use this application without any guide or instructions

Note: A=Acceptance, E=Efficiency, L=Learnability

Table 2: Questionnaires question

Based on the tables above, the questionnaires are design to measures three category which is Acceptance, Efficiency and Learnability. Each category consists of three questions each. The 'Acceptance' category studies the acceptance percentage of the user in the probability of using the application as a source of reference to learn Dusun language. Under the 'Efficiency' category, it studies the percentage of the applications efficiency in terms of design and language structure. Under the last category 'Learnability', it studies the applications level of learnability without any instructions or guidance of step by step in using the applications. The result of the testing will be discussed in different views. At first, the test will be analyzed and group by race which is Dusun natives and non-Dusun. The data are later combined and analyze.
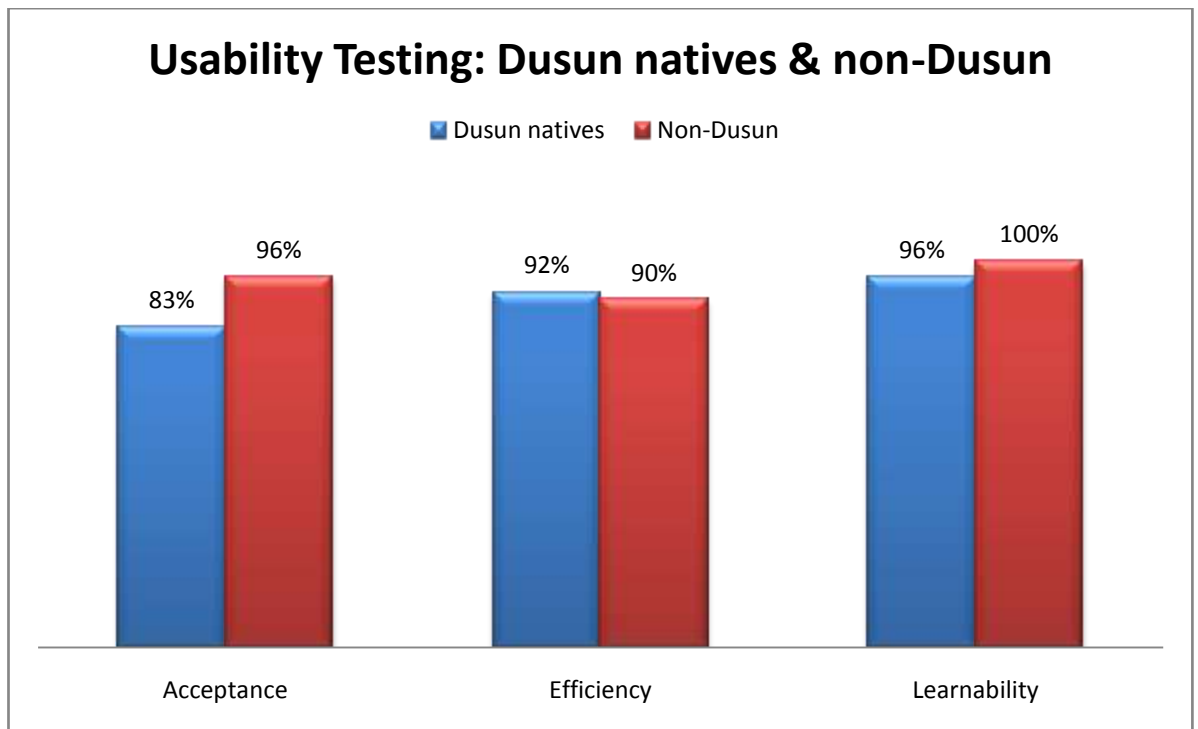
Figure 16: Usability Testings: Dusun natives and non-Dusun

