

# Study of Mobile Learning System Based on Android

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## Abstract

With the rapid development of Mobile Internet, Mobile Learning gradually shows a strong superiority of its anytime and anywhere learning. The paper designs a mobile learning terminal platform based on Android System. The main functions of the System are: student registration and login, student selects and learns their courses; teacher registration and login, teacher releases and teaches courses; administrators manage user information and system information. The system uses the Java language and the Eclipse development environment to design and develop. So that the learners can get knowledge whenever and wherever possible, realizing the true meaning of automatic learning. Finally it can realize the socialization and lifelong learning of study.

## Keywords

Mobile Learning System; Android System; Java Development Language.

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## 1. Introduction

With the rapid development of mobile Internet technology and the popularity of Android smart phones, mobile learning is more and more practical. Compared with the traditional education model, it has many advantages.

The characteristic of mobile learning is that learners can learn at any time and anywhere. As mobile terminals are convenient to carry, users can make full use of fragmented time. By communicating with teachers and other study partners, learners can solve their problems in time and improve their learning efficiency. Based on the above requirements, this system aims to design and develop an android-based mobile learning system.

## 2. Background and significance of system development

### 2.1 System development background

In recent years, the rapid development of mobile Internet technology, followed by the transformation of our learning mode: mobile learning. It makes people's desire to learn anytime and anywhere possible. At the same time, we can independently choose knowledge to learn, which greatly ADAPTS to the needs of the current society. At the same time, Android system has been widely used for its excellent features, which makes it feasible to design and develop a mobile learning system based on Android platform.

### 2.2 Goals and significance of system development

The traditional learning mode has its inherent characteristics, such as fixed place and time, which require great input from learners. However, it is difficult to motivate students' initiative in independent learning due to its lack of pertinence. The current development of the Internet has changed many

traditional industries, education is also among them. Netease's series of mobile applications such as netease open class are outstanding representatives, so it is necessary to make a mobile learning system. Mobile learning system is of great significance for people to make use of fragmented time and improve themselves. In particular, we can obtain the top and most timely education information online in real time.

After installing the mobile learning system, the user can register relevant information according to the prompt operation. After registration, the user can learn the course. Meanwhile, the user can record the problems in time and ask the teacher for help in order to get better teaching results by using the functions such as note and consultation.

### **3. System-related technologies**

This mobile learning system is developed using Java language, and adopts the official integrated IDE, namely adt-bundle (already including Eclipse), to build the development environment, as well as the use of some plug-ins, to design and develop an android-based mobile learning system.

#### **3.1 Java**

Java, a general term for the Java object-oriented programming language and Java platform introduced by Sun, is an object-oriented programming language that can write cross-platform applications. Java technology, with its superior versatility, efficiency, platform portability and security, is widely used in PCS, data centers, game consoles, scientific supercomputers, mobile phones and the Internet, and boasts the world's largest professional community of developers.

#### **3.2 Android**

Android is an open source mobile device operating system based on Linux platform developed by Google. Its architecture is divided into four layers: operating system, middleware, application framework, and application program. Android applications are developed in the Java language, and the traditional Java language runs by compiling source files into Java bytecode through the JVM.

#### **3.3 ADT - Bundle**

Adt-bundle is the development tool of Android. It is an integrated environment, which solves the complex problem that we use Eclipse to configure the Android development environment, and the integrated plug-in is the integrated IDE development tool provided by Google officially. By using the adt-bundle, we can develop Android in one fell swoop.

### **4. System design and analysis**

#### **4.1 Demand analysis**

##### **4.1.1 System user design**

Learners, teachers, administrators. In the actual process, learners and teachers are the two main users, and administrators play the role of background management.

##### **4.1.2 System function design**

(1) User login: by registering as a user of the system, first-time users can conveniently record their learning information and continue learning anytime and anywhere.

(2) Course learning: course learning mainly provides the course content for learners to learn, and students can choose courses independently; The teacher mainly introduces and explains the course in depth. The administrator manages the system to maintain the normal operation of the system.

(3) Video playing function: the learning mode screened by video is twice as effective for learners. By uploading video resources, teachers can enable learners to learn and download the video resources, and improve teaching efficiency through the interaction between teachers and learners.

(4) Social function: because mobile learning has the feature of being anytime and anywhere, learners may have no peer around the reality, so it is very necessary to add social function.

#### **4.2 Diagram of system function modules**

According to the above demand analysis, draw the general function module diagram of the mobile learning system, as shown in figure 1 below, which respectively represent the main functions of each user of the mobile learning system.

### **5. Database design**

The system user table is mainly used to store three types of users of the mobile learning system: learners, teachers and administrators. Include user name and password two fields.

The learner information table is mainly used to save the role information of course learning users.

The teacher information table mainly records the personal information of teachers and the courses taught.

The course information table mainly records the course number, course name and related course introduction.

### **6. Design and implementation of the main functions of the system**

According to the demand analysis, this mobile learning system is mainly divided into two major design modules: user design module and function design module. The user design module is mainly used for the registration and login of related roles. The function design module is the related functions given by the user after login, which is mainly divided into the modules of course learning, video play and social function. The following is the flow chart of the course selection for students. This diagram shows the process of the course selection for learners in the mobile learning system, as shown in figure 4 below.

#### **6.1 User design module**

The main function of user design module is registration and login of three kinds of users, namely administrator, learner and teacher. After the user opens the mobile learning system, the user login and registration interface will appear. If the user does not have registration information, he/she needs to input relevant personal information for registration. After registration is completed, he/she can choose according to his/her identity and then log in the system to use the corresponding functions.

The user opens the system and displays the home page. The user can log in after entering his or her own login information. If not registered, registration is required.

#### **6.2 Function design module**

Function design module is the main function design of the mobile learning system. According to the previous demand analysis, the learning system has course learning, video media resources and social functions. The following is a detailed introduction of each function.

##### **6.2.1 Course learning module**

The course learning module is a function module which realizes the course learning after the user logs in the system. Take learners for example, they can choose a course they like to learn. As shown in figure 5,6 below, after learners select the course, they can check the specific information of the course in the course information page, including the lecturer and course introduction. Users can also have a preliminary understanding of the course through the chapter list. In the process of learning, learners can also record key knowledge by taking notes.

##### **6.2.2 Video playback module**

Video play module is the function that can learn video uploaded by corresponding teachers after learners choose courses. Video teaching is a popular way of learning at present. Video is uploaded by teachers, students can pause, fast forward/fast back and play again in the learning process. In addition,

video of this system also provides download function, so that learners can study anytime and anywhere.

Video playback is mainly implemented through JMF, an Application interface that combines audio, video, and other time-based media into Java Application and Java applets. The JMF determines the exact location of video through the MediaLocator, and then constructs the player to play. A JMF player has its life cycle and monitors its various states.

### 6.2.3 Social module

The convenience of mobile terminals also determines their demand for social functions. The social function provided by this system can provide online communication between students and between students and teachers and timely discussion. The system stores messages and emails received by users through Communication Service. Here are the five key points of the system:

## 7. Summary

In the current society, the mobile Internet has been widely into people's life, becoming a major trend of the current development of the Internet. Therefore, mobile learning is highly feasible. It has the convenience of learning anytime and anywhere, which greatly expands the development of traditional education. This paper analyzes in detail the design and development mode of Android mobile learning system, which is mainly divided into user design module and function design module. Users log in through the registration system, and then learn related courses. Teachers release and teach courses. Administrators are the administrators of the learning system.

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