CERTIFICATION OF APPROVAL

THE SPANISH-MALAY LEARNING VOCABULARY APPLICATION NOW AT YOUR FINGERTIPS: THE-VOC

By

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_____

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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 or done by unspecified sources or persons.

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JUAN ANDRES MAHAMA ELONGA

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ABSTRACT

Although Spanish is a language spoken in more than 332 million people in the world and basically being the official language in more than 22 Countries, the percentage of Spanish speakers or creoles among the Malaysians is very small in number. Spanish is one of the few languages considered to be phonetics. This means the pronunciation of an Spanish word can be known from the spelling of the word (even though the same thing cannot be applied for the reverse).

Information gathered from surveys shows that many novices especially the youngsters in Malaysia are very engrossed in watching the so called "soup opera or telenovela" regardless of the language used because of the English or Malay subtitles provided at the bottom of the screen. In addition, many of them would like to pick up Spanish language for future benefits such as travelling to Spanish speaking Countries.

It is cleared that studying any foreign language is not easy as it might sound to be, for that reason some experts encourage learners to expose themselves more to the language by any means. They also recommend them to understand that it will be necessary for them to put more effort from their part than what they are expecting from the instructors in a classroom type of study.

According to Downey & Snyder, (2001) and Sparks & Miller, (2002). "At-risk students can experience success in classrooms that provide direct, explicit instruction on language structure and extra time to master the subject matter". However, this is definitely not an option for the Malaysian students in UTP willing to learn Spanish because of the inability to cope with both timetables.

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1 CHAPTER 1
INTRODUCTION

1.1 Project background

The-Voc is a cell phone application that can be used by the Malaysian novices willing to acquire or enhance their skills in the Spanish language through the use of some day to day practical vocabulary in Malay coupled with Spanish. The-Voc app makes use of simple illustrations such as pictures and interactive quizzes with immediate feedback that will vigorously engage any youngster in the process of learning the language.

Spanish novices in Malaysia especially in UTP are keen to pick up the basics of popular languages such as Spanish, but never really had the time to get started by them in becoming fluent. Therefore, the idea of having to enroll on an evening course at their local College or University whereby one of two hours are to be devoted per week to studying in a classroom sitting might be off putting because it felt boring and not much attention is paid.

The-Voc is a language learning app in the form of gaming that could embrace the following attributes easy to navigation with a simple, self-explanatory, and clean interface, vocabulary enhancement and retention by listening to how each word is pronounced and through picture illustration. In comparison to an existed application such as the "Learn Spanish with Pictures" application which is a mobile language learning application that makes use of full screen images with the objective of making learning fun! However, the fact that users need to guess the Spanish name word of the figure portrait in the image, makes it really discourage for beginners.

The use of mobile applications and other handheld devices has been one of the focused points of most of the trends toward cell phones connectivity in today's World. Mobile application or "app," is theoretically any software that people download and run on a mobile device. However, it could be defined as the final user software applications

designed for mobile device platforms and which extend that particular device's capabilities (Wikipedia: Software, 2013).

1.2 Problem Statement

The usage of Spanish language in Malaysia is very small or limited in number because most people use English or Malay language for their everyday communication activities. However, a survey conducted in UTP illustrated good number of novices that were enrolled in the evening Spanish classes in order to pick up the Spanish language to enrich their language skills, but did stop due to many circumstances, such as time availability, lost of interest and crowded class, etc, just to mention a few.

The lack of vocabulary in Spanish language will poorer learners communication skills and phrase construction. The-Voc provides a more centric way of teaching, focusing only on Malay and Spanish language vocabulary, with a practice session with instant feedback providing and entertainment environment for learners.

The grammar differences between both languages Spanish and Malay, makes it hard for learners and even cause them to lost interest in continue learning the language. Many good software for language learning such as Rosetta Stone ($179 per level), Fluenz ($187 per level), Rocket Language ($398.95), are used for learning purposes but because of the downfalls they present such as being very costly , requiring Mac OS X10.6 or higher version and not installable on mobile devices such as phones discourages many users to go for them. The-Voc however, is free and available for Android mobile devices such as tablets and phones and can even be installed on computers through the use of other software. The-Voc is very similar to Ciao Italian language learning software in terms that both offer few basic lessons with fun animated characters, both are easy to use because of the simple and friendly user interface. However, The-Voc provides vocabulary that is useful for every environment while Ciao Italian is mostly for travelling and getting around type of vocabulary with lessons like "At the Museum" and "Checking into a Hotel". It is sold at the current price of $9.99.

1.3 Objectives

The objective of this mobile application project is mostly to increase the number of Spanish language followers whereby the interest of the learners will be extremely improved compared to as in a class room discussion sessions. Moreover, the project also aims to:

1. To enrich learner's vocabulary in relation with pictures, essential Spanish phrases, words with their audio pronunciations recorded by native speaker.
2. To develop a Spanish vocabulary mobile application for any Malaysian novice in the Spanish language, specially college student.

1.4 Scope of study

The The-Voc applications will be open to be used by any Malaysian novice interested in learning the language. However, the primary targeted users will be college students between the age of 18 to 23. Since many of them have got the initiative of learning the language by themselves, via books and CDs.

The-Voc application, is intending to provide learners with some common vocabulary words, encompassing them into six Modules: Greetings/Conversations; Days of the Week, months of the year; the first Numbers; Family/Relatives and Body Parts. Since the app will be develop to run on one of the most used operating system known as Android, it will be able to be run in most current mobile devices. This includes cell phones, Samsung notepads, and computers through the means of supported apps such as eclipse and BlueStacks.

A survey conducted to new students at the University Technology PETRONAS (UTP), has proven that there is no single Malaysian student that can name a minimum of ten words in Spanish not to mention maintaining a short conversation. Which indicates how much interest have gone lacking on them.

2 CHAPTER 2
THEORY

2.1 Literature review and theory

When examining the subject area of learning a foreign language such as Spanish from a mobile application, three things will be taken into consideration: a) technology, b) society acceptance, c) people's interest. The first one because a mobile application is a software that will need a particular type of device embedded with a compatible platform for the software to be run. The second consideration, is mostly to differentiate the number of users making use of such type of applications and lastly how many of them are actually using them. Malaysian's younger generation are very attracted to technology, that they do almost everything on them such as playing on their mobile devices, checking they mails and social network, etc, just to mention a few.

It is proven that younger generation in Malaysia is growing up under the conditions whereby technology penetrates into their lives day by day allowing them with access information at any time regardless of location by simple using they hand phones or any other mobile device. Likewise with the availability of a self tutoring application such as The-Voc, these young learners will be able to access it from their mobile devices, discover and gain a lot more knowledge about the Spanish language. Researchers have carried out studies that compare the efficiency of using mobile learning applications with printed material for learning. As a result, students actually acquired more benefits by using their mobile applications than printed materials.

2.2 Will mobile learning change language learning?

The above question refers to a research done by Kukulska-Hulme, A. (2009), at The Open University. This is a distance learning and research university founded by Royal Charter in the United Kingdom.

Kukulska-Hulme, A. stated that, the use of mobile devices is gradually having significant impact on the different areas of learning, language learning inclusive. People

without access to fixed computers can still be aware of their current surroundings and event cross the border between the formal and informal type of learning, creating a significant change in the teaching language practices. The research also argues on the new perspectives and language learning practices the emphasis of mobility can led to. Furthermore he discusses about what mobile learning can offer to learners and whether it could change the traditional way a language is taught and learn. According to other researchers of his time including him, the use of technology has been coupled well with strategic educational goals in the way that improves learner's retention at the time that it reaches learners who would not have the opportunity to participate in education (Kukulska-Hulme et al., 2005).

2.3 The Mobile Learning in Foreign Language Learning

The above research was done by X. Liu in 2009, whereby he discusses the use of mobile devices in learning a foreign language. He stated that as mobile learning becomes a practical way of learning, it will be considered to be a subordinate category of E-learning. This type of learning is based on the use of WLAN known as wireless Internet access whether in classroom or any other learning area, allowing students to learn anywhere, anytime from their mobile devices. And since language learning is a process of continue practices to enhance memory, it is very suitable for learning foreign languages. He also analyzes certain features of mobile learning and foreign language learning while discussing the applications of mobile learning in the area of foreign language.

2.4 The role of Mobile phones in supporting teaching and learning

The above title refers to a study done by many researchers in the field of how mobile devices were able to support teaching and learning. Muyinda et al, (2007), stated that the among of people using mobile devises nowadays has got a tremendous change due to the high purchasing power compared to previous years and that beside using the devices for communication only, there were used for teaching and learning purposes. To this new

paradigm evolution led by mobile phones, he called it mobile learning. UNESCO, (2012), mentioned how potentially the expansion of mobile devices in the world, especially in Africa and Middle East in particular can improve teaching, learning and institutional efficiencies, enabling national education changes. According to (Huang et al, 2010), mobile learning applications can help students to interact with others anytime anywhere. The effects of this are feasible in the way students interact with tutors nowadays in educational institutions. While mobile learning and teaching purposes are booming in many parts of the world, primary, secondary and tertiary education in Tanzania still find it very limited said (Nihukia, 2011). Supplementary, Kafyulilo, (2012), stated that the usage of mobile phones is low in Tanzania even though this technology tool is accessible in schools and colleges.

2.5 Mobile Assisted Language Learning (MALL)

This is a subarea under the field of mobile learning. Many studies done under this area, have supported the hypothesis that mobile technology can definitely increase learners' second language acquisition. However, because of the lack of cumulative research; issues such as reliability of findings, scalability and in terms of acquiring linguistic knowledge and skills have raises over time because most of the theories and concepts used by researchers were only used in one or few papers.

This MALL research discusses aspects of the usage of mobile technology in supporting language learning, whether or not they can enhance learners' second and foreign language acquisition. It also touches the attitudes toward how this technology is being perceived, how many people want to actually use this technology for the purpose of learning a new language. (Chang & Hsu, 20011; Cheng et al., 2010 as cited in Olga Viberg & Ake Gronlund, 2007-2012).

