



Design and Implementation of College English Listening Learning System Based on Android Platform

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Abstract. With the rapid development of information technology, mobile devices provide a new learning mode for learning, enabling scholars to obtain the knowledge they want at any time and anywhere, and achieve autonomous learning. The design and implementation of college English listening learning system based on Android platform is a project that will be used to develop Android based applications. The application will be used to improve college students' English listening. The purpose of this project is to provide a platform for college students who are unable to concentrate or pay attention in class because they do not have good listening skills. This paper studies the college English listening learning system based on the Android platform, aiming to achieve college English listening learning on the mobile platform, provide students with a good English listening environment, and improve college students' practical English communication ability. This system will help them learn how to listen effectively, so as to achieve better results than before. In order to enable users of the system to achieve their goals, they need to make some modifications to the way they use mobile phones when learning.

Keywords: College English · Android platform · English listening learning

1 Introduction

With the advent of the information age and the increasingly frequent international exchanges, English has become the main international language in the world today. The official meetings, government documents and diplomatic activities of most countries are all in English. English is widely used. More than 70% of the world's emails are written in English; More than 70% of the world's scientific and technological publications are published in English; 60% of the world's radio programs are conducted in English; English is the first common language in most international conferences [1]. With the accelerated process of economic globalization, all non English speaking countries are increasing their English language education. In China, since the reform and opening up, the whole society has paid more and more attention to English learning. English has become a compulsory course for primary and secondary schools, universities, and graduate students across the country. It is one of the compulsory subjects for various

entrance examinations, graduation examinations, degree examinations, professional title examinations, overseas examinations, and even some job search examinations, English level has become an important indicator of people's comprehensive ability [2]. School education and e-learning training have gradually applied mobile schools to learning. The United States Department of Education pointed out in a research report that comparing mobile schools with simple classroom teaching and distance online learning is the most effective way of learning. Mobile schools have first been widely promoted and applied abroad, and have emerged relative platforms in the field of education in China. However, in recent years, scholars have gradually developed a mobile school model with flexibility and convenience according to the Horizon Report, which helps cultivate students' creative thinking, independent research and cooperative exploration ability, help teachers customize learning plans for students, and effectively improve students' learning achievements. In recent years, it has gradually become the focus of research. The development of learning analysis and adaptive learning technology will continue to promote the application scope of mobile schools and maintain its attractiveness. Mobile schools cover the advantages of face-to-face teaching and online teaching. It can not only help students learn systematic knowledge in classroom teaching, but also help students learn according to their own learning style. For teachers, we can also improve the teaching mode and conduct diversified subject teaching. Mobile school mode is increasingly popular with teachers and students. Mobile school models are diverse. According to the characteristics and needs of specific modules in different disciplines, we can find suitable models to achieve independent learning, cooperative learning, inquiry learning and other teaching objectives.

In terms of teaching philosophy, the new curriculum standard advocates the concept of mobile school. It is proposed that English teaching should meet the needs of students' personality development, pay attention to the application of modern information technology, and enrich the learning resources of English courses. In the context of modern information technology, according to the learning characteristics of students' significantly enhanced awareness, we should actively promote the deep integration of English curriculum implementation and information education technology, and scientifically organize and implement mobile schools. Modern information technology supports mobile school mode. On the basis of the traditional teaching mode, the space of English teaching is expanded to online learning, which increases the flexibility and interactivity of students' learning. At the same time, English teaching should still reasonably inherit the advantages of traditional teaching, that is, face-to-face communication between students and teachers. This can fully feel the personality charm and education temperature of teachers.

Listening and speaking are the basic forms of human information communication, and "listening" is an important means for people to obtain information, and it is also the central link of language communication. According to an American survey, normal people spend 70% of their waking time in various forms of communication activities, including 11% for writing, 15% for reading, 32% for speaking, and at least 42% for listening [3]. Therefore, listening ability is the key to English comprehensive communicative competence. In 2007, the Ministry of Education officially issued the newly formulated College English Curriculum Teaching Requirements (hereinafter referred to

as the “Teaching Requirements”), which clearly stated that the teaching goal of college English is to cultivate students’ comprehensive English ability, especially listening and speaking ability, so that they can communicate effectively in English in their future study, work and social interaction, and at the same time enhance their autonomous learning ability and improve their comprehensive cultural literacy. In order to meet the needs of China’s social development and international exchanges, “as a contemporary college student, we should enhance our awareness of the times, strengthen the study of English, an international common language, and strive to develop English listening and speaking ability, so that we can become talents to adapt to the new century.” It also points out that education and network information technology should be combined to break through the limitation of time and space and provide more abundant learning resources and individual guidance for learners. Mobile learning caters to this demand, enabling students to change passive learning into active learning. And extracurricular mobile learning is more conducive to making full use of students’ free time, and students can improve their learning skills even when they are on the move [4]. Therefore, the English learning model based on mobile learning will be the trend of future development.

