



# Design of Online Auxiliary Teaching System for Accounting Major Based on Mobile Terminal

Yanbin Tang (✉)

Jiangxi University of Applied Science, Nanchang 330100, China  
yugsf574@163.com

**Abstract.** Online teaching is a common teaching form at present. In the process of using the online auxiliary teaching system for accounting majors, there is a defect that the memory occupies a large space. In order to solve the above problems, an online auxiliary teaching system for accounting majors based on mobile terminals is designed. Hardware part: The power supply design adopts the form of independent power supply in blocks, and configures the external memory interface of C6722B; the software part: builds a database of students' classroom behavior, migrates behavior attribute data, and uses the online teaching platform as a carrier to obtain the teaching objectives of accounting majors. The mobile terminal optimizes the data transmission function of the online auxiliary teaching system. Experimental results: The memory footprint of the online auxiliary teaching system for accounting majors designed this time and the other two online auxiliary teaching systems for accounting majors are: 357.42M, 484.96M, and 486.99M respectively. The online auxiliary teaching system for accounting majors is more suitable for use.

**Keywords:** Mobile terminal · Accounting major · Online auxiliary teaching · Teaching form · Data warehouse · Interactivity

## 1 Introduction

Modern mobile terminal technology has made rapid progress, with the terminal cost reduction and technology upgrading, function more perfect, a variety of products flooding the market. Take mobile phones as an example, China's current mobile phone users exceed 600 million, while the university campus penetration rate is basically 100%. The research on the application of mobile terminal in classroom teaching will help to open up new ways of classroom teaching, enrich classroom teaching mode and enrich educational teaching theory. As an assistant means of teaching, mobile terminal can provide classroom teaching resources more intuitively and comprehensively, and can detect students' learning status more conveniently and quickly through classroom learning tasks [1].

At the same time, the development of intelligent terminal and mobile network technology provides practical technical support for the new education mode. It is not only the

need while social development, but also the trend of educational development to take auxiliary teaching as an extension of educational service. In addition, can realize the information technology and the classroom conformity, realizes the education informationization. At the same time, the application of mobile terminals in classroom teaching can change the classroom environment, change teaching and learning scenes, improve classroom teaching efficiency [2, 3]. Relevant scholars have made different degrees of research on the online assistant teaching system of accounting major. Genetic algorithm is used to speed up the construction effect of the hardware environment of accounting major, increase the coverage of online courses, simplify the teaching process through the design of functional modules, and improve the teaching effect of accounting courses. However, this method has redundancy when dealing with accounting information data. Cluster analysis can comprehensively use the information of multiple variables to classify the samples. Through cluster analysis, it can effectively reduce the complexity of the course content and results of network accounting major, make the teaching level clear, and enhance the teaching purpose. However, the computational complexity of this method is high, and singular values will have a great impact on the data clustering results, which may cluster into chains.

This paper will also study the current situation of mobile terminal used in education at home and abroad, sort out the relevant development process, systematically study the feasibility, related theory and effective operation mode of CAI, and provide experience for the further research and development of CAI based on mobile terminal from the direction of basic theory, which is of great significance to the development and popularization of CAI, and also to the teaching reform under the Internet age.

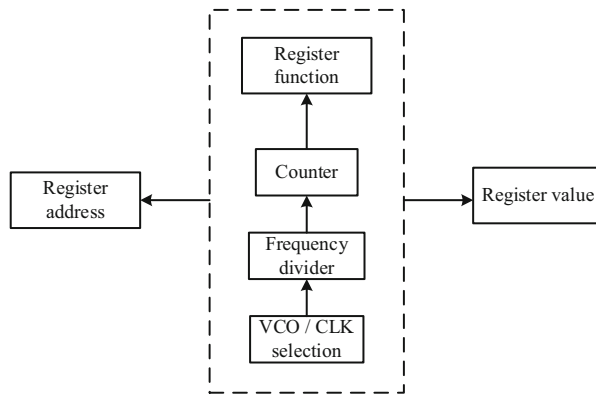
Presently, our main teaching organization form is the class teaching system. This kind of collective teaching form easily neglects each person's difference, neglects individual development. And the use of mobile terminals can give students more learning freedom and learning resources, so that students choose their own learning resources, so as to promote the development of students' personality. At the same time, teachers can further implement teaching students in accordance with their aptitude. Therefore, it is of practical significance to combine the traditional classroom with computer application technology and Internet technology, fully mobilize the atmosphere and enthusiasm of students in the classroom, improve the quality of classroom teaching, make use of the advantages of the Internet +, and make use of novel and vivid interaction to design and develop a well-interactive and functional online auxiliary teaching system for accounting majors that meets the needs of modern teaching.