According to Pachler et al., (2010) study (as cited in Olga Viberg & Ake Gronlund, 2007-2012), the rapid increase of mobile technology, they will influence cultural practices as well as allow new contexts for learning. In addition, their integration into the teaching and learning field is being constantly increasing to the extent that educators

need to understand how this technology could be used to support all the different kinds of learning (Kukulska-Hulme & Shield, 2008 as cited in Olga Viberg & Ake Gronlund, 2007-2012). So far, there are more advantages than disadvantages over the use of mobile devices for language learning such as flexibility, low cost, small size and end user friendliness just to mention a few as stated by (Huang et al., 2012 as cited in Olga Viberg & Ake Gronlund, 2007-2012). While for some of the highlighted disadvantages, small screen size and limited presentation of graphics are relevant as cited by (Albers & Kim,2001 as cited in Olga Viberg & Ake Gronlund, 2007-2012). However, regardless of all those drawbacks, researchers such as Thornton and Houser (2005) study (as cited in Olga Viberg & Ake Gronlund, 2007-2012) showed that the use of mobile devices can really be used for delivering language learning materials to the students.

2.5.1 How does Mobile Technology Assist the Acquisition and Development of Linguistic Knowledge and Language Skills?

Most of the papers focuses more on examining the vocabulary acquisition, listening and speaking skills in terms of the linguistic knowledge skills gained. Several suggestions have been given regarding the language learning benefits provided by the use o MALL, this include the integration of mobile technology in both formal and informal contexts. Learners are part of the creation of the learning content whenever they engage in the authentic learning. These devices are really useful to support the practices of listening and speaking skills and they are often used for vocabulary acquisition while they are measure on learners by surveying their attitudes.

2.5.2 About MALL Technology

MALL Technology basically involves devices that are small in size compare to a normal PC. For example the smart phones, it could be said that they are one of the most smallest MALL devices been around for quite long time now. With the duo usage of sending and receiving calls and messages (SMS).Researchers such as Thomton and Houser have made used of the MALL technology to introduce the English language in a Japanese university by using messages to provide vocabulary instructions to the students. The

project consisted on some type of teaching English vocabulary to Japanese student which lesson's were sent via email three times a day. All students were receiving a total of five words per week and were tested every two weeks.

It is cleared that the smart phones today are way better than those developed years ago. Today's phones specially those known as smart phones function on an operating system such as Android, iOS, Symbian and Microsoft's Windows just to mention a few, are some of the top most used operating system people go about when purchasing an smart phone. Their features are more than just making and receiving calls or sending and receiving messages, but going way beyond that like browsing the internet, accessing the Global Positioning System known as GPS, take pictures, etc.

Despite all that today's smart phones has way better graphic and processor capabilities compared to the old versions and even to some computers, without forgetting the sounds quality. All these great features has contributed to the developers' feelings of creating more significant applications for the current sophisticated phones.

More on the MALL technology devices involve the well known tablets, those are devices functioning just like smart phones and computers. However, they are bigger in size than the cell phones and smaller than the personal computers. In addition, they are also operating in different operating systems just like the cell phones. However, their screens are bigger than the smart phones' screens allowing users to perceive better resolution and view while watching medias or playing video games.

The above technology are some currently in the market and supportive to Mobile Assisted Language Learning (MALL).

2.6 Existing Mobile Application on Language Learning

Here are some among the many applications existing in the market today and available to MALL purposes.

2.6.1 Spanish! On smart phone

Spanish! Is a learning application tool, a vocabulary building Spanish application very similar to flashcards but differing in that it processes AUDIO and an intelligent tracking system with the ability of learning fast. It allows users to immediately select from the right and wrong options after they flip to an answer. The application has the ability of remembering the wrong words as well as the right ones. However, it focuses more on the problematic items, while using longer time between repetitions of learned material.

FIGURE 1. screenshot of the Spanish! App on an smart phone device.

The Spanish! App contains around 1000 Spanish words with their AUDIO. It allows the reverse mode of studying, this means Spanish to English and vice versa. It is featured with the browse mode which allows users to review back all the words and also allow the customization of words. However some relevant drawbacks are that many difficult words are incorporated, limited language and that it is not free. The below table illustrate a clearer view of the pros and cons of this application.

TABLE 1. Pros and Cons of Spanish! application

PROS	CONS
• Has AUDIO incorporated. • User can practice after lesson. • It can remember users' selections. • It provides large list of vocabulary. • It allows reverse mode system. • It allows the progress tracking. • It allows the browse mode	• Uses many difficult words. • It is only for English or Spanish speakers. • It not free • Available of only one Operating System. • Not specific target users.

2.6.2 Spanish - Learn Spanish (Hello - Hello) on Ipad

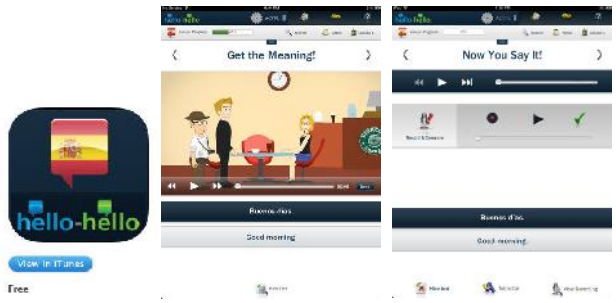

FIGURE 2. screenshot of the Spanish - Learn Spanish (Hello-Hello) on iPad

This is an animation enriched application designed to teach vocabulary to users. Although the application is free, and provides a lesson free, you must purchase the remaining 29 lessons where each is worth for $1.99 and has many languages to learn from while it also making use of good graphics, it has no Bahasa and it is only available for Apple iOS platforms, it is also lacking on some daily some basis modules which users could benefit from such as number system, which makes it limited in vocabulary.

The below table illustrate a clearer view of the pros and cons of this application.

TABLE 2. Pros and Cons of the Spanish - Learn Spanish (Hello - Hello)

PROS	CONS
• Application is Free. • It provides a good pool of languages. • It provides interactive exercises. • Good graphic definition.	• Available for only iOS platform. • Lessons have to be paid. • The number system module is not included among the courses. • Targeting tourist only

2.7 Discussion/ Reflection

Based on the above researches, it can be concluded that the development of this project can benefit the targeted users. This is because it will initially provide users with some of the most convenience lessons based on real life situations designed to give the ability to learn a new language vocabulary such as Spanish in the most convenient way by making use of their mobile devices to study anytime, anywhere.

Since the applications are in general terms targeting teenagers aged from 18 to 23, a lot of factors should be considered in order to claim the success of applications. Teenagers specially Malaysians love playing with their cell phones for many reasons. However, for the purpose of learning a new language, the application should be made attractive enough to keep them using it until for their convenience. Developer should carefully consider the incorporation of sound effects or music, images, background colors and some other key elements such as the vocabulary word selections that will be relevant to students.

Both languages the targeted language and the translated language must be grammatically spelled and pronounced correctly as well as be consistent to most dictionaries, in that way learners will ensure that they are learning the language correctly. The well design of

the pages will also contribute to the attractiveness of the application, keeping them simple will ease the navigation through the features as a whole.

The idea of implementing training modules with exercising in a form of logical games with the incorporation of pictures will serve users as a way to study and later test their understanding. In addition of seeking for user attractiveness to the application, this will start by being lunched for free and available to all potential users. The application will also have Audio recordings for each of the vocabulary words in it, for that reason it is very important to ensure that ensure the word's pronunciation is considerable clear, correct and with the correct intonation so that users will easily pick up the correct way of pronouncing the words.

3 CHAPTER 3
METHODOLOGY

3.1 METHODOLOGY

The project is mainly focusing on learning a foreign language. Therefore, the need of having access to reading materials such as research papers, books, and articles is essential for the understanding and development of the product.

The research methodology will be based on six stages: Project Planning, Literature review, Data Gathering and Analysis, Application determination of components, System Architecture Development, and System Interface or Prototype.

3.2 Project Planning

At this Stage, the identification of the problem statement and project objectives are listed out. This planning phase also involves the identification of the targeted users as well as the project scope, the application development platform as well as the project feasibility study.

3.3 Literature Review

In this Stage, previous studies are analyzed as part of the literature. Other language tools are taken into consideration to study the similarities existing between the applications. This is to ensure that proper guidance and outline for the development of the project is followed and hence, this study also provides us with the most relevant strengths and weaknesses previous learning tools and existing ones have faced.

3.4 Data Gathering and Analysis

During this stage, all intended modules for the application were listed and analyzed by making used of an online Spanish dictionary in order to both, determine the area to which the words and phrases will best fit in the application as well as to ensure the

proper spelling of the words or vocabulary. Five are the modules initially determined to be implemented into the application. Below is the list: members; Parts of the Body; Greetings; Days of the Week; months of the year; Numbers; Family; .

3.5 Determining the Main Components of the application

The The-Voc application encompasses two main components which will be separated into two categories: the lessons and the practice exercises. The first one will give users the ability to navigate through all modules while the second one will help them test their Spanish language enhancement in terms of vocabulary.

3.6 Developing System Architecture

This stage is used to mainly focus on the application system architecture and come up with a clearer picture of the whole idea by highlighting the system functionalities. User has the ability to select the desired module from the provided list and from there, select either going straight to the exercises or to take the lesson.

3.7 Sketching the Interface of the System

In this stage the application design interface is developed to create a more realistic view of how each interconnected interface will look like. Sketching the system will also act as a good guidance for the development phase of the system application, whereby development could easily be made based of what was previously arranged such as the button's positions, labeling arrangement, color, image location, etc.

FIGURE 3. Research Methodology

The development of the The-Voc application does not follow a unique type methodology but adopted other teaching methodologies to enhance the effectiveness of the application. It combines a little bit of the Traditional, Passive Perception, Grammar-Translation and more teaching approaches by providing the word's translation ,pronunciation and visual aid of the targeted language. The table below briefly described some different teaching methodologies.

TABLE 3. Language Teaching Methods

Direct Method Uses a dialogue conversational style in the target language by using oral materials with actions or pictures, without any translation or usage of the mother tongue.	**Traditional Method** Writes out 20-25 new words in a column, putting the targeted words on the left while their meanings on the right writing on native language. **Example:** Car---Kereta ; Eat--- Makan	**Passive Perception Method** Records 40-50 new words with their translations and then listen to the recording as many as needed at normal volume level.
Motor-muscular Method Uses and manipulates the subject designated by the word you want to remember, **example**: (a candle), is matched with a real candle.	**The-Voc**	**The Grammar-Translation Method** Uses learners mother tongue language with little of the target language. Uses grammar rules to put words together and reading of complex texts is initiated early in the course of study.