2 Related Work

2.1 Domestic Research Status

With the rapid popularization of smart phones, domestic mobile learning researchers have gradually turned their attention to smart phones. The so-called smart phone refers to “a generic name of such kind of mobile phones that, like personal computers, have an independent operating system and can be installed by users themselves with software, games and other programs provided by third-party service providers, through which the functions of mobile phones can be continuously expanded and wireless network access can be achieved through mobile communication networks”. By December 2012, 28 master’s theses had been published by searching the literature of nearly ten years on CNKI, using “smart phone” and “mobile learning” as keywords [5]. After sorting out, the main research contents can be summarized into four aspects: (1) design and development of mobile learning system based on Wap; (2) Design and development of client based mobile learning system based on different intelligent operating systems; (3) Design and development of mobile teaching resources; (4) Research on mobile learning mode, strategy, curriculum design, etc. In the study of the client based learning system, there are only 3 articles about English, but there is no research on English listening.

Nowadays, mobile learning has entered 12 years in China, and has made great progress both in theoretical level and technical practice. More and more enterprises have joined in the research and application of mobile learning, and mobile English learning has become a new field. In 2005, following the “Xingxue Family”, Beijing Dish Zhongdian Wireless Technology Development Co., Ltd. Developed an “English Mobile Communication” learning software, which was initially only installed on Nokia and Bird mobile phones. In recent years, it has developed to support the use of all smart phone users [6]. In 2007, the mobile campus of Shanghai RTVU made a great breakthrough in mobile learning, and jointly developed a “mobile English learning system”

with relevant companies, taking the first step towards the real “mobile language interactive teaching”. The “Mobile Interactive English” jointly launched by Anhui Mobile and iFLYTEK in 2010 is an English learning product for primary and secondary school students and parents. Students use the “Mobile Interactive English” learning software to learn English, and parents can learn about their children’s English learning at any time through the system’s feedback mobile messages, effectively improving students’ interest in English. At the same time, it has established channels for parents to directly obtain children’s learning information. In addition, there are some mobile English learning software, such as Palm English, I love memorizing words, Crazy English, etc. Many large well-known websites in China have also successively launched mobile language learning services, such as Hujiang English, Coco English, Pute English, ICIBA, etc., which have all boarded the mobile terminal platform to realize the synchronous access function of web pages and mobile phones.

2.2 Mobile Learning Theory

With the continuous development of information technology, mobile learning theory is gradually applied to various mobile devices. As a personalized learning education, it is loved by the majority of scholars. Mobile learning is an extension on the basis of digitalization. It has many characteristics of digital learning, and can be seen as included in mobile devices, mobile learning environments and mobile learning content. The mobile learning theory is studied from three aspects: mobile devices, mobile learning environments and mobile learning content. Among them, mobile learning devices are designed with small size and light weight as the starting point. The main mobile learning devices are mobile phones, tablets and laptops, which are convenient for users to carry around and enable learners to operate mobile devices anytime and anywhere when they need to learn. Of course, mobile devices need to have digital processing capabilities, be able to connect with the network, and share information through USB, Wifi, Bluetooth, wireless networks, etc. [7]. Compared with the traditional learning environment, the mobile learning environment has great changes. The main characteristics are that the learning content should be refined as much as possible, the operation interface is simple and the multimedia format is limited. Mobile learning content should be more thematic, so that mobile devices can support as long as possible. This is because in the current market, batteries are still the weak point of electronic products. Therefore, we should focus on detailed learning content, try to make learning time longer, and help learners complete the realization of learning units. Mobile learning content requires learners to define their own learning objectives, select learning content suitable for mobile devices, conduct self-monitoring and management, promote the use of mobile devices to learn emotions, and enhance learning effects [8]. The learning content of different scholars using mobile devices is different, with personalized tags. Learners can develop good learning rules by operating their mobile devices for a long time, so that the learning content can meet their own interests. Any learning device will not be kept around like a mobile device at any time. Learners should choose mobile learning content according to their actual needs to make mobile devices play their best role.