## **2 Hardware Design of Online Auxiliary Teaching System for Accounting Major**

For the designer, the key of the design is to set the resistance-capacitance parameters of the loop low-pass filter. If the parameters of the loop filter are not properly configured, the clock phase locking of the AD9517-3 will fail without clock output. Because the system adopts dual CPU core microprocessor, there are many peripheral circuits. In order to avoid the breakdown of the master-slave processor or the influence of the master-slave CPU on the peripheral circuit, the power supply design of the whole system adopts

separate independent power supply. The AD9517-3 has an on-chip integrated phase-locked loop that integrates the phase detector and the VCO internally, requiring the user to design only the loop lowpass filter.

The PLL is a phase negative feedback control system. The system mainly consists of clock source crystal oscillator, phase discriminator, loop low-pass filter and voltage controlled oscillator. The specific scheme is as follows: LM2576: 7 ~ 40V input voltage, 5V output voltage, as the input voltage of the lower stage voltage chip. AP 1117: 5V input voltage, 3.3V fixed output voltage, power supply for STM32 and its peripheral devices. In the hardware of online assistant teaching system for accounting major, the configuration of register is shown in Fig. 1.



**Fig. 1.** Register Configuration Structure

As can be seen from Fig. 1, the register configuration structure includes: register function, counter, frequency divider, VCO/CLK selection, register value, and register address. After the error voltage output by the phase detector is filtered by the loop low-pass filter to filter out the high-frequency noise, the output signal frequency of the voltage-controlled oscillator is controlled to realize the feedback control of the phase. The frequency of the output signal is locked to the frequency of the input signal, and when the loop low-pass filter is stable, a stable sampling clock is output. TPS70345: 5 V voltage input, 3.3 V/1.2 V two-way output voltage, 1.2 V provides core voltage for C6722B, 3.3 V provides voltage for C6722B I/O port and its peripheral devices DCP0105: 5V voltage input,  $\pm 5$  V Two voltage outputs, designed to power the TL084 operational amplifier.

Database server: TS300-ES is recommended for database server. It is a well-built vertical/rack-mount 5U server with built-in PSBP-E/4L high-performance motherboard and supports Xeon 7100 series CPU in Intel LGA775 package. The data storage capacity directly affects the data processing efficiency, and the core data processing tasks are all completed in the DSP data processing unit. Therefore, the configuration of memory resources is essentially to configure the external memory interface of C6722B.

Core Intel Xeon processor 7100, highly expandable up to 16GB memory type. The SATA controller adopts Intel ICH7R, supports 4xSATA2 300 MB/s, supports software

RAIDO, 1, 10 and 5 settings. Using the ADIsimCLK simulation tool, the user only needs to set parameters such as the input reference clock frequency, the charge pump current size, the VCO frequency division factor, and the order of the loop low-pass filter network. After running ADIsimCLK, the resistance and capacitance parameters of the loop filter network can be obtained.

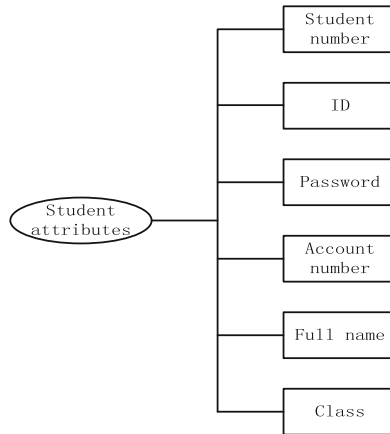
### **3 Software Design of Online Auxiliary Teaching System for Accounting Major**

#### **3.1 Build a Database of Students' Classroom Behavior**

The collection of students' classroom behavior data should be carried out closely around the purpose of data collection. The purpose of collecting students' classroom behavior data is to realize the permanent preservation of classroom behavior data and provide the necessary data basis for teaching decision-making. In the teaching environment based on mobile terminals, data collection is mainly carried out through mobile devices. In the data service layer, it contains the database that stores a large amount of data, and the software used to manage and maintain the data. The data service layer is responsible for providing data to the operation logic layer and then to the user interface layer. Therefore, the user terminal cannot directly access the contents of the database, and must be connected through the operation logic layer, thus improving the security of the system.

