Research on Optimization Strategies of College English Listening and Speaking Homework Design Based on Mobile Learning

Zhou Xue

30661794@qq.com

Yinchuan University of Science and Technology, Ningxia, China

Abstract: As a public compulsory course in colleges and universities, College English bears a self-evident responsibility. However, in teaching practice, some teaching links have not received corresponding attention, especially in listening and speaking homework, many students just perfunctory, and do not understand the particularity of listening and speaking homework. Based on the current learning situation in colleges and universities, this paper will develop a college English listening and speaking homework system, and introduce a third-party speech recognition system into the oral training of the system to help students develop autonomous learning habits and improve their knowledge mastery, so as to optimize the college English listening and speaking homework in today's mobile learning environment and establish a better environment for college English.

Keywords: college English; listening and speaking homework optimization strategy; mobile learning

1 Introduction

At present, under the background of China's educational reform, in view of the reform of college English, the traditional teaching form has been changed and gradually developed in the direction of emphasizing oral English and practice. In order to achieve the teaching goal, improve students' overall English ability development and create a new teaching environment for students, it is necessary to establish a college English listening and speaking operation system, so that students can obtain a training environment for autonomous learning and enrich teachers' teaching methods. Using mobile learning environment, auxiliary teaching has become one of the key directions of education development. Based on this, it is very necessary to establish a reasonable English listening and speaking operating system.

2 Design requirements of college English listening and speaking homework system based on mobile learning

This survey of English teachers' teaching in a university found that students' English learning situation is very different, and English teaching is in large classes, so it is difficult for teachers to carry out special teaching in English listening and speaking, which greatly increases

teachers' workload. The development of this system aims at improving college students' English listening and speaking ability, supervising students to complete training, facilitating teachers to master students' learning situation and reducing teachers' workload.

2.1 User requirements analysis

According to the needs of users, the use of this system is mainly divided into three categories, namely administrators, teachers and students.
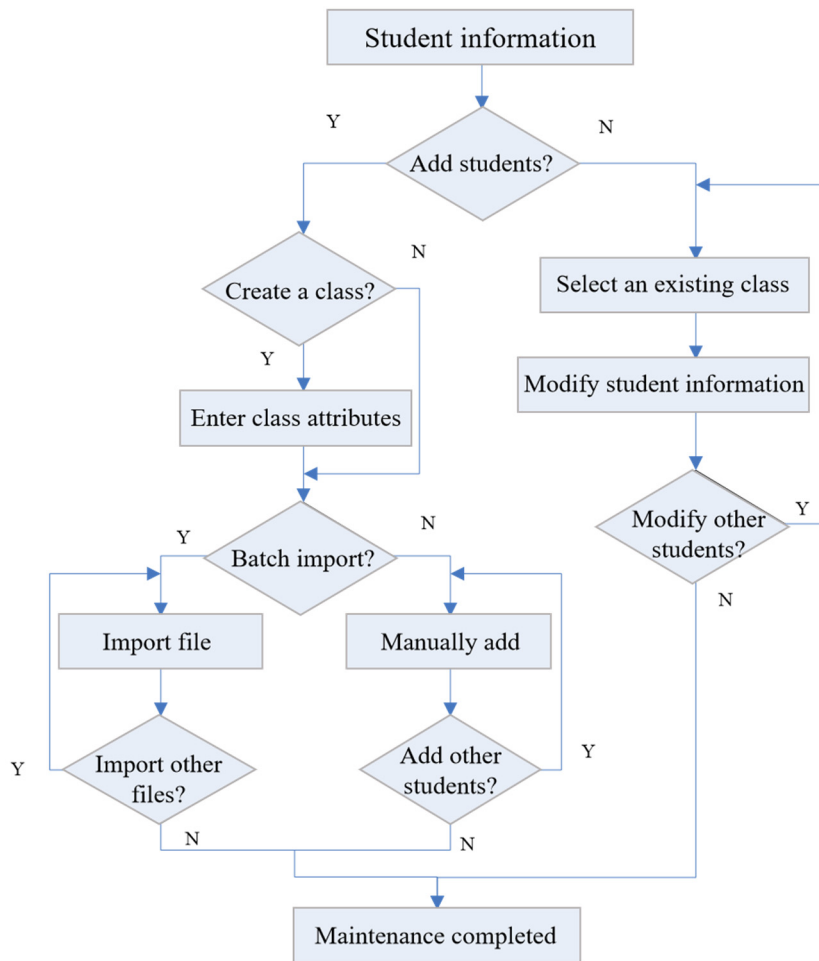
Administrators mainly provide learning materials and background resources for the English listening and speaking homework system, and maintain and manage the system. The administrator is mainly to improve the user attributes, add, assign and delete according to the school, teacher level and class, and assign the user's permission to realize the daily maintenance of the resource management and guarantee system of this system.

