

**DEVELOPING INTELLIGENT MOBILE  
APPLICATION FOR TEACHING ENGLISH  
LANGUAGE**

**A THESIS SUBMITTED TO THE GRADUATE  
SCHOOL OF APPLIED SCIENCES  
OF  
NEAR EAST UNIVERSITY**

**By  
ALAN NURADEEN IBRAHIM**

**In Partial Fulfillment of the Requirements for  
the Degree of Master of Science  
in  
Computer Information Systems**

**NICOSIA, 2016**

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Alan Nuradeen Ibrahim

Signature:

Date:

**To my parents ...**

## ACKNOWLEDGEMENTS

My appreciation goes to my patient and kind supervisor Prof. Dr. Nadire Cavus, for her persistent encouragement, guidance, tolerance and continued moral support she gave to me through the duration of my thesis.

I would also like to thank Prof. Dr. Dogan Ibrahim who has been so helpful throughout the duration of my thesis.

I came across a lot of people who were so helpful to me during my educational journey over the past 2 years at Near East University and I am so grateful to them all.

To all the students and staff of the Department of Computer Information Systems and the faculty at large, I am so grateful to you all for your help in one way or the other, I am truly honored.

My thesis would have been a whole nightmare that would have never ended if my lovely friends were not there to assist my limitations and share their enormous experiences with me.

To Temitope Mobolade, Fuad Ahmed, Alando Muhammed, Blnd Rasul, Botan Aziz, Ahmed Mauloud, Rawand Fryad. Thank you so much for being so supportive in every special way you could, it meant a lot to me and added a lot to my life.

Special thanks to my beautiful wife and wonderful son for being so patient and supportive throughout my masters program and thesis. To my lovely parents, siblings and extended family for supporting my education this far, continued moral support and prayers, I will forever be grateful to you.

Lastly to the Allah who gave me the grnhyce and strength to finish my thesis and who has always been there for me, I say a big thank you.

## ABSTRACT

Mobile devices such as mobile phones and tablets are actually being used by a lot of children around the world and this statistic is increased at a shocking rate. Usually children use the mobile devices for communication with their friends or with their parents, or for playing games. Mobile devices can also be used for educational purposes and many researchers have studied and published their findings on using these devices in teaching and self-learning. This thesis is about using an Android based mobile phone in an intelligent manner for teaching the basic English language to children who are new to learning the English language. The age group of the children in this study are 12-15 years old, and the children in Iraq has been considered as the target group in the study. The novelty of the developed system is that the questions are divided into three groups depending upon their difficulties. Normally the learner starts from level 1 and depending upon how many questions are answered correctly the level changes automatically to adjust to the level and the learning ability of the person involved. At the end of questions the results are automatically sent to the parents by e-mail so that the parents can see the levels of their children accordingly. Although the system was developed on a mobile phone it can also be used on tablet computers or PCs with little modifications. It is hoped that the developed system will be useful to young children who are learning the English language as a foreign language. Another advantage of the system is that it will give feedback to parents and teachers and make them aware on the levels of the children.

**Keywords:** Intelligent mobile application; learning English; mobile learning; self-learning; android

## ÖZET

Elektronik cihazlar, örneğin cep telefonları ve tabletler dünyanın her yerinde çocuklar tarafından kullanılmakta ve bu sayı gittikçe korkunç bir şekilde artmaktadır. Genellikle çocuklar cep telefonunu arkadaşlarına veya anne ve babalarına ulaşmak için, veya oyun oynamak için kullanıyorlar. Ayrıca, cep telefonları eğitim amaçlı kullanılabilir ve bir çok araştırmacılar bu cihazlar üzerinde öğretim ve kendi kendine öğrenme konularında çalışmışlar yapmışlar ve bulgularını yayınlamışlardır. Bu tezde, Android tabanlı cep telefonlarını akıllı bir şekilde kullanarak çocuklara temel İngilizce eğitimi vermek için sistem geliştirilmiştir. Tezde 12-15 yaşında olan ve Irak'da yaşayan çocuklar çalışmaya katılmıştır. Tezdeki yenilik, çalışmadaki soruların zorluklarına göre üç bölüme ayrılmış olmaları ve sistemin öğrenciyi otomatik olarak uygun seviyeye yönlendirmesidir. Normal olarak öğrenci birinci seviyeden başlar ve kaç tane soruyu doğru çözdüğüne bağlı olarak soruların zorluk seviyeleri otomatik olarak öğrencinin kapasitesine göre değişir. Soruların sonunda neticeler öğrencilerin öğretmenlerine e-mail olarak gönderilir ve bu şekilde öğretmenler öğrencilerinin seviyelerini görebilirler. Sistem, Android işletim sistemi kullanan cep telefonlarında çalışacak şekilde geliştirildi; fakat küçük değişikliklerden sonra PC veya tabletlerde de kullanılabilir. Geliştirilmiş olan sistemin yabancı dil olarak İngilizce lisanını öğrenenlere yardımcı olacağı ümit edilmektedir. Sistemin diğer bir avantajı ise velilere veya öğretmenlere öğrencilerin seviyeleri hakkında geri bilgi vermesidir.

**Anahtar Kelimeler:** Akıllı mobil uygulama; İngilizce öğrenme; mobil öğrenme; kendi kendine öğrenme

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# CHAPTER 1

## INTRODUCTION

### 1.1 Overview

In Iraq region, English initiated to be given as a foreign language at public schools in 1873. Nevertheless, before that year, personal colleges among the country used to offer the teachings in English and French. Learners believes area unit found to be the foremost very important among the views mentioned on prime of since they were verified to have a giant influence on all as beliefs organize a essential concept in each career knowledge that operates with human behavior and learning (Gvozdenko et al, 2015).

As curriculum was supplied by the Ministry of Education in Iraq, the materials or the method of teaching were not controlled by the English teachers; thus, they were bound to the books and syllabi they were provided by law. In addition, it was not possible for teachers to add other English-related materials as the lesson plans were designed by the Ministry of Education (Kareem, 2010). Thus, the designated textbooks were the key material for teachers (Posner, 2012). Gallup (2012) researched that 92.2% of adults virtually had a mobile phone, around 1/3 of the society (34.1%) connected to the Internet via a mobile phone in the past week. 3 mobile phone users out of 10 stated that the main aim of using a mobile phone was to download video or audio clips or to check their social network accounts (Gallup, 2012). Over 25% of them mentioned that they used the mobile phone to download or to access a mobile app in the past week and 16.3% of them used the mobile phone for listening to music by accessing the radio. Men, young adults and the college students were the mobile phone users carrying out the above-mentioned activities in particular, but they were not the listeners of the radio, which shows that the users were significantly young people.

In a survey performed by the Malaysian Communication and transmission Commission (MCMC, 2013), it had been reportable that itinerants penetration within the recent four years unbroken growing enormously in most countries and also the main mobile phone users were observed to range between seventeen and forty-nine years in age. This is the reason why it should not be not possible mobile phones are utilized for learning purposes as an alternate approach to enhance the normal and formal approaches to English synchronic linguistics learning for graduates. There are some ways during which mobile learning is also used. One among the ways in which considerations the teaching and learning of English synchronic linguistics among undergraduates. Mobile-based approach to teaching and learning of English

synchronic linguistics is exclusive in this it permits the language learners to profit the educational technique in current and a lot of adapted style. This approach may enrich, enliven, or add selection to the traditional methodology of synchronic linguistics learning. Teaching and learning of English synchronic linguistics via itinerant is seen as a viable different to reinforce learners proficiency within the language because it is digitally designed, versatile and mobile - i.e. anytime and anyplace.

For learning to be effective, is very important for lesson delivery to match with students sort of learning. As Bertolami (2011) has advised, one of the focal points of student frustration with the course of study is that the inequality between learning (content) and also the administering of commands. In line with this want, this study presents however a customized intelligent mobile learning system for synchronic linguistics learning, is designed to support effective synchronic linguistics learning via mobile phones that is ready-made to students” most popular learning designs.

English is that the most significant foreign language in the higher proportion of non-English speaking countries. The proficiency of the English language is based on expertise and synchronized linguistics. English language happens to be the most broadly spoken foreign language for people who English is not their native tongues. All over the earth, English language is majorly used as the language main means of correspondence in various regions. In the working world, people who can speak English can easily be employed as bilingual candidates in all countries from countries where their native language is not English. In the colonial age, English has become the most common communication language because Great Britain expanded. Being able to communicate in English allows you to access various countries and cultures. English allows the access to science as well. For the purpose to develop scientifically, the speaking of English language is a major requirement. Learning the alphabet forms the basics of English and it is rather easier and faster to be learnt in comparison to more complex languages, such as Chinese. In addition, in order to enjoy a movie in a foreign language, the need for subtitles or knowledge of foreign languages are not necessary any more as English became dominant in the industry. Most countries of the world are easier to access if English is spoken, without caring about the skin colour, ethnicity or roots. From a statistic that was done by Euromonitor (Euromonitor, 2011), about 35% of people in Iraq speak English from an Eligible population of about 31,700,000. Meaning the total English Speakers in the country is about 11,095,000 where we have about 11,000,000 who have English as their first language. From what we can see here, not a lot of the

population speaks English and this is a reason means of learning the language is needed to be introduced.

In today's globalized world full of competition, an incredible stress on the employment of English within varied operating sectors is available. Nevertheless, there is still an abundant area for improvement on English competence among graduates, particularly those from rural areas. UN agencies are still troubled to understand the rudiments of the language. Whereas the govt puts abundant effort to lift the extent of English proficiency, the quality of English among undergraduates continues to be declining. Amid this issue, effective efforts are desperately required within the academic system to confirm that the long run lots of people are ready to master English language so as to stay competitive within the job market. Since synchronic linguistics is one among the areas that the majority students are still scuffling with (Enxhi, et al., 2012), it might be a district value confronting so as to enhance their English competence. The acquisition of English synchronic linguistics by university students is very important as accuracy in speech and writing is extremely needed in playing educational activities. Therefore, it is necessary for college students not solely to be ready to communicate in English fluently however even be ready to use and perceive English synchronic morphology formulates and operates accurately.

To beat the issues of low English proficiency among students and pupils, it is necessary to spot the key motivators that might facilitate the method of synchronic linguistics learning. During this digital age, technology will play a really necessary role and mobile technology might be one among it. Thus, this study aims at planning a mobile learning tool, specifically the Intelligent Mobile Learning Tool for English Learning to act because the constant support of real-time learning directly via smart mobile devices. Helps reinforce English learning through multi choice questions with quiz-like applications, inquiry based mostly activities and flashcard-like data. The intelligent a part of the application lies in its ability to map the mobile-based English learning content to individuals to most popular learning designs. In terms of implications, this study provides insights on however mobile technologies is utilized to satisfy the quality demand among language learners nowadays.

