Retraction

Retracted: Construction of Personalized Learning Platform Based on Intelligent Algorithm in the Context of Industry Education Integration

Advances in Multimedia

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Z. Qian, "Construction of Personalized Learning Platform Based on Intelligent Algorithm in the Context of Industry Education Integration," *Advances in Multimedia*, vol. 2022, Article ID 6042583, 14 pages, 2022.

Hindawi

Research Article

Construction of Personalized Learning Platform Based on Intelligent Algorithm in the Context of Industry Education Integration

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In order to meet the personalized needs of different students and provide students with a variety of intelligent learning strategies and learning content, this research is aimed at the current lack of intelligent function design in the network teaching platform of colleges and universities. Based on the concept of integration of production and education, with the help of intelligent recommendation algorithm of reinforcement learning, a personalized learning platform based on intelligent algorithm is constructed. First, through the method of questionnaire survey to understand the students' needs for personalized learning and the functions of online teaching platform, on this basis, build a personalized learning platform based on reinforcement learning and data mining intelligent algorithm. The system test results show that when the number of accesses is less than 2000, the CPU and memory resources of the system basically remain unchanged. When the number of accesses is less than 3000, the CPU utilization rate reaches 70%, and the performance decreases, but it can also ensure normal operation.

1. Introduction

In recent years, with the continuous expansion of the scale of colleges and universities and the wide application of information technology, assisted teaching with the help of online teaching platforms has become the direction of colleges and universities competing to learn. On the one hand, at this stage, most of China's online teaching platforms usually use hypertext to present teaching content according to the chapters of the course, although this method can provide students with a large number of learning resources. However, it cannot effectively guide students how to use these resources correctly, which has high requirements for students' learning consciousness and the ability to find learning resources and lacks personalized learning guidance for student groups. On the other hand, there are relatively few online course resources in the online personalized learning platform of many colleges and universities, which cannot meet the demand for large quantities of learning resources [1, 2]. Therefore, this paper develops a self-learning platform with the help of intelligent recommendation algorithm and

personal recommendation algorithm from the perspective of industry-university integration, so as to teach according to the individual needs of students.

2. Literature Review

Homeschooling requires the development of the times and a new model of educational research. Since the 20th century, more and more researchers and educators have begun to explore and practice self-study. The research on personalized learning in China has gradually increased, and the main research results have been concentrated in the past five years. Based on CNKI's analysis of personalized learning in China, the author believes that the research types in core journals are mainly divided into two categories. One is the research on the combination of personalized learning and teaching. Such research takes frontline teachers as the main force, puts forward the principles of personalized learning path design according to teaching experience and discipline characteristics, and designs practical cases for specific courses. Personalized learning in this kind of research

focuses on students' individual differences and interests, advocates the hierarchy, diversity, and flexibility of learning content and form and evaluation methods, and gives students room to play independently [3, 4]. This paper expounds the necessity of personalized learning and designs and develops various types of teaching, communication, and display courses based on personalized learning. Some scholars interview learning analysis and research experts to share how to better understand students' personalized learning process. The methods and strategies of the application of web-based adaptive evaluation system in teaching are deeply explored. Start with the evaluation of students' personalized learning, and form students' personalized knowledge learning map according to students' practice and answer [5, 6]. For ordinary frontline teachers, the realization of personalized teaching requires them to invest a lot of time and energy costs but also requires teachers to have certain teaching experience and organizational ability and puts forward higher requirements for teachers' professional ability. It is difficult to realize personalized teaching only by relying on teachers' personal ability. Therefore, the further promotion of such research needs more backbone.

Some scholars believe that the collective teaching method cannot be used to carry out layered teaching for different students, but using the network teaching platform, students can selectively learn the course knowledge points according to their own learning needs without the limitation of time and space. The platform can also provide learning content recommendation services to students according to their registration information and the types of courses they often study.

3. Reinforcement Learning Intelligent Recommendation Algorithm

3.1. Markov Decision Process. Markov decision process (MDP) is the theoretical basis of reinforcement learning and a basic mathematical model for the interaction between environment and agents, as shown in Figure 1.

In the problem of Markov decision-making process, there are five basic elements, including state space, action space, reward function, state transition matrix, and attenuation factor.

In MDP, if the reward function obeys a certain probability distribution, the goal of MDP is to maximize the expected reward. Assuming that the agent interacts with the environment for $T > t$ times, the reward it gets is $R_t, R_{t+1}, \cdots, R_T$. Let G_t be the maximum reward it can get after moment t; then,

$$G_t = \sum_{i=t+1}^{T} R_i = R_{t+1} + R_{t+2} + \cdots + R_T. \tag{1}$$

In practice, the interaction between the agent and the environment is likely to be endless, so there is no termination T. This situation is very common, for example, training the agent how to set up the pole. If the holding time of the pole is not set, there is no end state for the final agent; then,
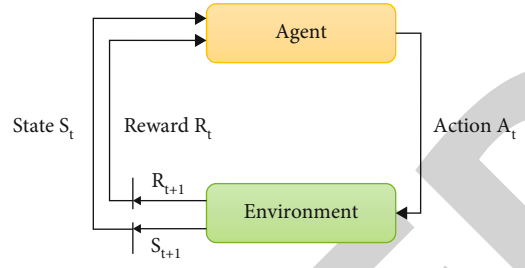

