Learning Malay Language as Secondary Language for Chinese Children Using M-Learning Application

By

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Dissertation submitted in partial fulfillment of

the requirements for the

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the

Information & Communication Programme

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Approved by,

……..

(SAIPUNIDZAM BIN MAHAMAD)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

September 2013

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 or done by unspecified sources or persons.

SHARIFAH SARAH BINTI SYED MOKHTAR

ABSTRACT

This project is about learning modules of Malay language. It is an interactive learning application where the target users are Chinese students aged four to ten. It is for learners which Malay is their second language in communicating. Mobile application will be used to help the children to learn Malay language. The aim of this project is to encourage children who do not use Malay language as their first language to master this national language. The environment of the m-learning application is customized using App Inventor. This learning application will be consisting of three learning modules. The learning modules offered are alphabets, numbers and object. Each module will be divided into two sections; tutorials and exercises. In tutorials, the students will be given exposure on the simple Malay words. The tutorials will use graphic approach where simple images are used. As for the exercises, the students' knowledge will be tested where they are required to answer the questions given and it will be scored. The progress of the learners will be recorded and the parents or teachers are able to view the progress report via web site. In addition, the teachers are able to create their own learning modules to suit the users' capabilities in learning the language. The admin is responsible to put entry of the users into the server's database. The admin will give permission to the new users based on their authority. The admin will set whether the user is a teacher or student. The teacher is able to view the students' progress marks while the students are able to do the exercise and learn the tutorials. This interactive learning application will assist kindergarten children aged four to six and secondary students aged seven to ten in learning simple Malay language. The target users of this application are Chinese students as this application helps to translate Chinese language to Malay language. This application will also monitor the progress of the students from time to time.

ACKNOWLEDGEMENT

I would like to thank Allah S.W.T (the greatest God) for His guidance for giving me strength throughout the whole period and journey of the Final Year Project. I am so praised to Allah S.W.T for His blessings for giving me an opportunity to meet the objectives of the Final Year Project itself. Without His guidance and blessings, the objectives of the Final Year Project could not be met.

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Sharifah Sarah Syed Mokhtar

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLE

CHAPTER 1

INTRODUCTION

1.1 Project Background

Mobile learning (m-learning) is a part of electronic learning (e-learning), educational technology and distance education where the process involved the usage of mobile devices. M-learning focuses on the learning across the context. M-learning is stressing on the mobility of the learners where it is possible for the learners to learn with the absence of fixed location. The learners are able to interact with portable technologies and it utilizes the increment of mobile devices population nowadays. Some of the technologies involved in m-learning are handheld computers, tablets, MP3 players, notebooks, and mobile phones. Just like e-learning, m-learning allows the sharing of learning contents through cloud storage. It is collaborative and easily accessible from anywhere with the help of wireless technologies. M-learning can replaces books and notes with small RAM filled with learning contents.

This project is about learning modules of Malay language. It is an interactive learning application where the target users are Chinese students aged four to six. It is for learners which Malay is their second language in communicating. Mobile application will be used to translate Chinese language into Malay so that the learners are able to learn and understand Malay language. The process of learning will be simple so that it matches with the capability of the young learners. It focuses on the mobility of the application where the learners are able to learn the language wherever and whenever. The learning module uses mobile devices such as smart phones, tablets or Personal Digital Assistants (PDAs). The parents or teachers of the learners are able to monitor their progress via website. Besides that, the teachers are also able to create their own modules to suit their students' progress in learning the Malay language. The aim of this project is to encourage children who do not use Malay language as their first language to master this national language.

1.2 Problem Statement

One of the problems detected is that people refuses to learn new languages other than their mother tongue. The majority of the community are more comfortable communicating with the languages that they are used to and do not open up to a new environment. They believe that it is not a necessity for them to learn new languages. As citizen of Malaysia it is important to be fluent in Malay since it is the nation's national language.

Lack of early education is also becoming a concern. It is very important to nurture the children with knowledge at the early stage because they are at their learning phase. Children are learning fast because at this stage they are exploring their surrounding and they are getting familiar with their surroundings. Hence, children at the age of four to six are the best candidates for this m-learning module.

Besides that, the usage of dictionary as the medium to translate is not convenient for the learners to use if they want to travel. Dictionary is too thick and a bit inconvenient to be carried around. It is also difficult for the users to use it especially the children because it is not interactive and unable to attract the children to use it. The immobility feature of the translator is part of the problems detected.

1.3 Objectives

- To develop a mobile application that has an interactive interface and approaches which able to translate Chinese language into Malay for children the age of four to six.

- To integrate two approaches of learning and designing modules into one application where it is able to educate the Chinese children effectively.

1.4 Scope of Study

The scope of study for this project is to study the behavior of the target users which are the children aged from four to six. It is because the mobile-based application needs to suits the preference of the users in order to attract and sustain their attention in learning using this application. The interface of the application must be interactive at the same time helpful in teaching the young learners the new language. Besides that, the user-friendly features of this application need to be identified so that it is convenient to use. The teaching modules must be effective.

Since the target users are young learners aged four to six, feedbacks from the parents need to be attained in order to know the impact that the mobile-based application brings to the children. It is also necessary to seek opinions from the parents and teachers concerning the relevancy of this m-learning approach. In order to know the feasibility of the mobile-based application to be implemented, a survey among the children's parents and teachers should be done during the pre-implementation phase.

CHAPTER 2

LITERATURE REVIEW

2.1 Usage of mobile application as a learning medium (To Promote Children's Learning)

Based on Carly Shuler and Ed M.'s "Using Mobile Technologies to Promote Children's Learning", mobile devices can assist the learning process of children. Mobile devices can promote the knowledge, skills and perspectives of children. The objective of the study was to deepen the children's mastery in key literacy, world languages, STEM (Science, Technology, Engineering and Mathematics) subjects, collaboration and critical thinking skills. The study had used mobile devices as the learning tools for the children. Mobile devices had provided several key opportunities in the children's learning progress.

First of all, mobile devices had encouraged "anywhere, anytime" learning. Since mobile devices can be carry around anywhere and anytime, it allows the students to access, gather and process the information outside of their class. Students can be encouraged to learn in the real world context, and help to bridge school, afterschool and home environments. Besides that, learning through mobile devices can help to reach the underserved children. Mobile devices can be bought at an affordable price and its accesibility in low-income communities had help to advance the digital equity. It assist to reach and inspire the populations of children who are economically disadvantaged and also for those communities in the developing countries.

In addition, the broadening use of mobile technologies had contributed to the improvement of the 21st century social interactions. Mobile technologies had promote and foster collaboration and communication; which both are important for the success of 21st century. Besides that, the attributes of mobile devices fit with various learning environment because it fits naturally with the environment compared with other larger

technologies. The other perk of using mobile devices as learning medium is that it makes personalized learning experience possible. Instruction should be adaptable to individual and diverse learners because every children have their own attitudes and wants. Not all children are alike. Mobile devices provide significant opportunities that support differentiated, autonomous, and individualized learning.

2.2 Acceptance of Mobile-based Application in the Community (Student Perceptions of Mobile Learning)

`A study had been done to identify the tasks the facilitate the individualized learning of content, group projects or discussions, assessment, and teacher-directed lecture through the use of m-learning technology tools. Three types of interaction were observed during the study. First is the interaction between the student and the learning content. Second is the interaction between the students and the instructors and third, is the interaction between the students themselves. The most common m-learning technology tools tested are mobile phones and PDA.

The student's feedbacks on m-learning were gathered and the studnets agree that m-learning generates strong interest among the students. The students have a strong, positive reaction about integrating m-learning into the classroom. The students also find that learning with mobile devices are enjoyable. The students had recognized the potential for future m-learning opportunities as new technologies are integrated into education. At the same time, the students also gave feedback that acknowledged the competence and the ease in using mobile devices in performing the learning tasks. They also agreed that the usage of mobile devices was convenient and it enabled learning processes to be flexible and portable.

2.3 Relevancy of m-learning

Further information was gathered to prove the relevancy of m-learning in the community. M-learning is considered applicable in the community because it provides convenience and flexibility to its learners. It is because mobile learning can be accessed anywhere and at anytime. M-learning can be reached at the exact moment when learning is required. It is relevance to the current development because mobile learning enables training to be 'situated rather than simulated'. Hence it makes learning available at any point of need. In addition, mobile learning can increase the learner's control over their learning environment. The learners are able to take charge of their own learning activities because of the nature of the mobile learning that is always available for its learners.

Mobile learning can make good use of 'dead time' and reduce the tendency of wasting time. Mobile learning can happen even during 'dead time' which is during the learners are travelling or waiting for a meeting to start. The learners can make use of that time and learning through the mobile learning approach. Plus, mobile learning fits many different learning styles. Mobile learning can offers many different means of learning on mobile devices. The learners can learn by reading (text and graphics), video, animation, working through decision trees, listening to podcasts, contributing to discussions (forums or SMS), researching on the internet and many more. These different approaches will make the learning processes more fun and approachable.