The fact is, today's students are immensely totally different from the method used a couple of decades ago. Consistent with Eaton (Eaton, 2012), today's students are tech-savvy. They will access a world of resources and data simply at their fingertips. They are hungry for motivation, inspiration, and steorage. They harness their creativeness to precise themselves and demonstrate what they apprehend using technology. They are the creators, not merely customers, of technology. In line with such tech-savvy attributes, the sector of English

education has witnessed fast changes in teaching methodology, material development, and assessment. Ancient beliefs and practices of pedagogy are giving thanks to newer, a lot of innovative ways in which of teaching. Old, authoritative, teacher-centered approaches to teaching are giving thanks to a lot of cooperative and interactive approaches. Audio language labs, that were once thought of a big innovation, have begun to fall out of favor (Davies et al., 2012). The explanation for this possibly had its roots part within the method move far from structural approaches to learning, to a flurry of novel techniques for second learning acquisition (Alexander, 2013). Therefore, for synchronic linguistics learning to be effective, the educational materials designed for college students ought to be attention-grabbing and interactive. They even have to be in line with the educational desires of young generations in todays technological setting UN agency would like a lot of digital motivation, suppleness in addition, eminence.

The application developed as a result of this thesis is divided into three separate levels, as one goes further to subsequent levels, the difficulty at each level increases. This is to say that each level has a role it is playing in the enhancing the fluency of the student. From the first level, it tries to get the student familiar with English words by supporting each option with English to give the student an idea of what the question entails. The second level then tries to connect easy words into simple sentences before the last level deals with more grammatical expressions. All these levels play a role in helping the student become better in learning the language so well.

## **1.2 Problem Statement**

In theory, according to Roozenburg (2015), a problem is being discontent regarding a specific condition or situation. Despite this, another common idea is satisfaction, it has relativeness. The gravity of a problem differs according to different people. The struggle in English language teaching (EFL) is practically the problems encountered during teaching. This research works on different obstacles that English teachers encounter in Mosul city in Iraq. Between 2014 and 2016, mobile broadband usage was from 1.25% to about 1.27%, fixed-line telephony was from 1.94% to about 2.25% and the number of those who possessed mobile phones was from about 33% and then dropped to 29% in 2016 (Euromonitor, 2016). By this, students in the northern part of Iraq do not have the knowledge that learning could be done by mobile devices and computers, so the thesis is help create that awareness. In the northern part of, the need to learn English language is on the high rate now because of the availability of

Jobs that only employ those that understand English language, this application will help resolve such an issue. Mobile learning is a broad technology which is not widely known or understood. And this is because applications and tools that aid mobile learning are not widely available. Also, the devices that handle mobile learning are of a higher specification which might not be afforded by the general public. Access to the internet in most parts of the world is still expensive and this might lead to the inability of people in having access to mobile learning. Concentration to learning on mobile devices could also be affected where by the device has other functionalities and applications that might take away the students attention from learning. About 35% speak English from a population of about 31,700,000. English Speakers in the country is about 11,095,000 where we have about 11,000,000 who have English as their first language and this is not a good score to help the advancement of a country (Euromonitor, 2016).

### **1.3 The Aim of the Thesis**

The aim of the study is to develop an intelligent mobile application to teach English as a foreign language to students of ages 12-15 years. Creating a better understanding to mobile learning.

- The system adjusts the level of the learner.
- Inform the teacher about the progress of the learner.

### **1.4 Importance of the Thesis**

The importance of this study is to aid develop an Intelligent system to adjusts the level of the students learning ability. The application developed, the test section is set to 3 sections with ascending difficulty. These levels are to help the student get familiar with English language gradually until they get so fluent with it.

### **1.5 Limitations of the Study**

The study has some limitations which should be looked into in other researches that will be done in future. This study is limited by the period that begins from March 2015 until October 2016. A more detailed research and application can focus on several age groups and more courses from different sectors. The application is limited to the study of just English, in future-this can be expanded to other languages.

## **1.6 Overview of the Thesis**

This thesis consists of six chapters and references:

Chapter One presents a brief description of the new technology to give the ability for these students to learn the English language as a second language by their mobiles is described, and literature review of the study.

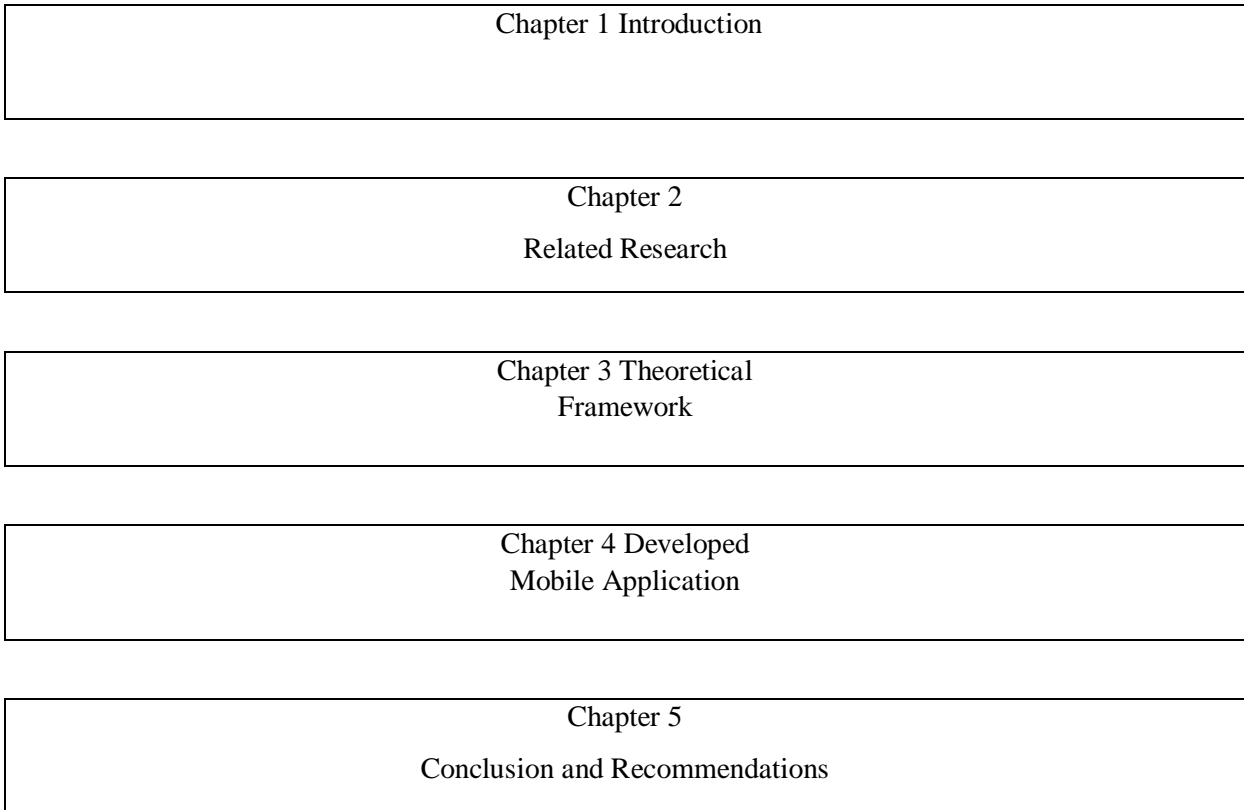
Chapter Two presents an overview of different research on English learning and the use of the new technology as the android systems.

Chapter Three consists of two parts; the first presents an overview of different communication methods and introduces the main topic of learning system nowadays in the schools. It ends that has a broad introduction of the research area. The second part provides more detail about motivated learning by the tablets and personal computers using Wi-Fi systems and the use of them in testing their English language as a second language.

Chapter Four discusses two parts; the first one discusses the education and Communicative Competence. The second part explains the used software in details, specifications and the operation process.

Chapter Five brings conclusion in the acquired results gotten in the latter chapter. Whats more, it presents ideas that might profit the reader to undertake future research work in the region.





**Figure 1.1:** Illustrating the sequential order of the thesis

## **CHAPTER 2**

### **RELATED RESEARCH**

With the event of wireless mobile network and also the improve of the mobile facility, Mobile learning (mLearning) acquire the moderns life and changing into a preferred means in learning. Mobile learning incorporates a heap of benefits in following aspects resembling movability, interactive, simple to work, and Targeted users. So, it attracted a whole range of learners. During this state of affairs, the knowledge in Mobile Learning become a lot. This produces the Intelligence in mobile learning a lot more necessary. For typical information of mobile learning to be gotten we want to get some few terms that makes this science so much valuable.

#### **2.1 Research on Mobile Learning**

Cavus (2016) described that an interactive application has been developed that can be used in teaching English as a second language using little kids stories in mobile devices. It was said that the aim of that study was investigating the degree of assistance of the produced interactive mobile application in order to help students develop their English skills in terms of oral and written skills as well as ability to understand different lexical elements and passages for personal study. The development of this application was including mobile speech recognition engine which would detect the sound and allow students to correct any pronunciation mistakes. The application is programmed on an correspondent basis. 37 learners participated in the study and took a Pre-Test and a Post-Test in order to be assessed in terms of their language learning capabilities. As a result, it has been found out that students have developed statistically significantly in terms of their language skills within the study groups by using the application. Consequently, the application has been decided that it is possible to be utilized for English teaching purposes to foreign language users.

Tan et al. (2015) worked on location-based increased reality for mobile learning: algorithmic program, system, and practice. The technology may function thought-about as chiefly including 2 features: identification of real-world object and show of computer-generated digital contents connected the known real-world object. The technical challenge of mobile is being to spot the real-world object those mobile devices camera aims at. During this paper, they gift a location-based of object identification algorithmic program that has been wont to determine learning objects within the 5R adaptive environment based smart mobile learning

pre-setting. We are going to conjointly offer some background of the algorithmic program, discuss problems in using the algorithmic program, and gift the algorithmic program authorized mobile learning system and its implementation.

Astatke et al. (2015) ready survey on rising and increasing Engineering Education within the geographic area and continent using Mobile Learning Technology and Innovative Pedagogy. They explicit that, recent innovations in cheap and transportable laboratory instruments have enabled new pedagogic approaches within the teaching of theoretical ideas and style practices in applied science (EE). School members at six universities within the USA have pioneered the employment of those new tools to include active experimental activities into existing lecture courses. This has semiconductor diode to restructured applied science courses with a spotlight on student centered learning and not instructor-centered lectures. The goal of this effort has been to gauge whether or not a lot of student-centered learning setting will stimulate a deeper understanding of applied science principles and grow the student involvement. The employment of active experiments started with an introductory electrical circuits course and has swollen into physics, biology, and better level applied science courses. Many modes of instruction using this technology and pedagogy are enforced at totally different establishments. Within the mixed approach, the schoolroom expertise could be a combination of lectures and active activities using the mobile laboratory instruments to bolster theoretical ideas. For the second tutorial model, the inverted or flipped schoolroom, students are expected to browse material reception, before their investigation of the ideas via dynamic happenings within the school rooms. A 3rd model uses the transportable laboratory instruments to finish active activities outside of the schoolroom as prep issues, style comes, and/or an untraditional laboratory element.