Figure 1: Schematic diagram of interaction between agent and environment.

the t at this time is an infinite number:

$$G_t = \sum_{i=t+1}^{\infty} R_i. \tag{2}$$

In many cases, the agent may face many states, and there may be many steps required to complete a thing. The decision-making in a state that is particularly far away from the current state does not affect the action in the current state of the agent. Therefore, in the return setting, researchers add a decay factor γ to the reward that is far away, and the farther away from the current state, the stronger the decay of the reward, and the return can be rewritten into the following expression:

$$G_t(\gamma) = \sum_{k=0}^{\infty} \gamma^k R_{t+k+1}, \tag{3}$$

where the value range of γ is (0, 1]. In particular, when $\gamma = 1$, it degenerates into a return without attenuation coefficient, that is, formula (2).

The value obtained when evaluating strategy π in state s is called the state value function, which is represented by $V^\pi(s)$. The value function of state s under the current strategy can be defined through the above reward:

$$V^\pi(s) = E_\pi[G_t|S_t = s] = E_\pi\left[\sum_{k=0}^{\infty} \gamma^k R_{t+k+1}|S_t = s\right]. \tag{4}$$

For some discrete action environments, the actions of agents are countable. In this case, it is very meaningful to investigate the possible rewards of all actions under a certain state s, so it is also necessary to define that under a certain state, taking an action a according to strategy π may obtain the expected rewards:

$$G_\pi(s) = E_\pi[G_t|S_t = s, A_t = a] = E_\pi\left[\sum_{k=0}^{\infty} \gamma^k R_{t+k+1}|S_t = s, A_t = a\right]$$

$$= R(s, a) + E_\pi\left[\sum_{k=0}^{\infty} \gamma^k R_{t+k+1}|S_t = s\right]. \tag{5}$$

Table 1: Gender composition of surveyed students.

Gender	Male	Female	Total
Number of students	165	143	308
Proportion	53.6%	46.4%	100%

Table 2: Grade composition of surveyed students.

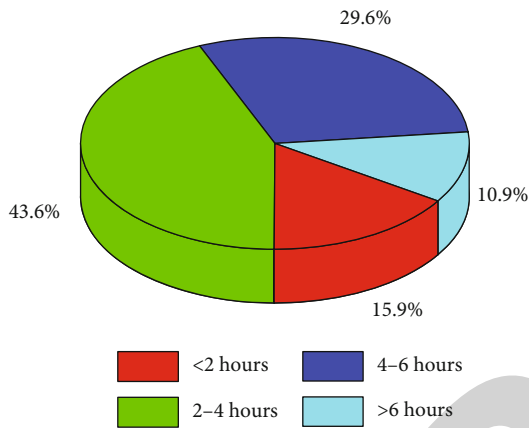| Grade	Grade 1	Grade 2	Grade 3
Number of students	44	161	97
Proportion	13.9%	54.3%	31.8%

Figure 2: Survey of students' Internet access.

Table 3: Questionnaire on students' network operation skills.

Age	Not at all	Commonly	Skilled	Master
Number of students	23	67	151	63
Proportion	7.5%	22.0%	49.6%	21.2%

3.2. Reinforcement Learning. Reinforcement learning is an artificial intelligence learning algorithm based on MDP model. In reinforcement learning, agents are unknown to the world. Whether the strategy used by the Q learning model is the same as the strategy implemented is different from the strategy, and the strategy is the same. Q learning algorithm uses the method of time difference to estimate the Q value and solves the Q value according to the greedy strategy [7, 8]. The core update formula is

$$Q(s, a) = Q(s, a) + \lambda \left(R(s, a) + \gamma \max_{a'} Q\left(s', a'\right) - Q(s, a) \right). \tag{6}$$

Its essence is the estimated value of the mean value $\bar{Q}(s, a)$ of $Q(s, a)$. From the update formula (6), when selecting $Q(s', a)$ for update, the action is not selected according to ε-greedy, but $\max_{a'} Q(s', a')$ is directly selected, which does not select the value according to the way of generating data.

The Sarsa algorithm is different. The updated value is selected according to the strategy. The strategy gradient considers the problem of reinforcement learning from a different perspective than value iterative reinforcement learning: in the strategy gradient method, the sequence is generated when the agent interacts with the environment:

$$\tau = \{s_1, a_1, r_1, s_2, a_2, r_2 \cdots, s_T\}. \tag{7}$$

The above formula is generated by policy π_θ sampling the environment, where θ is a policy parameter. Therefore, the probability of generating sequence τ is

$$P_\theta\{s_1, a_1, s_2, a_2 \cdots, s_T, a_T\} = p(s_1) \sum_{t=1}^{T} \pi(a_t|s_t) p(s_{t+1}|s_t, a_t). \tag{8}$$

Therefore, the reward generated by this sequence is also a distribution of strategy parameters. Considering the goal of reinforcement learning, maximizing the expected reward, parameter θ can be inversely calculated:

$$\theta^* = \arg \max_\theta E_{\tau \sim p_\theta(s, a)} \left[\sum_t r_t(s, a) \right]. \tag{9}$$