The Reading Method	The Audio-lingual Method	Creative Method
Focuses more on targeted language and the grammar necessary for the reading comprehension is taught. Pronunciation and conversational skills are place in the second place.	Method promotes dependence mimicry and memorization of set of phrases. It does not provide grammatical explanations. Uses many tapes and visual aids. Vocabulary is learned in context.	Learner finds a word on his native language that sounds similar to targeted language, then writes it down targeted word from native. Example: **The letter ends with a conclusion.** konklusi (kən-ˈklü-zhən) --- **conclusión**

Since time seems to be conscious but project output is to be delivered within the timeframe, the project follows the RAD type method, where RAD stands for Rapid Application Development. This is one of the many methodologies used for software development whereby a quick prototyping is required and there is not much time for planning. However, despite the fact that the project development time is not sufficient enough, there are good chances that they will be needs modify the software in accordance to the requirements. Moreover, because it has to be supervised from time to time in order to ensure project's effectiveness. And after supervision, feedback is given based on project usability, feasibility and functionality. Feedback is then used by developer to change and enhance project before next supervision. This reciprocation continues until everything is clinched and implemented. This is one of the many advantages of using this methodology, because it allows developer leave their plans opened and subjected to changes in order to accommodate requirement changes at any time during the development of the process. This demonstrates how flexible it is compared to other software development methods such as Waterfall which processes flow downward and are not easily reversible. This means if after moved on to another phase, the previous phase cannot be modified easily.

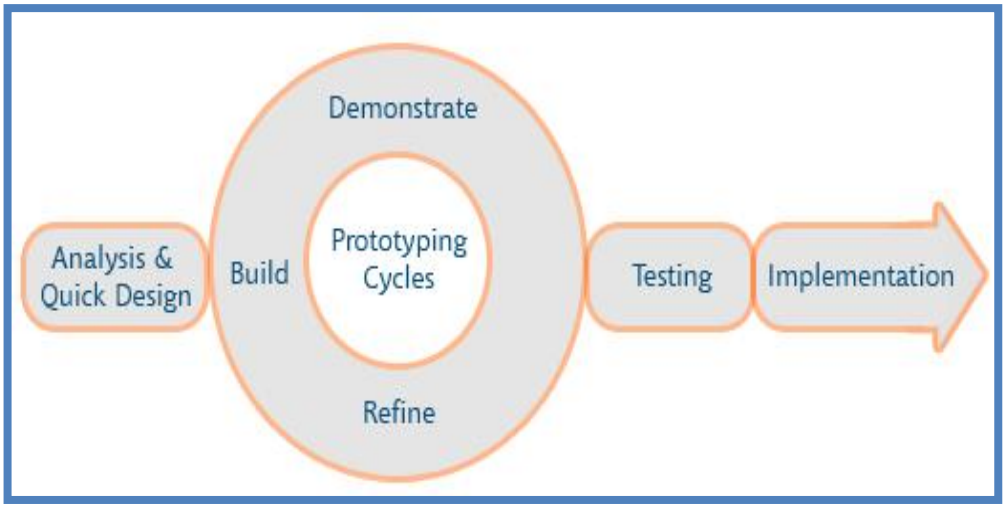

FIGURE 4. Rapid Application Development Structure

3.8 Project Work

Using the above methodology, steps are definitely to be missed because of the short planning time. For that reason only four of the main and critical phases are applicable. Requirement Gathering, Quick Analysis and Design, Testing, Development/Implementation, Prototype

3.8.1 Requirements Gathering:

at this phase, developer and supervisor discuss about the project scope, needs and what are the expected outputs. This phase is terminated after supervisor authorized project initiation.

3.8.2 Quick Analysis and Design:

In this phase simple system architecture together with some basic system interface are design in order to be used later by the developer as a guidance.

The analysis part was done over the system functionalities as well as the usage of adequate colors and contents. The interface design was very important in the way that the background color and content of the module would be familiar to users.

Sounds for words pronunciation as well as the background music is to be carefully selected to ensure the attractiveness and interest used of the application. For this, users were approached and asked for their preferences.

As for the functionality part, existing applications will be taken into consideration and analyzed to study their behavior of the application after any button is pressed.

the gathered requirements are analyzed and the most suitable needs for the project are to be carried out. Some surveys forms were distributed among many university students in UTP. Mostly regarding about what are their point of view with regards to the use of mobile devices as another way of learning a language.

3.8.3 Prototype:

In this phase, a rough version of the application system is built so that mistakes can be easily caught. It is mostly used to explore the functionalities and of the product design. This phase embraces also the coding of the system.

The use of an additional application such as Eclipse software in concordance with other Android development tools (ADT) are required to develop an application that is intended to be run in an Android platform. Eclipse is a software that provides developers with the ability to configure the Extensible Markup Language (XML) by means of a graphical interface.

3.8.4 Testing:

In this phase, the output product is tested to see whether it meets all specified requirements. However, since large number of programs components are already been tested and RAD allow the reusability of existing components, this will allow work to be completed within timeframe.

Certain requirements are to be met before performing the testing either for the full system or for a single module, it is very important to have the Android Application package file (APK) installed into the testing device, the Application

Programming Interface (API) level 8 or above should be running as well on the same device to avoid issues with the application interface.

The product will be tested on three different devices, laptop by using an emulator called BlueStack to create an Android supporting platform on the pc, it will also be tested on a regular Android cell phone as well as on an Android tablet. This is because the three devices will present different density per pixel intensity as well as different screen sizes and resolutions which is good to detect any possible error.

At the end of this phase, users will be asked to complete a system usability scale questionnaire which will be hosted online to easily reach and have responses back from users.

3.8.5 Development/Implementation:

Since the RAD methodology is being used, UTP students are asked for help in giving feedbacks from the ongoing application, in that way changes and improvements are caught and handled on time. At this phase the application is up for evaluation.

3.9 Development Tools

Basic tools needed in order to complete this project are :

- Hardware
    - Personal Computer for Coding
    - Android device (smart-phone) for testing purposes.
- Software
    - JDK 1.6
    - Eclipse IDE 3.7
    - Android SDK

4 CHAPTER 4
RESULT & DISCUSSION

4.1 Result & discussion

The gathered and analyzed data from the methodology phase leads to the results displayed in this session. As it has already been stated in previous sessions of this project, the application will consist of two big components known as modules where all the lessons will be residing and the exercise from where users will be able to practice and measure their level of understanding.

4.2 Data Mining Result of the Application: The-Voc

The words included into the application as part of its vocabulary were carefully analyze and corrected with the help of an online dictionary together with the help of both languages native speakers. Below is the list of all the modules included in the application.

1. Numbers
2. Parts of the Body
3. Family members/ Relatives
4. Days of the week
5. Months of the year
6. Greetings / conversations

4.3 Basic System Architecture Flowchart

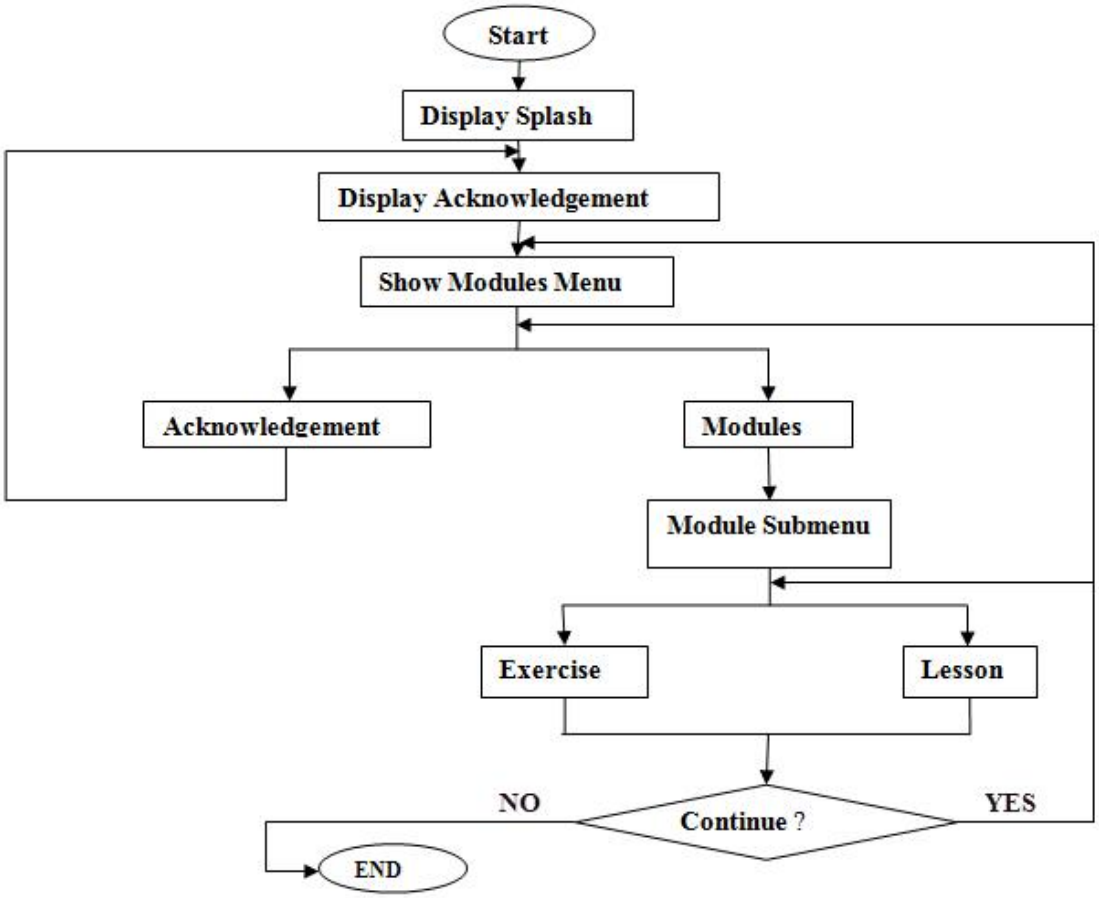

FIGURE 5. System Architecture Flowchart

Figure 5 shows how the application will work. On the launch of the application, user is brought to the splash screen, acknowledgement and then the menu. The user chooses any of the six modules that they want to learn on. Upon selection, user will be brought to another selection screen where they have to select the activity they want to do, which is either lesson or exercise, and from their selection they will be displayed with either the lesson or exercise activities.

4.4 System Prototype

The picture below Figure 6, illustrates the different screens of the mobile language learning application project known as The-Voc. The graphics are organized in a way that they can be pre-visualized at the time that each screen is displayed in sequence denoting the interaction between each other. This is basically to represent the way the application will be unfold in a shot by shot manner. After the application is loaded, a splash screen is shown welcoming user, then user is presented with the module list, after done selecting the required module, the following screen will provide user with the choices of selecting either the exercises or the lesson.