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2.3 System Development Tools

1. PHP generates JSON data: PHP (foreign name: PHP: Hypertext Preprocessor, Chinese name: “Hypertext Preprocessor”) is a general open source script language. The syntax absorbs the characteristics of C language, Java and Perl, which is easy to learn and widely used, and is mainly applicable to the field of Web development. JSON can convert a set of data represented in JavaScript objects into a string, and then it can easily pass the string between functions, or pass the string from the Web client to the server-side program in asynchronous applications [9]. This article uses PHP files to parse database tables and generate JSON data.
2. HBuilder: HBuilder is a web development ide that supports html5 launched by DCloud (Digital Paradise). Fast is the biggest advantage of HBuilder. HBuilder can greatly improve the development efficiency of html, js and css through complete syntax prompts, code input methods, code blocks and many supporting facilities. This paper uses HBuilder to write PHP files.
3. XAMPP: XAMPP (Apache + MySQL + PHP + PERL) is a powerful XAMPP software station integration package. Many people realize from their own experience that it is not easy to install Apache server. If you want to add MySQL. PHP and Perl, it will be more difficult. XAMPP is an Apache distribution that is easy to install and includes MySQL, PHP, and Perl. XAMPP is really easy to install and use: just download, decompress, and start. This article uses XAMPP to build Apache server and MySQL database.
4. Eclipse: Eclipse is an open source, Java-based and extensible development platform. As far as it is concerned, it is just a framework and a set of services for building development environments through plug-in components [10]. Fortunately, Eclipse comes with a standard set of plug-ins, including the Java Development Kit (JDK). This article uses Eclipse as a tool and Android as a platform to develop a simple news client application to realize the layout of the news list interface, JSON data parsing and filling, as well as the jump and display details of the news list interface.

2.4 Construction of Server and Database

The server setup is completed on the local machine. After installing the XAMPP software package, open it, as shown in Fig. 1. Start the Apache server and MySQL database, click Admin to enter the management interface, create a new database named newsdemo with the sorting rule of utf8, and then create a database table named news, create six fields, and insert two corresponding news data.

As shown in Fig. 2, the table news in the database has six fields. The first field is called id, which is the serial number of English listening[11]. The serial number is the primary key of English listening, so that each English listening does not repeat. There are five other fields related to English listening content: title (title), desc (brief overview of English listening), time (English listening time), and content_Url (English listening

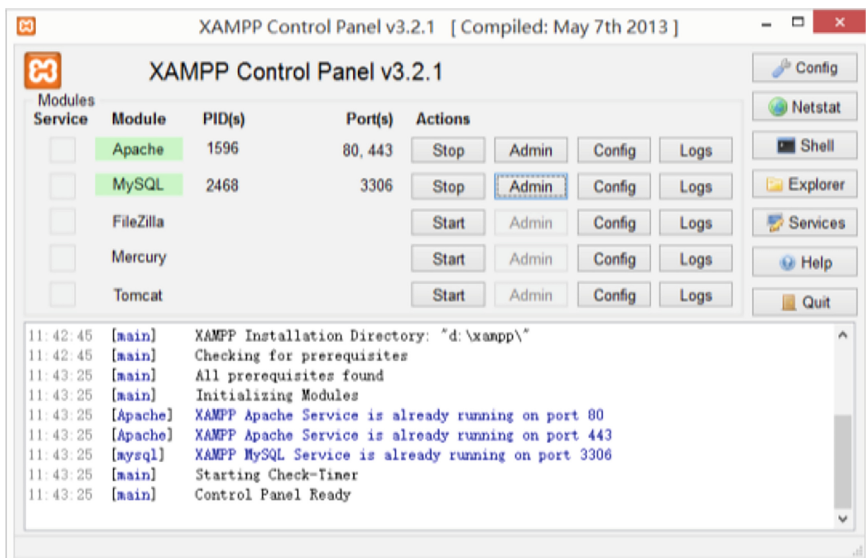


Fig. 1. Start Apache and MySQL with XAMPP

content link), pic_Url (English listening picture link). The final effect is to convert all the data in the table into JSON data format through a PHP web page, namely <http://lxxx/getNewsJSON.php>, and then you can get the JSON string at the bottom of the figure, that is, a JSON object wrapped in an array, which contains five key value pairs, which are five elements of English listening.