Figure above are the graphs of the usability testing which comprises of only the Dusun natives of 20 respondents indicated by blue columns and non-Dusun with 10 respondents of red columns. The 'Acceptance' bars are to measure the acceptance level of both the category. Dusun natives voted a 13% below the non-Dusun on the 'Acceptance' bar. The results are different because of the difference in language background of the test user. Dusun natives have a prior knowledge of the language itself. Thus they are able to notice and judge the language structure. The non-Dusun test user may not be able to judge the language structure since they have no knowledge of the language. Under both bar of 'Efficiency' and 'Learnability' the differences are within a small margin.
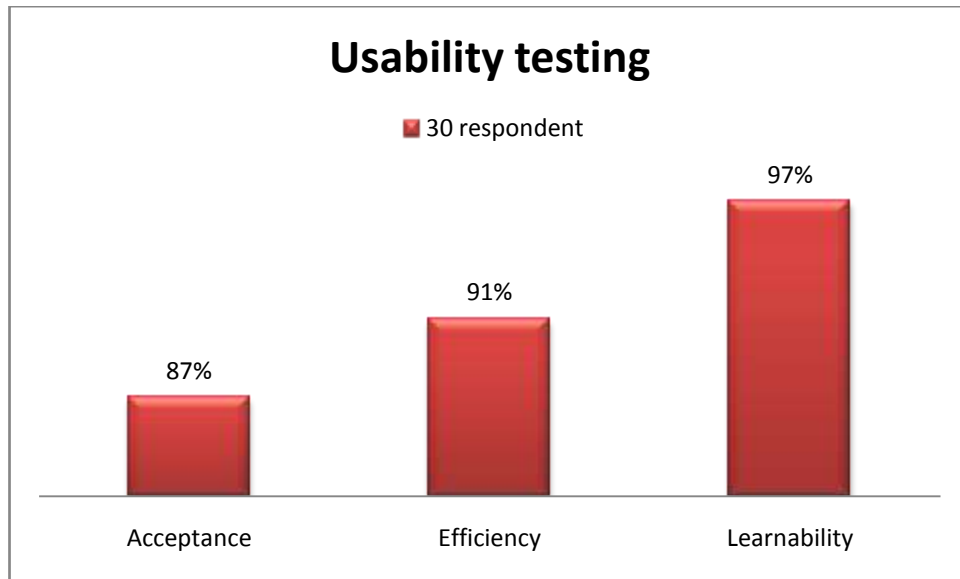
Figure 17: Usability Testing

The figure above are the result of combination both Dusun natives and non-Dusun respondent under one graph. To conclude, the applications are usable and have a very high rate on 'Learnability'. These applications are easy to learn even for the users who use the application for the very first time. High level of 'Learrnability' also indicates that learning Dusun language using and android applications is valid and usable.

Through the test conducted, it can be conclude that the Learning Dusung language mobile application are usable for any user either the Dusun natives or non-Dusun. The applications can be used as a source of reference in learning Dusun as it is efficient and very easy to learn.

CHAPTER 5
CONCLUSION

Dusun Learning Language Application is develop for the Dusun natives to learn their language. Dusun language is identified as an endangered language. The language will come to extinction if the number of speakers keeps on decreasing. The application will provide another alternative other than books, websites and personal tutor to learn the language. It is very important for the natives to preserve their own language. It is because the dying of the language will lead to the dying of the native's culture.

5.1 Objectives relevancy

Both the objectives of the project has been achieved which is

- To develop an Android Application in learning Dusun Language for daily conversation
    - The objectives has been achieved as the prototype are finished developed and equip with databases.

- To conduct usability testing on the Dusun Language for daily conversation Android Application.
    - The usability testing are conducted after the application finished being developed. The target users are used as the respondents to obtained a direct feedback from what they thought of the application.

5.1 Recommendations

Learning Dusun Language Mobile application are proven to be a reliable soure of reference in learning Dusun language. It could be new alternatives in preserving the language and also Dusun cultures. The applications could be promoted and presented to related association such as KDCA, KLF or any related organization that care about the language preservations. Based on the usability testing, the applications database needs a continuous updates and refinement in order to ensure that the applications are a reliable source. Besides that, in the effort of continuation of this project in the future, a more interactive and focussed application could be developed based on different targets, such as age groups and dialect differences.