2.4 Mobile Based (m-learning) and Web Based Learning

Mobile learning involves the usage of mobile devices in gaining knowledge and new education. It is a subset of e-learning (electronic learning), educational technology and distance education. The first m-learning was introduced in the year 1968 by Alan Kay and his colleagues where they invented Dynabook which is a book-sized computer that runs simulations for learning purposes. The Dynabook contained information in its circuit and it can be readily plug into available networks that contain human knowledge. Anybody from any age group was able to program it to access the information. The first mobile learning modules in classes started in the 1990s when

Apple Classrooms of Tomorrow (ACOT) in partnership with Orange Grove Middle School of Tucson, Arizona had used mobile computers connected by wireless networks. The practice of using mobile learning modules for students was being evaluated by universities in Europe and Asia. Palm Corporation had offered universities and companies to create and test mobile learning using their PalmOS platform by providing the universities and companies grants. By the year 2000s, the major m-learning projects had been receiving funds from the European Commission. Starting from 2010 the population of smartphone users had been increasing this gives opportunities for the m-learning developers to expand their scope. The availability of multi-devices authoring tools also encourages the expansion of m-learning because those tools allow e-learning courses to be delivered to a variety of mobile operating systems and devices.

Web-based learning is also called as e-learning where the information and knowledge are delivered over a wireless network such as the internet or intranet to browser-equipped the learners. There are two primary models for web based learning; first one is the instructor facilitated (synchronous) and second model is the self-directed, self-paced (asynchronous). The process of delivering the materials can be done by a combination of static methods and interactive methods. Static methods include learning portals, hyperlinked pages, screen cam tutorials, audio or video streaming, and live Web broadcast. Examples of interactive methods are threaded discussion, chats, and desktop video conferencing.

2.5 M-learning in Malaysia

Mobile learning had been well accepted in Malaysia and some of the higher institutions who had already applied the mobile learning modules are Open University Malaysia, University Sains Malaysia and University Technology MARA. Open University Malaysia (OUM) had implemented the use of text-based short messaging system in its mobile learning modules. In 2008, OUM had established a research team to innovate its learning system in m-learning with the collaboration of the academicians. The learners are able to have access to the courses content, tips, motivation and course management in the form of text-based short messaging system. The learners are also able to participate in a forum where it motivates the learners to participate in the discussion forums.

CHAPTER 3
METHODOLOGY

3.1 Project Methodology

The methodology used in this project is the waterfall model where it is used in the software development life cycle (SDLC). The waterfall model will only move on to the next phase after the completion of the current phase.

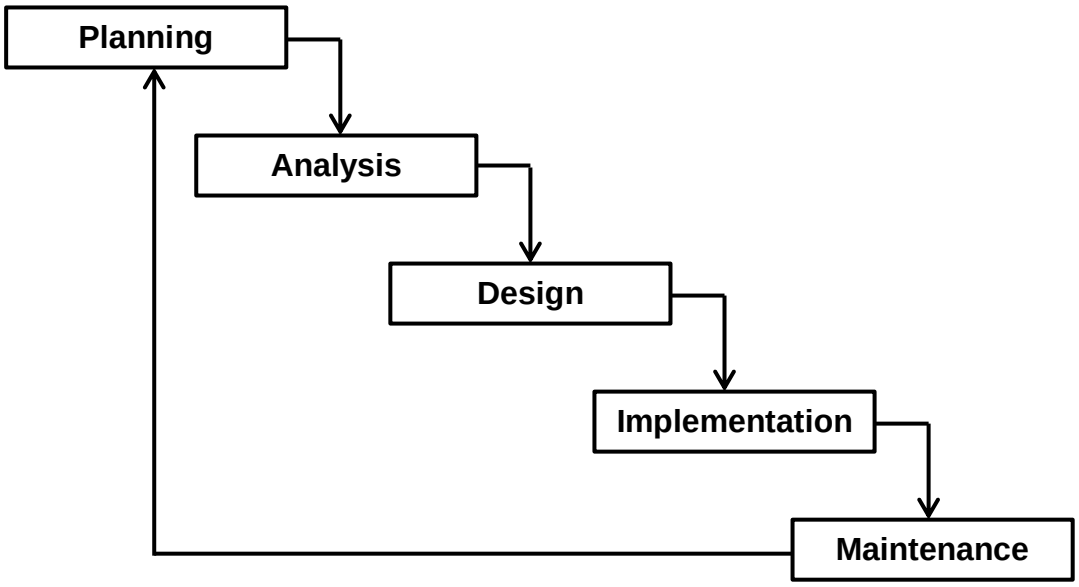

FIGURE 3.1. Waterfall model

In the **planning** phase, the target users for the mobile-based application will be identified. The requirements and design of the interface to suit the target users is studied. The effort of determining the problems surfaced from the current approach for young learners educations is done by observing the current trends and behavior. Survey is conducted to seek opinions from the parents and teachers concerning the usage of the m-learning application on the children.

In **analysis** phase, the data collected from the surveys and interviews was analyzed to come up with the most suitable solutions to solve the problems identified previously. Critical analysis is used.

Next is the **design** phase. In this phase the right tools required to develop the mobile application are identified based on the analysis made earlier. Using a flow chart and UML use case diagram, the design of the application interface was sketched. The design must be feasible and reliable for the usage of the young learners. The user-friendly gaming application is developed. The application is interactive and easy to use.

After the completion of the designing stage is the **implementation** phase. The completed application modules will be executed. The application will test run with the actual users which is the young students aged four to ten.

Any flaws of the application will be corrected in the **maintenance** phase. Feedbacks on the effectiveness of the learning modules will be collected from the parents or the teachers.

3.2 Tools

i. App Inventor

ii. Flash Player

iii. Android SDK

iv. Android devices (mobile phones or tablets)

v. Android Device Manager

3.3 Gantt Chart

TABLE 3.1. Gantt chart

No	Activities	May		June				July					August				September				October				November				December			
		1	2	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Planning Phase**																															
1.1	Preliminary research work																															
1.2	Identify problem statement																															
1.3	Define objectives																															
1.4	Define scope of study																															
1.5	Literature review on subject matters																															
2	**Analysis Phase**																															
2.1	Prepare questionnaires																															
2.2	Distribute questionnaires																															
2.3	Creating interview questions																															
2.4	Interview Subject Matter Expert																															
2.5	Data collection and data analysis																															
3	**Designing Phase**																															
3.1	Design system architecture																															
3.2	Determining tools required																															
3.3	Designing project interface																															
3.4	System coding																															
4	**Testing Phase**																															
4.1	Project testing																															
4.1.1	Analyze testing result																															
4.1.2	Debugging major problem																															
4.1.3	Application testing by user																															
4.1.4	Debugging minor problem																															
4.1.5	Implementation testing for user																															
5	**Deliverable Phase**																															
5.1	Review application																															

CHAPTER 4

RESULTS AND DISCUSSION

4.1 System Architecture

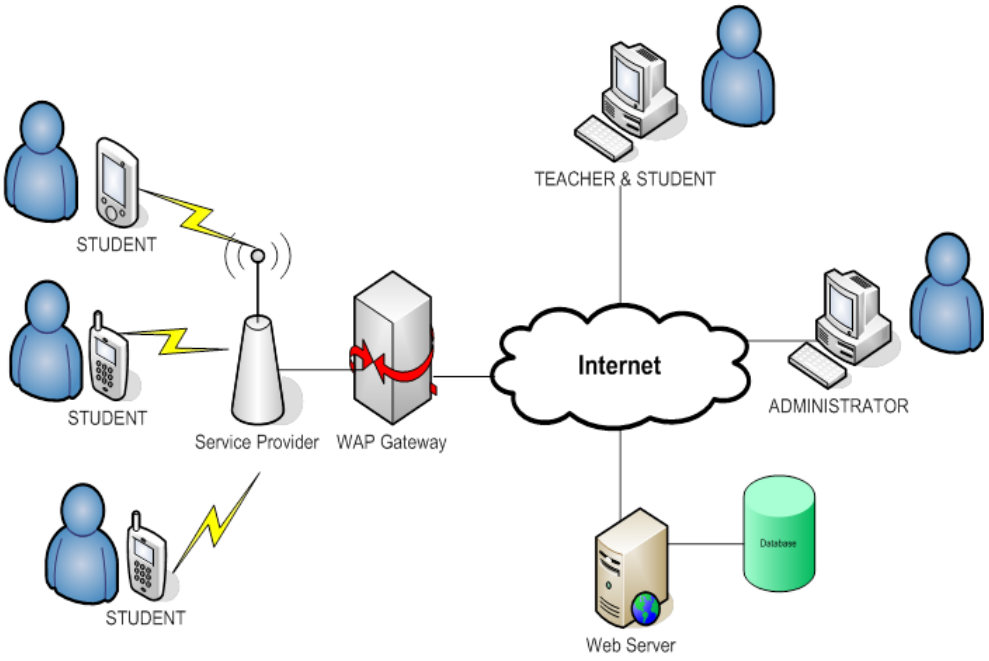

FIGURE 4.1. Adapted system architecture

This application is both mobile and web based. The learners will be able to use the learning application using mobile devices such as smartphones or tablets. At the same time, the parents or teachers are able to observe the progress of the learners via web site by accessing to the internet. Besides that, the teachers are also able to create their own learning modules for the children to learn. The teachers will have their own account in the system in order for them to have the permission to create the new modules for the system. The administrator will monitor the accounts of all users including the students, teachers and also the parents. The administrator will maintain and update the learning system. Each student will have their own identification number in order to differentiate between the users. The progress of the students will be recorded into the system so that their progress can be monitored by their parents and

teachers. All of the learning modules are kept in the web server's database and can be retrieved when the users are requesting for the modules when they login into the system. The students' progress reports are also stored in the web server's database. Both the teachers and parents can have the access to the progress reports if they have the permission by the administrator to view the reports.