Teachers are mainly sub-managers. They import the class roster according to the procedures. Teachers can fill in students' attributes, distribute homework and distribute curriculum requirements according to the system, and grasp students' practice and teaching progress in time according to the completion of homework, so as to realize the mastery of students' learning.

For students, students are the largest service group in this system. The ultimate goal of the system design is to help teachers solve students' application listening and speaking ability, mainly setting listening training, oral training and learning situation check, which is the most important user demand in this system.

2.2 Main business analysis

Because students are the largest service group in this system, students' information must be well maintained in the system. The modification of students' information can be completed by teachers, who set up classes in the system, improve the class attributes according to the class situation, and introduce students' information into the classes. Teachers can also modify according to the students' situation, so as to facilitate them to master the school data of all students in the class. The process of maintaining students' information is shown in Figure 1.

Figure 1 Flowchart of student information maintenance

For homework release, teachers can first choose the type of homework, make listening and speaking choices, and then enter the question bank to choose topics. Teachers can also create their own topics, and then set the completion time or classroom content screening by class to complete the assignment release. [1]

The design of investigation and tracking of students' learning situation should comprehensively extract data from the whole class and individual students, showing students' mastery of knowledge points. Through the overall learning situation of the class, teachers can be guided to know the overall knowledge mastery level of students. The knowledge mastery of each student can help teachers teach students in accordance with their aptitude. Through the knowledge mastery of middle school students in the class, teachers can find the key points and master the teaching situation from the micro, macro, vertical and horizontal aspects, which is of great significance for teachers to formulate follow-up guidance teaching.

For the listening training business, after students log in to the system, they will answer the questions according to the listening content. The design of the questions can be set to choose, judge or fill in the blanks. If the students can't complete the listening practice, they will enter the circular listening part. If the students can't complete the questions, the system will reveal the knowledge points to help them understand the questions and complete the listening practice.

The system will complete oral training in two ways, namely, text-to-speech and speech-to-text. Speech-to-text is mainly to convert the sentences read by students into text with the help of a third-party speech recognition system, compare the system text with the text converted by the speech conversion system, mark the errors and present them to the students, and finally the students themselves can judge whether to repeat the training and complete the homework. Text-to-speech mainly means that students input text through the sentences they hear. The system compares the text converted from the sentences and presents it to students, so that students can understand the mistakes. [2]

2.3 Functional requirement design and analysis

After the analysis of the main business of the system, the functional requirements of the system are generated, and the requirements are mainly defined in four categories: login, administrator, teacher and student. Login system is a public function, which is the main way for users to enter, use and manage the system. The function of the administrator is mainly to maintain the sub-modules such as the system, listening question bank and oral question bank to ensure the normal operation of the system. The function of the teacher subsystem is mainly the right to use the functions of class and students' self-management, homework release, score export and student training tracking. The function of the student subsystem is mainly to complete the homework issued by teachers and meet the requirements of teachers through training. The system function tables of each part are shown in Table 1.

Table 1. System function requirements table

Category	Function	Illustration
System function	Login	User login system
	Personal information maintenance	The user changes the password
Administrator system	Maintenance of hearing question bank	Adding, modifying and deleting question bank
	Maintenance of oral English question bank	Adding, modifying and deleting question bank
	Teacher information maintenance	Adding, modifying and deleting teacher attributes
Teacher system	Class maintenance	Adding, modifying and deleting class attributes
	Student maintenance	Adding, modifying and deleting student attributes
	Homework release	Teachers release homework
	Achievement export	Teachers export the completion of students' homework
	Learning situation inquiry	Teachers inquire about the history training situation