The gradient value of the objective function with respect to parameter θ is obtained as

$$\nabla_\theta J(\theta) = E_{\tau \sim \pi_\theta(\tau)} \left[\left(\sum_{t=1}^{T} \nabla_\theta \log \pi_\theta(a_t|s_t) \right) \left(\sum_{t=1}^{T} r_t(s, a) \right) \right]. \tag{10}$$

Since the goal of reinforcement learning is to maximize the reward, the gradient rise algorithm is used to update parameter θ. So the update formula of θ is

$$\theta \longleftarrow \theta + \alpha \nabla_\theta J(\theta). \tag{11}$$

Due to the uncertainty of various state transition probabilities and the uncertainty of reward model, the variance of $\sum_t r_t$ is large, and the algorithm oscillates when it is updated. Researchers have come up with various ways to reduce the variance. At present, the better effect is the Actor Critic architecture, which modifies equation (12) to equation (13):

$$R(s, a) = \sum_t r_t, \tag{12}$$

$$A_t(s, a) = Q^\pi(s, a) - V^\pi(s), \tag{13}$$

where function a is called the dominance function, q is called the actor, and V is called the evaluator. This approach has two advantages. The first is to reduce the variance. The second is to introduce the Q function into the strategy gradient method. At this time, we can use some static strategies, that is, the neural network method to fit Q, so as to enhance the practicability of the algorithm [9, 10].
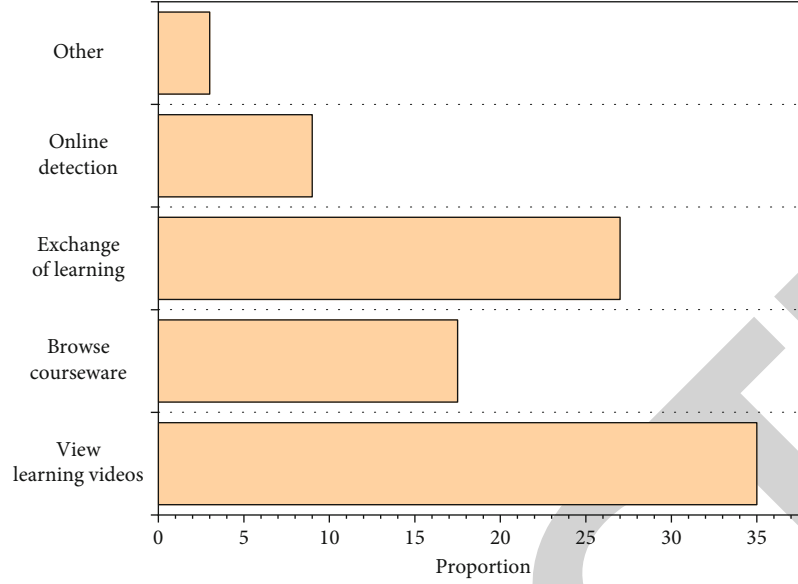
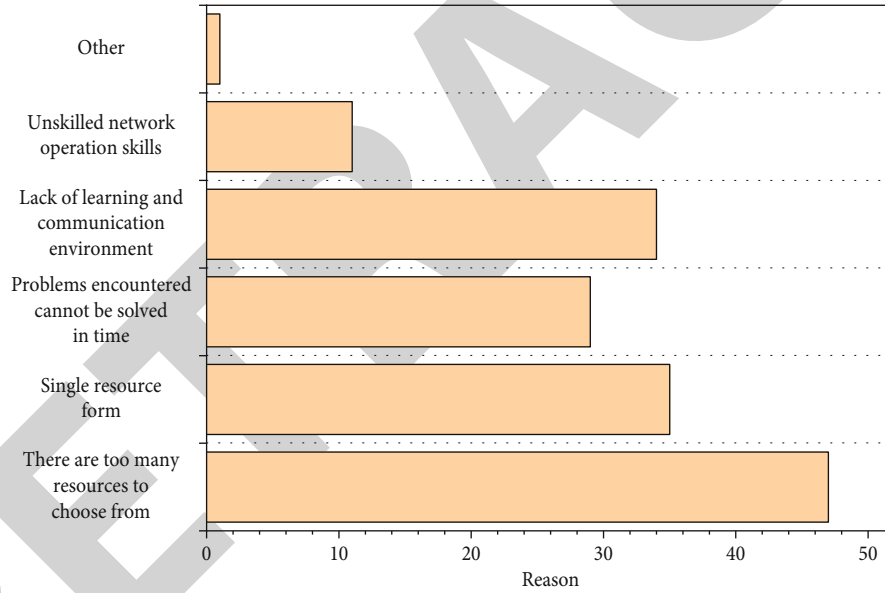Figure 3: Function survey of network teaching platform.

Figure 4: Survey of network teaching platform problems.