UNESCO (2012) did a paper on Turning on Mobile Learning in continent and also the geographic area. This report finds out 3 differing kinds of mobile learning developments in continent and also the geographic area (AME). Initially, the region is host to variety of project-based interventions, several of that are small-scale, wildcat pilot comes. In addition, late social movements in AME are enabled by the intensive use of mobile phones and social media. Third, shoppers have taken mobile phones for a range of individual, personalized uses. Every of those strands have aspects of learning embedded inside them, either as a definite objective or as a causeless result. Project-based interventions target the role that mobile phones play in supporting the delivery of services in an exceedingly sort of areas, together with education, food security, health, agriculture, etc. Along with the mentioned progress,

they reflect the arising quality within the society within the ordinal century. The mobile learning worth proposition, albeit underdeveloped, purports to increase the reach of learning opportunities to remote areas, thereby supporting the enlargement of academic access. Mobile learning conjointly allows a development within the quality of education by gap up new avenues for casual, personalized and placed learning. Additionally, mobile learning will probably promote social equity by permitting marginalized teams access to higher cognitive process. This evolving worth proposition offers a chance to leverage the omnipresence of mobile phones in addressing the general crisis in education within the region. UN agency reports that the prospect of meeting the Education for All (EFA) goals by 2015 in continent and also the geographic area is extremely unlikely. Withal, this review of mobile learning comes includes cases that demonstrate the potential of mobile phones to support 5 of the six EFA goals. The review failed to realize proof of mobile phones supporting access to universal primary education (UPE) – EFA Goal two – most likely as a result of the bulk of creativities are positioned on elementary-school students, tertiary school students and aging learners. The comes known during this paper obvious new styles of learning, together with the emergence of latest literacies and genres among teens in South Africa. This review conjointly found that mobile phones have vied a chemical action role within the social movements that arose in geographical area and also the geographic region in the year of 2011. Questionably, the Arab Spring grades amongst the leading significant unceremonious mobile learning wonders in the year 2011. Thousands of young people made use of social media retrieved through their mobile devices as a point for self-recognition, self-declaration, debates and mobilization concerning democracy, human active rights and civil liberties. This review conjointly uncovered proof of the ways that during which teens within the region are shaping their identities through the mixing of mobile phones in the everyday living (Theologizer and Shah, 2011; Childrens Fund of the United Nations, 2011). This paper highlights a spread of policy implications within the face of a quickly evolving mobile learning setting. It acknowledges that existing data and engineering (ICT) in education policies in AME seldom address mobile learning that reflects a major policy vacuum. However, some establishments and comes have developed acceptable and enjoyment policies at an area level. The paper acknowledges the challenges visage by policy-makers in light-weight of the dearth of analysis, empirical proof and underlying theory development on mobile learning within the AME region at this stage. Whereas acknowledging the unreliable nature of existing data, this paper considers analysis

findings from the little however growing range of studies and reports on the market on mobile learning within the region.

## **2.2 Research on Intelligent Quiz Application**

Yamany and Yousef (2014) bestowed a survey on a Mobile-Quiz application in Egypt. They each came up with the paper that explicit mobile devices like cell phones become the widest instrument two-handed within the students daily activities together with browsing net and causation e-mails. Many countries like Japan and US have already applied it within the education and learning processes because of its outstanding characteristics together with accessibility. During this work, a mobile-quiz application is usually recommended and delineate to facilitate the assessment method within the high-density school rooms and to increase the correspondence between the students and instructors. Also, a case study of the planned application in an exceedingly explicit educational Egyptian establishment is applied and mentioned for the primary time with respect to the biggest information s. Basically, 3 totally different strategies are urged to settle this application within the Egyptian world in step with the on the market eLearning resources. The preliminary outcomes of the conducted experiment incontestable the chance of applying mobile devices inside the assorted educational Egyptian environments. Hosein and written word (2013) did a survey on an academic Bluetooth quizzing application in mechanical man. During this work, it absolutely was explicit that Bluetooth is one in all the foremost prevailing technologies on the market on mobile phones. One in all the key queries the way to harness this technology in an academic manner in universities and colleges. The thesis is a small Bluetooth quizzing systems which has the ability to offer quizzes to students of a tertiary school. The Bluetooth quizzing application entails of consumer mobile mechanical man application and a server. It'll utilize a queuing system to permit many purchasers to attach at the same time to the server. Once purchasers connect, they will register or select the choice to finish a quiz that the lecturer hand-picked. Results are mechanically sent once quiz is completed from the consumer application. Knowledge analysis will then be done to review the progress of scholars.

Gupta et al. (2014) all did a survey on design for mobile quiz application using mechanical man application framework. Academic Technology is consistently evolving and growing, and this progression can regularly provide new and fascinating advances in learning setting. Ancient E-Learning systems developed for portable computer and desktop computers were supported complete package application and net based mostly application design. These

applications have several limitations to use with efficiency or we have a tendency to cannot use them simply since these applications would like a computing machine and network property.

With the advancement in mobile technology and availableness of good mobile devices and network we are able to style a system which might be wont to check the data level of scholars within the category space. Since mobile network is out there at giant geographic region therefore this could be used for the data testing of anyone specially candidates of package firms World Health Organization would like a selected talent for the work. Therefore, the most objective of the analysis work is to develop an interactive mobile application supported mechanical man framework to conduct quiz sessions within the schoolroom for the assorted technical topics. This paper deals with the epitome development of a Mobile quiz system, comprehensive analysis system for the remote students or in an exceedingly schoolroom. On additional sweetening this app may be used for the achievement method of package firms which is able to save time and efforts to illuminate unwanted candidates to seem for private interview by motion an extended distance.

Lakshmi et al. (2013) worked on mobile quiz through wi-fi on mechanical man platform. The Mobile Quiz here is a mechanical man application that has a brand-new technique of taking part in Quiz using mobile phones. This application is particularly developed for those that wish to play difficult Quiz. The project provides an efficient challenge to the player. Generating random queries for the user World Health Organization participate on the quiz. Whenever Wi-Fi is connected in mechanical man mobile, the user will play quiz. Users will have their own interest specifically space to participate. Whenever the server updates the sport now mobile get alert expression that they will update the app. Queries are loaded from the cloud information if and given that there is net association otherwise it asks to ascertain net association. At the last of the sport it displays the score like range of answers correct, skipped and total queries are going to be shown. In this present day, individuals are preferring Agile Model. In Agile Model once each sprint there is a demo-able feature to the client. Tellioglu et al. (2015) came up with a journal regarding uml-quiz, automatic conversion of web based e-learning content in mobile applications. During this work, it absolutely was explicit that several academic establishments use Learning Management Systems to produce e-learning content to their students. This typically includes quizzes that may facilitate students to organize for exams. However, the content is typically web-optimized and not terribly usable

on mobile devices. As this work commenced, an inherent mobile application (UML-Quiz) that brings quiz content from the native Moodle and familiarizes it for a mobile scenery has been developed. The results extremely usable and promising. The prevailing teaching content may be simply employed in the new system by giving blessings of mobile applications. During this paper, the planning selections for UML-Quiz and also the usability optimizations to the content and to the interaction mechanisms are bestowed. Inside an evolutionary style process, we have a tendency to may improve the primary version of the quiz and find out about many interaction and program style problems. In an exceedingly second version of the quiz, we have a tendency to managed to integrate users” feedback to the system and improve its acceptance by the users. We have a tendency to gift our analysis method and also the results before closing the paper.

Romero et al. (2014) did a study on using mobile and web-based computerized tests to gauge university students. Mobile learning and testing is rising as a possible academic setting. During this article, we have a tendency to judge the employment of mobile devices for testing as compared to web-based assessment systems. We have a tendency to conjointly describe an authoring tool to develop adaptable and adaptive computerized tests that may be dead on such totally different platforms as private computers, private digital assistants and mobile devices. We have allotted an experiment with computing university students to work out their satisfaction and to match the results obtained once corporal punishment a take a look at on personal computers versus mobile devices. The experiments have shown that students were extremely driven and enjoyed using mobile application for testing. What is more, there have been not any important variations within the results obtained with the various versions of the take a look at.

Lim et al. (2014) did a research on net-services-extension for retrieving quiz on MOODLE mobile application. Mobile applications utilizing wireless mobile technology like good mobile phones/smartphones and tablet-pc (ipad/android) has penetrated into numerous fields. Applications starting from diversion, business, health, life-style and don't miss within the field of education. The convergence of computing technologies, transmission content and wireless communications (3G/4G/Wifi) has modified several lifestyles together with education within the kind of mobile learning applications. Moodle e-learning platform has been ready to be used conjointly as a mobile learning platform. During this paper, the extension of mobile Quiz access has been engineered that enrich existing Mobile Moodle. On-line services extension

has been engineered to facilitate the creation and execution of quiz online directly on Moodle Mobile application. A series of experiments are conducted using mechanical man smartphone. Creating Quiz can be done through mobile applications of the changed Moodle. Likewise, students will take the quiz through their mobile browser of their smartphone. With the provision of the quiz feature of Moodle mobile application, the tutors and students are straightforward to access on-line quizzes.



## CHAPTER 3

### THEORETICAL FRAMEWORK

#### 3.1 Intelligent Systems

Intelligent Systems is that the phase of computation related to making computers to work like humans. The terminology was revealed in the year 1956 by John McCarthy at the well known Massachusetts Institute of Technology (Beal, 2016). What is to be achieved throughout this thesis is produce associate application to require the teaching job and build them fascinating for whatever area unit reaching to be looking then and usually this can be often a significant breakthrough.

Intelligence Systems contains the subsequent areas of knowledge:

- ***Games playing:*** Programming computers to play games against human opponents
- ***Expert systems:*** Programming computers to make alternatives in real-life things (for example, some skilled systems facilitate doctors diagnose diseases supported symptoms)
- ***Natural language:*** Programming computers to grasp natural human languages
- ***Neural networks:*** Systems that simulate intelligence by attempting to breed the styles of physical associates that take place in the brains of animal
- ***Robotics:*** This is the act of programming or configuring computers to appear at and hear and react to completely unlike sensory stimuli

When the overall public adopts computing, they consider HAL 9000 from 2011. A Space Odyssey, knowledge from Star Trek, or a lot of recently, the mechanical man Ava from Ex Machina. However, to a man of science that may not what INTELLIGENT SYSTEMS essentially is, and also the question what is Intelligent Systems? May be a sophisticated one.