4.2 System Flow Chart

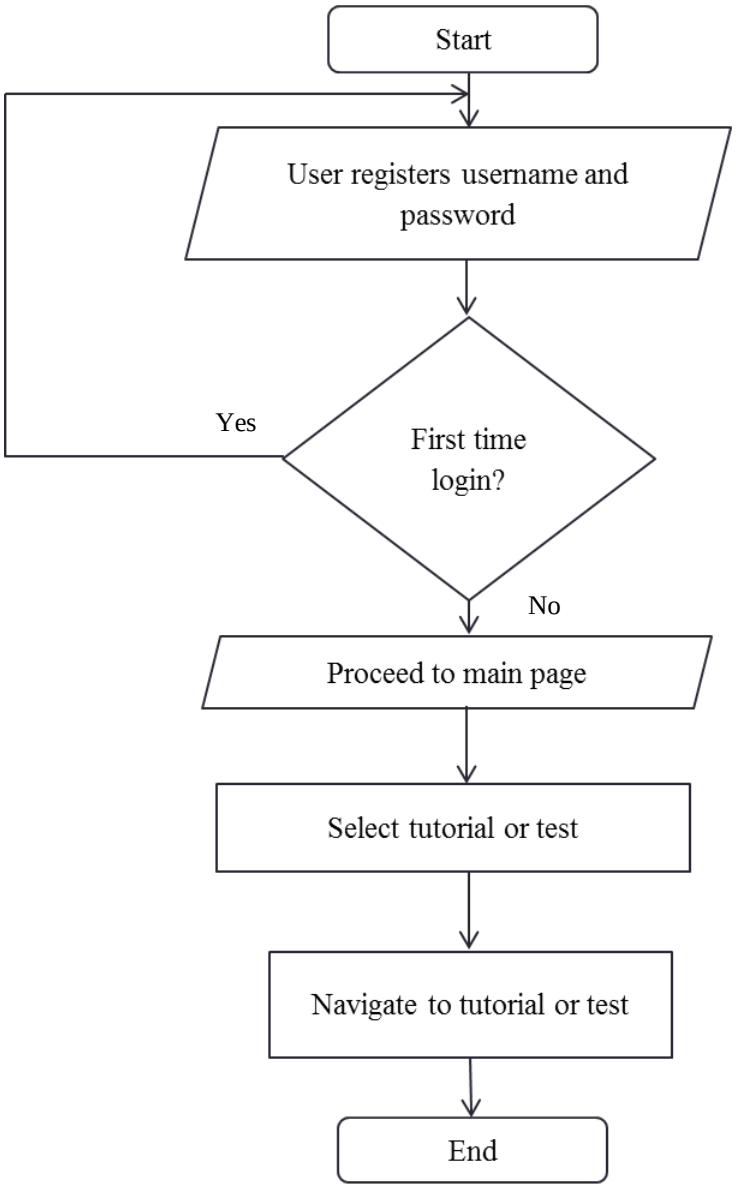

FIGURE 4.2. Flow chart for users (registration/login)

For first time login, the users are required to register their username and password. The registered username and password will be stored in the database and will be used to identify each of the different users. Every user will have their own unique identification and there cannot be any redundancy in the usage of the username and password. As for the users who had already had their own username and password, they will login into the system, and will be navigated to the main page. On the main page the users can either select between tutorial and test. Once their option had been selected, the page will proceed to the selected option.

4.3 System Class Diagram

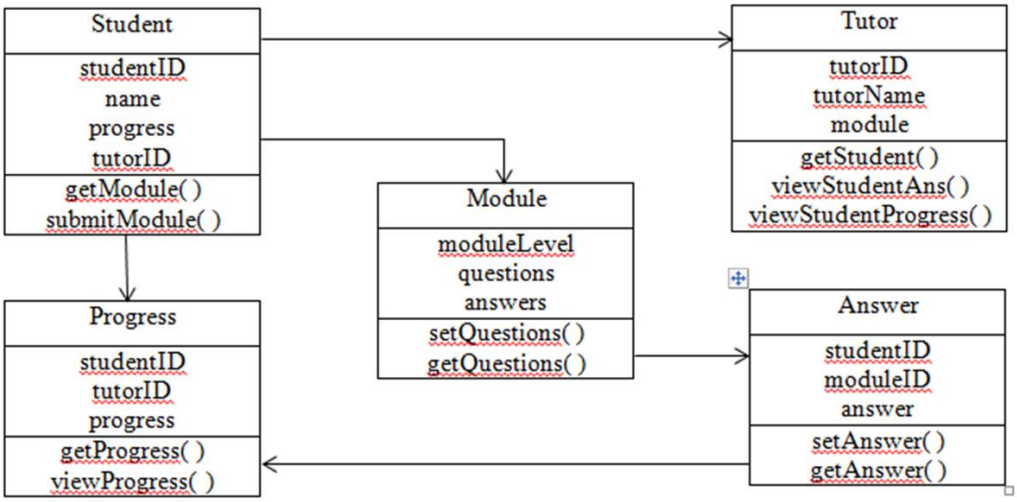

FIGURE 4.3. System class diagram

There will be five class diagrams required in the system; student, tutor, progress, module and answer.

4.4 Interview

An interview had been done at the Tadika Tronoh Indah which is situated at Desa Tronoh Indah. Tadika Desa Tronoh Indah is a Chinese kindergarten where the majority of the students are Chinese. The kindergarten's syllabus and modules are based on the government's curriculum criteria. The kindergarten's operating hour is from 8 o'clock in the morning until 12 noon. The objective of the interview is to study the modules and syllabus taught at a Chinese kindergarten. The author wants to capture the approach needed in delivering new knowledge to the children especially in the ways how Bahasa Melayu is taught. The children are exposed with 400 minutes of Bahasa Melayu lessons weekly.

The children learned to speak the language by phonics approach where they will listen on how the vowels (a, e, i, o, u) sounds. They will listen to the teacher and say along with the teacher. This will helps the children in pronouncing the words correctly. Besides that, the children are also exposed to graphic exercise. Children learn by observing their surrounding and by using pictorial approach it will ease the learning process. Pictures of objects, animals, flowers and many more are used to teach the children. Besides that, phrases and rhymes are very helpful in teaching the children language. Phrases and rhymes are taught and delivered in Bahasa Melayu in order for the children to get familiarized with the language. Phrases and rhymes will make the learning environment more whimsical and fun. Other than that, there is also a reenactment of a situation approach. The children will be given a situation and they have to act based on the situation. Every session will have a different theme and the children will reenact the situation by conversing in Bahasa Melayu. This approach can broaden the imagination of the children and at the same time develop the children's communication skills. Hands on practice are very effective and helpful.

As for the evaluation of the children, each student will be evaluated based on their performance in class and during tests. Their progress are recorded and monitored. If the students did not perform well, they will be reevaluated. However there is also a case where the students are doing very poorly in their performance in class and tests. Those group of people needed special attention and individual teaching will be delivered to those who did poorly.

4.5 Survey Analysis

A selective survey was done among the parents of the Tadika Tronoh Indah students. The objective of this survey is to seek feedbacks from the parents on the relevancy of this mobile language learning application. The total respondents for this survey are 14 people. The questions were divided into three parts; parent's information, children's information and product feasibility.

i. Parent's Information

In this section, the parent's information is gathered. The purpose of this section is to collect the demographic data of the potential buyers. Two questions were asked concerning the parent's information. The questions and analysis are as followed:

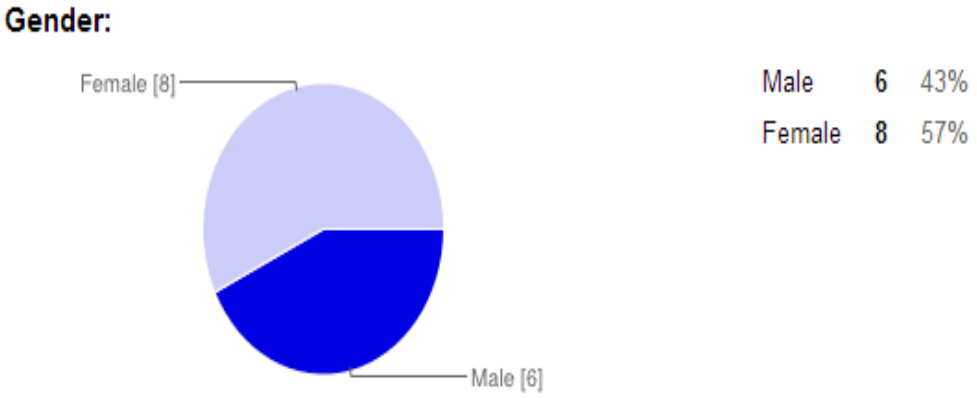

FIGURE 4.4. Respondent's gender

This question is referring to the gender of the respondents. 43% of the respondents are male while the remaining 57% are female. Hence, the majority of the respondents are female.