Deep Q network is built on Q—a deep reinforcement learning algorithm on learning. It adopts deep neural network to fit Q function, which solves the problem of "dimension explosion" of Q function. In the update formula of Q, DQN considers equation (14) as an objective function and uses Q network to fit. The objective function is as follows (15):

$$r(s, a) + \gamma \max_{a'} Q\left(s', a'\right), \tag{14}$$

$$y_j = r_j + \gamma \max_{a'} \widehat{Q}\left(s', a'; \phi\right). \tag{15}$$

The loss function in DQN is set as follows:

$$L(\phi) = \frac{1}{2} \left\| y_j - \gamma \max_{a'} \widehat{Q}\left(s', a'; \phi\right) \right\|_2^2, \tag{16}$$

where ϕ is the parameter of neural network. In order to make the neural network training converge, DQN uses two techniques when it is actually used. The first technique is experience playback. The algorithm stores the actually sampled experience segment (s, a, s', r) into the playback pool. When training a neural network, randomly sampled samples are fused with new pieces of knowledge to generate training data. The second tip is to use steady training. During
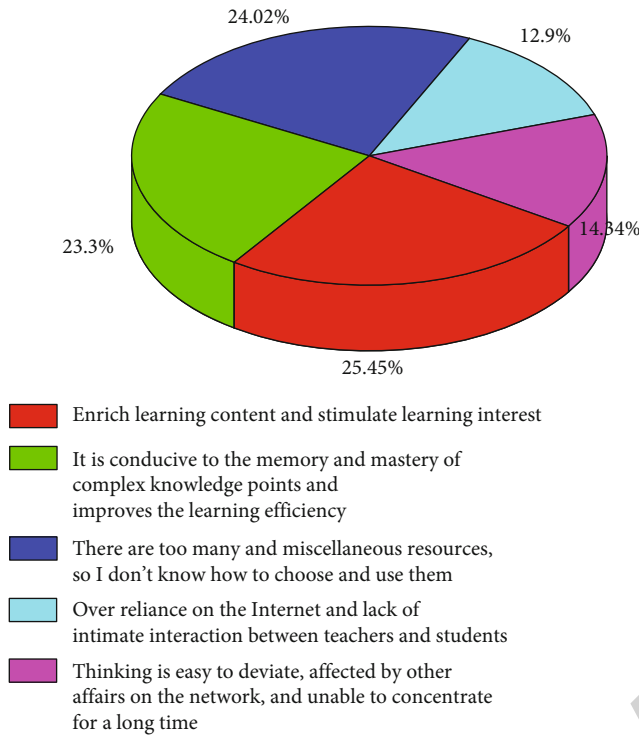
Figure 5: What impact do you think the use of online learning platform has on your learning?

training and updating, two neural networks are used. Not modifying the network directly is called network planning. The other network is always updated; this is called network evaluation. After one step of training, the parameters of the test network are copied to the target network. Both methods stabilize the neural network and solve the problem of the related model.

4. Investigation and Analysis of Personalized Learning Platform

The questionnaire mainly includes the following aspects: the basic use of the network, the consciousness and level of network autonomous learning, and hope to get learning support and other content on the network platform [11, 12]. The survey object is the students of a science and technology engineering school. The questionnaire survey method is adopted for the first, second, and third grade students of secondary technical school. There are 369 students majoring in accounting, numerical control technology, machine tool processing, computer application, elevator operation and maintenance, marketing, automobile operation and maintenance, and preschool education. A total of 369 questionnaires are distributed, and 332 questionnaires are finally recovered, with a questionnaire recovery rate of 89.9%. After excluding the invalid questionnaire, the effective questionnaire rate reached 82.8%.

It can be seen from Table 1 the gender composition of the respondents: men and women account for 52.3% and 47.7%, respectively, and boys account for 52.3% of the respondents, but there is no obvious difference.
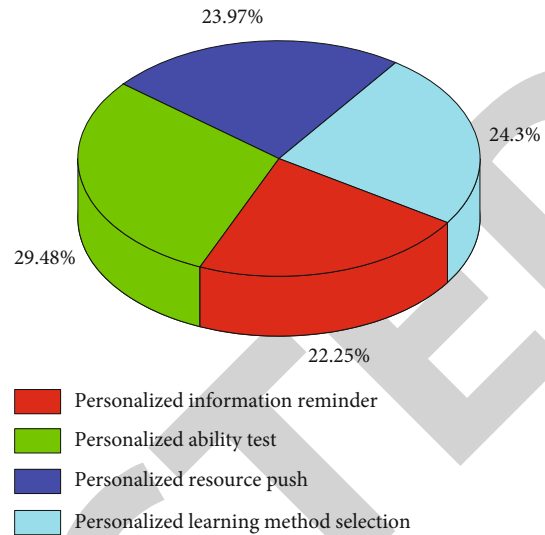

Figure 6: What personalized needs do you want the e-learning platform to meet?

The statistical results in Table 2 show the grade composition of the surveyed students. This questionnaire survey selected students in grades 1, 2, and 3 of technical secondary school as the survey objects. The students in grade one of technical secondary school have not got rid of the indoctrination learning method in middle school, so the proportion of selection is relatively small, while the students in grade two and grade three have a relatively deep experience of learning. Their feedback is of great reference value to the research of this paper.

This study investigated the daily online situation of students in a science and technology engineering school. Figure 2 shows that 15.9% of students spend less than 2 hours online every day, 43.6% spend 2-4 hours online, 29.6% spend 4-6 hours online, and 10.9% spend more than 6 hours online. It can be seen that students in secondary vocational colleges have the conditions to surf the Internet, which has no impact on the implementation of online teaching [13, 14].