Empak (2016) explicit that one in all the quality textbooks within the field, by University of American state pc scientists Stuart Russell and Googles director of study, Peter Norvig, positions computing in to four comprehensive categories:

The dissimilarities between them may be redefined, notes Ernest Davis, a Prof. of computing at New York University. AlphaGo which is the pc program that overcome a world champion at Go, acts realistically once it plays the sport (it plays to win). However, it does not essentially assume the method somebody's being will, although it engages in a number of similar pattern-recognition tasks. Similarly, a machine that behaves sort of a human does not essentially bear abundant likeness to individuals within the method it processes

- Machines that assume like humans,
- Machines that act like humans,
- Machines that assume rationally,
- Machines that act rationally.

Even IBM's Watson, that acted somewhat sort of a human once taking part in risk, wasn't using something just like the rational processes humans use.

### **3.2 Intelligent Mobile Application**

Mobile systems are relying more on cloud-based services that, themselves, are becoming more intelligent. Machine intelligence now has the ability to learn from experience and objectives. The next ten years after now will be packed with major benefits to society. The technology allowed computers to turn into smaller in size and they became for individual use. The opportunity of single main-controller system with the allowance of multiple users was the first stepping stone of the computer technology. However, this revolution did not end by the development of PCs (Malaka ,2014). The PC decreased in size and turned into portable PCs like laptops and personal digital assistants (PDAs), which are not as powerful as laptops. Nevertheless, this was not the final evolution either as wearable computers such as head-mounted displays were developed as lighter access to technology. The final point of the progress is expected to have the traditional computers replaced by devices integrated into objects, such as cars, clothes or milk bottles. It is expected that consumers will be recalled to purchase a bottle of milk as passing along the shelf via a reminder sent by the computer integrated into the fridge operating based on its content. This scenario can be applied to different cases, allowing users to be reminded. Despite these gadgets in research, the research continuously improve to render the computerized devices into much more smaller gadgets such as mobile phones, portable computers and PDAs in order to integrate them into use, which are already out in the market. New communication protocols and techniques like

UMTS as a high bandwidth wireless network standard or WAP as a protocol for mobile application allow information access everywhere. It is now easy to access the location of users via triangulation methods or via satellite navigation system GPS. However, mobile phones with wireless network do not always provide useful and light systems full of power. Although it is possible to combine usual software programming and services, it is not as easy to use specific software in the absence of a keyboard or to view images when the screen happens not to be wide enough. It is essential for the mobile phone users to have an access to their personal information and to be able to change and adapt the system according to personal needs and this is the reason why smart applications are required to facilitate the personal use and to render the system successful. Nevertheless, a number of problems are still available and they need to be resolved so as to establish better systems for mobile users such as:

- Location consciousness
- Context consciousness
- Interaction descriptions and interaction devices for mobile systems
- Intelligent user interfaces for mobile systems
- Interface based on present happenings
- Adaptation in case of limited availability of resources
- Tolerance to faults
- Service discovery, service description languages and standards

In order to research the alternatives to render the interfaces of users intelligent and cooperative, Intelligence conducted studies and the deficiency of resources is one of the greatest blockades intelligence has been dealing with recently. Therefore, these issues can be solved by using the Intelligent methods, while they are not the single methods in order to establish user-friendly mobile systems which demonstrate the locations and situations and function inconspicuously. Establishing Intelligent Systems which are for mobile assistance does not only constitute an extra but they are considered as a requirement. Moreover, not just one Intelligent technique is needed here. In order to achieve a purpose, various methods, such as learning, are combined in this technique. The system of learning performs an important role for the services focused on rendering to the users. A system comprised of symbolic and sub-symbolic Intelligent learning methods in terms of neural networks can be flexible in order to allow users to opt for different choices at different situations. However, spatial reasoning is equally significant in location aware systems. In this case, the current conditions render the

above-mentioned methods difficult. At the same time, resource adaptive services and user smart localization can be supported by different methods such as decision-theoretic planning of navigation instructions.

### **3.3 Mobile Education**

The idea of mobile education or mobile learning remains:

There are clear definitions and conceptualizations of mobile education that outline it strictly in terms of its technologies and its hardware, specifically that its learning delivered or supported only or chiefly by hand-held and mobile technologies similar to personal digital assistants (PDAs), smartphones or wireless laptop computer PCs (Stanimira et al., 2016).

If we have a tendency to take as our place to begin the characterizations of mobile learning found within the literature, we discover words similar to personal, spontaneous, opportunist, informal, pervasive, situated, private, context aware, bite-sized, and transferable. Typically, this can be often generally contrasted with words from the literature of typical certain e-learning like structured, media-rich, broadband, interactive, smart, and usable. The use the two lists to make a blurred distinction between mobile learning and eLearning. This distinction, however, is not alone blurred but part is in addition alone temporary. many of the virtues of e-learning unit the virtues of the power of its technology (and the investment in it) and shortly these virtues conjointly are going to be accessible to mobile devices as process drive enhancements in interface vogue, processor speed, battery life, and property system of measurement (Mayer, 2010).

Tackling the matter of definition from another direction, we have a tendency to see that mobile devices and technologies area unit pervasive and omnipresent in several fashionable societies, and area unit more and more ever-changing the character of information and discourse in these societies (whilst being themselves the product of diverse economic forces and social). This, in turn, changes each the learning characters (both informal and formal) and modifies the forms in which learning is administered. Learning that accustomed be delivered “just-in-case,” will currently be delivered just-in-time, just enough, and just-for-me (Traxler, 2015).

One may specialize in the character of quality so as to explore the character of mobile learning. For every learner, the character of mobility incorporates a sort of connotations and

these can color conceptualizations of mobile education. It should mean learning while traveling, driving, sitting, or walking; it should be hands-free learning or eyes-free learning. These translations impact on the application and thence the description of mobile learning. Having prior discounted technology as an influencing feature of mobile learning, it ought to after all emerge that utterly totally dissimilar hardware and code platforms support rather different descriptions of mobile learning. At the possibility of over-simplification, the idea behind the Palm™ based totally whole of hand-held computers (or rather, organizers) initially semiconductor diode to a zero-latency task-oriented interface with solely most amount practicality as would work within the prescribed size of box and this might coax maximum performance out of the processor, the memory, and also the battery. Microsoft-based mobile devices by comparison hereditary a PC based interface with sizeable latency, creating abundant higher demands on memory, battery, and processor. This classification could also be a little less active than it once was, yet it can be observed as sustaining 2 completely different understandings of mobile learning; the previous a bite-sized, justin-time version concerning the one represented on top of, the latter additional sort of a transportable however puny version of tethered e-learning represented on top of. Similarly, if we have a tendency to were to handle whether or not learning delivered or supported on this generation of laptop computer and tablet PCs ought to be termed mobile learning tablets. Learners, and so folks generally, can carry and use their phones, their iPods, or their PDAs routinely and unthinkingly; but, they are going to rarely carry a laptop computer or tablet PC while not a premeditated purpose and a minimum timeframe (Gipple et al., 2014).

If we glance at the rising follow of mobile learning primarily based around phones and PDAs in developing countries, particularly the poorest, a completely different image emerges supported whole different affordances. The radically completely different physical infrastructure and cultural atmosphere – as well as telephone circuit telecom, web property, electricity, the rarity of PCs, and also the relative inability of societies to support jobs, mercantilism, and alternative initiatives primarily based around these conditions – has meant that prescriptions for mobile learning area unit additional cautious than within the developed world (Traxler et al., 2015). Its conjointly meant that mobile phones area unit currently being recognized because the pre-eminent vehicle not just for mobile learning, however conjointly for extensive social alteration (Traxler et al., 2015). It is entirely potential that the emergence of mobile learning in developing countries can take the evolution of e-learning on a flight that is terribly completely dissimilar from that in established countries, where it has been

established on large, static, and steady resources. Distance learning can kind a big part of this due to its existing standing among the event communities.

### **3.4 Mobile Learning**

The use of wireless, mobile, portable, and hand-held devices is bit by bit increasing and diversifying across each sector of education and across each the developed and developing worlds. It is bit by bit moving from small-scale, short-run trials to larger additional sustained and intermingled preparation. This text attracts on recent publications, projects, and trials so as to explore the doable future and nature of mobile education. The research then examines the link between the challenges of rigorous and acceptable analysis of mobile education and also the challenges of embedding and mainstreaming mobile education at intermissions formal institutional education. Mobile learning has rising discernibility and important in instruction. Proof for this growing visibility and significance is as follows. First of all, there is the increasing size and frequency of dedicated conferences, seminars, and workshops and internationally (Traxler, 2015). The mobile learning currently exploits each free hand-held mobile computers and mobile telephones and substitute devices that draw on an corresponding set of purposes. Mobile learning exploitation hand-held computers is clearly comparatively immature in terms of each its technologies and its pedagogies, however is developing apace. It attracts on the speculation and observe of pedagogies employed in technology increased learning. Employed in the schoolroom and also the community, and takes place as mobile devices area unit reworking notions of house, community, and discourse (Katz et al., 2013) and also the inquisitive beliefs and tools (Hewson et al., 2013). The term covers the individualized, connected, and interactive use of hand-held computers in lecture rooms (Perry et al., 2012), in cooperative learning (Pinkwart et al., 2013), in fortification (Chen et al., 2013), and in subject matter and steerage (Vuorinen et al., 2013). Mobile devices area unit supporting company coaching for mobile staff (Gayeski et al., 2013) and area unit enhancing medical education (Smordal et al., 2013), teacher coaching (Seppala et al., 2013), music composition (Polishook, 2015), nurse coaching (Kneebone, 2015), and various alternative disciplines. They are shifting into a practicable and resourceful part of established support and establishment (Griswold et al., 2015). In October 2015, the primary comprehensive reference book of mobile learning was revealed (Kukulka et al., 2015), however accounts of mobile distance learning area unit still rare. The area unit currently an

oversized variety of case studies documenting trials and pilots within the property right (Hulme et al., 2015).

Mobile learning unambiguously supports spontaneous reflection and self-evaluation and also the current ePortfolio technologies square measure expected to migrate to mobile devices within the close to future (Hartnell-Young, 2014). It is equally attainable, however, to form a powerful case for mobile education on sensible or impurist grounds. This impurist case acknowledges that learning takes place during a wider social and economic context, which students should be recognized to be underneath a variety of pressures, most clearly those of your time, resources, and conflicting/ competitive roles. This can be true of distance learning and part-time students. Mobile learning permits these students to take advantage of little amounts of your time and area for learning, to figure with alternative students on comes and discussions, and to maximize contact and support from tutors (Hartnell-Young, 2014).