FIGURE 4.5. Respondent's number of children

This question is referring to the respondents' number of children who are still in kindergarten. All of the respondents which are 100% of the respondents only have 1 to 2 children who are still in kindergarten for the moment.

ii. Children's Information

In this section, the children's information is gathered. The purpose of this section is to gather the demographic data of the potential users which are the children themselves. There are total of two questions asked in this section. The questions and analysis are as followed:

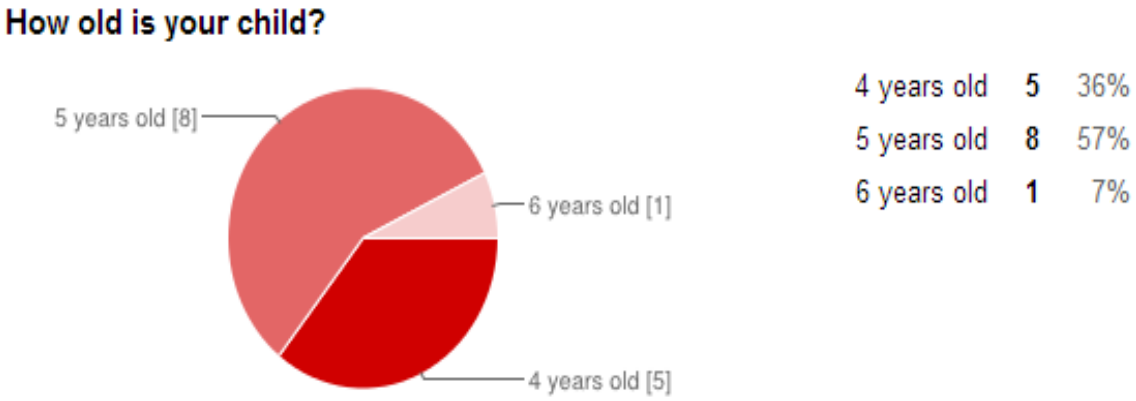

FIGURE 4.6. Age of the respondent's child

This question is referring to the respondents' child's age. 36% of the respondents' child are aged 4 years old, 57% are aged 5 years old and only 7% are aged 6 years old. Hence, the majority of the respondents' children are aged 4 years old and the least are aged 6 years old.

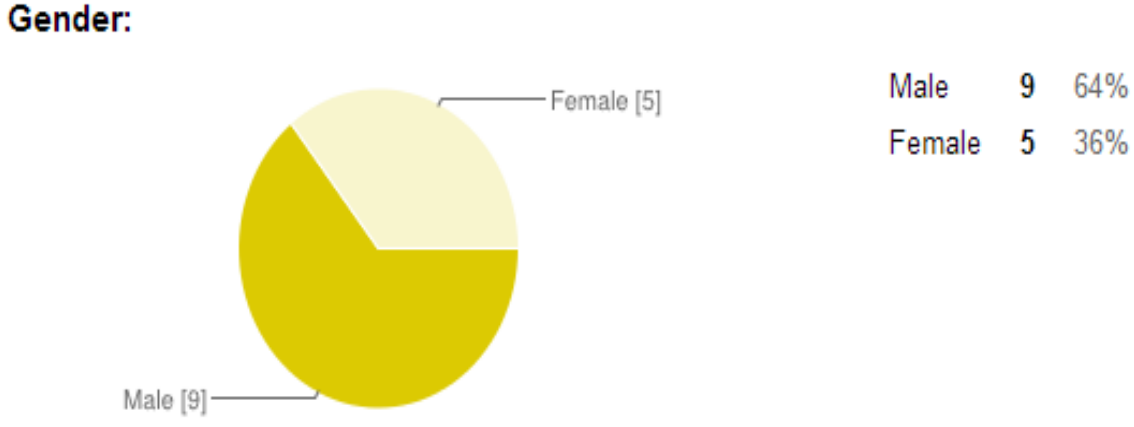

FIGURE 4.7. Gender of the respondent's children

This question is referring to the respondents' child's gender. 64% of the respondents' children are male and the remaining 36% are female. Hence, the majority of the children are male.

iii. Product Feasibility

In this section, questions concerning the relevancy of this mobile learning application were gathered. It is to test and identify the marketability of this application. A total of six questions were asked to the respondents. The questions and analysis are as followed:

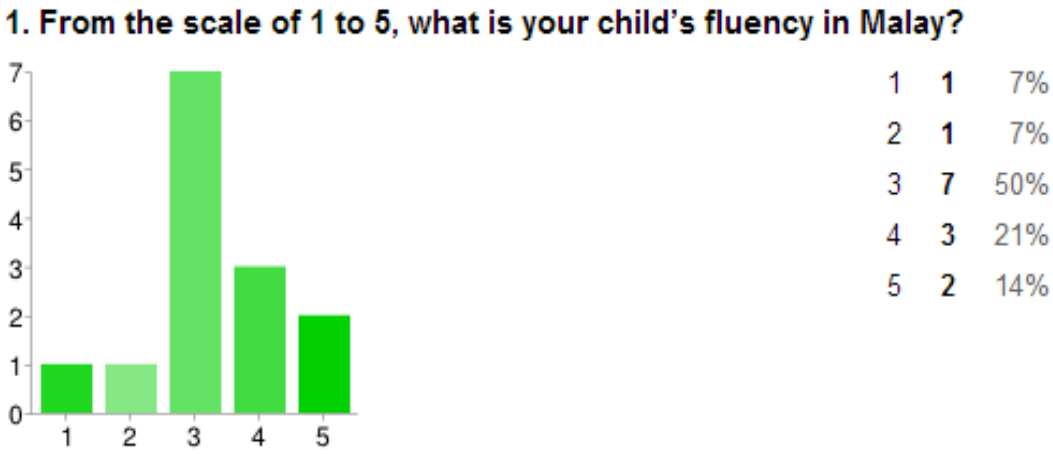

FIGURE 4.8. Children's Malay fluency level

Question 1 is referring to the children of the respondents' fluency in Malay. The scale indicates 1 – Poor, 2 – Below average, 3 – Average, 4 – Good and 5 – Excellent. 7% had responded that their children are poor in Malay and another 7% are below average. The majority of the children which is 50% are average in Malay fluency. Another 21% are good in Malay and the remaining 14% are excellent in Malay.

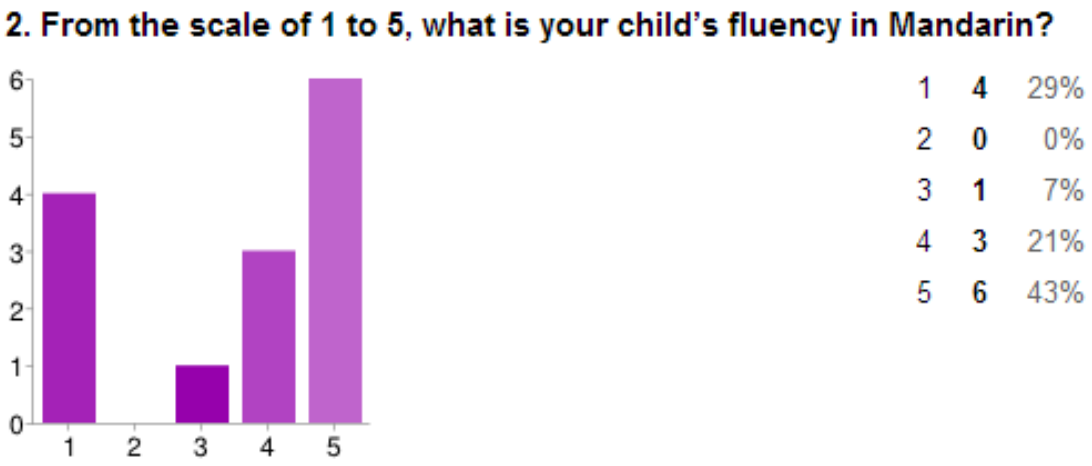

FIGURE 4.9. Children's mandarin fluency level

Question 2 is referring to the children of the respondents' fluency in Mandarin. The scale indicates 1 – Poor, 2 – Below average, 3 – Average, 4 – Good and 5 – Excellent. 29% of the children are poor in Mandarin while there are no respondent which is 0% who answered their children are below average in Mandarin. 7% of the children are average in Mandarin. 21% of the children are good in Mandarin and the remaining 43% are excellent in Mandarin. The majority of the children are fluent in Mandarin.