FIGURE 6. Application Operation's Process

4.4.1 Module design wireframe for lessons and Exercise

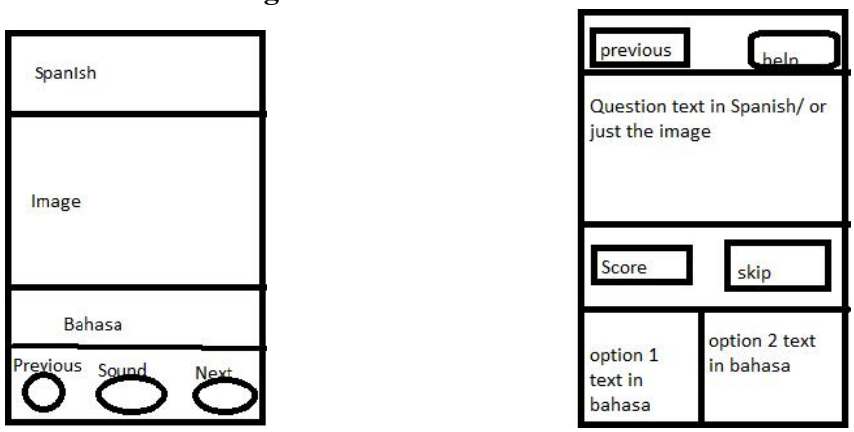

FIGURE 7. Wireframe of application lessons and exercises

4.4.2 System functions and modules

FIGURE 8. Splash, Acknowledgement, Main Manu

Note: Whenever a Category module is selected from the Main Menu, the user will experience another selection screen for them to choose an activity to do, whether it is Lesson or Exercise. The selected screen is represent its module category.

4.4.3 Modules 1: Days of the weeks; Lessons' screenshots

4.4.4 Modules 1: Days of the weeks; Exercises' screenshots

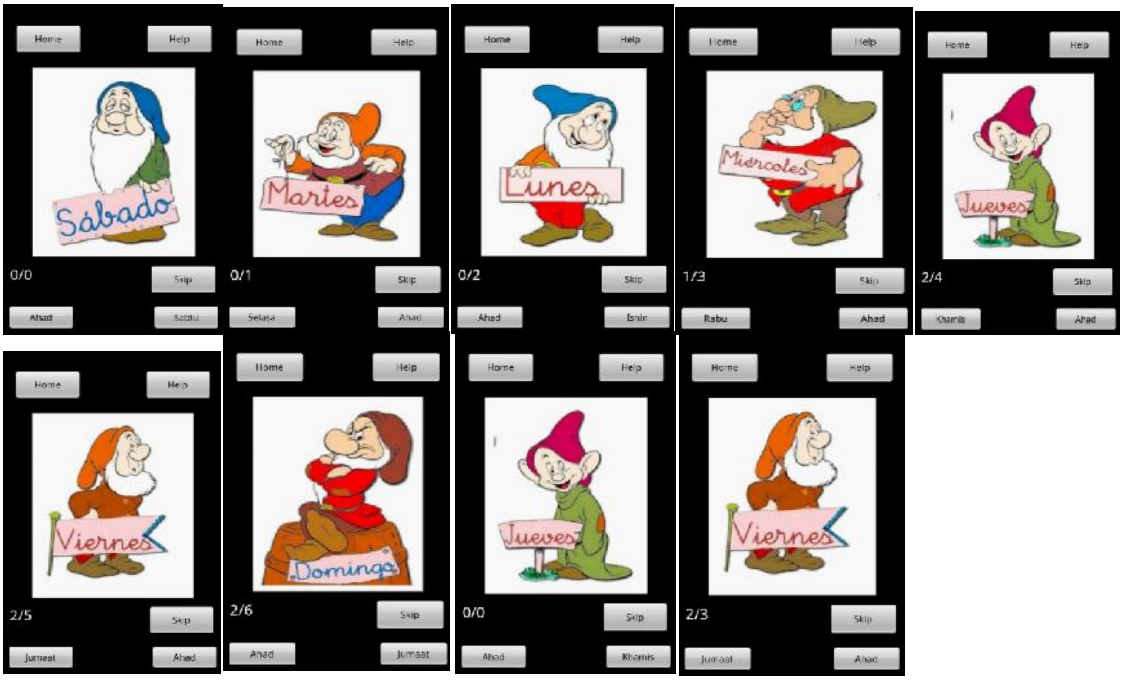

FIGURE 9. Application Lessons and Exercises for module 1

4.4.5 Exercise Activity

All modules are provided with the same wireframe design for lessons and exercises. The Number module's exercise however, requires users to have the basic math understanding in relation to the four basic math operations (addition, subtraction, multiplication and division). The Family module's exercise session requires users to have a well understanding of how family members are related. The rest of the modules, Part of the body, days of the weeks, Months of the year, Greetings are very straight forward in both lessons and exercises' sessions. The is also a hint bottom provided, which user can get access by pressing at the "help" bottom shown in the screen. The "Skip" bottom will allow users to move to the next questions, this goes on until user decides to go to another module. The idea behind it is to give users the chances to do revise the lessons as possible and to easily pick up the words and proper pronunciation so that they can do good in the exercise session. Time is specifically devoted to vocabulary by using the proper and simpler names for things and using challenging lessons as travelling down the module's list. This method is adopted from the Montessori teaching technique which puts vocabulary as the central work of lower elementary and major activity of upper elementary in order to give students the opportunity to grab and remember as much vocabulary as possible by simple performing the activities in a way such that labels and pictures matched to ease words memorization. In the lesson session, all pictures are matched to their names in Spanish, translated in Bahasa so that learners have the quick picture of what the objects are and how their called in the targeted language (Spanish). This technique is also adopted from the Montessori teaching technique.

4.5 Data collection and Findings of survey

The application was tested from the very beginning phase of its development phase, the targeted users were presented with the 3 application's modules and given a brief walk through of their functions and how they flow from one phase to another, they were also asked to test the application. A small number of users were selected for this testing because of the some constrains. However, the result collected were crucial for the

success of the application as a whole, because examples are way better and easier to understand than general descriptions.

4.5.1 Usability Test

The measurements of the usability testing conducted were achieved by means of a usability system scale. In this system, users were required to complete a survey after they were provided with the first application's module , to show them the level of fidelity to expect from the rest of the application modules. User's were asked to focus only in certain functions and aspects of the design. Each question of the survey were ranged from the extreme points of strongly agree to strongly disagree.

Below are the results from each of the survey questions used for the testing.

Question 1: I think that I would like to use the application.

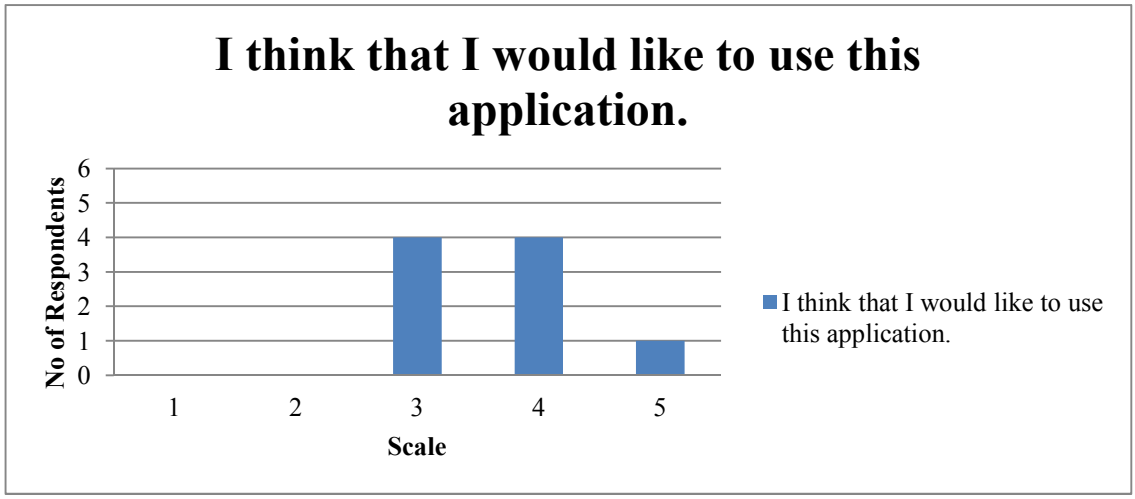

FIGURE 10. Question 1 Results from System Usability Scale questionnaire

The above figure 10, indicates that out of the 10 responders targeted for the application's walk through of three of its modules, 5 of the user's responses were clustered at scale 4 out of the 5. Meaning to say they were sure of them wanting to use the real application. It could then be deduced that more than 80% in total from the user's responses would like using the application.

Question 2: I thought the application was easy to use.

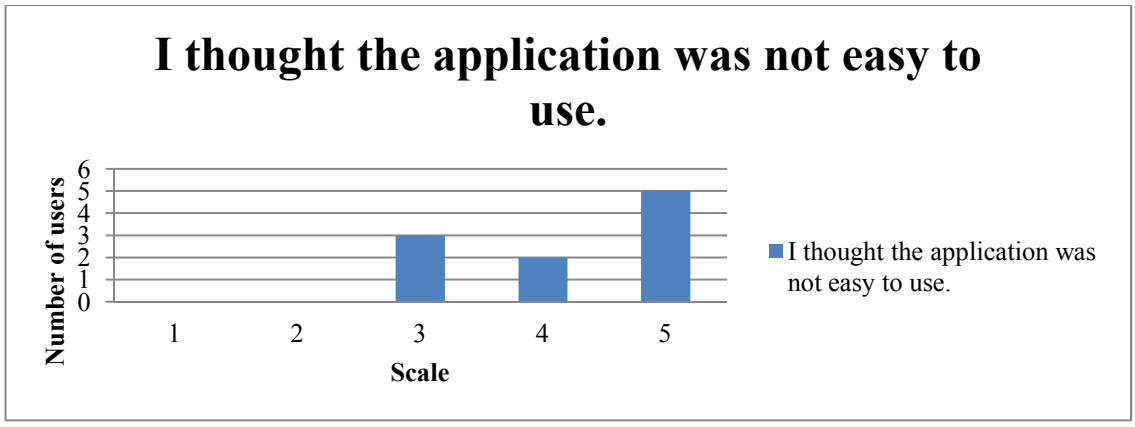

FIGURE 11. Results from Question 2 of the System Usability Scale questionnaire

The above figure 11, shows that out of 10 participants, they all agreed that they thought the application was going to be difficult to be used just like many existing currently in the market. However from the results, it is feasible that they consider that the application's user friendliness will be perceived with this application because none of the user's responded negatively about the question.