All kinds of classroom activities are designed around mobile devices, and a certain button or click behavior of a mobile device corresponds to a certain classroom activity or function. Therefore, the collection of behavior data in this environment is actually the collection of functional information of teaching software on mobile devices. The three-tier architecture adopts the client/server operation mode, and each layer can be developed by different teams with different programming languages and tools at the same time. Since changes in the functions of individual tiers do not affect other tiers, it is very easy to deploy in the enterprise. When it is necessary to modify or add new functions at any level, it will not affect the normal operation of other levels. The storage module in this process is mainly used for real-time transaction processing in the classroom, and can perform complex real-time insertion, deletion, update and other data operations.

The storage module provides the original data source for the data warehouse. During the data extraction process, the behavior attribute data corresponding to the storage module and the data warehouse can be directly migrated. The attribute data that is not in the storage module can be extracted and organized by the data conversion tool and stored in the data warehouse. Adopt 3-tier framework and use database software to build dynamic website, in addition to making the website have the characteristics of interacting with users. In the system development stage, each level can independently use different tools for development in a modular way. The collection and analysis of data is one of the necessary skills in the Internet age. From individuals to large enterprises, they need to rely on data as the basis for decisions and choices. Classroom data occupies an important position in teaching research, and is an important reference for teachers to improve teaching strategies and improve teaching effects. The attribute map of students in the database is shown in Fig. 2:



**Fig. 2.** Attribute map of students in the database

As can be seen from Fig. 2, the student attributes in the database include: student number, ID, password, account number, name, and class. In the future, if the functional requirements of any level are changed, it can be updated independently without affecting the operation habits of other levels. For website administrators, the information can be classified and stored in the database. And through the program to generate the web page, without the need to manually manage the content of the web page and generate new hyperlinks. This makes management more convenient and content updates faster. After determining the objects and methods of data collection, the preservation of data should also be considered. The data storage method is realized through the database.

There are many mature database management systems, and all of them can be connected with a variety of software development technologies and network technologies. The establishment of the data warehouse can be roughly divided into the following steps: System theme design, that is, the application goal of the data warehouse. Plan the physical structure and logical structure of the database table, so that the design of the database can reach a more optimized mode. It can better manage users' data, ensure that the system can manage data quickly and conveniently, and meet the needs of system functions. System logic model design, that is, the relationship between each entity table of the database and the event table. Relational database design, that is, the relationship between the database tables and the design of the attributes of each table. The design of the physical structure of the system, that is, the technical means and methods required for the realization of the data warehouse system. The last is the maintenance of the data warehouse system.

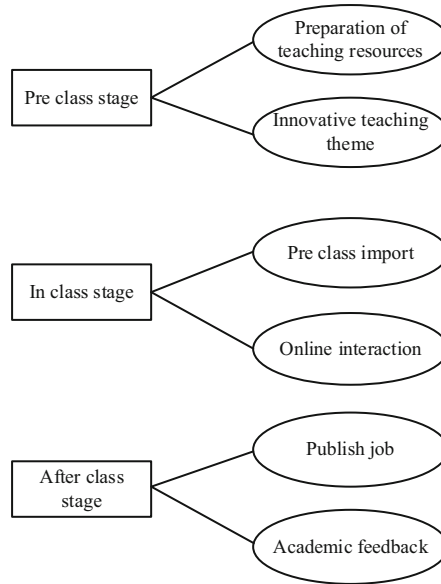
### 3.2 Acquire Accounting Teaching Objectives

In terms of teaching objectives, the accounting major focuses on the current economic society and the characteristics of various enterprise units and the requirements for accounting practitioners, and simultaneously pays attention to both the students' accounting professional ethics and professional knowledge and skills. Online teaching

is not an “online recurrence” of traditional teaching, but is based on the design of online resources and online teaching platforms to reshape the teaching methods of teaching activities. Turn the disadvantages of online teaching into opportunities, form a student-centered teaching model, and adhere to the teaching concept of “student self-study + teacher guidance + platform supervision”. Make full use of the characteristics of online teaching, use online platform data monitoring to supervise teaching, and do a good job of checking and filling gaps in students’ learning through the formulation and release of online teaching resources, so as to cultivate students’ autonomous learning ability and improve students’ independent thinking ability [4].