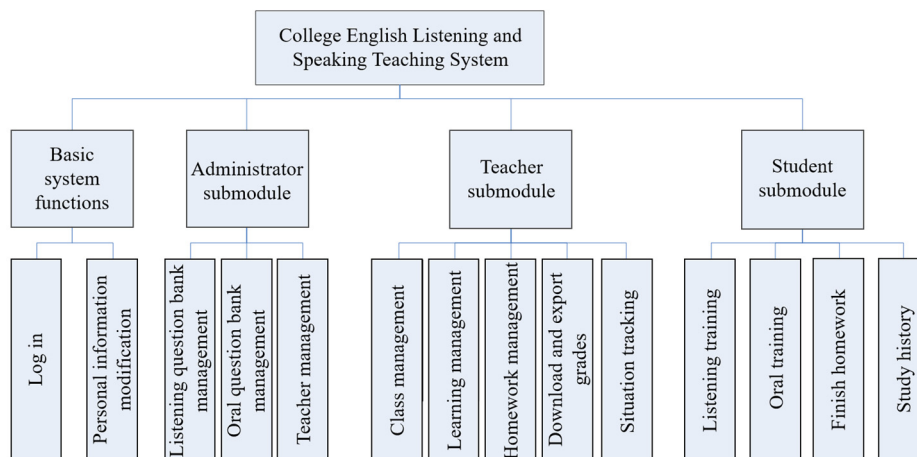| Student system	Hearing training	Students conduct listening training
	Oral training	Students conduct oral English training
	Finish homework	Complete the release homework and give feedback to the teacher
	Study history	Store the history of training and homework for students to watch

2.4 Data design and analysis

The data requirements of the system are mainly based on the data of teachers and students, and are analyzed around the business and functions of the two major users. Homework, listening and oral English also need corresponding data to support. Therefore, the entities of the system are mainly composed of teachers, students, listening homework, oral English homework, listening question bank, oral English question bank and classes. According to the actual situation, the relationship between teachers and students is one-to-many, teachers manage multiple classes, and the relationship between homework and classes, students and homework, students and listening, and oral English question bank is many-to-many.

3 Design of college English listening and speaking homework system based on mobile learning

3.1 Overall structure

This system is designed with the top-level module to control the presentation system step by step, mainly taking the college English listening and speaking operation system as the main body, setting up the basic functions of the system, and establishing it step by step with the administrator module, the teacher module and the student module. The overall structure of the system is shown in Figure 2. The basic function of the system is mainly to modify the user login and personal information, and the administrator module is mainly to build the listening and speaking question bank management, teacher attribute management and system maintenance. The teacher module mainly focuses on class management, student management, homework management, homework score export and student tracking, while the student module mainly focuses on the construction of listening, oral training, homework completion and learning history, and oral training needs to join a third-party speech recognition system to complete oral training. [3]

Figure 2. Overall structure diagram of the system

3.2 Detailed system design

1) Login system design

According to the design of login system, users must use legal channels to enter the system. Through login operation, the user enters the student number, work number and password to confirm the account type. The student type login is compared with the student data. If it matches, the user enters the student side to complete the login, otherwise, the user will not log in. The teacher type login is similar to the student type. If the teacher data is matched successfully, it will enter the teacher side, otherwise it will not be logged in. The administrator enters the administrator side to complete the login by virtue of the correspondence between the user name and the password.

2) Administrator module design

Aiming at the design of listening question bank module, this module should be designed to facilitate the administrator to modify, add and delete the listening question bank after logging in the system. When adding listening questions, ask for the path of adding materials, and keep the matching practice questions of listening. After the user gives the saving instruction, the system will enter the next process. If the material path and saving format added by the administrator do not support the system, it will automatically return to the page of adding questions, prompting the administrator to add them correctly. For the function design of deleting and modifying the listening question bank, in the operation of deleting and modifying the question bank by the administrator, the retrieval function can be established to specify the modification or deletion of materials. When the administrator clicks save, the system will save and confirm, and the modified information will be automatically saved after the second confirmation. [4]

The design of the oral question bank module is basically the same as that of the listening question bank module, and it is all about adding, modifying and deleting materials in the

module. However, the materials in the oral question bank are less than the listening materials, so the maintenance of the oral question bank is simpler than that of the listening question bank, and the construction of the oral question bank should be linked to the third-party speech recognition system. [5]

Administrators maintain teachers' information. Administrators can add, modify and delete teachers' information through the system to maintain teachers' information. The administrator enters the teacher maintenance interface, selects the operation type, and when adding teachers, first confirms the number and inputs the teacher information. After the information meets the specified standards, it uploads the database and feeds back the results. If it does not meet the rules, it returns an error message to modify it again. Delete the teacher, enter the teacher number to delete, and feedback the result after confirmation. Enter the teacher number when modifying the teacher, edit the teacher data according to the modification, confirm the feedback result after modification, and complete the maintenance of the teacher information by the administrator.