### **3.4.1 Technologically Driven Mobile Learning**

A few detailed technological innovation is organized in an enlightening setting to establish technical practicableness and didactic chance

- Miniature however transportable e-learning – Mobile, wireless, and hand-held technologies area unit wont to re-enact approaches and solutions already utilized in conventional e-learning, maybe porting some e-learning technology cherish a Virtual Learning surroundings (VLE) to those technologies or maybe simply mistreatment mobile technologies as versatile replacements for static desktop technologies
- Connected schoolroom learning – an equivalent technologies area unit utilized in schoolroom settings to support cooperative learning, maybe connected to different schoolroom technologies cherish interactive whiteboards
- Informal, customized, located mobile learning – an equivalent technologies area unit increased with further practicality, for instance location-awareness or video capture, and deployed to deliver instructional experiences that may well be tough or not possible

- Mobile training/ performance support – The technologies area unit want to improve the productivity associated potency of mobile staff by delivering info and support just-in-time and in context for his or her immediate priorities (Gayeski, 2012)
- Remote/ rural/ development mobile learning – The technologies area unit want to address environmental and infrastructural challenges to delivering and supporting education wherever conventional e-learning technologies would fail, typically worrisome accepted biological process or biological process paradigms

Mobile distance learning may represent any of those classes (with the exception of the connected schoolroom learning); however, it develops can rely partly on the affordances of any given state of affairs. These affordances may include:

- Infrastructure, that means power offer, communication services, net property, etc.
- Sparsity, creating a rise to infrequent face-to-face contact, absence of technical support, etc.
- The wider policy agenda together with long learning, inclusion (of rural areas for example), assistive, participation, and access
- Mobile distance learning at intervals a framework of mingling distance learning and therefore the affordances of different delivery and support mechanisms

### **3.5 Mobile Technology**

Mobile technology is strictly what the name indicates – technology that is portable; it refers to any device that you simply will carry with you to perform a large sort of tasks. It is technology that enables those tasks to be performed via cell phone, PDA, vehicles, laptops, etc. a regular mobile device has gone from being no quite a straightforward two-way electronic device to being a cell phone, a GPS navigation system, an internet browser, and instant traveler system, a video gambling system, and far additional. It includes the employment of a spread of transmission media such as: nonparticulate radiation, microwave, infra-red, GPS and Bluetooth to permit for the transfer of knowledge via voice, text, video, 2-dimensional barcodes and additional. Mobile technology is strictly what the name implies - technology that is moveable.



**3.5.1 Advantages of Mobile Technologies:** Mobile computing will improve the service you provide your customers to Illustrate: when meeting with customers, you may access your client relationship management system - over the web - permitting you to update client details while aloof from the workplace you can modify customers to procure services or product while not having to travel to the until, e.g. by employing a wireless payment terminal diners will pay for his or her meal while not departure their table

Powerful solutions will link you directly into the workplace network whereas operating off web site. For example, you may remotely:

- Set up a replacement customers account
- Check costs and stock handiness
- Place an order on-line

The growth of cloud computing has conjointly compact completely on the employment of mobile devices, supporting additional versatile operating practices by providing services over the web. For additional data, see cloud computing.

**3.5.2 Disadvantages of Mobile Technologies:** There are prices concerned in putting in place the instrumentality and coaching needed to create use of mobile devices. Mobile IT devices will expose valuable knowledge to unauthorized individuals if the correct precautions aren't taken to make sure that the devices, and therefore the knowledge they will access, are unbroken safe. See additional on cyber security for business and securing your wireless systems.

### **3.5.3 Android Runtime**

Android Runtime contains of Dalvik Virtual machine and Core Java libraries, positioned on the exact stage as the library layer. Dalvik Virtual Machine is a particular kind of Java Virtual Machine utilized for executing applications on Android device. The Dalvik VM empowers all Android application to execute in its own process, with its own instance of the Dalvik virtual machine. The Dalvik VM permits more than two instance of Virtual machine to be formed concurrently providing enhanced security, remoteness, memory administration and threading support. Unlike Java VM which is process-based, Dalvik Virtual Machine is register-base. Dalvik Virtual Machine run .dex files which are created from .class file by dx tool .dx tool is

comprised in Android SDK. DVM is enhanced for low dispensation power and low memory environments. DVM is developed by Dan Bornstein from Google (Singh, 2012).

### 3.6 Mobile Devices

A mobile device may be a general term for any kind of hand-held laptop. These devices area unit designed to be extraordinarily transportable, and that they will usually slot in your hand. Some mobile devices like tablets, e-readers, and Smartphone are powerful enough to try and do several of an equivalent belonging you will do with a desktop or laptop personal computer:

- **Tablet Computers:** Like laptops, pill computers area unit designed to be transportable. However, they supply a special computing expertise. The foremost obvious distinction is that pill computers haven't got keyboards or touchpads. Instead, the whole screen is touch-sensitive, permitting you to sort on a virtual keyboard and use your finger as a mouse pointer. Pill computers cannot essentially do everything ancient computers will do. For several folks, a conventional laptop sort of a desktop or laptop computer continues to be required so as to use some programs. However, the convenience of a pill laptop means that it should be ideal as a second laptop (Anthony, 2013).
- **E-readers:** E-book readers also known as e-readers are the same as pill computers, except they're chiefly designed for reading e-books (digital, downloadable books). Noticeable examples symbolize the Barnes & Amazon Kindle; Kobo and Noble Nook. Most e-readers use associate degree e-ink show that is simpler to browse than a conventional CRT screen. You will even browse in bright daylight, similar to if you were reading an everyday book. You do not want associate degree e-reader to browse e-books. They will even be browse on tablets, smartphones, laptops, and desktops (Anthony, 2013).
- **Smartphones:** A smartphone may be an additional powerful version of a conventional telephone. Additionally, to an equivalent basic feature phone call, voicemail, text messaging smartphones will hook up with the net over Wi-Fi or a cellular network (which needs getting a monthly knowledge plan). This suggests you will use a Smartphone for some equivalent belongings you would ordinarily do on a laptop, appreciate checking your email, browsing the online, or watching on-line. Most Smartphones make use of a touch-sensitive screen, which therefore means there is no visible keyboard on the mobile device. Instead, you may sort on a virtual keyboard and

use your fingers to move with the show. Different commonplace options embody a high-quality photographic camera and also the ability to play digital music and video files. For several folks, a smartphone will really replace physics like associate degree previous laptop computer, digital music player, and photographic camera within the same device (Chen, 2014).

### **3.6.1 Android Operating System**

Android Runtime consists of Dalvik Virtual machine and Core Java libraries. It is found on the exact stage as the library layer. Dalvik Virtual Machine is a type of Java Virtual Machine is put to use for executing applications on Android device (Singh, 2012). The Dalvik VM permits all Android application to execute in its own individual process, with its own case of the Dalvik virtual machine. The Dalvik VM permits more than two occurrences of Virtual machine to be formed concurrently providing enhanced security, remoteness, threading support and memory management. Unlike Java VM which is process-based, Dalvik Virtual Machine is register base. Dalvik Virtual Machine run .dex files which are formed from .class file by dx tool. dx tool is encompassed in Android SDK. DVM is enhanced for low dispensation power and low memory environments. DVM is programmed by Dan Bornstein from Google.

#### **3.6.1.1 Architecture of Android Operating System**

Android operating system is self-possessed of diverse software things, including Android Operating system Architecture or Software Stack, Android Runtime, native libraries, Linux kernel, Application Framework and Applications:

- Linux Kernel Linux Kernel (Linux 2.6) covers the bottom part of the software system. This forms the basis of the Whole Android Operating System and Google has made certain variations on it (Singh, 2012). Process management, Memory Management, device management (ex. camera, keypad, display etc.) are the primary software sustained similar to the main Operating Systems. The device hardware is operated by Android operating system as it consists of various significant hardware drivers. Properties such as virtual memory, networking, drivers, and power management are under the control of Linux kernel.
- Native Libraries of golem software package Layer On the best of the UNIX system Kernel layer is Androids native libraries. This layer permits the device to handle different types of data. data is explicit to hardware. of those libraries ar written in c or c++ language. These libraries ar spoken as through java interface. Some important

native libraries are: Surface Manager: it's used to manage show of device. Surface Manager used for composing windows on the screen. SQLite: SQLite is that the data used in golem for information storage. it's electronic information service and offered to any or all applications. WebKit: it is the browser engine used to show HTML content. Media framework: Media framework provides playbacks and recording of various audio, video and film format. (for example MP3, AAC, AMR, JPG, MPEG4, H.264, and PNG). Free Type: icon and Font Rendering OpenGL | ES: used to render second or 3D graphics content to the screen libc: It contains System connected C libraries.

### **3.6.2 Mobile Communication Technologies**

Mobile devices are often enabled to use a spread of communications technologies, including:

- Wireless fidelity (Wi-Fi) - a kind of wireless native space network technology
- Bluetooth - connects mobile devices wirelessly
- Third generation (3G), fourth generation (4G), international system for mobile communications (GSM) and general packet radio service (GPRS) knowledge services - knowledge networking services for mobile phones
- Dial-up services - knowledge networking services mistreatment modems and phone lines
- Virtual non-public networks - secure access to a non-public network

It is so attainable to network the mobile device to an office or the web whereas traveling.

### **3.6.3 Use of Mobile Devices in Iraq**

92.2% of the Iraqi population possess a mobile device as well as a 34.1% accessing the Internet in 2016, in October. This amount has been recorded as the highest internet usage rate in the week. 3 out of 10 people who possess mobile phones used it for downloading and using the social media websites. The percentage of downloading and using mobile applications was recorded as 25% and the rate of listening to music on the mobile phone was recorded as 16.3%. All the above-mentioned actions were performed by the society, including adults, while young people preferred listening to the radio on the mobile phones particularly (GALLUP, 2014).

## **CHAPTER 4**

### **DEVELOPED MOBILE APPLICATION**

This application consists of the real-time e-learning plus social concept that provide a reliable mobile learning application. In case you are offline then also one can learn from this app. This application basically consists of where the learning contents are place. This application is real time application and provides free of cost e-learning.

#### **4.1 Target Audience**

This application is designed to help the learning of young students of the levels of 12 to 15 years. The development of the app is to aid capture of the interests of these young learners to learn English with the questions presented to them with different difficulty levels. Online teaching career has been set on a journey of discovery. It has provided inventive freedom, endless resources and learning materials, and therefore the risk to show students from all corners of the world. However, additional and additional students area unit exploitation mobile devices to attach to the net. Mobile learning (or m-learning) is that the ability to be told anyplace and at any time employing a moveable device. Mobile learning is a smaller amount structured than e-learning, however it enhances the latter utterly. the planet nowadays is smitten by doing everything quickly, learning enclosed. Self-study is clearly necessary in learning. From expertise, as very little in concert hour every week of self-study will boost a student progress vastly. Nonetheless the bulk of scholars have chosen to review on-line thanks to time restrictions, and in their initial lesson, they create it quite clear they need no time for schoolwork. So, however can we encourage the busy students to seek out the time? because the use of mobile technology is increasing, why not supply students the chance to review anytime, anywhere and at their own convenience through their mobile devices? to urge students started with tiny, realistic schoolwork activities. Request that students spend just five or ten minutes a day on English. The introduction of the amazing app available and encourage them to learn in a mobile way. Which works well. These age group of students are the teens which is believed to learn with a more interactive environment like the app created.