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APPENDIX 1

Learn Language : Phrasebook

Learn Spanish with babble.com

Kamusku: Jawa

APPENDIX 2

Questionnaire for usability testing

<div>

Usability Testing:
Learning Dusun Language Application: Daily Conversation questionnaires

i. Umur :
ii. Tahap Kemahiran Bahasa Dusun:

Sila tanda (/) pada yang berkenaan merujuk penyataan di bawah. (Satu pilihan sahaja)

1	2	3	4	5

| Tahap	Penyataan
1	Tidak berkemahiran : Tidak mampu memahami dan berbual dalam Bahasa Dusun.
3	Kemahiran sederhana : Mampu memahami sedikit perkataan di dalam perbualan dan mampu menyampaikan perbualan pendek dalam Bahasa Dusun
5	Sangat Mahir : Menggunakan Bahasa Dusun dalam perbualan seharian.

iii. Aplikasi

Sila bulatkan pada petak berkenaan. (Satu pilihan sahaja bagi setiap soalan)

Soalan	Tidak Setuju				Sangat Setuju
Saya akan menggunakan aplikasi ini untuk mempelajari Bahasa Dusun	1	2	3	4	5
Saya mengesyorkan aplikasi ini untuk digunakan sebagai medium pengajaran Bahasa Dusun	1	2	3	4	5
Rujukan Bahasa Dusun dalam aplikasi ini sangat memuaskan	1	2	3	4	5
Reka bentuk and tema aplikasi ini sesuai dengan Bahasa Dusun	1	2	3	4	5
Susunan reka bentuk aplikasi ini memuaskan hati saya	1	2	3	4	5
Aplikasi ini berfungsi dengan lancar	1	2	3	4	5
Cara penggunaan aplikasi ini senang untuk dipelajari	1	2	3	4	5
Aplikasi ini membantu saya mempelajari Bahasa Dusun	1	2	3	4	5
Saya mampu menggunakan aplikasi ini tanpa tunjuk ajar dan arahan penggunaan	1	2	3	4	5

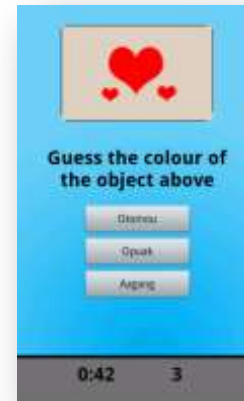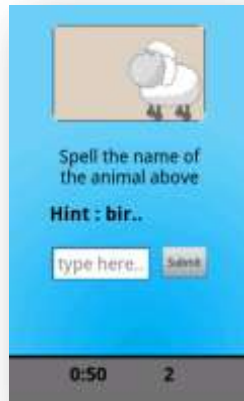*Terima kasih atas kerjasama yang diberikan.*