From Table 3, it can be seen that 69.5% of the students can use the Internet for basic operations, such as browsing the web, sending and receiving emails, participating in forum discussions, QQ chat, and searching for relevant information, and 22.6% of the students think that although they are not very skilled in operation, they will not affect online learning [15, 16]. Network operation skills are the basic conditions for implementing network learning. According to the results of the survey, a science and technology engineering school has the conditions for implementing network teaching.

Since the vast majority of students can use the network for autonomous learning, learning activities are supported by the personalized network teaching platform which is the focus of this paper. According to the statistical data in Figure 3, viewing learning videos, browsing courseware, and online communication and discussion account for 36.2%, 19.6%, and 29%, respectively, and online detection

Campus network
The WWW server
BBS server
Mail server
Database server
School central computer room server

Campus network accesss switch
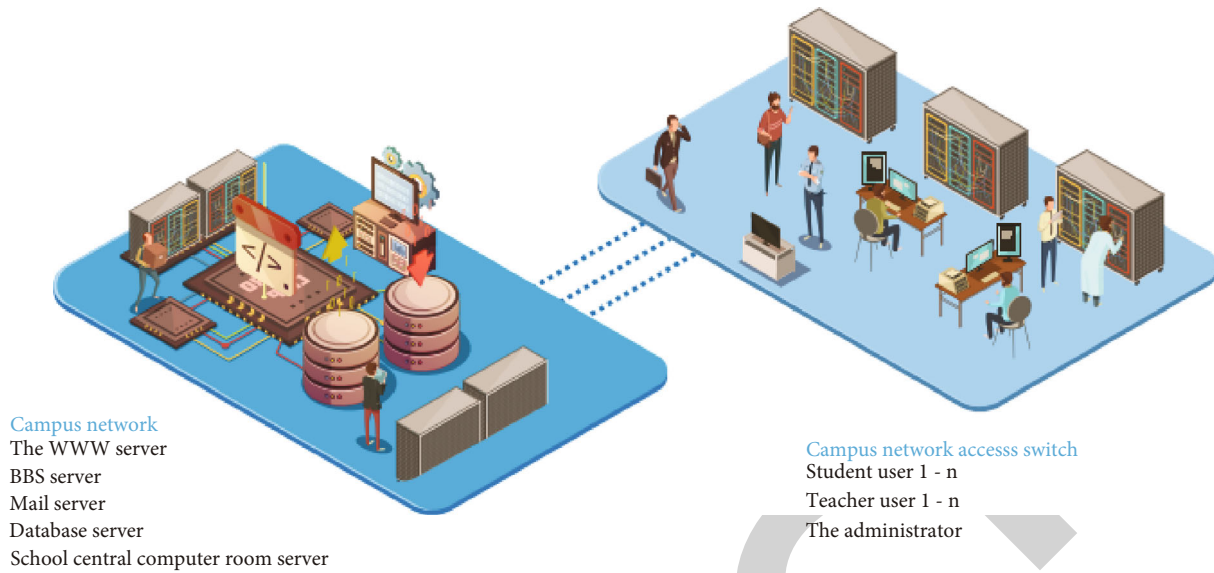Student user 1 - n
Teacher user 1 - n
The administrator

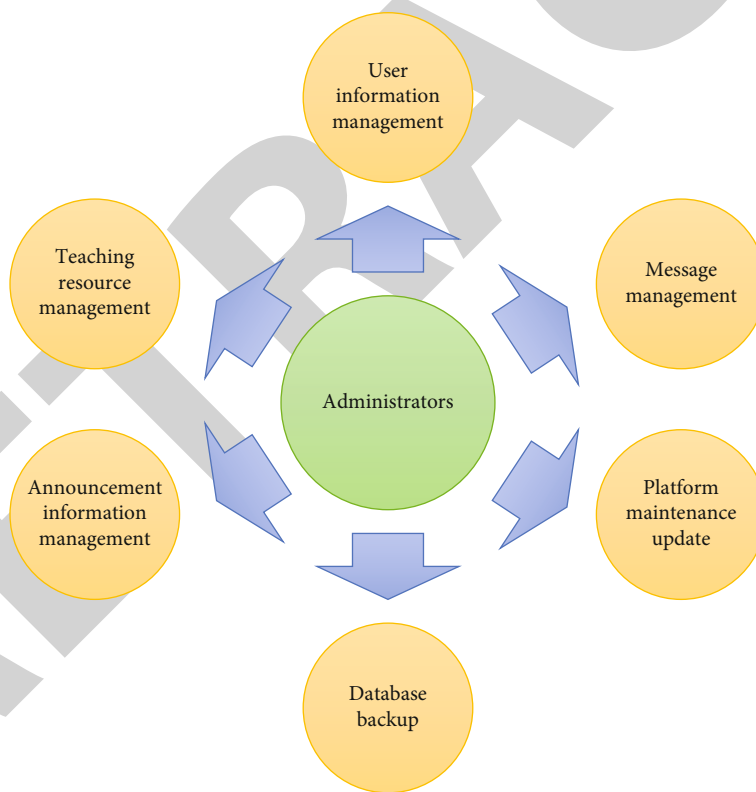Figure 7: Platform network structure diagram.

Figure 8: Administrator function diagram.

accounts for 10.5%, thus determining the design structure of the online teaching platform [17, 18].