#### **4.2 Device Specification**

For this application to run effectively, it needs a base or we say a platform to which the android app will function effectively. In this present age, we have several devices which

permit the effective use of android applications. For this application created, it works devices that can operate Android 4.0.4 version to the very latest. Hence, any devices that can effectively handle the android version are devices that the application will work effectively on. So as mentioned earlier, the Android version is the major point of consideration because the application is a very light one. The platform should consist of at least an operating system of Android OS, v4.0.4 (Ice Cream Sandwich), 4.3 (Jelly Bean), with a Chipset of Exynos 4412 Quad, the CPU be at least Quad-core 1.4 GHz Cortex-A9 and the GPU should also be at least Mali-400MP4 for the application to work at an appropriate speed. It should definitely have a GSM / HSPA for data technology and should be able to work with Wi-Fi effectively.

### **4.3 Application Features**

The application is a standalone application which is able to work without internet connectivity in case the student is an area of no internet connection. It is very light with a raw. apk file of 5.77MB and this does not take time to install. The application which is an android application was created with the eclipse mobile application app developer and everything about the app was done this developer application which works on Windows and Macintosh.

### **4.4 Area of Use**

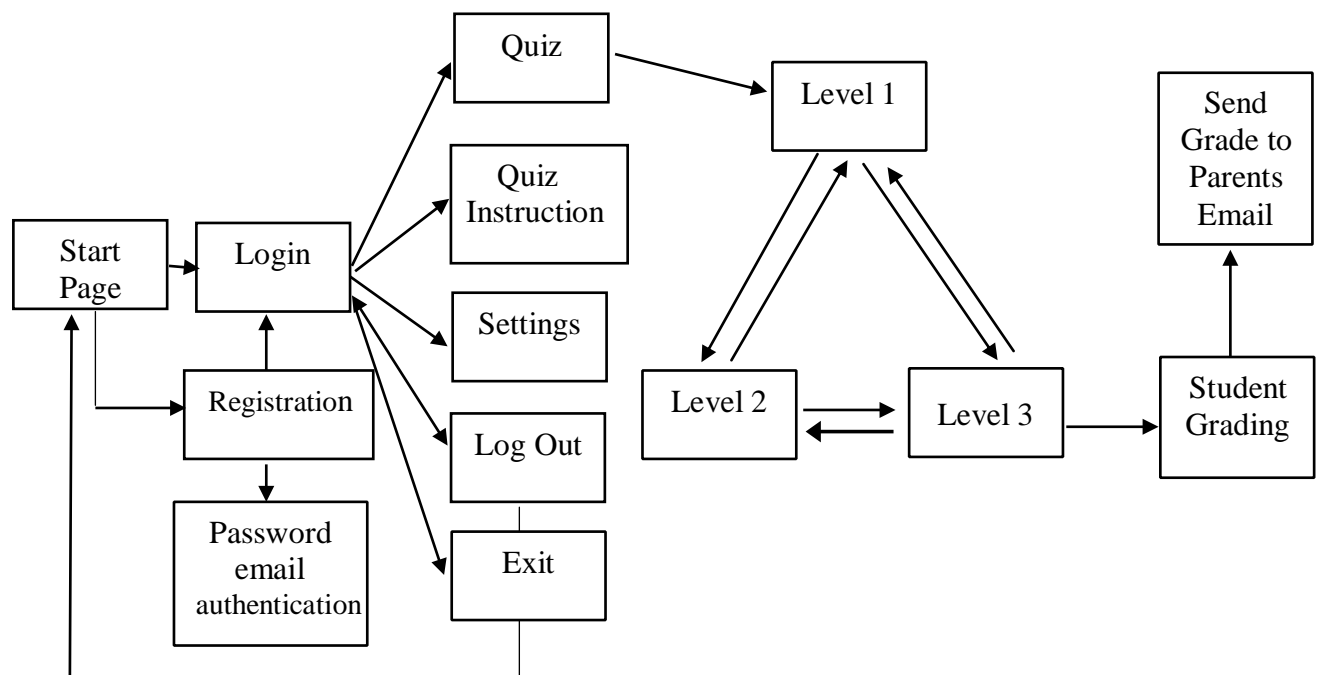
This application is aimed at helping young learners in all areas of the world whose local language is not English in getting to understand the language so well and easily. But first, before the application was created, we first had to study the English language level of students around Iraq. It was understood that students here do not really understand the language but are fast learners. That is why the application began with easy questions before it got to the difficult ones. English language is learnt in schools in this region and the application will not be a substitution for the teaching but an aid to helping the students understand all that they are thought in their various classrooms.

### **4.5 Application Database**

SQLite is known as a C library that delivers a lightweight disk-based database that does not need an isolated server process and permits opening the database with the use of a nonstandard option of the SQL query language. Some other applications can make use SQLite for internal data storage. It is possible to make a sample an application using SQLite and then move the code to a bigger database such as Oracle or PostgreSQL.

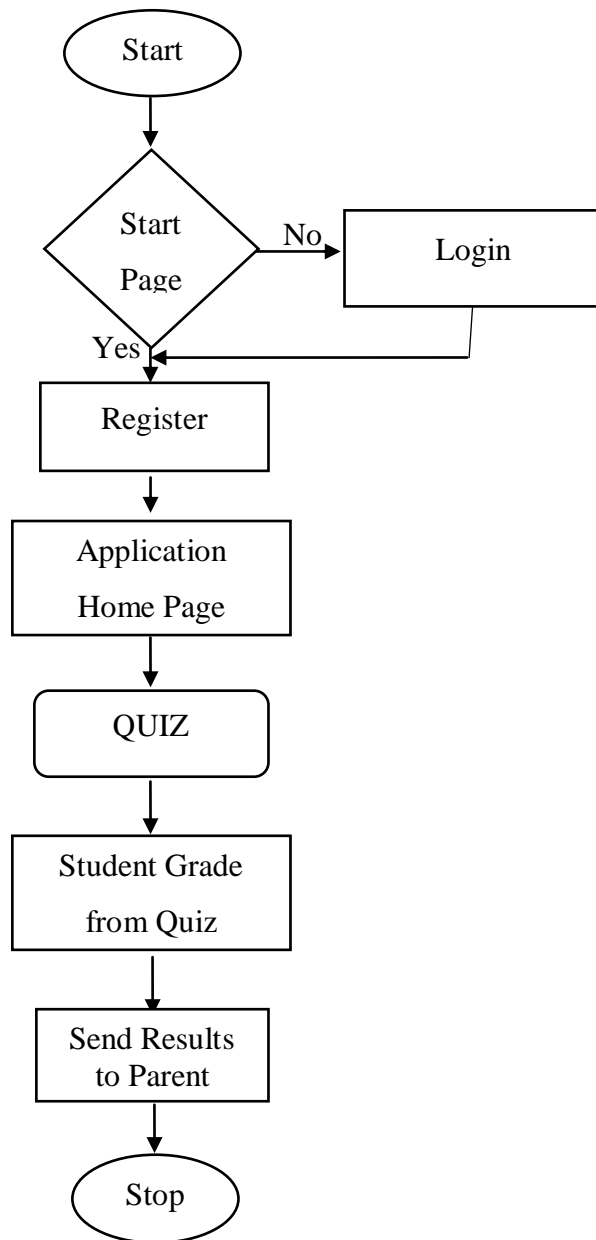
## 4.6 Application Architecture

This architecture gives detailed information on the system of the application and how each feature connects to each other. The application which has to be used for mobile learning should not be so complicated because it is a learning tool and should be understood easily by the students. The age group we are dealing with is students of ages 12 to 15 and for this we need to make sure it is as simple as possible to understand for the student to get around the app easily. That is why we have the architecture of the system as easy as possible.



**Figure 4.1:** Architecture showing the flow of the application

From what we can see from the figure below, the application has a start page which links to the login and the registration page. After the registration process, a password is generated to the email of the user on which password will be used at first login of the application. Next is the home page which consists of the quiz, the quiz rules, settings, log out and the exit. The quiz has 3 levels which increases in difficulty as the quiz goes further. After the whole quiz process is completed, grades are stored and then sent to the email of the parent of the student which was collected during the registration. The settings on the home page is used to change the password after the first login or at any time at all. And finally, the log out is to sign out the current user when the student is done with all he or she wants to do with the application.



**Figure 4.2:** Flow chart showing the flow of the application



## 4.7 Applications Questions

The questions that were used on the application were gotten from the Sunrise 8 textbook. The is a book which is used by students of ages 12 to 15 to learn English in Iraq. The book consists of grammatical test which on one way or the other help students figure out how to use English properly. Using the application to present these questions to the student will help the student grasp English even faster.

- **Level 1:** Level 1 contains eight questions and each question has four options that go with it. The aim of this level is to help build the vocabulary of the student and to get the students familiar with the English with the help of pictures. Easy Pictures are displayed to the student and the student is left with the choice to pic from these options. The difficulty of the level is that the student has to figure out which of these options best suites the picture which is displayed, which means the student must have learnt a little about the pictures in class before taking the test. These questions are taken from the Sunrise 8 unit 1 which is an English learning Textbook.
- **Level 2:** Level 2 contains ten questions and each question also has four options to choose from. The aim of this level is to help the students pronunciation and to know how much the student knows how to spell words correctly from what has been learnt in the classroom. Here, the student is given four options and is to choose which one is the correct spelling for the word which is the difficulty of the level. These questions were gotten from Sunrise 8 unit 3.
- **Level 3:** This level has 14 questions where each question has four options to pick from. This level happens to be the most difficult level because it tests the students ability to make a correct grammatical sentence. The aim if this level is to build the students grammar. This level displays a sentence with a major grammatical word missing and the student has to choose word best suites the missing gap in the sentence. Another difficulty of the level is that the options are so similar to each other which means picking the right answer has to be done with proper understanding and concentration. The questions in these level are picked from Sunrise 8 unit 5.

## 4.8 Application Description

**4.8.1 Start Page:** This is the page you meet after the installation of the app. It has the two (2) options

1. **Login:** As a registered user of the application within the ages of 12-15, The login consists of the user name and the password.