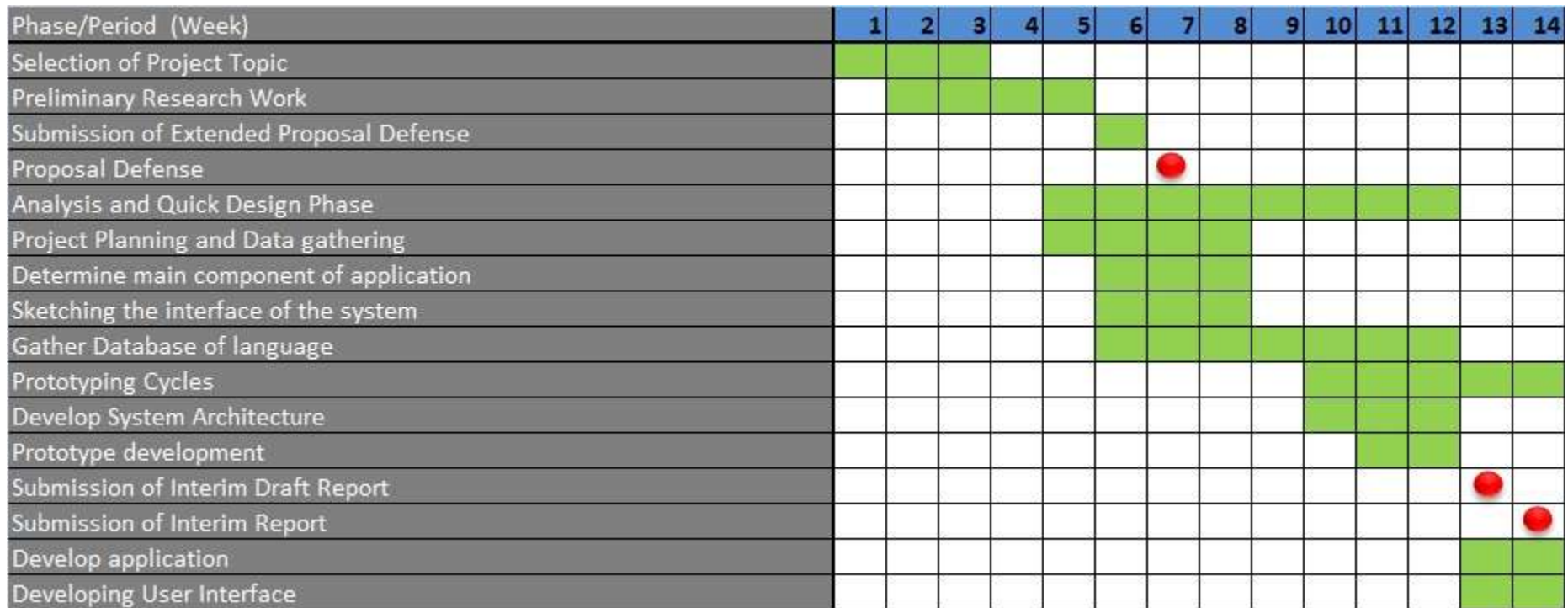</div>

APPENDIX 3

Learning Dusun Language Application System Architecture
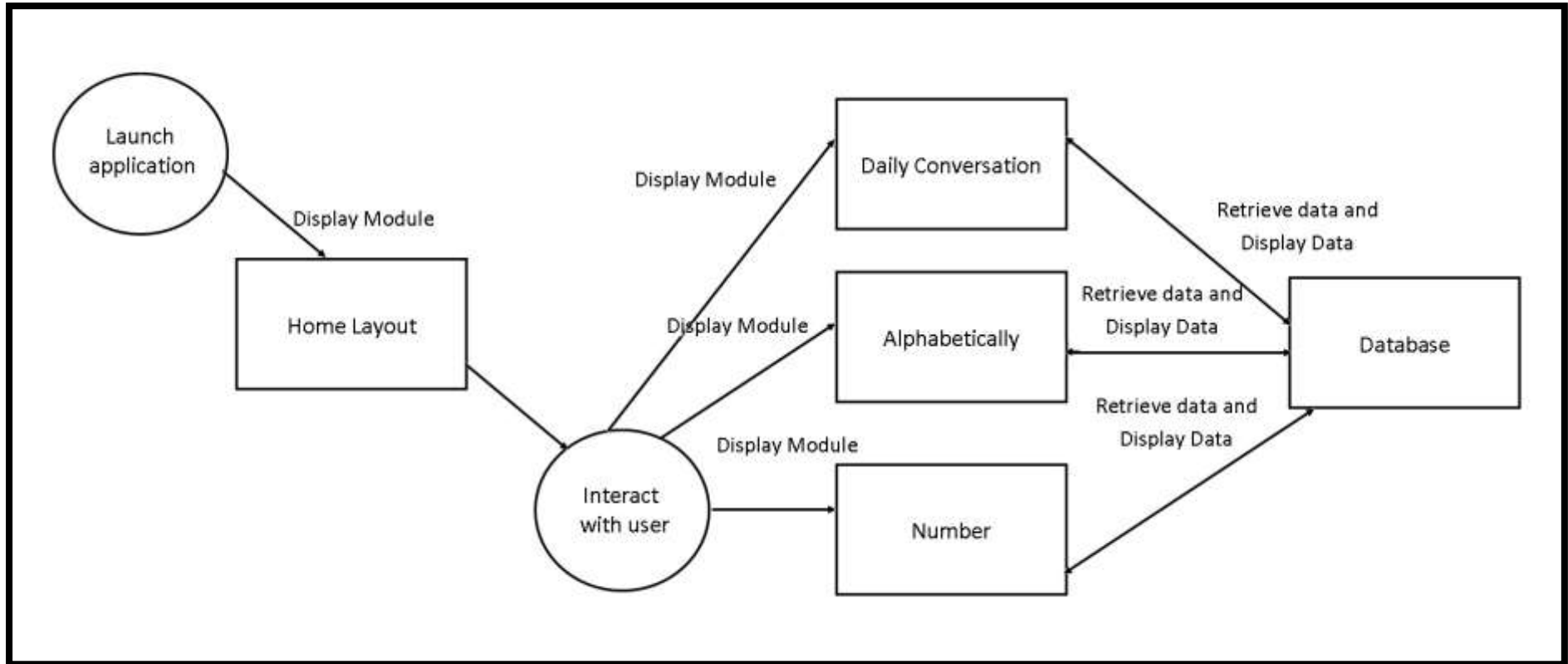
APPENDIX 4

