Mobile Learning Application with Online Query Support

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Abstract— Mobile learning introduces a fresh new education platform due to the enhancement of mobile devices and wireless communication technologies. It provides a new approach in providing knowledge into our daily life. This could be done by developing learning application in effective form to deliver data easily understandable form. This paper presents the design of Mobile Learning Application on Android Platform using Java Programming that will help users in learning any particular topic more precisely. Our idea is to integrate with graphical touch to create the ubiquitous learning environment in presenting the learning of any subject more interactive. With this mobile learning application, student could learn at their own speed and anytime. This mobile learning application clubs the current classroom learning and e-learning approach. Initially it has shown that a well-presented material that is delivered through a mobile phone has a great impact to enhance learning process.

Keywords—Mobile Learning, Online query support , Forum , Android , Mathematical model

I.   INTRODUCTION

Through the advancements in learning methodology and communication, information is growing fast. Prior to this, books and teachers were seen as the only sources of information; nowadays there are multiple resources through which information can be accessed from the Internet Computers and mobile devices. Mobile devices like PDA's, mobile phone and Tablet PC are nowadays more user friendly and suitable than before. They are coming with major advancements in memory storage, interactive features and high data transfer rate than before. Mobile devices are neutral to teaching and learning theories; they can be used with traditional learning theories such as behaviorism and new learning theories such as constructivism. For example, in the application of the field of behaviorism, which focuses on repetition in the curriculum content, studies show drill and practice learning materials have a positive role in helping students to learn. However, many researchers in technology, as well as the author view the optimum utilization of mobile devices is in use in developing of higher thinking ability and problems solving. Lincoln (1992) state, "The key to success lies in finding the appropriate points for integrating technology into a new pedagogical practice (constructivism) so that it supports the deeper, more reflective self-directed activity children must use if they are to be competent adults in the future." Ramsey, Reaux, & Rowland (1998) contend that technology combination can efficiently support constructivism..(Dawood Salim Al Hasan (2003)).

II.   LITERATURE SURVEY

Technology for learning has been observed in various ways in last few years. In the past few decades, electronic learning ore-learning had been adopted and used by many students in different parts of the world. Students are getting familiar with both the e-learning and technology used for it but in recent years, the rapid progress in mobile technology has created a new term which is known as mobile learning. Mobile learning is the next generation of e-learning that are based on mobile devices. Wireless technologies such as Wifi , Bluetooth, and GPRS are used in a project for development of informal classroom and eSchoolbag system at the Aletheia University in Taiwan.The

Math4Mobile application environment includes cellular applications designed to support mathematics.Using Web services for mobile learning applications helps the process of development by providing a standardized way of communication between mobile clients and servers.

It is a research on how to use mobile devices and mobile application development as a mechanism to teach introductory programming to computer science students. The objective of their research is to integrate mobile devices into computing education that could provide more benefits to the students than other teaching techniques. In their research the approach involves Java Micro Edition platform and the Blackberry smart-phone as a device. The application associated software tools such as Blackberry Java Development Environment for building Java ME and Blackberry based applications and Blackberry Smart-hone Simulator. There is a project from University of Tennessee at Martin that has developed mobile learning applications for the Google's Android and Apples iOS platforms to be used in electrical engineering courses will be investigated their effects on student performance. These applications are quiz style and touch based applications that ask students questions relevant to electrical engineering subjects. There are several different problems to choose from, including digital logic gate analysis, discrete signal convolution, and digital filter design. Once students complete the work, the score results can be sent to the instructors email automatically. (Kamaruddin Mamat, Farok Azmat (InCULT2012)).

III. PROPOSED SYSTEM

The Mobile Learning application

Our application can be installed only on android platform phones. This application consists of the real time e-learning plus social engineering concept that provide a reliable mobile learning application. In case you are offline then also one can make use from this app. This application basically consist of three part first part has notes part where the learning contents are place and in second part forum is available for user whereas the third part consist of Email facility as add-on for the user. If any query occurs to user then he/she will post it on the forum. The users on the other side will provide the solution to the user's query, thus this application is real time application and provide free of cost e-learning. The application we are going to develop is reduces major drawbacks of existing system. This application is basically based on the smart phone. Now days most of people uses it. So the application has lots Scope area. The Application provides the reliable and convenient way for the mobile learning.

3.1. Android

Android is a mobile operating system (OS) integrated on the Linux kernel and currently managed by Google. With a user interface based on direct manipulation, Android is designed primarily for touchscreen devices such as smartphones and tablet computers, with specialized user interfaces for televisions , cars , and wrist watches . The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping to manipulate onscreen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it also has been used in gaming consoles, digital cameras and much more devices. Android is the much more hot favorite mobile OS in market. As mid 2013 the Google Play-store has had over a million Android apps published, and over 50 billion apps downloaded. Androids source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and proprietary software.

3.2. Mobile Network

2G (or 2-G) is short for second-generation wireless telephone technology. Second generation 2G cellular telecom networks were commercially launched on the GSM standard in Finland by Radiolinja in 1991. Three primary benefits of 2G networks over their predecessors were that phone conversations were digitally encrypted; 2G systems were significantly more efficient on the spectrum

allowing for far greater mobile phone penetration levels; and 2G introduced data services for mobile, starting with SMS text messages.2G has been superseded by newer technologies such as 2.5G, 2.75G, 3G, and 4G; however, 2G networks are still used in many parts of the world. 3G, short form of third Generation, is the third generation of mobile telecommunications technology.