Question 3: The application has adequate capabilities and functions.

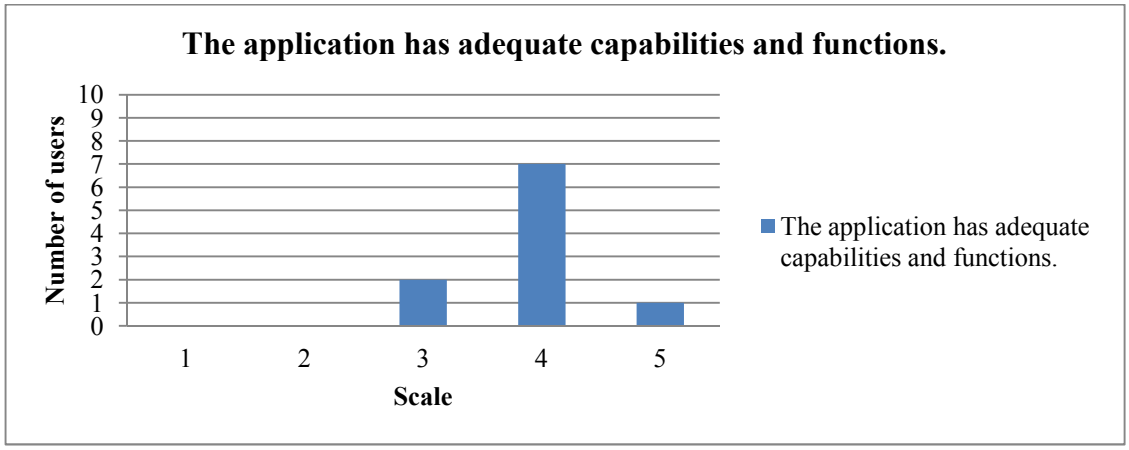

FIGURE 12. Results from Question 3 of the System Usability Scale questionnaire

The figure 12, above represents the answers of the question whether or not the application has adequate capabilities and functions. The graph shows that most of the responders found the application to have just adequate capabilities and function, nothing

like unnecessary complexity. It can also be perceived that more could be done to better the application in terms of functions.

Question 4: I thought there was too much inconsistency in this application.

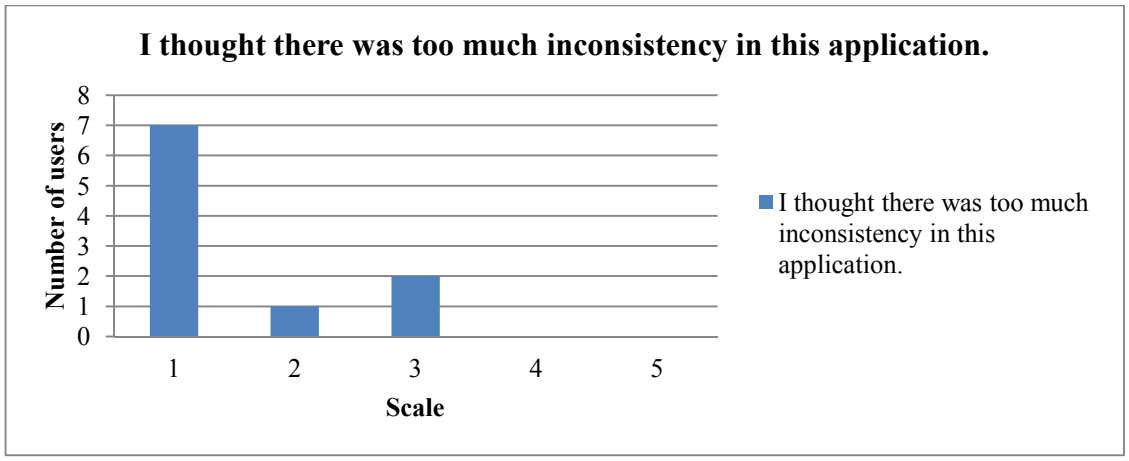

FIGURE 13. Results from Question 4 of the System Usability Scale questionnaire

The figure13, above indicates the number of people that thought the application was inconsistence. Seven users out of ten strongly disagreed regarding inconsistency of the application because they found it to be consistence. In overall it can be concluded that more than 80% found the application to be consistence.

Question 5: I think I could learn more using the application

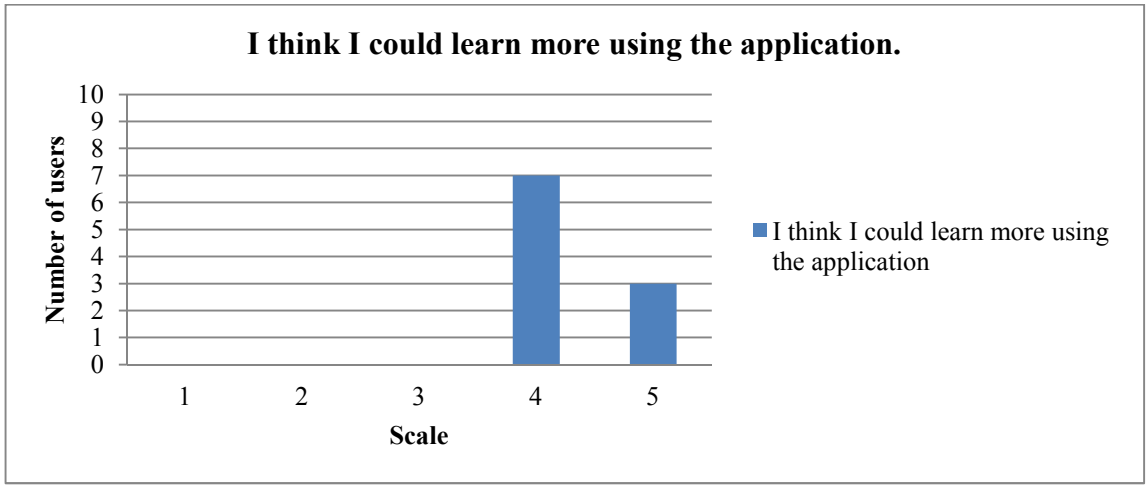

FIGURE 14. Results from Question 5 of the System Usability Scale questionnaire

The figure 14, above expresses the number of people believing to gain more knowledge by means of the application and expecting to learn more by using it. The graph shows that seven responders chose scale 4 as their answers, while the other three went to the strongly agreed answer represented by scale 5. This indicate that in overall the candidates are eager for the application launching.

Question 6: I found the system very hard to use.

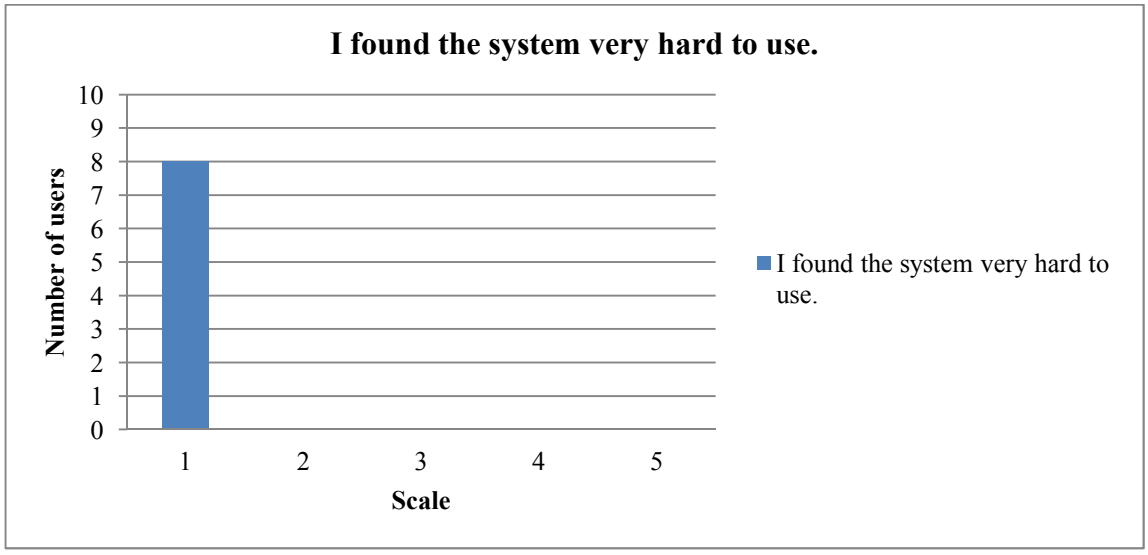

FIGURE 15. Results from Question 6 of the System Usability Scale questionnaire

The figure 15, above represents the results given by the ten selected users. Out of ten, eight found the application easy to use so they strongly disagreed on the question of whether it was hard to use or not, the remaining two users however, did not respond to the question and leave it blank. The result shows that the system will not be hard to use.

Question 7: The application interface is enjoyable.

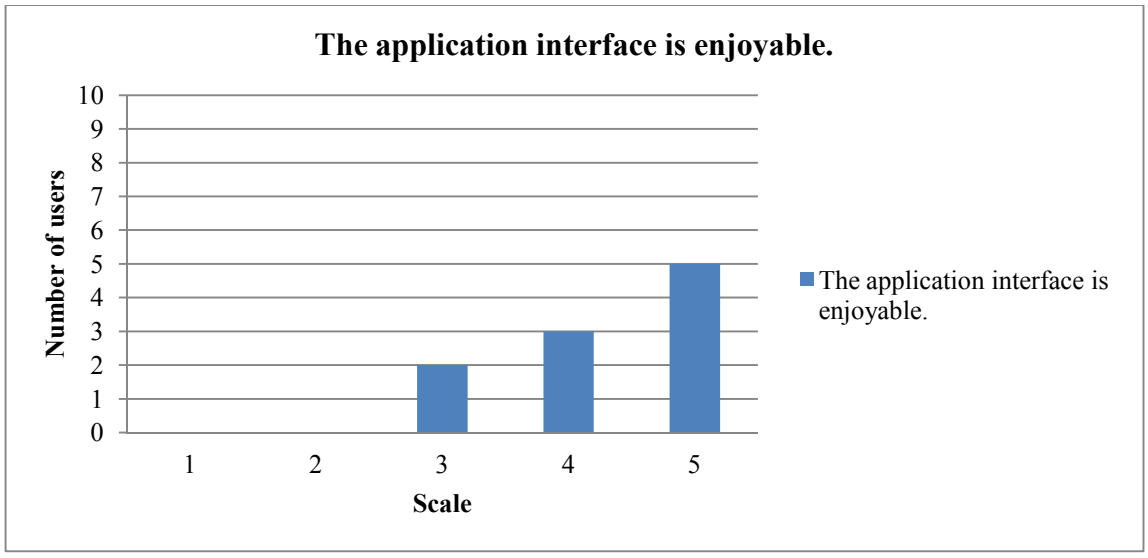

FIGURE 16. Results from Question 7 of the System Usability Scale questionnaire

The figure 16, above represents the answers given for the question of whether the application's interface was enjoyable or not. The result shows that 5 of the responders chose scale 5 while the remaining users were distributed between scale 4 and 3. However, the overall indicates that they are happy with the application interface.