Learning Kadazan For Kids by Hadymond

APPENDIX 5

Final Year Project 1 Gantt chart

Phase/Period (Week)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Selection of Project Topic	■	■	■											
Preliminary Research Work		■	■	■	■									
Submission of Extended Proposal Defense						■								
Proposal Defense							●							
Analysis and Quick Design Phase					■	■	■	■	■	■	■	■		
Project Planning and Data gathering					■	■	■	■						
Determine main component of application						■	■	■						
Sketching the interface of the system						■	■							
Gather Database of language						■	■	■	■	■	■	■		
Prototyping Cycles										■	■	■	■	■
Develop System Architecture										■	■	■		
Prototype development											■	■		
Submission of Interim Draft Report													●	
Submission of Interim Report														●
Develop application													■	■
Developing User Interface													■	■

■ (blue)	Final Year Project 1
■ (dark)	Final Year Project 2
■ (green)	Completed
●	Milestone
■ (yellow)	Estimation completion

Final Year Project 2 Gantt chart

Phase/Period (Week)	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Prototyping Cycles	▇	▇	▇	▇	▇	▇	▇								
Develop application	▇	▇	▇	▇	▇	▇	▇	▇							
Developing User Interface	▇	▇	▇	▇	▇	▇	▇	▇							
Coding application		▇	▇	▇	▇	▇	▇	▇							
Refine application								▇	▇						
Testing Phase								▇	▇	▇					
Usability Testing (Application tested for language structure validity)								▇							
Refine Application								▇	▇						
Usability Testing (Actual target user)									▇						
Submission of Progress Report								●							
Analysing Data								▇	▇	▇					
Testing Phase								▇	▇	▇	▇	▇			
Implementation Phase											▇	▇			
Demo											▇				
Feedback											▇	▇			
Pre-EDX											●				
Submission of Draft Report												●			
Submission of Dissertation (Soft Bound)													●		
Submission of Technical Report													●		
Oral Presentation														●	
Submission of Project Dissertation (Hard Bound)															●

▇ (light blue)	Final Year Project 1
▇ (dark blue)	Final Year Project 2
▇ (green)	Completed
● (red)	Milestone
▇ (yellow)	Estimation completion