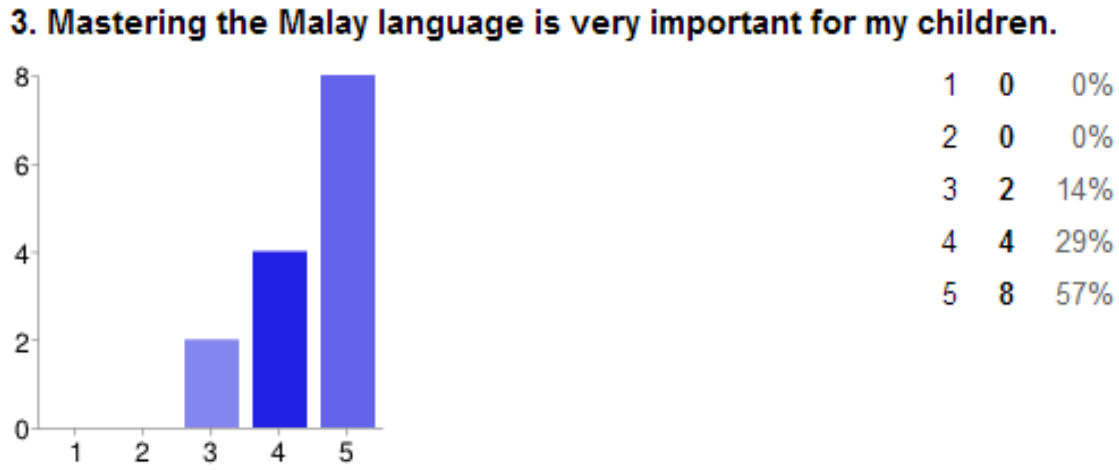

FIGURE 4.10. Importance of learning Malay language

FIGURE 4.10 is referring to the respondents' concerns on the importance of mastering the Malay language to their children. The scale indicates 1 – Strongly disagree, 2 – Disagree, 3 – Indifference, 4 – Agree and 5 – Strongly agree. 0% answered strongly disagrees and agree. 14% answered indifference in the importance of Malay language while 29% agree with the importance of Malay language. The majority of the respondents; 57% strongly agree with the importance of mastering Malay language.

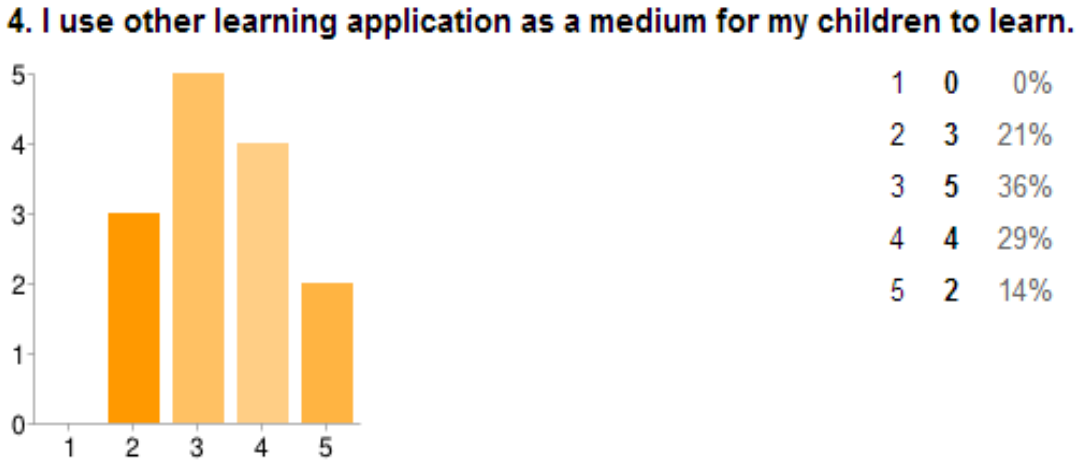

FIGURE 4.11. Usage of learning application

FIGURE 4.11 is referring to whether the respondents are using other learning application as their children learning medium. The scale indicates 1 – Strongly disagree, 2 – Disagree, 3 – Indifference, 4 – Agree and 5 – Strongly agree. 0% of the respondent strongly disagrees and 21% are disagreeing with it. 26% of the respondents are indifference with it. 29% agree that they used other application and the remaining 14% strongly agree. The majority of the respondents are indifference with the usage of other learning application.

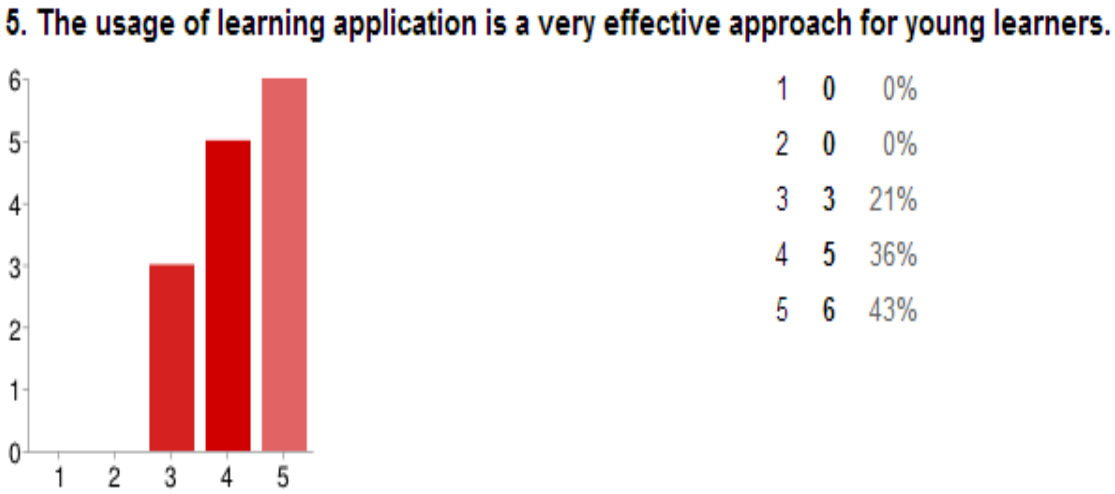

FIGURE 4.12. Effectiveness of mobile learning application

FIGURE 4.12 is referring on the opinion of the respondents on the effectiveness of using mobile learning application approach for young learners. The scale indicates 1 – Strongly disagree, 2 – Disagree, 3 – Indifference, 4 – Agree and 5 – Strongly agree.0% answered strongly disagree and disagree. 21% of the respondents are indifference with it. 36% agree with the effectiveness of mobile learning application and the majority of them; 43% strongly agree with it.

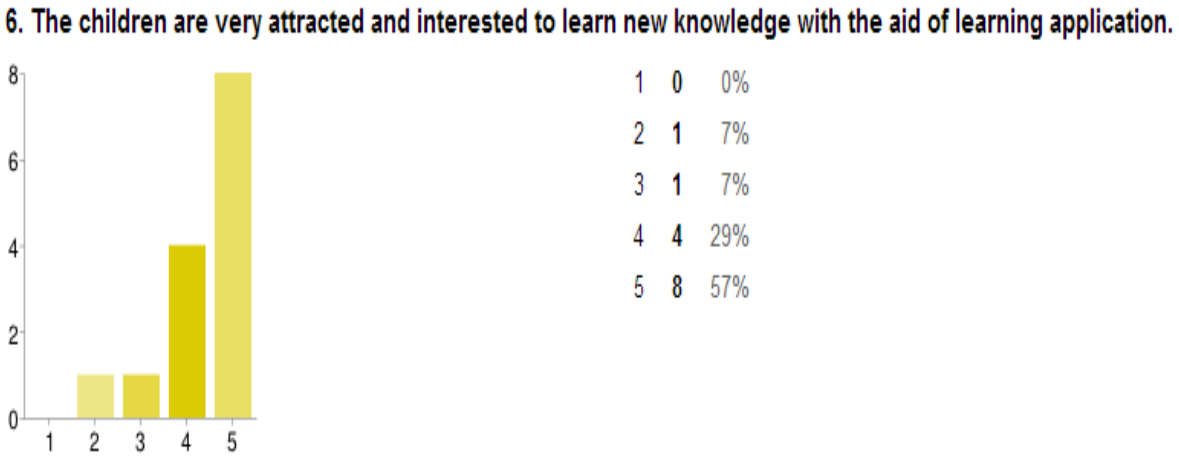

FIGURE 4.13. Children's interest to learn new knowledge

FIGURE 4.13 is referring on whether the children are attracted and interested to learn new knowledge with the aid of mobile learning application. The scale indicates 1 – Strongly disagree, 2 – Disagree, 3 – Indifference, 4 – Agree and 5 – Strongly agree. 0% strongly disagrees with this statement and 7% disagree with it. 7% are indifference with the usage of mobile learning application and 29% are agreeing with this statement. The majority of the respondents strongly agree with it.

4.6 Interface Design

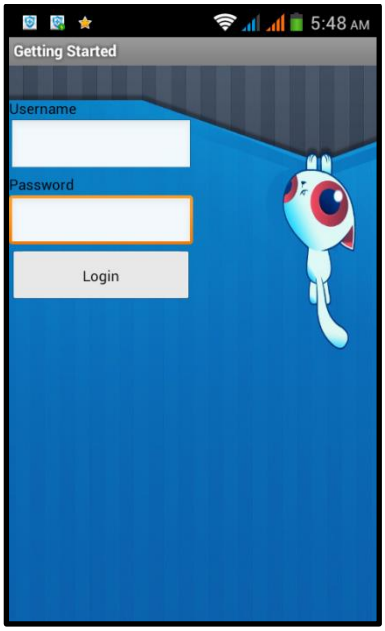

FIGURE 4.14. Landing page

On the landing page, the users will key in their ID and password. However for first time login, the users are required to seek permission from the admin. The admin will add the name of the user in the server. The admin will also determine whether the user is a student or a teacher. Both options have different authority to the application. For student, the users can do the tutorials and exercises while if the users are logged in as teachers, they are able to view the score of the students.