In order to continue to analyze the specific reasons that affect students' learning effect, this study investigated students who have used the online teaching platform. As can be seen from Figure 4, the main reason is that there are too many resources on the online platform and students are not easy to choose. At the same time, problems such as

students' lack of timely help and lack of learning communication in the learning process also affect the effect of online learning to varying degrees. These problems have also become the problems to be solved in this study. On this basis, build an intelligent network learning platform that can recommend learning strategies and learning content according to students' personalized needs and provide a bridge for teachers and students to interact [19, 20].
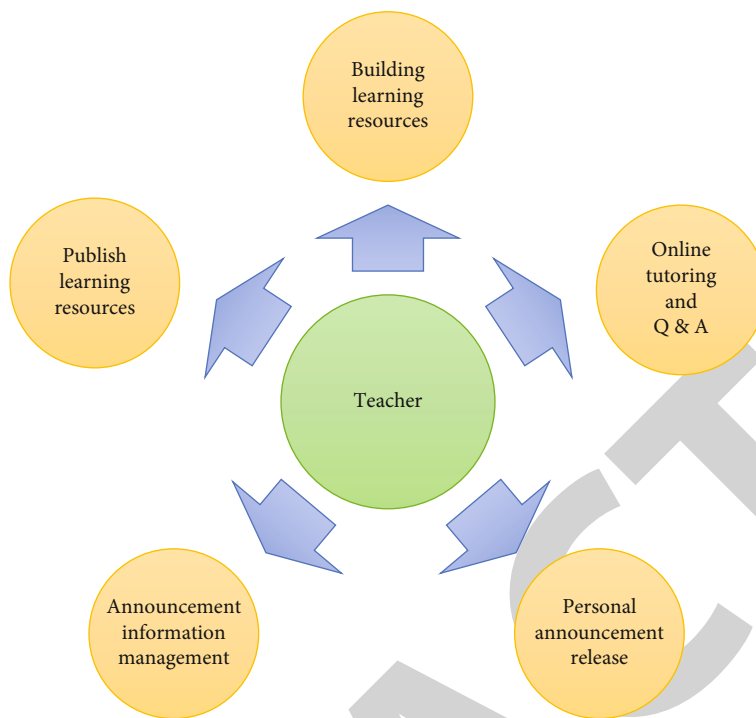
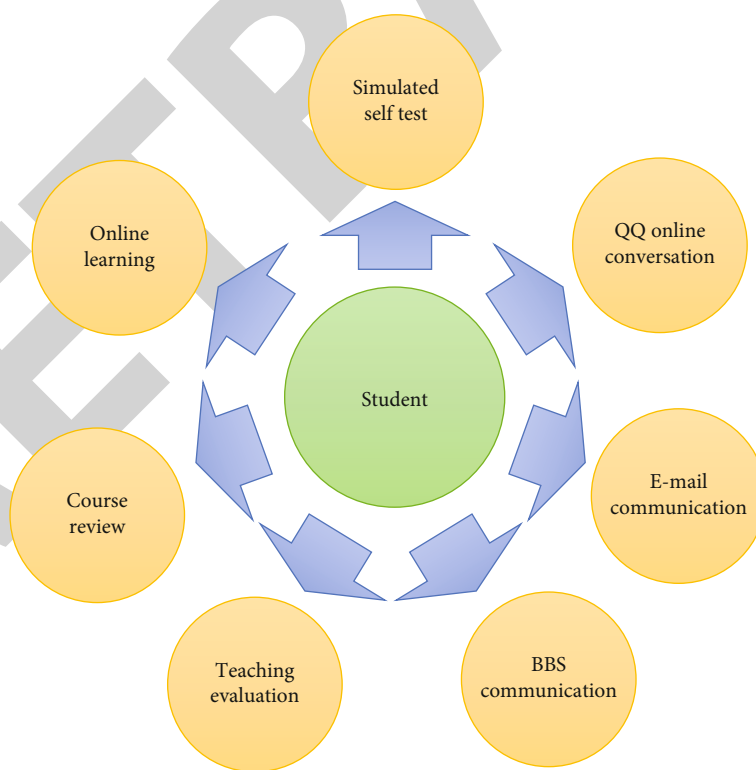FIGURE 9: Teacher function diagram.