id	title	desc	time	content_url	pic_url
1 (自增)					

<http://xxx/getNewsJSON.php>

```
[{"title":"xxx","desc":"xxx","time":"xxx","content_url":"xxx","pic_url":"xxx.jpg"}]
```

Fig. 2. Database table news

Write a PHP web page through the HBuilder editor, connect to the database, and output the current data to JSON format. Create a new `getNewsJSON.php` file to obtain JSON data, and a `mysql_The.connect.php` file is used to connect to the database [12].

3 College English Listening Learning Based on Android Platform

3.1 Android Platform

Android platform is a new technology product developed based on Linux kernel and mainly launched by Google. It is very open and has attracted many manufacturers. Android platform has gradually become mature. Its main advantages are as follows:

(1) It has an application framework, which is mainly used to create classes for Android applications, enabling developers to access the encapsulated hardware underlying mobile devices. Even third-party applications can access the library of the Android platform, and can directly call the library without re launching, providing convenience for program developers.

(2) The Android platform uses Dalvik virtual machine technology and is built through registers. It is specially developed by Google for mobile devices. Java applications running on the virtual machine need to be converted into an executable format Dex is suitable for systems with small memory and slow processor speed. The Dalvik virtual machine can make mobile devices run at a good speed even if it takes up small development resources [13].

(3) The Android platform uses SQLite data storage. The SQLite database is embedded, supports structured data storage, takes up less resources and space, and can support transaction processing. At the same time, the Android platform also has powerful multimedia functions, which facilitates the development of applications.

(4) Android platform also provides GSM driver module, Bluetooth, 3G, WiFi and GPS technology, which can realize wireless transmission of voice, video and other data and enable mobile devices to obtain global services. The Android platform provides a very complete API and development tools for developers to develop programs.

3.2 Analysis of English Listening Teaching Methods

In the college education system, the status of English teaching has been gradually improved in recent years. Many experts and scholars have vigorously advocated the importance of college English teaching, especially the proportion of college English listening in English teaching is gradually increasing, so as to improve English practical ability [14]. The method of English teaching has also developed from traditional explanations to autonomous learning, and the teaching technology has also developed from traditional tape recorders to multimedia network teaching. The teaching methods of English listening can be divided into two kinds: from top to bottom and from bottom to top. From bottom to top, they are mainly divided around the structural knowledge of language learning. They are gradually realized from the bottom to the top. They analyze and understand the listening materials in the way of pronunciation, words and sentences until they can understand the whole listening content. The bottom-up teaching method attaches great importance to students' basic English ability. Teachers will first deal with students' knowledge difficulties such as words, grammar and semantics, and then help students solve listening problems. This method is because in many exams, students are not able to write what they hear on the answer sheet. It requires students to understand what they hear, but because the language background and customs are different between

China and foreign countries, This requires explaining the language context before playing listening materials [15]. From top to bottom, students can summarize themselves according to the specific listening content and realize the process of meaning. At present, many colleges and universities use this teaching method to enhance students' interest in learning, rather than learning every word and sentence. In fact, if you want to really improve the students' English listening level, you should organically combine the two to understand the article from the perspective of pronunciation, words and sentences, and at the same time, you can use meaning to further understand the listening materials.

However, in the teaching of English listening in many colleges and universities, due to the limitation of time and energy, the completion of English listening in the classroom is limited. Students need to arrange time to complete English listening in the classroom according to their own actual situation. They should listen persistently, consolidate listening knowledge, and make them really improve their own listening level. The English listening learning system proposed in this paper can be completed on mobile devices to achieve personalized teaching. The English listening materials obtained are more novel and fast, providing students with opportunities for self-learning [16]. At the same time, the implementation of the mobile English listening learning system can provide students with various teaching modes, choose learning content according to their own needs, and help cultivate students' metacognitive strategies.