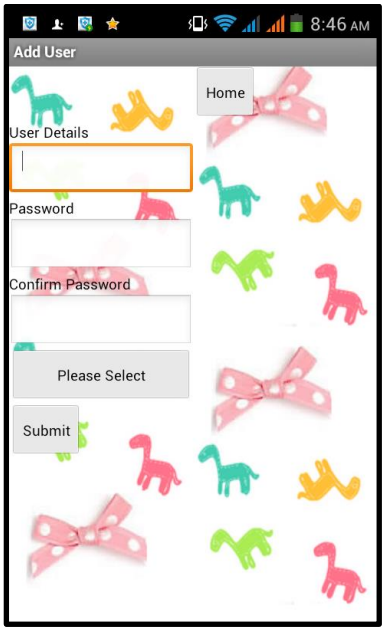

FIGURE 4.15. New user registration

For user's registration, the admin will add the users detail in the database. The admin will select whether the user is a teacher or a student. These details will be used to identify the users the next time they login.

FIGURE 4.16. Student's view

This is the view for the students. They are able to choose two options, whether to do the tutorial which is "Belajar" or to do the exercise; "Latihan". In tutorial, the students are given exposure on the Malay words with the help of simple graphics. As for the exercise's page, the students are tested on the understanding of Malay.

FIGURE 4.17. Learning modules

Based on FIGURE 4.17 there are three learning modules available. First is the alphabet, second is number, and third is object. Different approaches of learning can expand the knowledge and understanding of the children.

FIGURE 4.18. Tutorial page

On the tutorial page, the users can learn first before trying out the exercise. This will help the users in better understanding the modules. The tutorial will be available in three modules; alphabet, number and object.

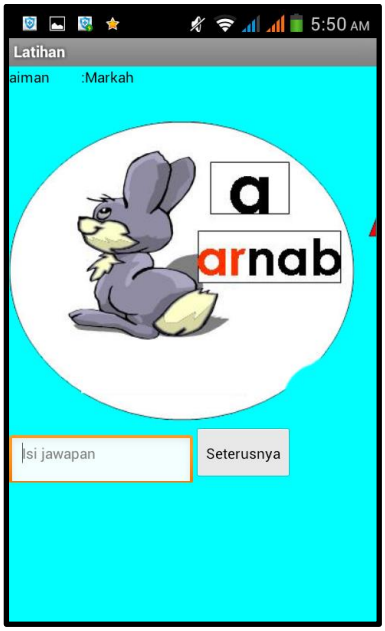

FIGURE 4.19. Exercise page

On the exercise page, the users will try to answer the questions given. The correct and wrong answer will be reveal at the end of the session. However, the performance of the users would not be mark and recorded yet in this session.

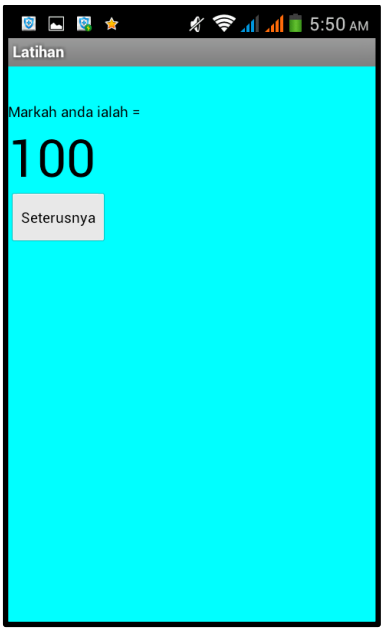

FIGURE 4.20. User's performance score

Based on FIGURE 4.20, the users' performance score will be recorded and will be stored in the system. The parents and teachers are able to view this performance score to monitor the performance of the users. The performance score is recorded when the users answer the exercise modules.

4.7 Discussion

Based on the finding, learning through mobile application is very applicable in the current era. It is because right now the era is experiencing technological advancement phase where every process is being done with the help of technologies. This system is using these opportunities of technological advancement by creating a learning modules using cloud storage. All the learning processes are being shared and stored in cloud storage that supports the mobility of the system. The details of the users are being stored in the server's database so that the data can be retrieved anytime and can reduce the limitation of data storage. Besides that, this system is also stressing on the importance of knowledge at an infant phase. This system is targeting young users which are Chinese kindergarten students aged four to six. Early education is important because at this stage of life, the capacity of brain to absorb new knowledge is at its peak point. In addition, appropriate childhood learning programs can help to contribute to the children's physical, emotional and social developments. Besides that, the parents are also agreeing on the importance of mastering more than one language.

The development of this system can help the children learn the Malay language in the form of interactive approach in response to the users' actions or requests. Simple interface are used to make it user friendly and images are used to suit the behaviors of the targeted users; kindergarten children. However, there are few limitations experienced by this system where it can only work online.

CHAPTER 5

CONCLUSION

5.1 Conclusion

Learning second language is very important especially during the early stage of growing up. Learning Malay is crucial especially in Malaysia because Malay is the nation's national language. This interactive gaming application is will assist kindergarten children aged four to six and secondary students aged seven to ten in learning simple Malay language. The target users of this application are Chinese students as this application helps to translate Chinese language to Malay language. This application will also monitor the progress of the students from time to time. The parents or teachers are able to monitor the progress via the web site or mobile devices. The teachers are also able to create their own modules based on the students' capabilities in learning the language.

5.2 Recommendation

There are more improvements that can be done for this application in the future. Additional features can be added to enhance the performance of this learning application. In order to make it more convenient to be used, the application should work offline. It will be much easier for the users if the application can work without internet connection because sometimes the availability of internet connection can be limited. Besides that, since the target users are kindergarten students aged four to six, it is important for the developer to attract the attention of the children. In the future, it is suggested that the learning application is developed in the form of interactive gaming environment with different level of difficulties. The student will start with level one and will need to reach certain marks in order for them to pass to proceed to the next level. This approach can test the users' knowledge more and at the same time keeping the learning process more interesting. Another recommendation that can be done is to add up audio learning feature where it teaches the children on how to pronounce. The users can learn to speak the language by phonics approach where they will listen on how the vowels (a, e, i, o, u) sounds. They will listen to the audio and say along with it. This will helps the children in pronouncing the words correctly.

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APPENDIX

Survey Question

General Question:

Parent's information

1. Gender:
    - Male
    - Female
2. How many children that you have that is still in kindergarten?
    - 1 - 2
    - 3 - 4
    - 5 – 6
3. Occupation:
   Please state: _____

Children's information

1. How old is your child?
    - 4 years old
    - 5 years old
    - 6 years old
2. Gender:
    - Male
    - Female

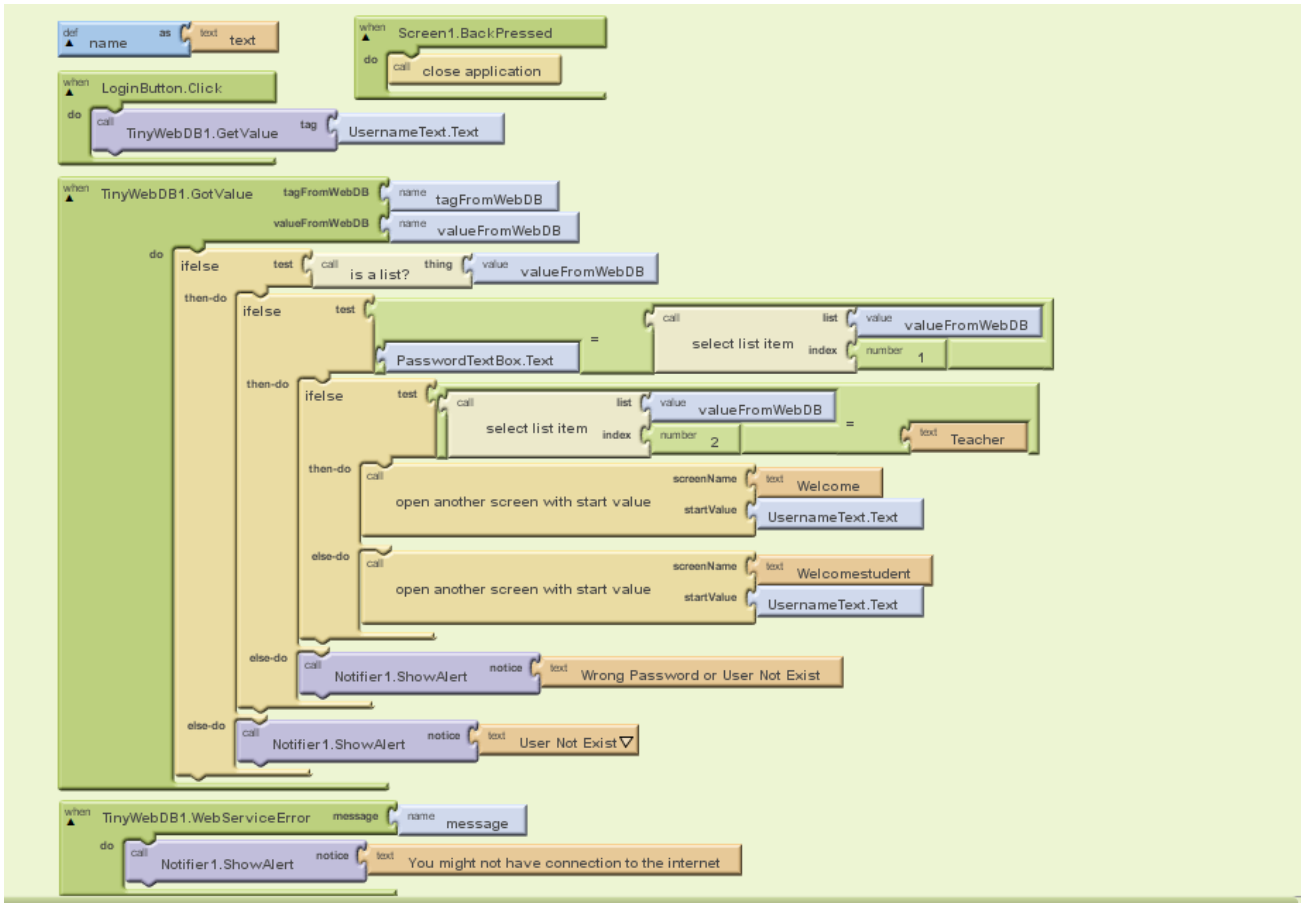
This learning application will help the children aged 4 to 6 years old to learn Malay language. This application is focusing on the Chinese children who use Malay as the second language. The learning approach will in the form of interactive games.