The online teaching mode is a relatively stable teaching activity framework and program constructed by certain teaching theories. It uses the Internet as a medium and an online teaching platform as a carrier to share learning resources in online classroom teaching [5, 6]. The five elements of theoretical basis, teaching objectives, teaching conditions, teaching procedures, and teaching evaluation constitute a complete teaching model. These five elements with different functions are interconnected to form a complete teaching model. In terms of professional ability, accounting graduates should be able to adapt to the needs of career development, have a certain degree of autonomy in learning; have the basic information technology application ability to operate modern office software; Standardized writing and other basic skills; module 4 is to fill in accounting vouchers, the main content is to understand accounting vouchers, understand the business processing of various vouchers and prepare accounting vouchers for various economic businesses. Module 5 is the registration book.

The teaching content of accounting professional training involves the cultivation of students’ basic professional knowledge, accounting practical skills and accounting professional ethics. The consolidation of knowledge and the cultivation of accounting professional ethics throughout. Master the steps to prepare a simple financial statement, and know how to view the main content of a simple financial statement. The seventh module is to sort out and keep accounting data. Mainly to understand the main accounting materials, classify and organize accounting materials, and module 8 is accounting assumptions and cycles. According to the training of skilled accounting personnel that meet the requirements of modern society. The school’s accounting training courses mainly include post-intensive training, manual accounting simulation training, computerized accounting simulation training, and ERP sand table simulation training. The main teaching content of the accounting major is divided into three stages, and the teaching objectives of each stage are shown in Fig. 2:



**Fig. 3.** Teaching goals for each stage

As shown in Fig. 3: The three teaching stages and contents of the accounting major are: pre-class stage: preparation of teaching resources, innovative teaching topics; mid-class stage: pre-class introduction, online interaction; post-class stage: homework release, learning situation feedback. At the same time, when cultivating accounting students, most colleges and universities combine vocational skill level certificates and graduation certificates to establish the training goal of “multi-certificate” to maximize the comprehensive vocational skills of students. In terms of professional quality, during the three-year education process, the school should focus on cultivating students’ professional ethics and legal awareness, so that they can be honest and self-disciplined in their jobs, adhere to the guidelines, and have good communication skills and team awareness. At the same time have a healthy body, a healthy personality and good behavior habits.

Under the guidance of the concept of “online classroom”, the author reconstructs and organizes the teaching content based on the students’ ability goals. There are a total of 8 modules in the accounting online textbook, and the first module is to understand accounting. The second module is to fill in the business documents of the enterprise, mainly to understand various documents and the original documents. The third module is to understand the debit and credit bookkeeping method, the main subject is accounting elements, accounting subjects and accounts.

### 3.3 Mobile Terminal Optimizes Data Transmission Function of Online Auxiliary Teaching System

A mobile terminal refers to a computer device that can be used on the move. Broadly speaking, it includes mobile phones, laptop computers, and POS machines [7]. But most

of the time, it refers to smartphones and tablets. Smartphone users can place desired applications according to different operating systems. Third-party applications such as education, shopping, and gaming extend its functionality. A mobile terminal, also known as a mobile communication terminal, refers to a computer device that can be used on the move. In a broad sense, mobile terminals cover a wide range, including mobile phones, notebook computers, tablet computers, handheld Internet devices, POS machines, and even U disks, mobile hard disks, and so on.

The introduction of mobile devices based on wireless Internet into the classroom not only improves the teaching efficiency, but also brings the updating of students' classroom behavior data. Data collection begins with determining the physical environment in which the data will be collected. The data collected in this study is the classroom data of students in the teaching environment of mobile terminals. In the course of classroom teaching, the system has a database management system that performs transaction processing in real time. The database is responsible for acquiring and saving real-time data, involving real-time operations such as data insertion, data deletion, and data update. If a large number of query operations are performed in this database management system, the running speed of the database will be affected. And the database management system in each class can only be used for this class and cannot be shared with other classes. It involves all classroom interaction behavior data related to teaching in this environment, including teacher-student interaction and student-student interaction behavior based on mobile devices.