3) Teacher module design

Design of releasing homework module. Teachers enter the releasing homework module, and release homework according to the requirements of the system. The homework release types are divided into listening and oral types, and topics are selected in the question bank. After the topic selection is completed, teachers are automatically prompted to set classes, and the search function can be used to select classes. After the selection is completed, students receive the homework task.

Teachers need to track in two ways when they enter the situation tracking module. One is to track the students' learning situation, and the other is to track the overall knowledge of the class. According to the student number or class number, the teacher checks the students' historical practice and homework completion, and obtains the overall learning situation of the class and the students' personal learning situation.

4) Student module design

The listening training module is mainly to help students complete listening training. Students choose the application scope of listening materials after entering the system. After selecting the listening exercises, enter the listening training mode according to the system prompts, and a listening practice material is configured with three different types of exercises to complete the listening training.

The design of oral English module is mainly that when students select oral English materials, the system displays the text according to the topics selected by the students, and the students read aloud, which is converted into text through a third-party speech recognition system. Then the system compares the converted questions, feeds back the mistakes to the students, and prompts the students whether to retrain. For the voice-to-text mode, the system plays the original voice according to the topic selected by the students, and the students input the text according to the voice. The system compares the input text with the original voice in the database, marks the error points, and judges whether to redo it according to the actual situation of the students to complete the oral practice. [6]

3.3 Database design

For the design of the database, its core idea is to design the data entity relationship in the system according to the data of the system, support the operation of related modules, and establish teacher table, student table, listening question bank table, oral question bank table, homework release related data table, class table, etc. The establishment of entity table is shown in teacher table 2.

Table 2 Teacher Table

Field name	Chinese name	Data type	Length	Main external key	Is it empty?
id	Job number	char	10	Major key	No
password	Password	varchar	10	--	No
name	Name	varchar	20	--	No
school	School	varchar	50	--	No
title	Professional title	varchar	10	--	No
phone	Contact information	varchar	50	--	Yes

4 College English listening and speaking homework system test for mobile learning

4.1 Management system test

For the test of management system, the first is the test of administrator login module. The administrator entered the user name and password in the login interface, successfully logged into the system, and then modified the password and personal information of the system, all without defects.

The main operations of the administrator to maintain the listening question bank include entering the listening question bank, adding, modifying and deleting listening materials, and saving them without errors. The maintenance test for the oral test bank is the same as that for the listening test bank, and there are no defects.

The administrator's test of teacher information module is mainly to manage teachers, such as adding, modifying and deleting teacher information, and saving teacher information data, and no defects are found.

4.2 Teacher system test

The test of the teacher system module, the first is the test of the teacher login module, which is the same as the administrator login test, and there is no abnormality.

The establishment of class module test, the first is to establish and delete the class smoothly and complete the saving operation. After that, the class information is modified and added smoothly. In the teacher module, the test of the class sub-module can operate normally.

The main test of the student management module is to manage students and successfully complete the addition, deletion and preservation of student information. In the operation of student management, sometimes it is not timely to get changes. After modifying the system, this problem can be solved to ensure the smooth progress of the student management module by the teacher system.

In the teacher system, there are no serious problems in the homework release module, student performance management module and student training tracking module.

4.3 Student system test

The login module detection of the student system is the same as the administrator login detection, and there is no abnormality. Students' listening module and oral training test mainly focus on the module's entry, scenario selection, training test and ending training without any abnormality. The test steps for students to complete the homework module are mainly to enter the homework module and complete the homework and homework submission, there is no abnormality in the test. The detection of students' learning history module mainly tests module entry and topic query, and there is no abnormality in the test.

5 Conclusion

By establishing an English listening and speaking homework system, this paper improves the embarrassing situation of listening and speaking homework in colleges and universities, optimizes the design of listening and speaking homework, reduces the workload of teachers, establishes a good learning path for college students' listening and speaking ability, and makes the effect of college English listening and speaking course better.

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