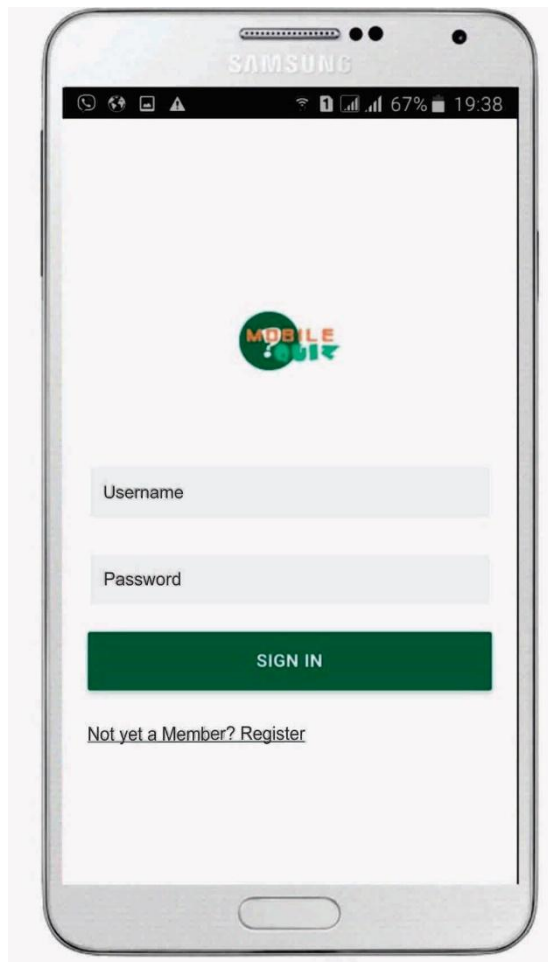
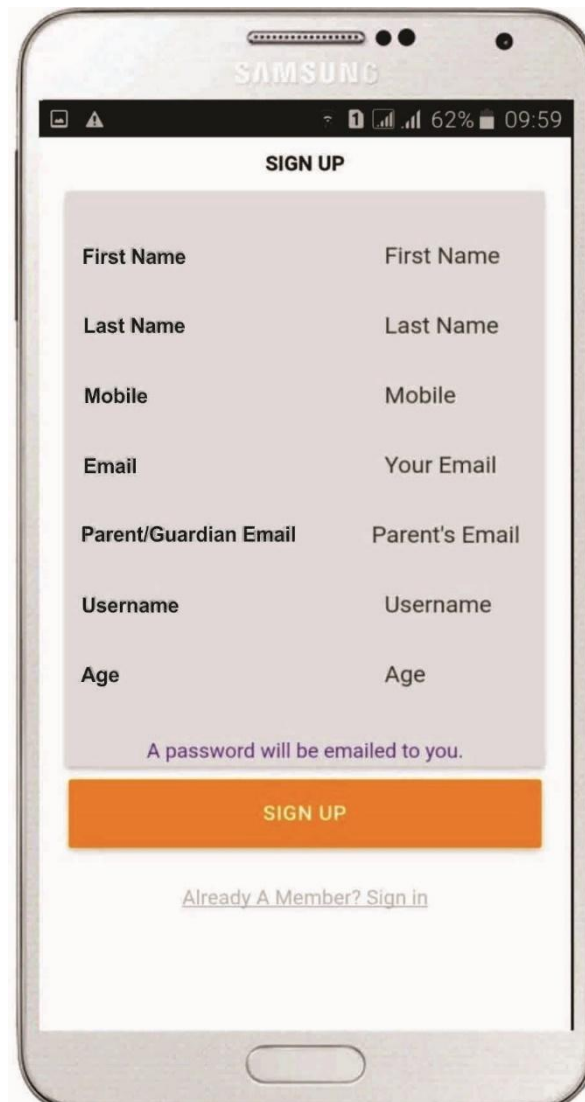


Figure 4.2: Start page of the application

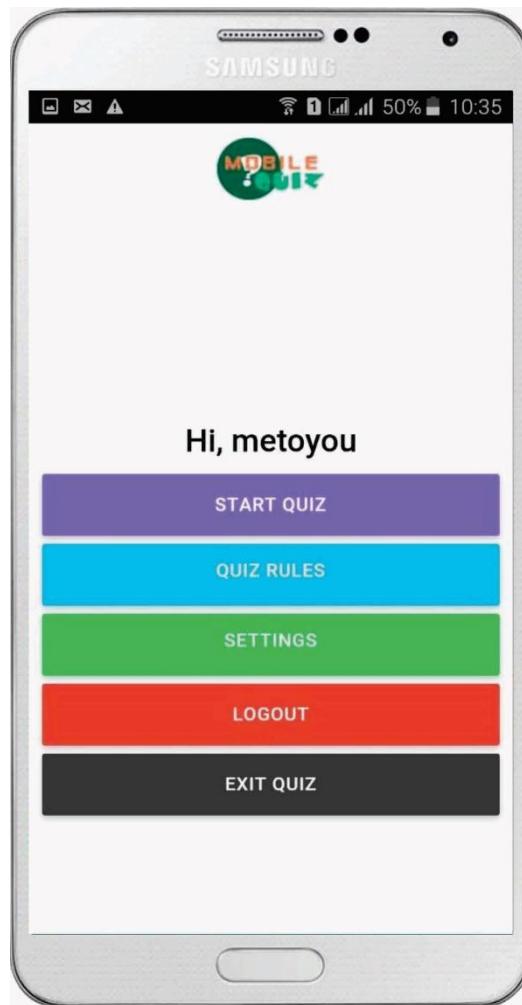
2. **Registration:** To be able to use the application is necessary, the registration page with will require you to add your first name, last name, age, email address, parents email

address and username for it to be added to the class database. After inputting this informations correctly, the system generates a password and send it to the users email address, which will be used for your first login into the system.



**Figure 4.3:** Registration Page of the application

**4.8.2 Home Page:** This is the next page you meet after logging in as a registered user of the app. This is page is the base of the application where the features of the application are connected to. The features of the application are:



**Figure 4.4:** Home page of the application

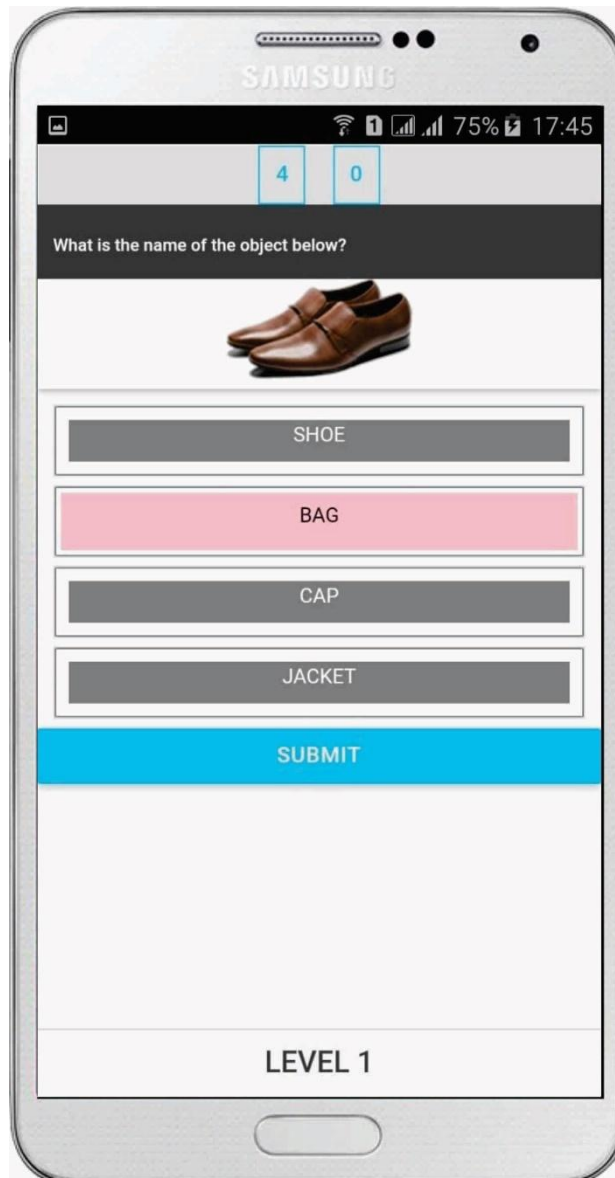
*1. Start Quiz:* This is the main point of the application where the students' knowledge and ability is being tested. This section is in three (3) levels. Each level has its different question and the higher the level the higher the difficulty. Each question in each level is timed for 20 seconds. Each current question has to be answered within the limited time else the game quiz ends and the student will have to start the quiz all over again and not forgetting that the grading for that moment is already done. Each level is rated with its different timing and so is the difficulty of the questions. If the correct answer is given to a question, it displays a green smiley with a smile that the answer is given correctly but if not, the red smiley will show a frown that the answer is not given correctly. At each login by the student the questions are rescheduled and presented randomly for a more efficient test.



**Figure 4.5:** Smiley face to show answer was pick correctly



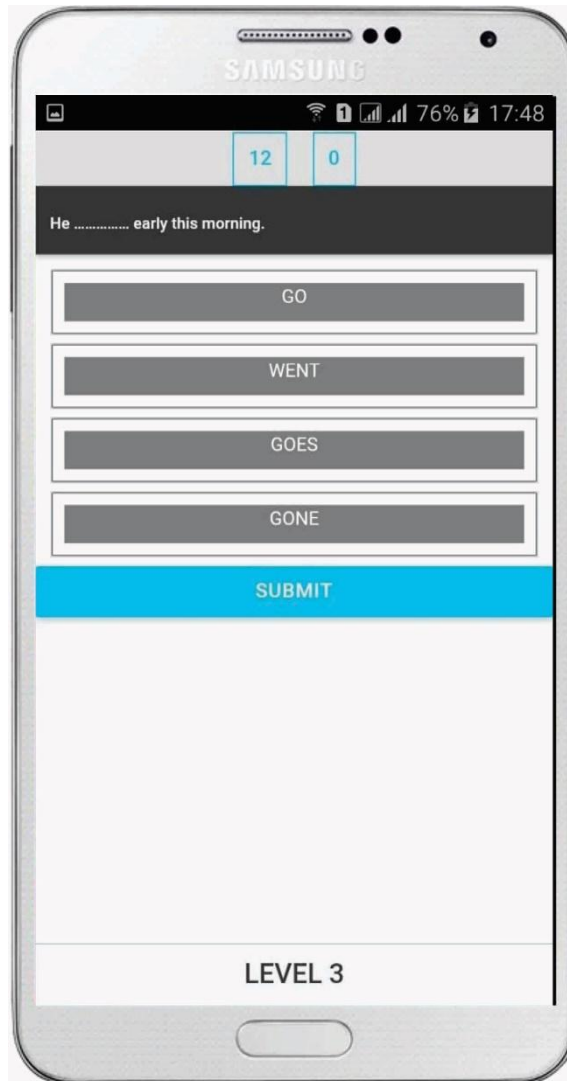
**Figure 4.6:** Smiley to show answer was picked wrongly



**Figure 4.7:** Example of a question in Level 1 with options

- i. **Level 1:** Level 1 consists of eight (8) questions. The user should answer six (6) or more questions to move to the next level, else he or she starts the level all over again. If the User is able to answer the eight (8) questions correctly, the user will directly move to Level 3 and skipping Level 2.
- ii. **Level 2:** This level consists of ten (10) questions. The user should answer above eight (8) questions to be able to move to the next level. If the user is unable to answer above six (6) questions, the user returns to level 1, if the user

answers above six (6) questions and below eight (8) questions, the user will have to repeat level 2.