1. From the scale of 1 to 5, what is your child's fluency in Malay?
    i. Poor
    ii. Below average
    iii. Average
    iv. Good
    v. Excellent
2. From the scale of 1 to 5, what is your child's fluency in Mandarin?
    i. Poor
    ii. Below average
    iii. Average
    iv. Good

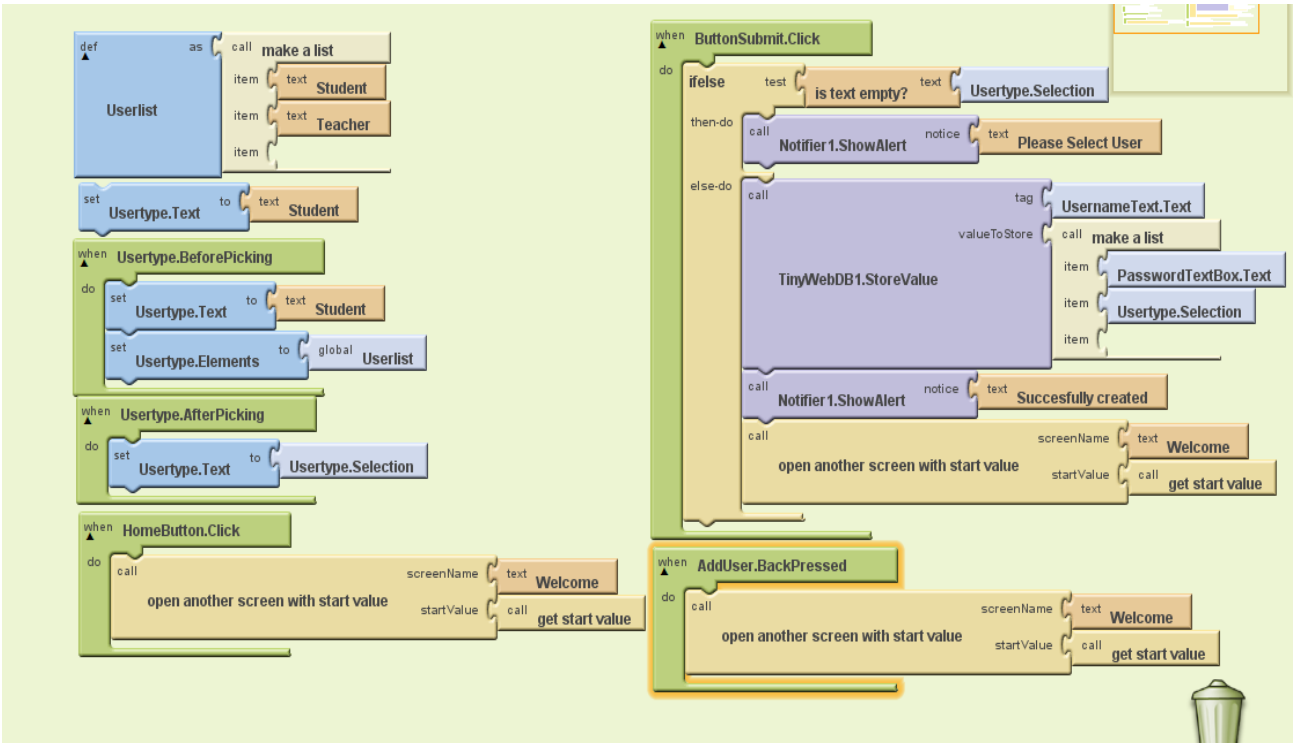
v. Excellent

3. Mastering the Malay language is very important for my children.
    i. Strongly disagree
    ii. Disagree
    iii. Indifference
    iv. Agree
    v. Strongly agree
4. I use other learning application as a medium for my children to learn.
    i. Strongly disagree
    ii. Disagree
    iii. Indifference
    iv. Agree
    v. Strongly agree
5. The usage of learning application is a very effective approach for young learners.
    i. Strongly disagree
    ii. Disagree
    iii. Indifference
    iv. Agree
    v. Strongly agree
6. The children are very attracted and interested to learn new knowledge with the aid of learning application.
    i. Strongly disagree
    ii. Disagree
    iii. Indifference
    iv. Agree
    v. Strongly agree