Through the management and maintenance interface of this system, it is also possible to update and maintain website content from the remote end with browsers such as IE, so that the management of website content is not limited by time and space. And apply the MVC design style to design and implement. Second, determine the method of data collection. This needs to solve two problems, one is which data to obtain, and the other is how to obtain it quickly, that is, the data transmission method. Combined with the working principle of the clustering algorithm, the data matrix of the data object is calculated:

$$L = \begin{bmatrix} Y_{11} & \cdots & Y_{1q} & \cdots & Y_{1m} \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ Y_{p1} & \cdots & Y_{pn} & \cdots & Y_{pm} \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ Y_{q1} & \cdots & Y_{qm} & \cdots & Y_{pq} \end{bmatrix} \quad (1)$$

In formula (1),  $Y$  represents the number of data objects,  $p, q$  represents an attribute value of each row and column data object, and  $m, n$  represents the data dimension respectively. Combined with formula (1), it is concluded that the most commonly used cluster evaluation method in cluster analysis is to use the square error criterion function, which is defined as follows:

$$G = \frac{\|d_\beta - s_{\beta-1}\|^2}{2} \quad (2)$$

In formula (2),  $d$  represents the cluster center,  $s$  represents the cluster set, and  $\beta$  represents the sum of squares of errors between each data sample and the cluster center

of the cluster where it belongs. The center point of the cluster in the square error criterion function is represented by the mean of the objects in each cluster, and the absolute error criterion is to select a representative sample in each class as the reference object. The latter can effectively reduce the impact of outliers and noise points on the clustering results. It is defined by the following formula:

$$K = \frac{\sqrt{\delta - 1}}{|d + s|} \times \frac{1}{\beta} \quad (3)$$

In formula (3),  $\delta$  represents the absolute error sum of all data objects in the dataset. Combined with the calculation results, the data transmission mode in the system is optimized. At present, the mobile terminals used in classroom teaching mainly include tablet computers and smart phones, and the course knowledge is usually processed by certain system software. Enter some specific codes into the mobile terminal, then teachers and students set up their own accounts, and enter their own account information to enter their own systems and public platforms. This can be used in classroom teaching. But in most cases it refers to smartphones and tablets with multiple functions. The mobile terminal or mobile device in this study refers to the intelligent mobile terminal with wireless communication function and providing various computer application functions. Mainly include smartphones and tablets. The operating system of the mobile terminal is the basis for the operation of the mobile terminal.

A mobile terminal is not only a system that connects hardware and software and hosts applications. It is also developed from the traditional desktop operating system according to the different operating environment requirements of mobile terminals. And it plays an immeasurable role in the intelligent terminal, and becomes the control point for the development of the mobile Internet industry. The source data of the data warehouse comes from multiple such databases. The data in the database is converted into new data conforming to the logical model of the data warehouse through the data conversion tool, and stored in the data warehouse. Data warehouse systems have specific topics that facilitate quick on-demand queries. In addition, it can be distributed and stored and there is a large amount of redundant information, so there is no need to worry about the problem of equipment storage, ensuring the permanent preservation of classroom data. The Learning Module is the central point that connects the other modules, through which you can enter any other module.

In order to make the learner use the APP to learn without feeling boring and to improve the learner's interest in learning. This module also provides a variety of learning methods for learners to choose from. The highlight of this module is that it provides a variety of learning methods. The realization of database structure is a key step in the whole system, and the quality of data transmission can affect the bottleneck of the system to a certain extent. Moreover, in the design, the actual use situation should be fully considered, and the corresponding design and implementation should be carried out in accordance with the requirements of the paradigm. In addition, the main function of the learning module is to provide learners with various learning services and learning support. It is a multi-functional learning service hall, into which various learning services can be used. For example, viewing various learning resources, viewing previous learning records and notes, communicating with the learning community, sharing your own learning experience, answering questions raised by other learners, etc.

As each mobile device is connected via wireless Internet, data transmission is convenient and guaranteed by standardized network protocols. Therefore, the acquisition of data can adopt the network-based data acquisition method. It is necessary to analyze the functional modules of the system to determine the entities required by the database and the corresponding attributes to ensure that the information can be stored completely. Secondly, the storage size and storage type of the field need to be determined by considering the content of the word attribute.

## 4 Experimental Test

### 4.1 Experiment Preparation

The operating system of the test server is Windows, the development language Java uses the JDK development environment, and the Web server uses Tomcat. The system database environment is MySQL. The server is distributed in the local PC. The web server of the server-side system architecture adopts the Tomcat host, which is currently the most widely used web server in the world. And the SQL SERVER2020 Database version built in the Myeclipse software suite is used as the database of this system, which is set up on the Microsoft Windows Professional computer host. Expand the subsystems such as Web Server, FTPServer, Mail Server, Database Server and other subsystems for the future needs of the host.