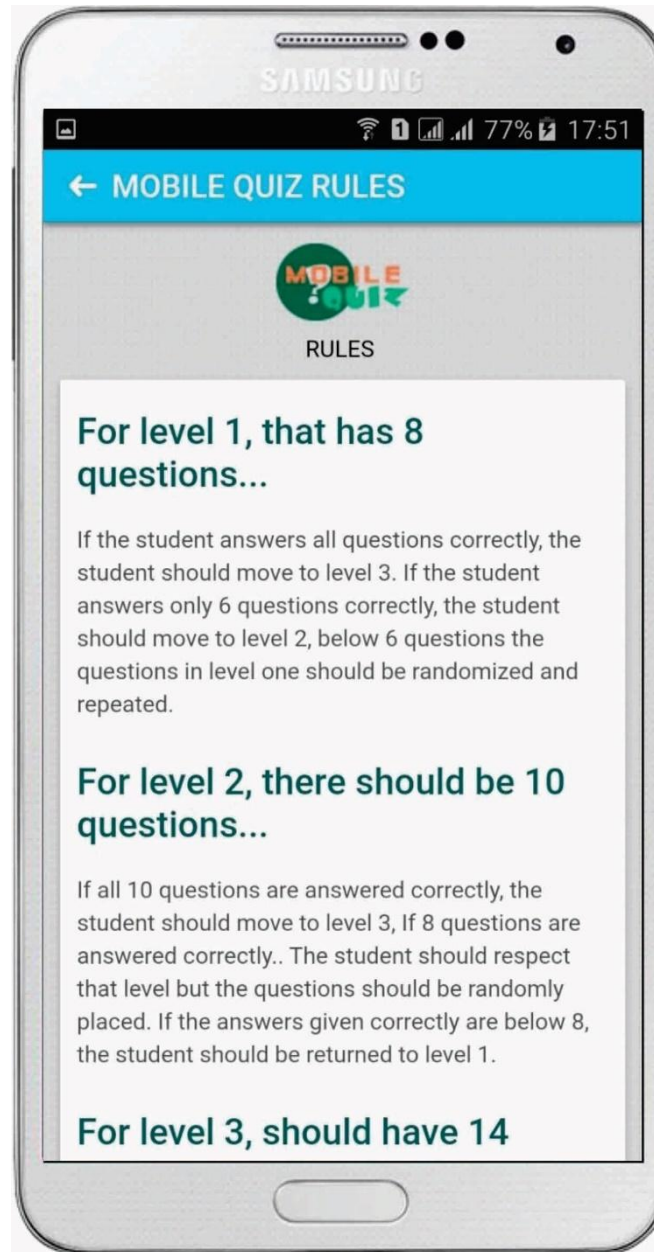


**Figure 4.8:** Example of a question in level 3 with options.

- iii. **Level 3:** Level 3 consists fourteen (14) questions. This happens to be the final level of the quiz with a higher difficulty of questions. The user is expected to answer above ten (questions) correctly to be able to finish the quiz. If the user is unable to answer the above eight (8) questions correctly, he or she returns to level 2, if user answers within eight (8) and ten (10) questions the level will be repeated. But if the user answers below six (6) questions correctly, he or she returns to level 1.

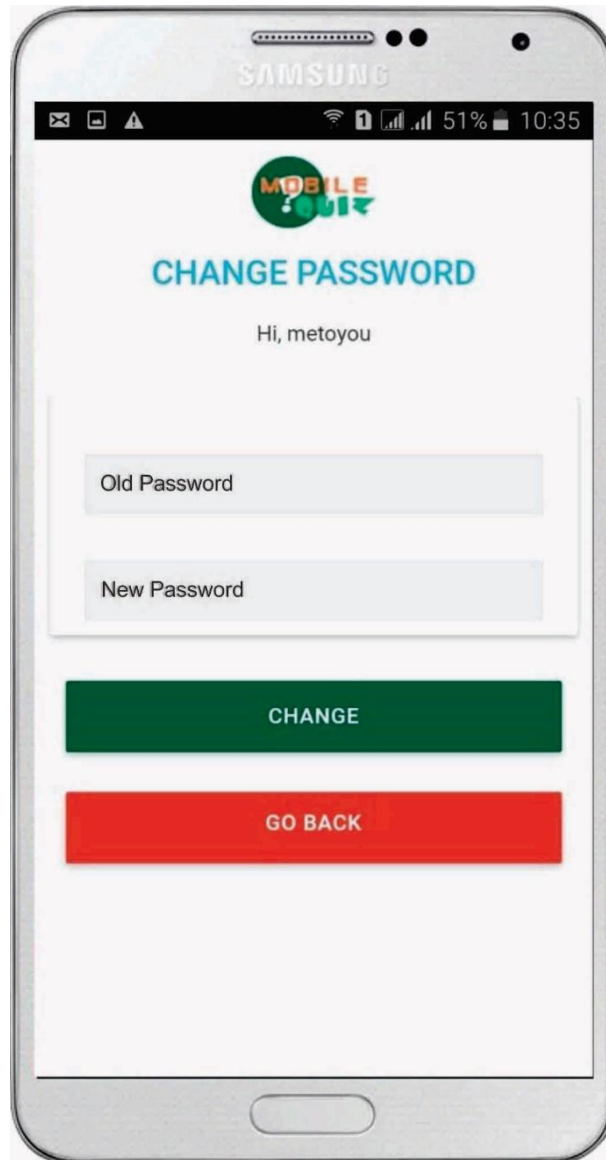


2. **Quiz Rules:** This is the Section that consists of the instruction on how to use the app effectively and how the quiz functions.



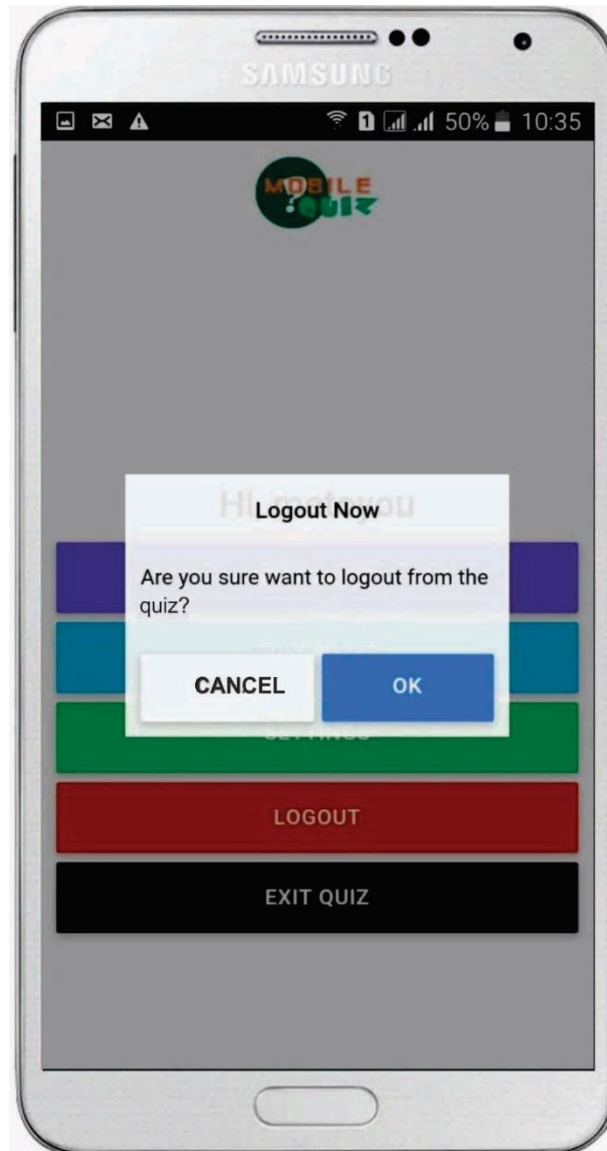
**Figure 4.9:** The rules page in the application

3. **Settings:** This is the part where the user is able to change his or her password from the one that was automated and sent to the user.



**Figure 4.10:** The password page

4. **Logout or Exit Quiz:** After all, said and done, the user can log out of the app after use or exit if he or she wants instant login at next visit.



**Figure 4.11:** Logout notification warning

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Conclusion**

The development of a new intelligent mobile phone based educational system suitable for 12-15 years old students is not an easy task. In this thesis, an intelligent, interesting and interactive level based quiz application has been developed to help students new to learning the English language to improve their language skills. The developed applications is also useful for the parents and teachers as it gives them feedback and information about the levels and the progress of the students. Thus, parents can monitor the learning abilities and the progress of their children as the system sends them automatic emails to let them know the levels of their children. The developed system motivates the children and speeds up the learning process. Finally, it is shown that the developed system will be useful to students, parents, to teachers, and also to people who carry out research in mobile learning.

#### **5.2 Recommendations**

##### **5.2.1 Recommendations for Schools, Teachers and Parents**

1. It is recommended that the application should be incorporated into schools curriculum to encourage it is use at several levels of education.
2. Teachers should be advised and educated on how they can make good use of the application which is by monitoring students' progress and knowing the kinds of questions that should be presented to the student.
3. Teachers should encourage their children on using the application because it is going to be so instrumental their grasping of English language.

### **5.2.2 Recommendations for Mobile Application Developers**

1. Age group could be increased to cover more students of other ages, and the app can also have a section for adults.
2. The questions could be extended to other subjects like mathematics and current affairs.
3. Sending of grades could be up graded to the level of sending text messages to direct phone number parents.
4. More questions could be added to each of the levels to increase the interactive time spent on the app.
5. Before the questions of the quiz begin, practice question can be presented to the student to help increasing their familiarity to the application. Also, audio phrases can be given for the student know how these words sound. And also, the quiz questions can be read out to the students to get familiar with the pronunciations.
6. Sound technology can also be used for other versions of the application or other levels for students to get familiar with the quiz questions. Also, a more difficulty level can be that the students input the answers themselves without the help of multi-choice options.

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