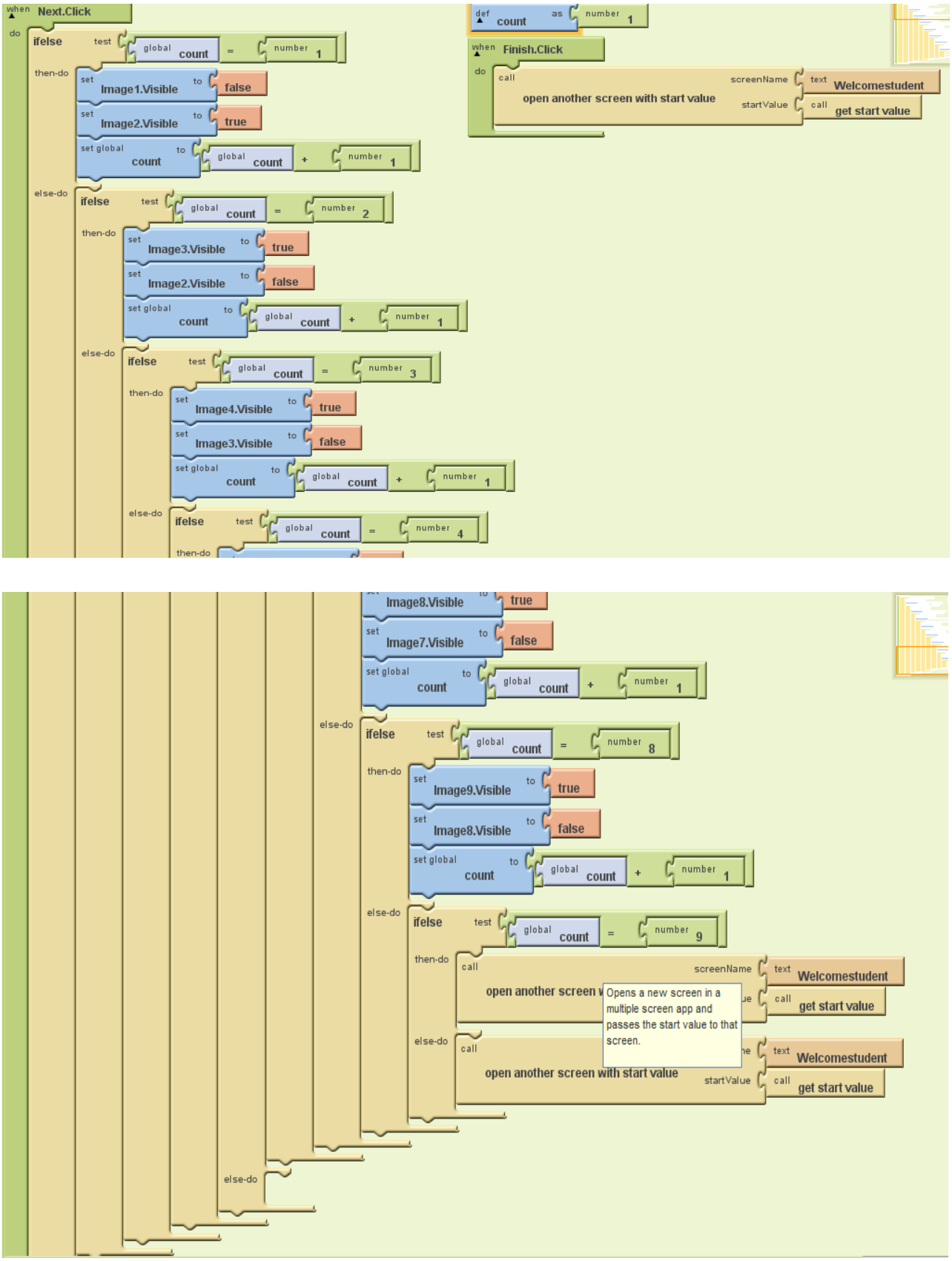
System Code Block



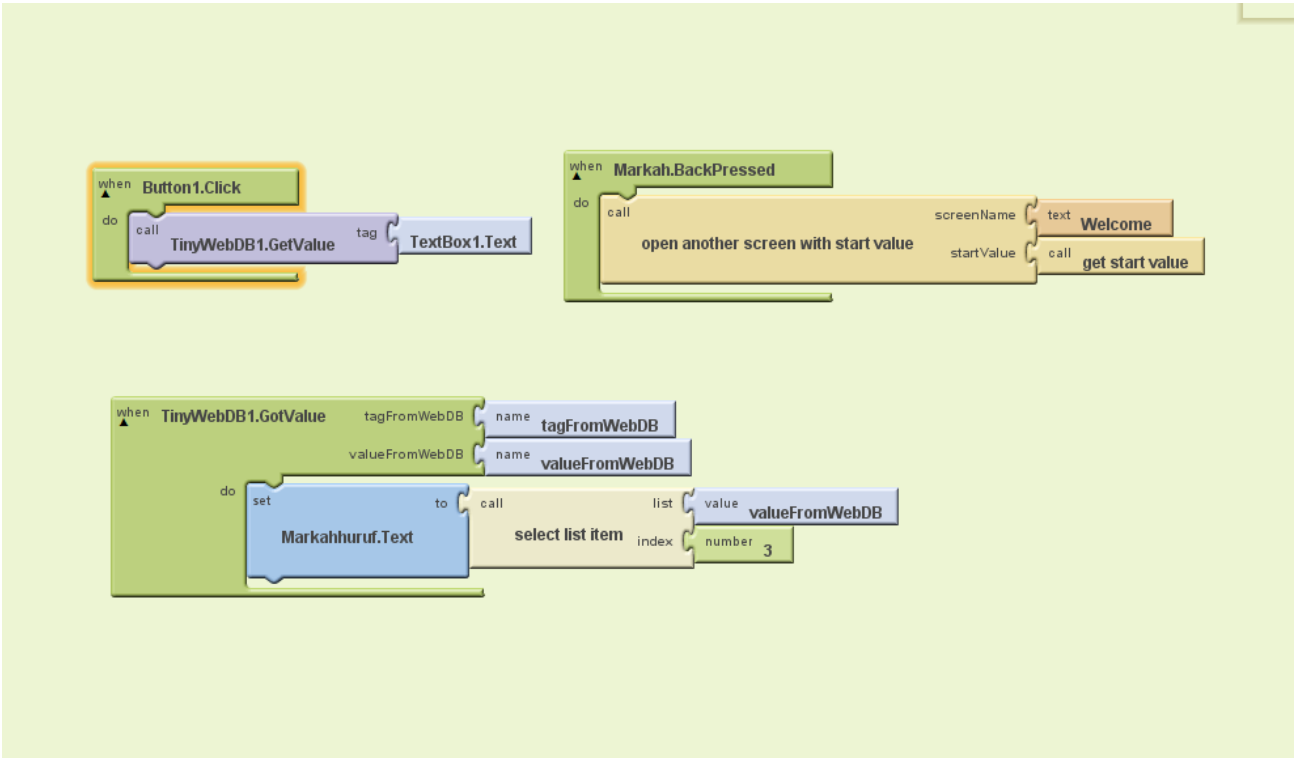
APPENDIX 1: Code block for the login screen



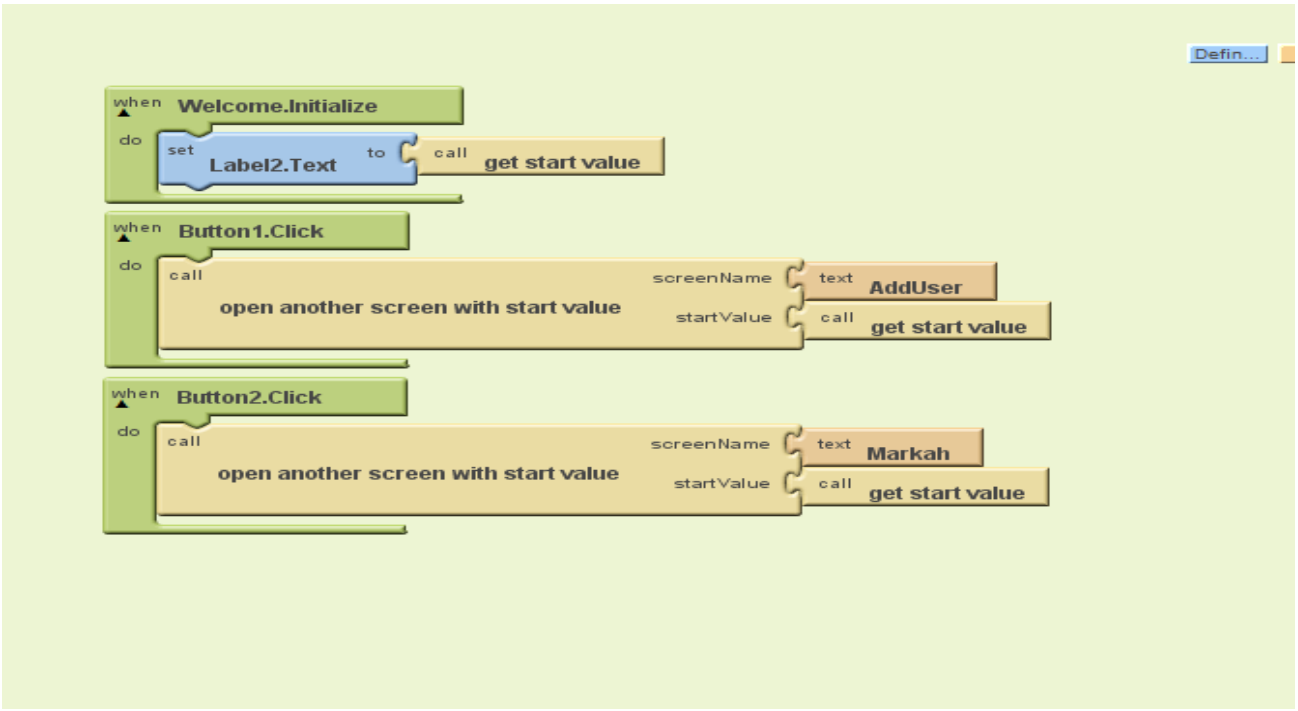
APPENDIX 2: Code block for the add user screen



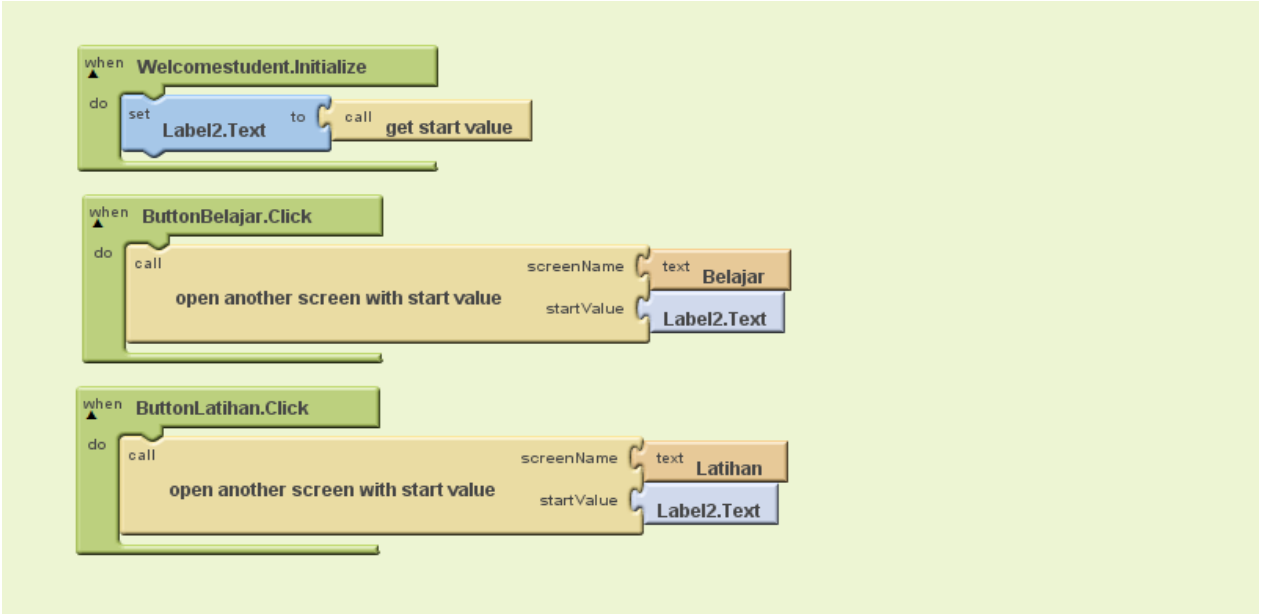
APPENDIX 3: Code block for tutorial screen



APPENDIX 4: Code block for student's score screen



APPENDIX 5: Code block for student's login screen



APPENDIX 6: Code block for teacher's login screen