Question 8: I need more tutorial to use the application.

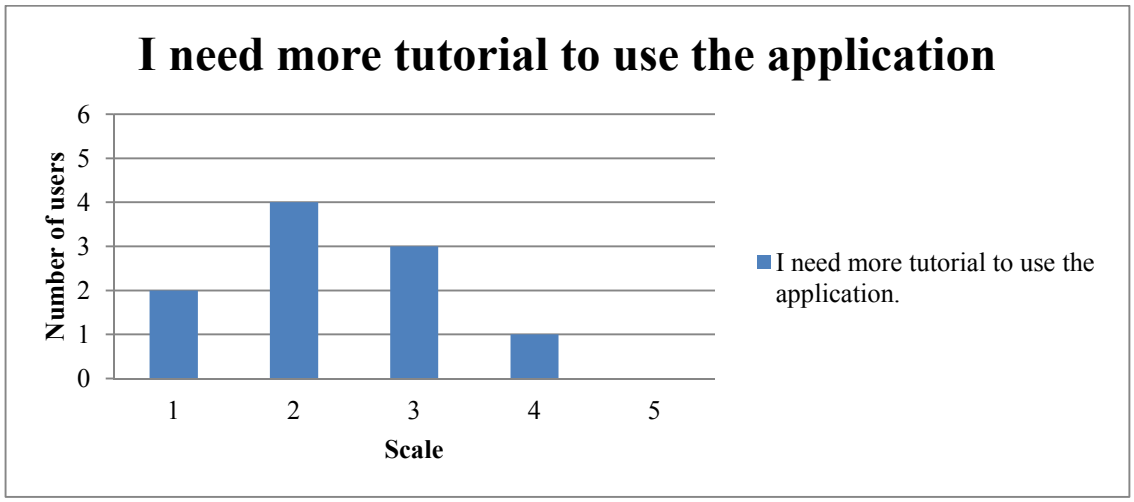

FIGURE 17. Results from Question 8 of the System Usability Scale questionnaire

The above figure 17 shows that 9 of the selected users disagreed on requiring the need of tutorial sessions in order to use the application due to its ease usage. However, the highest number of users disagreeing on this are clustered at the scale 2. While only two out of the ten candidates strongly disagreed, 3 remaining neutral, there was one of the responders who suggested having tutorial for use the application.

Question 9: Overall, the application satisfies me.

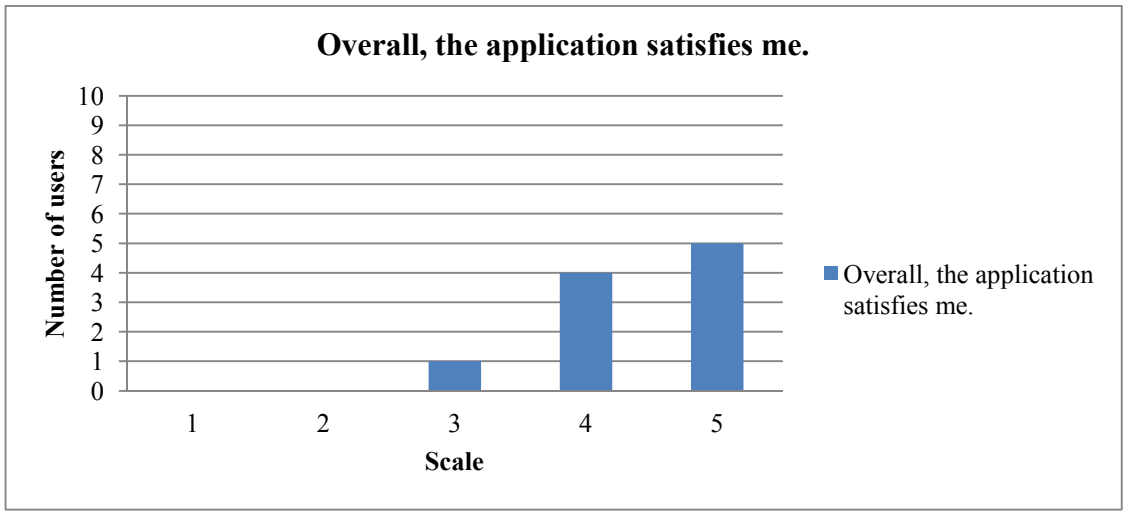

FIGURE 18. Results from Question 9 of the System Usability Scale questionnaire

The above figure 18 shows that all responders were mostly satisfied with the application, 50% of them actually strongly agreed that they were satisfied with the application. Four users out of the ten, agreed on that they were also satisfied with the application and were interested on using it.

Question 10: I found the application module contents not interesting.

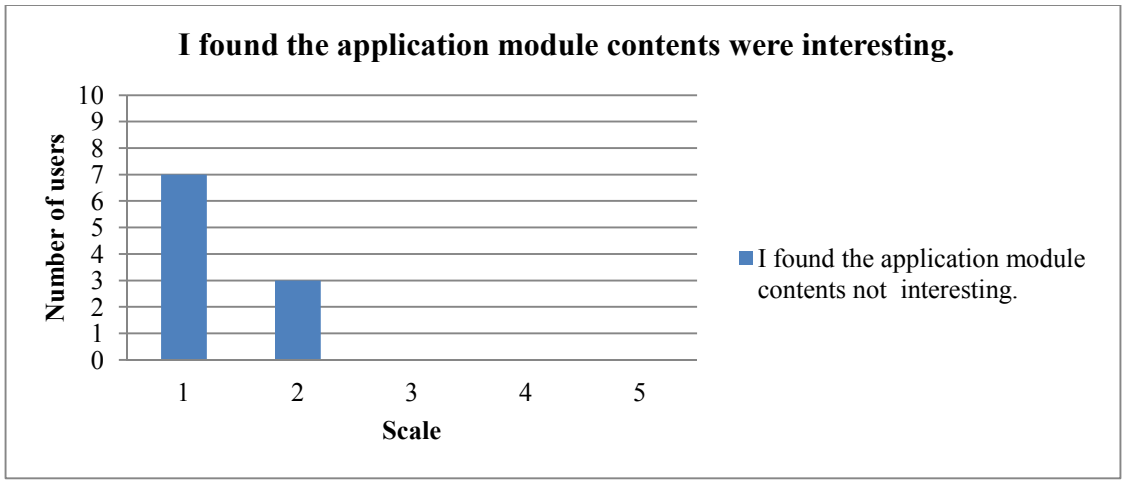

FIGURE 19. Results from Question 10 of the System Usability Scale questionnaire

The above figure 19 shows the results from the question whether or not users perceive the module's content of the application not interesting. From the graph, it is feasible that seven of the responders strongly disagreed on that the modules were not interesting. The remaining three on the other hand just agreed about the question and responded with a scale of 2. This means that the participants found the modules interesting.

System Usability Scale's Questionnaire average score

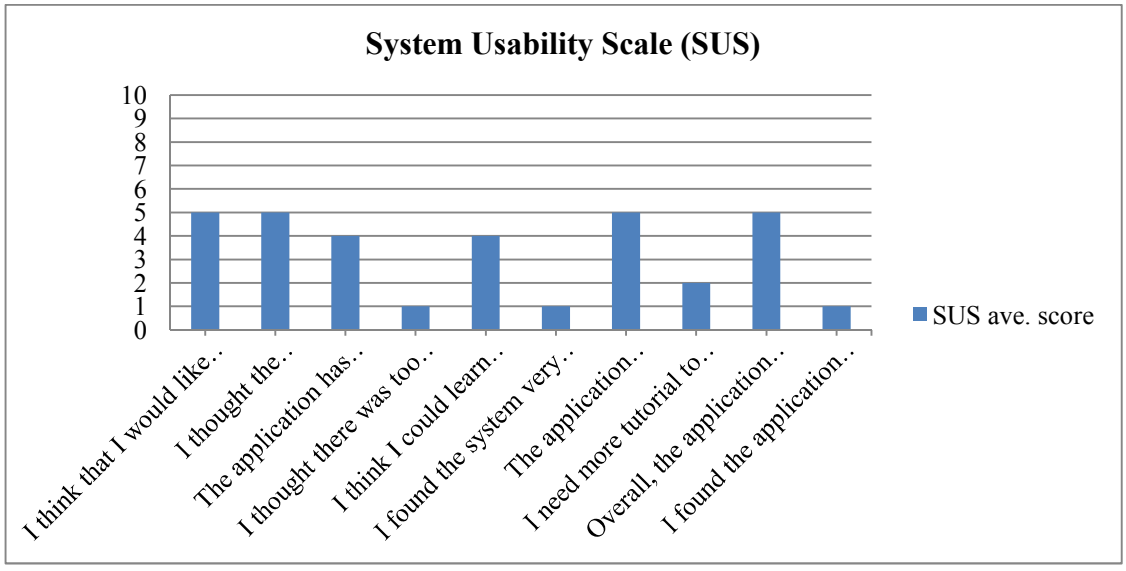

FIGURE 20:Clustering results for each answer about the SUS scale

The above graph, figure 20 shows the highest rates from each of the question's responses to facilitate the calculation of the SUS score. The questions numbered 1,3,5,7 and 9 will be taken as the positive statements. For the negative statements however, questions numbered 2,4,6,8 and 10 will be considered.