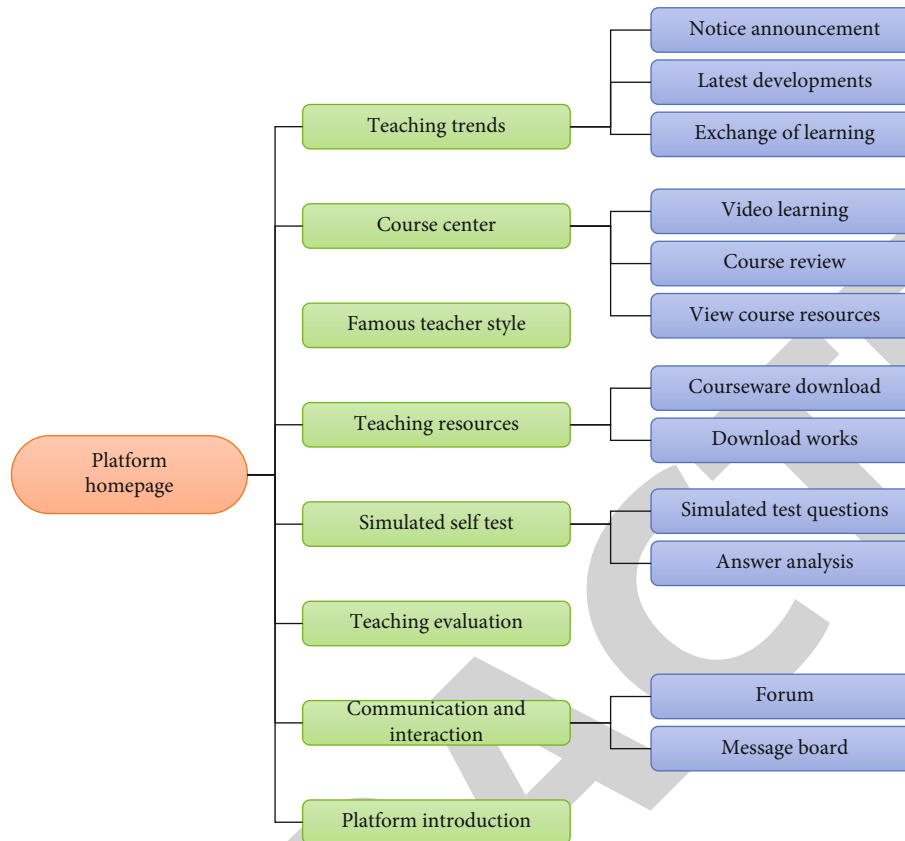
FIGURE 10: Student function diagram.

FIGURE 11: Platform function structure diagram.

The teachers of this course were interviewed to understand their needs. Teachers mainly need the platform to have the convenient function of publishing resources, so that they can view students' learning, such as homework and testing. The results are shown in Figures 5 and 6.

5. Design and Implementation of Personalized Teaching Platform

5.1. Network Structure of the Platform. According to the system requirement analysis, the system is intended to achieve the following design objectives.

5.1.1. Platform Independence. The system adopts the client/browser mode design, without installing the client, and meets the learning requirements of unlimited places and time.

5.1.2. User Role-Based Management. Distinguish administrators from teachers and students, and log in by roles. When switching different login roles, different interfaces appear, displaying the corresponding functions required. The layout design is concise and intuitive, the navigation is clear, and the software is easy to use, reducing the time for users to learn to use the platform. After logging in, students can browse teaching resources, conduct online exercises, participate in course discussions, etc. After logging in, teachers can publish teaching resources, view student learning progress

statistics, publish exercise assignments, answer questions online, participate in course discussions, etc.

5.1.3. Provide Personalized Learning Guidance. The system can record the browsing of students' resources, provide suggestions and guidance for subsequent learning content according to the learning progress of students' learning, and provide personalized learning content, learning methods and exercise test content levels [21, 22].

5.1.4. Compatibility. Pay attention to testing a variety of mainstream browsers, so that the system can run normally under the mainstream browsers.