Considering the compatibility of different models, the client is divided into two versions: Android and iOS. The Android model is mainly used for testing. The main screen size is 5 inches, the main screen resolution is 1280\*720, and the operating system is Android. The system requirements of the Sewer side are: Application software: Adobe Dreamweaver CS, PhotoImpact, Acorbat. Network programming language: The version that supports JSP web page format. Communication protocol: TCP/IP. The iOS model is iphone11, and the main screen resolution is 1334 \* 750. The operating system is iOS. The network used for data transmission is the campus laboratory network. Website system/database: Apache Web Server Version, SQL SERVER2020, Database Version 5.3. Operating System: Microsoft Windows.

### 4.2 Experimental Results

In order to verify the effectiveness of the designed system, experimental tests are carried out. The online auxiliary teaching system for accounting major based on genetic algorithm and the online auxiliary teaching system for accounting major based on cluster analysis are selected to compare with the online auxiliary teaching system for accounting major designed this time. The memory footprints of the three systems are tested under the conditions of different online numbers, and the experimental results are shown in Tables 1, 2, 3, 4 and 5.

As can be seen from Table 1, the memory footprint of the online auxiliary teaching system for accounting majors designed this time and the other two online auxiliary teaching systems for accounting majors are 120.30M, 149.60M, and 155.46M respectively.

**Table 1.** Memory footprint of 200 users online at the same time (M)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
1	153.61	149.36	112.36
2	142.06	152.09	124.19
3	135.88	156.34	119.25
4	149.21	162.04	121.66
5	151.26	158.49	118.69
6	153.20	161.03	121.44
7	145.11	148.79	118.06
8	156.93	146.82	125.18
9	143.15	156.31	124.71
10	159.34	155.49	126.08
11	153.77	158.07	118.45
12	148.26	162.37	119.74
13	153.19	152.84	121.03
14	147.05	157.09	116.11
15	152.01	154.74	117.58

**Table 2.** Memory footprint of 500 users online at the same time (M)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
1	233.18	205.91	164.58
2	225.14	212.47	178.25
3	228.39	222.84	181.09
4	226.43	219.16	167.44
5	227.58	223.47	173.59
6	225.79	215.04	176.62
7	224.14	226.78	175.06

*(continued)*

**Table 2.** (continued)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
8	226.20	225.01	168.33
9	218.55	229.56	172.15
10	225.05	216.84	165.46
11	231.74	205.77	159.25
12	226.94	231.99	164.88
13	226.48	215.18	163.24
14	228.15	220.49	164.29
15	215.02	224.11	157.61

As can be seen from Table 2, the memory footprint of the online auxiliary teaching system for accounting majors designed this time and the other two online auxiliary teaching systems for accounting majors are 168.79M, 225.92M, and 219.64M respectively.

**Table 3.** Memory footprint of 800 users online at the same time (M)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
1	322.11	363.55	306.15
2	324.82	359.18	288.74
3	329.58	362.04	296.45
4	345.17	354.19	273.61
5	346.19	352.22	283.55
6	352.07	347.09	296.10
7	347.23	355.18	306.44
8	349.20	358.06	289.16
9	356.12	362.15	302.77
10	365.28	359.11	294.61

(continued)

**Table 3.** (continued)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
11	359.03	348.71	296.13
12	367.15	342.66	313.22
13	373.48	359.18	311.47
14	382.07	361.02	266.71
15	325.04	355.13	259.48

It can be seen from Table 3 that the designed online auxiliary teaching system for accounting majors and the other two online auxiliary teaching systems for accounting majors have a memory footprint of 292.31M, 349.64M, and 355.96M respectively.

**Table 4.** Memory footprint of 1000 users online at the same time (M)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
1	564.91	546.91	336.47
2	507.96	522.16	359.15
3	516.33	519.47	369.12
4	521.84	522.19	355.74
5	516.99	533.08	363.20
6	522.78	529.17	372.91
7	521.44	531.05	386.15
8	536.91	526.14	376.59
9	528.16	533.66	368.47
10	524.05	521.84	369.12
11	536.77	563.49	377.11
12	529.15	537.16	348.04
13	531.69	522.09	365.25
14	525.46	536.17	355.06
15	566.29	528.03	361.77

It can be seen from Table 4 that the designed online auxiliary teaching system for accounting majors and the other two online auxiliary teaching systems for accounting majors occupy 364.28M, 530.51M, and 364.28M of memory respectively.