4.6 SUS table calculation

TABLE 4. Calculation of the SUS

Q. No.	Questions	Strongly disagree 1	2	3	4	Strongly agree 5	Calculation
1	I think that I would like to use the application.	○	○	○	○	✓	5-1=4
2	I thought the application was easy to use.	○	○	○	○	✓	5-1=4
3	The application has adequate capabilities and functions.	○	○	○	✓	○	4-1=3
4	I thought there was too much inconsistency in this application.	✓	○	○	○	○	5-1=4
5	I think I could learn more using the application	○	○	○	✓	○	4-1=3
6	I found the system very hard to use.	✓	○	○	○	○	5-1=4
7	The application interface is enjoyable.	○	○	○	○	✓	5-1=4
8	I need more tutorial to use the application.	○	✓	○	○	○	5-2=3
9	Overall, the application satisfies me.	○	○	○	○	✓	5-1=4
10	I found the application module contents not interesting.	○	✓	○	○	○	5-2=3

The above Table 10, illustrated a well separated table where the positive questions or odd are indicated with a light blue color at the background while the negative questions however, are indicated with a green background color.

All questions acquire a value between 0 and 4. After all values are collected, they will be added together and finally multiplied by 2.5. having the final result somewhere between 0 to 100.

The formulas to obtain the average scores for the questions as follows:

Odd-numbered questions

Average score = (Scale position – 1) * 2.5 / number of users

Even-numbered questions

Average score = (5 – scale position) * 2.5 / number of users

SUS= 4 + 4 + 3 + 4 + 3 + 4 + 4 + 3 + 4 + 3 = 36 *(2.5) = 90

This value 90 indicates a great A which is a good result in order to ensure the application will cover these three important factors. Effectiveness, Efficiency and Satisfaction.

4.6.1 User Perception

User acceptance test of the application is a very important aspect during the prototype testing . therefore a survey was distributed to determine the level of acceptance of the application from users.

Question 1: Are you Spanish?

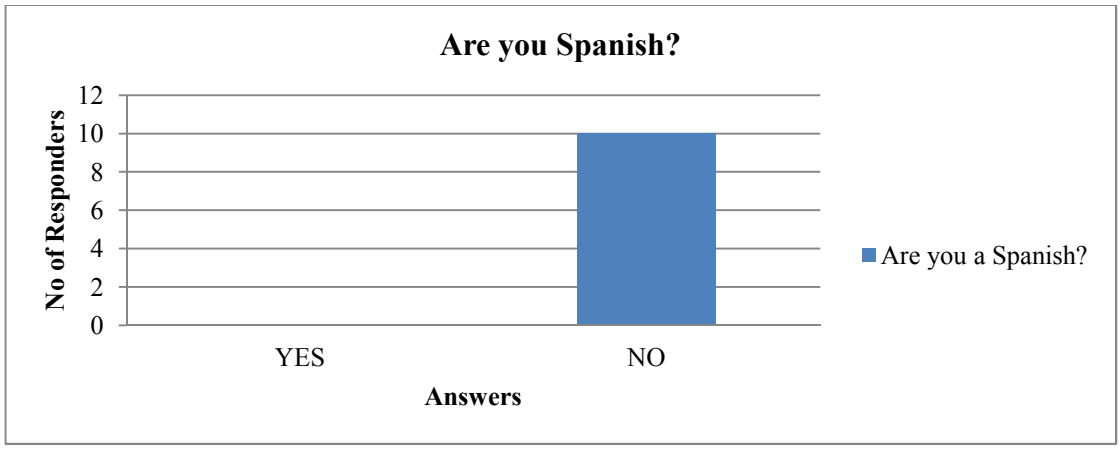

FIGURE 21. Results from Question 1 App Prototype Testing Survey

The figure above 21, indicates that none of the candidates participating on the application prototype testing was Spanish.

Question 2: How would you rate your fluency in Spanish?

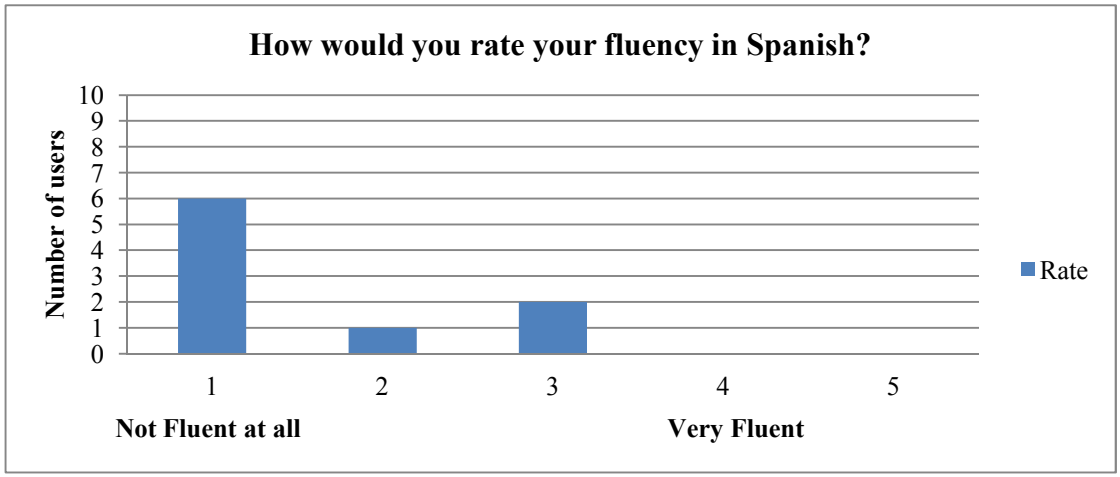

FIGURE 22. Results from Question 2 Prototype Testing Survey

The above figure 22, shows how many of the participants consider being fluent in Spanish language and how many are not on a scale of 1 to 5, where scale 1 indicates "Not fluent at all" and scale 5 depicts "Very fluent". The result shows that 6 of the participants are not fluent at all rating the 1 scale, one rated the scale of 2 and 2 rated the

scale of 3. This question intended to analyze how many of the participants had prior knowledge of the language.

Question 3: Is the application easy to use?

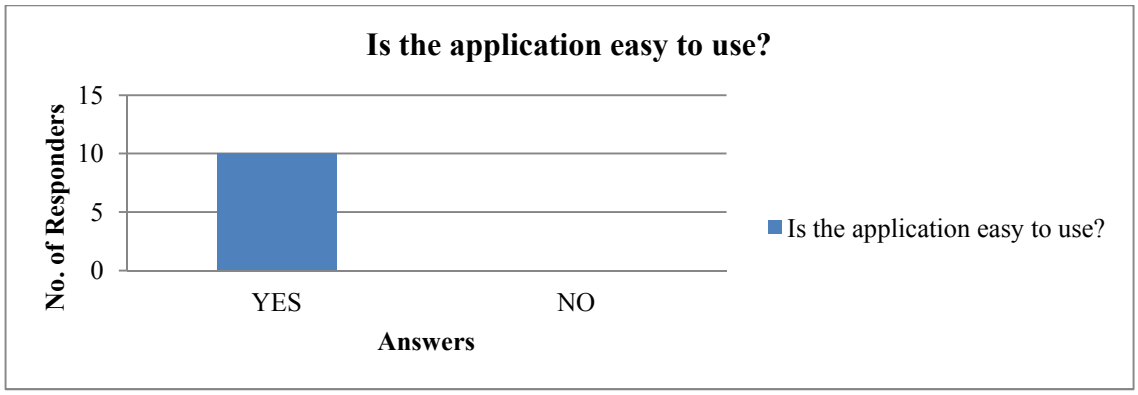

FIGURE 23 Results from Question 3 Prototype Testing Survey

The figure above 23, shows that all participants perceived the application as user friendly and easy to use.

Question 4: Did you required the assistance of the "Help" button or any additional Tutorial?

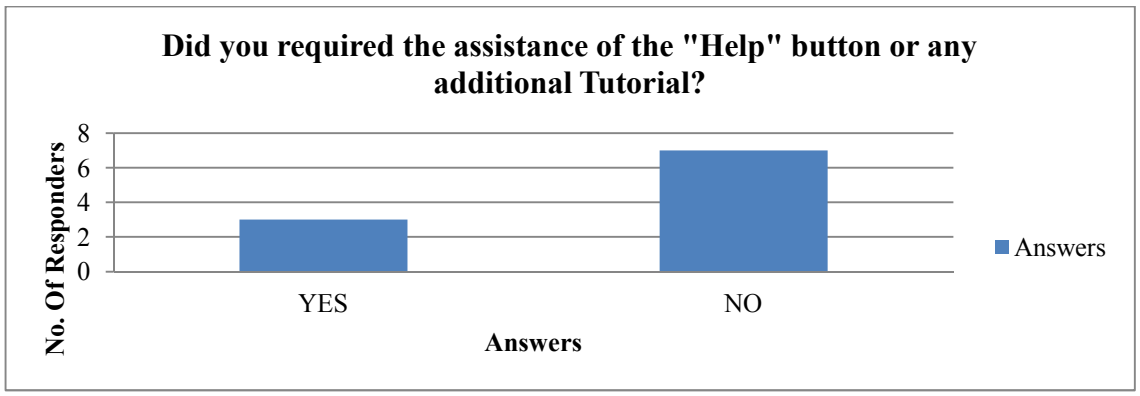

FIGURE 24. Results from Question 4 Prototype Testing Survey

The above figure 24, shows that the majority of candidates were able to challenge themselves by not making use of the Help button and yet able to get a satisfactory result from the number of correct answers. However, a small number of participants made use of the Help button in some particular questions.

Question 5: Do you consider the application as suitable for any novice in the process of learning Spanish?