4 Design of College English Listening Learning System Based on Android Platform

When designing the system, it is necessary to ensure that the learning interface is designed friendly and the interface is beautiful. Because the style of learning sister directly affects the learning effect of students. The design of learning interface should be based on the characteristics of mobile phone interface and software application. The interface structure, text and color matching, style layout, and the design method of guidance interface will bring users a different experience. When designing the learning interface of this system, according to the English listening teaching theory and the needs of users, the listening learning module is divided into five modules, namely, the user management module, the word query and memory module, the listening classroom module, the video learning module, and the examination module. These modules can be displayed on the home page, covering the whole college English listening link [17]. The module division is reasonable, and the expression is intuitive, Users can quickly locate the learning content according to their own needs.

Because we want to access the network, we need to write a HttpUtils tool class to implement the getNewsJSON (method, which is used to pass in the url to get the JSON English listening data and parse the JSON English listening data. First, use the new Thread() method to start a thread, open the input stream, read the English listening data line by line, and splice each line after reading, Because StringBuilder is much more efficient than the "+" method of simple String in string splicing, the StringBuilder method is used here. After obtaining JSON English listening data, call the handler. SendMessage () method to notify the main thread. Then implement the Handler() method in MainActivity, call the handleMessage() callback method to get JSON English listening data, and the next step is to parse it [18].

Because the format of JSON English listening data is array, it contains several JSON objects. For the analysis of JSON English listening data, you can see the following code: first pass in the obtained `jsonData`, `jsonArray`. `Length()` gets the number of JSON objects, and then write a loop to get each object in JSON. The project code is shown in Fig. 3.

```
JSONArray jsonArray = new JSONArray(jsonData);
for (int i=0;i<jsonArray.length();i++){
    JSONObject object = jsonArray.getJSONObject(i);
    String title = object.getString("title");
    String desc = object.getString("desc");
    .....
}
```

Fig. 3. Overall structure of English listening learning system

The design of the college English listening learning system based on Android platform adopts the MVC software design mode, which can well separate the interface display program from the data logic processing. MVC pattern consists of three parts: data model, controller and view [19].

According to MVC mode, the overall system can be designed hierarchically, including data layer, business logic layer and view layer. The data layer is used to provide data for the whole system, including files, network data, databases and shared data. Data is obtained through the core business logic processing layer of the system to achieve business processing. The business logic layer is processed in modules according to different processing functions [20]. The main modules include core business, broadcast monitoring and background services. Each module is encapsulated and connected. The main task of the view layer is human-computer interaction, which is realized through interface operation. The overall design of the system is shown in Fig. 4.

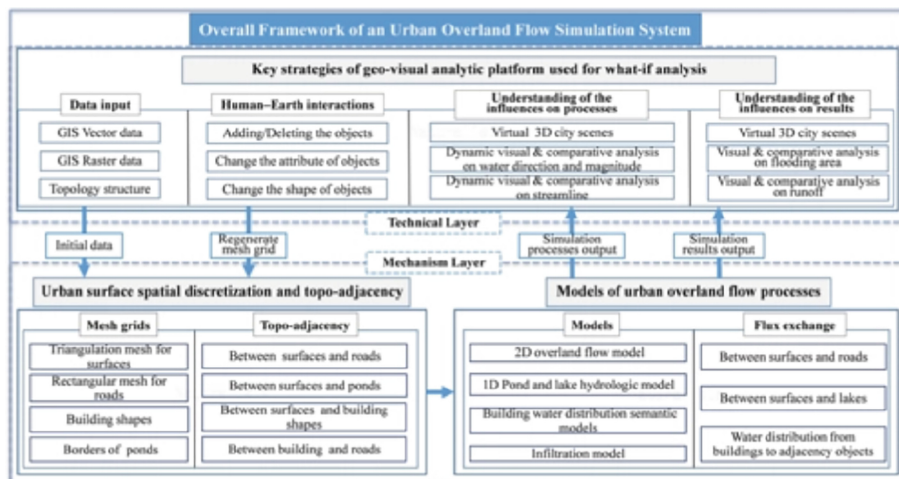


Fig. 4. Overall structure of English listening learning system

5 Conclusion

With the continuous development of information technology, the use of English has become more and more extensive, and college education has gradually improved the requirements for students' English learning. English listening has become the focus of college English teaching, laying a solid foundation for the improvement of English practical ability. The college English listening learning system based on Android platform proposed in this paper is aimed at improving college students' English listening. This system uses mobile devices to enable students to read and learn English at any time and anywhere outside class, make up for the lack of listening time and resources in class, create a good English listening and speaking environment, increase students' opportunities for English listening, and help improve college students' English listening quality.

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