**Table 5.** Memory footprint of 1500 users online at the same time (M)

Number of experiments	Online auxiliary teaching system for accounting major based on genetic algorithm	Online auxiliary teaching system for accounting major based on cluster analysis	The designed online auxiliary teaching system for accounting majors
1	725.31	716.22	556.91
2	736.26	723.31	545.63
3	722.13	733.15	539.21
4	746.19	741.14	518.88
5	725.23	719.08	520.16
6	733.14	726.05	523.17
7	731.05	731.29	516.25
8	729.18	725.22	548.38
9	731.02	736.13	520.76
10	729.04	740.17	522.92
11	733.01	739.14	531.87
12	729.04	735.20	529.25
13	733.07	733.13	526.14
14	724.18	746.17	532.19
15	742.29	744.16	529.70

It can be seen from Table 5 that the designed online auxiliary teaching system for accounting majors and the other two online auxiliary teaching systems for accounting majors occupy 530.76M, 731.34M, and 732.64M of memory respectively.

According to the experimental results, when the online assistant teaching system for accounting majors occupies 200–1000 users at the same time, the system memory will be improved. However, the memory occupied by method A is lower than that of method online auxiliary teaching system for accounting major based on genetic algorithm and method online auxiliary teaching system for accounting major based on cluster analysis. This is because method the designed online auxiliary teaching system for accounting majors adopts the form of segmented independent power supply, configures external memory interface, improves the calculation speed, migrates the behavior attribute data through the database, and optimizes the data transmission function.

## 5 Conclusion

The system designed here, on the basis of mobile terminals, improves the teaching mode of accounting major. We have highlighted the system's characteristics of modularization, miniaturization, prominent difficulties, contextualization, fun, clear content, and small capacity. At the same time, the performance of the system is improved. Due to limited capabilities, the article also needs to conduct in-depth testing of the accuracy of the system. However, due to the limited time and research conditions, the scope of the experiment is not wide enough, and the results are still limited. For example, this study only collected the accounting professional data of one school as the test object, and the data lacks universality. Therefore, the following experimental selection can be more in-depth and multi-dimensional, so as to consolidate the experimental research results and provide theoretical support for online assistant teaching of accounting major in the future.

**Fund Project.** 1. 2020 Jiangxi Provincial Department of Education Teaching Reform Project: The strategy research and practice of integrating socialist core values into the whole process of accounting professional teaching (Project number: JXJG-20-29-3)

2. 2019 Jiangxi Provincial Department of Education Science and Technology Project: Research on systemic risk identification and countermeasures of industry-university-research cooperation projects (Project number: GJJ191199).

3. 2020 Jiangxi Provincial Culture and Art Science Planning Project: Research on policy paths for Jiangxi cultural enterprises to solve difficulties under the new crown epidemic (Project number: YG2020154).

4. 2020 Jiangxi college of application science and technology-level Humanities and Social Sciences General Project: Application Research on Fuzzy Risk Calculation of Industry-University-Research Cooperation Project Based on FMEA (Project number: JXYKRW-20-1).

## References

1. Zhang, J., Huang, S., Liu, L., et al.: Research on equipment identification based on machine vision in mobile terminals. *Fire Control Command Control* **45**(2), 155–159,165 (2020)
2. Zhang, H., Wang, H., Guo, J., et al.: Online teaching of embedded system based on Tencent classroom and virtual simulation technology. *Exp. Technol. Manag.* **37**(12), 170–174
3. Han, L., Yu, X., Wu, H.-Y., et al.: *Chin. J. Immunol.* **36**(20), 2516–2519, 2523 (2020)
4. Mu, S., Wang, Y.: Turning “Crisis into opportunities”: how emergency online teaching moves towards systematic online teaching. *Mod. Dist. Educ. Res.* **32**(3), 22–29 (2020)
5. Wen, X., Xu, L., Chen, Y.: Research on the mixed online and offline teaching mode under the background of “golden course” ——taking the course of web application system development as an example. *Computer engineering & Software* **41**(7), 292–296 (2020)
6. Peng, W.: Research on online teaching system and its key technologies [J]. *comparative study of cultural innovation*, 4(24): 130–132 (2020)
7. Yao, K., Li, L.: Mobile terminal network survivable database security anti-tampering simulation. *Comput. Simul.* **37**(1), 456–459,483 (2020)