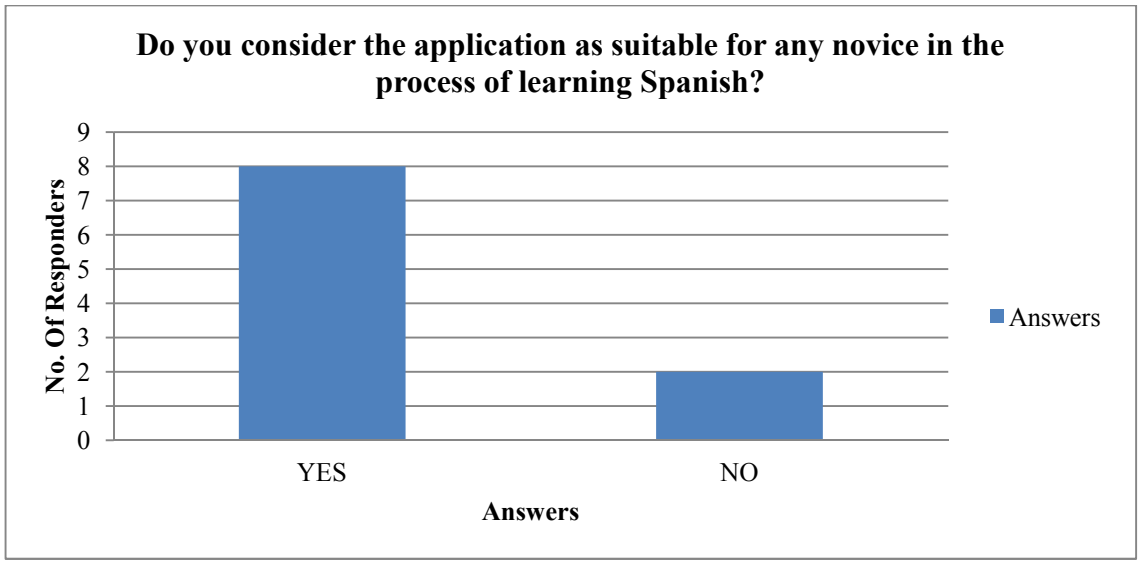

FIGURE 25. Results from Question 5 Prototype Testing Survey

The figure above 25, shows that eight out of the ten participants consider that the application is suitable for novices and can help them pick up many skills in the language.

Question 6: Is the interface of the system suitable to keep users interested in using the application?

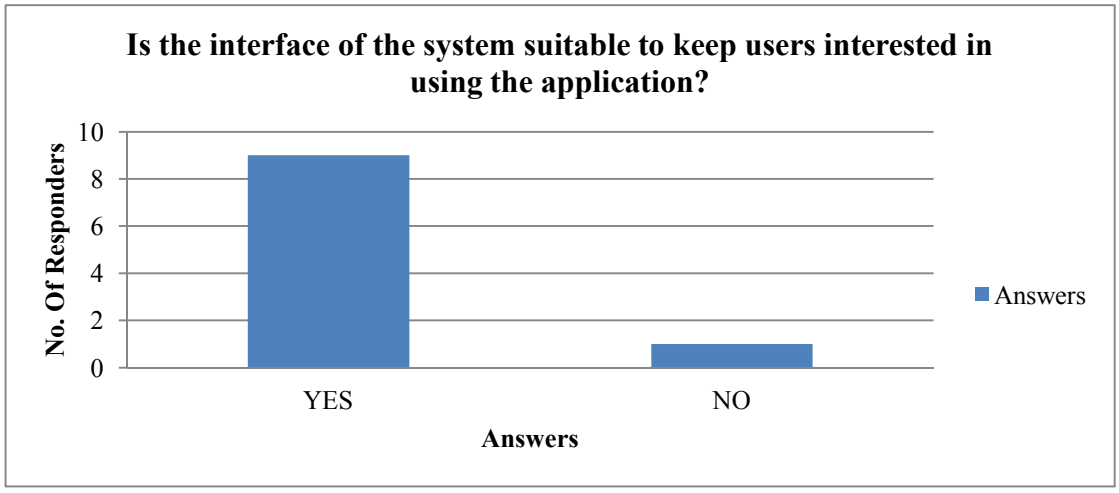

FIGURE 26. Results from Question 6 Prototype Testing Survey

The figure above 26, shows the number of users satisfied with the application's interface and perceived it as attractive and interested. However, one candidate out of ten believed that more improvements are required in the application's interface such as image clarity.

Question 7: Did you learn new Spanish vocabulary from the application?

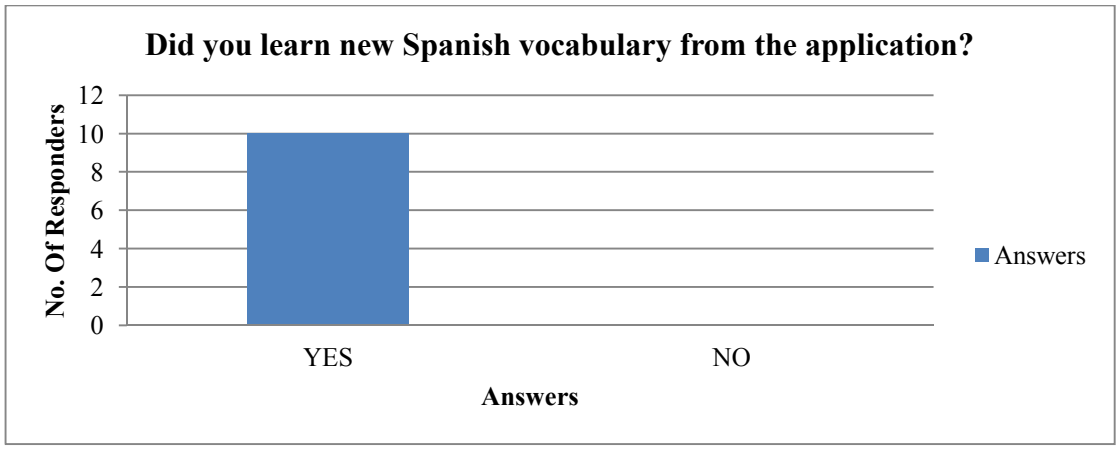

FIGURE 27. Results from Question 7 Prototype Testing Survey

The figure above 27, indicates that all of the participants were very happy with the application's content and actually were able to picked up some good vocabulary words from it.

Question 8: what is your suggestion regarding any improvement of the application that you think should be implemented to make it better?

Since this was an open ended yet optional type of question, not all of the participants responded to it. However, those that did, provided positive and constructive feedback for the betterment of the application. Here are some of the responder's answers.

Participant 1's feedback: "The pictures and sounds are good but require more clarity".

Participant 2's feedback: "I understand the application is for school purposes. However, although the app is good already. In future development, you should add more modules into more levels and chapters. "

Participant 3's feedback: "I like the combination of the pictures and words, the background's pictures of each module representing what the module is all about before actually starting it. Too bad, only a few modules are available now. Hopefully, this will be implemented soon and can have full access."

Participant 4's feedback: " I will start by giving it a Thumbs up to the application's developer, you have been very creative with this application. I got a very challenging moment with the Number module. Lol !!!! you even provided the sign language counting method on it."

Participant 5's feedback: " Although the pronunciation sounds can be heard, there is an annoying background noise that should be removed. It will also be very nice if you can add sounds for the correct and wrong answers so that user is audible notified as well."

4.7 Gantt chart FYP1

TABLE 5. Gantt chart FYP1

Task	Duration (Weeks)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7		Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Selection of Project Topic	2															
Preliminary Research Work	2								BREAK							
Submission of Extended Proposal	3															
Proposal Defense	2															
Project work continues	3															
Submission of Interim Draft Report	1															
Submission of Interim Report	1															

Suggested milestone , process

4.8 Gantt chart FYP 2

TABLE 6. Gantt chart FYP 2

Task	Duration (Weeks)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7		Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Project Work Continues	2	■	■	■	■	■	■	■								
Submission of Progress Report	2							●	K							
Project Work Continues	3								A	■	■	■	■	■		
Pre-SEDEX	2								E					●		
Submission of Draft Report	3								R					●		
Submission of Dissertation (Soft bound)	1								B						●	
Submission of Technical Paper	1														●	
Oral Presentation																●
Submission of Project Dissertation (Hard Bound)																●

● Suggested milestone , process ■

5 CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This project envisions the use of learning a foreign language such as Spanish from using any mobile android device as a learning tool to ease the language learning problems stated in the problem statement session. The project is also intending to deploy the potential use of mobile devices especially the use of cell phones in the field of language learning with the aim to increase Malaysian youngsters' skills toward their exposure and acquisition of the Spanish language in general and particularly in the vocabulary.

Subsequently users of the application may eventually better their confidence of speaking the language with less trouble.

5.2 Recommendations

As for some recommendations, there is a need for further studies to be conducted to acquire better product results such as proper language inputs of its usage. This is because due to the shortage of time for the development of the project, many factors could not be taken into consideration. Hence although too much reading was done for the development of the project, more is needed for it to be efficient and go beyond expectation.

So far, the project is to be run in an Android devices only, but I guess it should be an advantage to reach other platforms such as Syambian, Blackberry, and Apple's devices just to mention a few.

5.3 References

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Appendix A: Prototype System Usability Scale questionnaire

Questionnaire: The Aim is to know students Spanish language interest.

For each statement give a scale of 1 , from "Strongly Disagree" to "Strongly Agree", as shown below, and prompt users to answer.

Q. No.	Questions	Strongly disagree 1	2	3	4	Strongly agree 5
1	I think that I would like to use the application.	○	○	○	○	○
2	I thought the application was easy to use.	○	○	○	○	○
3	The application has adequate capabilities and functions.	○	○	○	○	○
4	I thought there was too much inconsistency in this application.	○	○	○	○	○
5	I think I could learn more using the application	○	○	○	○	○
6	I found the system very hard to use.	○	○	○	○	○
7	The application interface is enjoyable.	○	○	○	○	○
8	I need more tutorial to use the application.	○	○	○	○	○
9	Overall, the application satisfies me.	○	○	○	○	○
10	I found the application module contents not interesting.	○	○	○	○	○

Thank you very much for completing this questionnaire.

Appendix B: Prototype System User Perception's questionnaire

The aim of this survey is to help me to, justify improvements people want to be implemented on the application. It will take some minutes to go through all the modules but only few to complete the survey. This survey will also help me by involving users in determining key issues, identifying and implementing possible solutions. Thank you for your help. **Please return this survey by 3/12/2014 via email.**

User Perception

answer place a tick in the boxes that apply.

1. Are you Spanish?

☐ Yes ☐ No

2. How would you rate your fluency in Spanish? on a scale of 1 to 5, where scale 1 indicates "Not fluent at all" and scale 5 depicts "Very fluent".

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. Is the application easy to use?

☐ Yes ☐ No

4. Did you required the assistance of the "Help" button or any additional Tutorial?

☐ Yes ☐ No

5.： Do you consider the application as suitable for any novice in the process of learning Spanish?

☐ Yes ☐ No

6. Is the interface of the system suitable to keep users interested in using the application?

☐ Yes ☐ No

7. Did you learn new Spanish vocabulary from the application?

☐ Yes ☐ No

8. what is your suggestion regarding any improvement of the application that you think should be implemented to make it better?