This is based on a set of standards used for mobile devices and mobile telecommunications use services and networks that comply with the International Mobile Telecommunications-2000 (IMT-2000) specifications by the International Telecommunication Union. 3G finds application in wireless voice telephony, mobile Internet access, fixed wireless Internet access, video calls and mobile TV. 3G telecommunication networks support services that provide an information transfer rate of at least 200 kbit/s. Later 3G releases, often denoted 3.5G and 3.75G, also provide mobile broadband access of several Mbit/s to smart-phones and mobile modems in laptop computers. This ensures it can be applied to wireless voice telephony, mobile Internet access, fixed wireless Internet access, video calls and mobile TV technologies.C2DM has been officially deprecated as of 26 June 2012. This means that C2DM has stopped accepting new users and quota requests. No new features will be added to C2DM. However, apps using C2DM will continue to be working . Existing C2DM developers are encouraged to migrate to the new version of C2DM, called Google Cloud Messaging for Android (GCM).
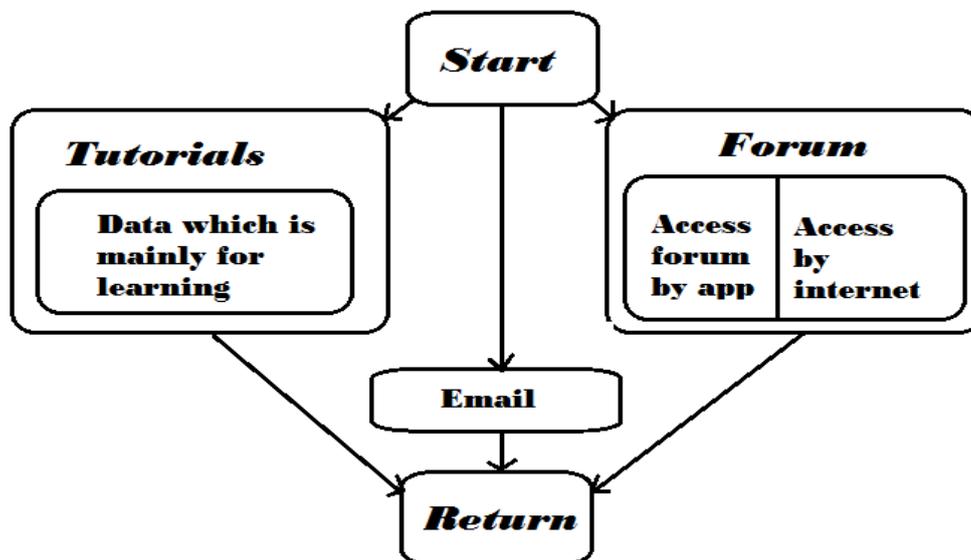

Figure 1. System Architecture of Mobile Learning

Tutorials

Tutorials or notes the main aims of mobile learning application. This notes maybe data such as text data , images , audios etc. This data is used for learning of concepts thoroughly with examples and other useful material. After studying the notes ,if user has any doubt then user moves to other features provided in the application. Screenshot or other markings are permitted for the data which will help the user in consulting for clearing the doubts.

Forum:

Forum is the feature provided by the application for better learning of the user. The forum is **open to** every user of the application and users on web. So when a user faces a doubt , he posts the doubt on the forum, Any user who wishes to comment has the authority to do so. In this way , all can view the comments on all users of forum. So if 2 people face the same problem, the doubt gets cleared with less efforts. If some user has a doubt regarding a sub-topic, with the more different examples , the concept details also goes strong of all.

Email:

Email is one add-on for the application .If the user fails to understand the concepts or do not get the doubts cleared then the Email option might be used in that situation. The doubts can be mailed to the required person in order to seek more precise explanation hopefully.

3.3. Mathematical model

Problem Statement
Let M be a set of Mobile learning application such that

$M = \{T,E,F,D \mid \Phi\ M\}$
where ,

    1. T is set of tutorials which contains various data like text and images.
    $T=\{Tx,I|\Phi T\}$
    Where,
        Tx represents Text data whereas I represents Images.

    2. E is set of Experts whom the user can communicate via mail.
    $E=\{e1,e2,e3..en|\Phi E\}$
    Where,
        e represents users or experts whom the mail can be sent.

    3. F is set of online queries which the user can post query on the forum.
    $F=\{f1,f2…fn,Q |\Phi F\}$
    Where,
        F represents the users in forums and Q represents the queries in the forum.
    $Q=\{q1,q2…qn |\Phi Q \}$

    4. D is set of database

Activity
Let fu be rule of U into E such that user uploads / sends a file through mail
    fu(U) | -> E i.e. fu(U) |-> {e0,e1,e2,e3….en}ϵ E
Let fm be rule of U into F where user posts query into forum
    fm(U) |-> F i.e. fm(U) |-> {q0,q1,q2…qn}ϵ Q

IV.   CONCLUSION AND FUTURE SCOPE

The Mobile learning is an emerging track of Learning and advancement of technology towards making things simpler. The application will also prove to be best use for students and anyone who wants to learn. The application will help to understand and study the concepts more precisely. In future, we can implement real time configuration for network devices like Routers , Switches etc. situated on cloud through this application. Practicals implementation along with one way data can also be possible in advancement stages of this particular application. Through such application,the students will be able to learn and do hands on practice both. This will also become a step to the future coming trends of mobile computing.

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