In the platform, teachers are mainly responsible for tutoring students and uploading resources. The main task of students is to learn and interact with teachers. To realize these functions, there must be corresponding servers to provide services. WWW servers mainly provide students with network resources such as surfing the Internet and viewing videos. BBS server mainly provides the communication and interaction between teachers and students, and email server mainly provides students and teachers to communicate through e-mail. The database server stores the uploaded teaching courseware, videos, test questions and answer analysis, student registration and access platform data information, and teachers' and students' evaluation information on platform design and course content design, among which
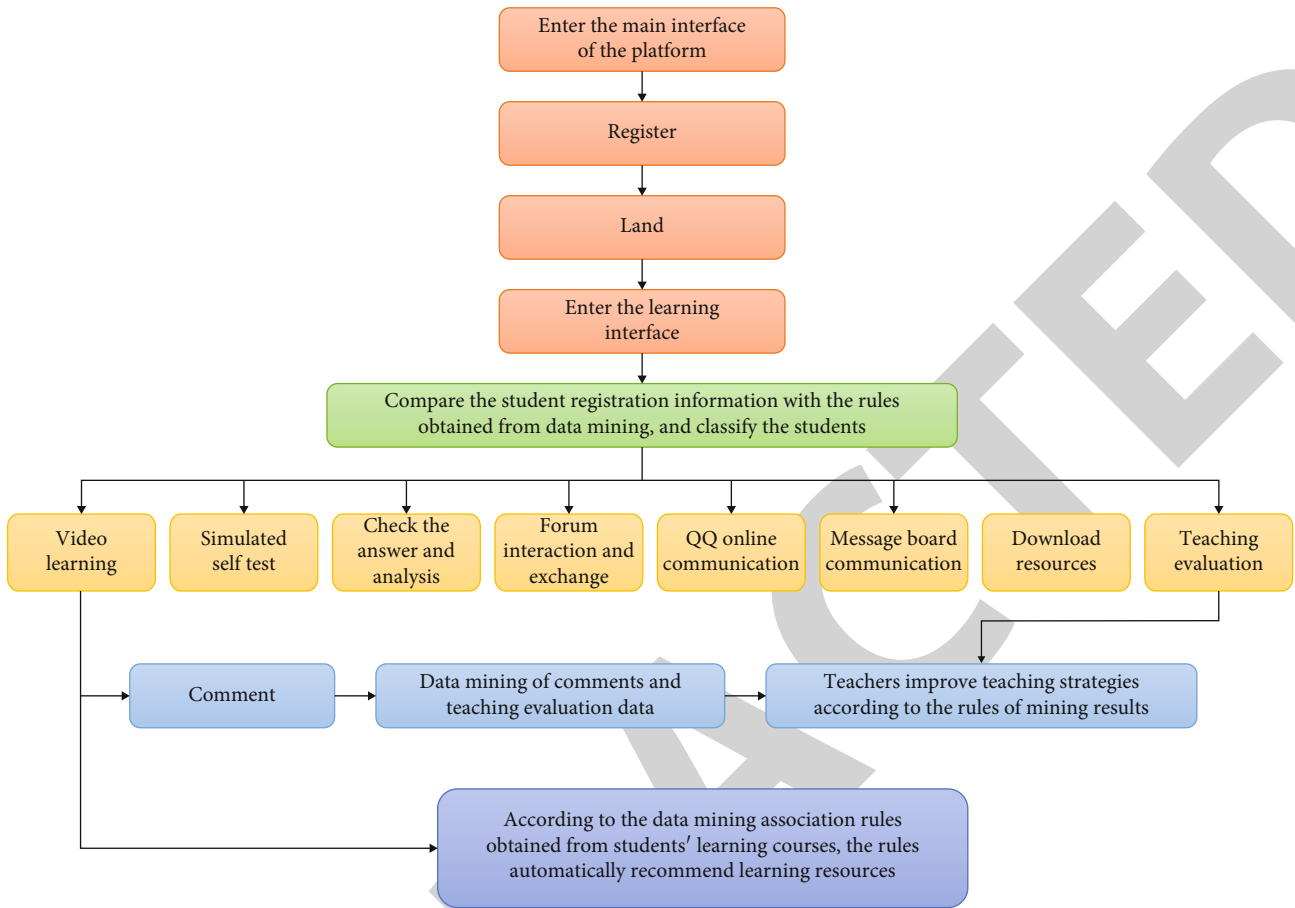
Figure 12: Platform function diagram.

Table 4: Examples of knowledge points.

Knowledge point number	Knowledge point name	Content of knowledge points	Chapter
12012	Relational model	Relational model refers to a data model that represents entities and their relationships in the form of two-dimensional tables.	Chapter 1, section 2
13005	Keyword	A field or combination of fields that uniquely identify a record.	Chapter 1, section 3
33001	Free table	A table that exists independently and is not associated with any database is called a free table.	Chapter 3, section 3

Table 5: Example of knowledge point relationship table.

Knowledge point number	Precursor knowledge point number	Relevance of knowledge points
12012		0
13005	12012	0.7
33001	31001	0.2

students, teachers, and administrators access the system through the campus network, as shown in Figure 7 [23, 24].

5.2. Platform Function Design. There are three kinds of users of the teaching platform: administrators, students, and teachers. The administrator's functions include the maintenance and update of platform data, the setting of student permissions, the setting of video resource viewing and downloading permissions, and the distribution of platform announcements. Students mainly carry out independent learning, including online video learning, self-test the content of relevant subjects, check the correct answers and answer analysis, interact with teachers through the online QQ conversation of the platform, and publish questions and obtain answers through the forum. In addition, students can also evaluate the construction of the learning platform and related courses. Teachers mainly upload and update teaching courseware and other resources and provide guidance and answers to students' homework and questions.
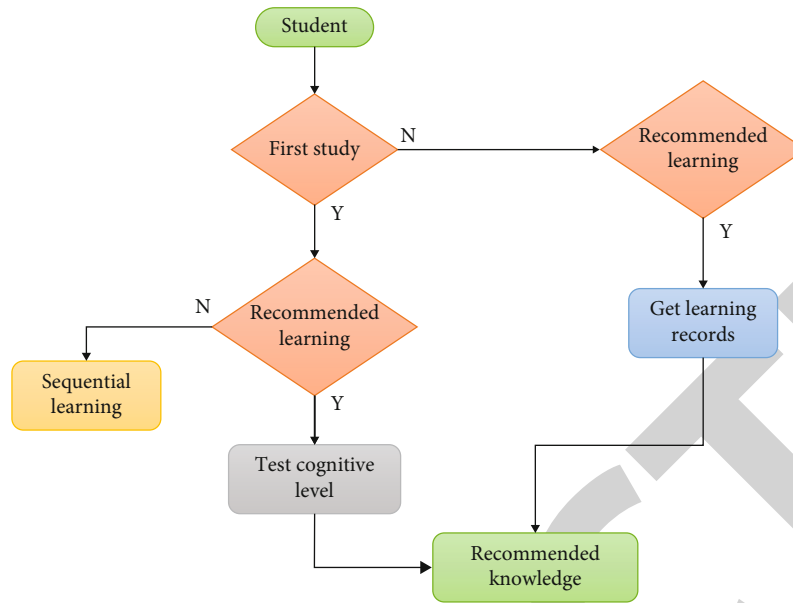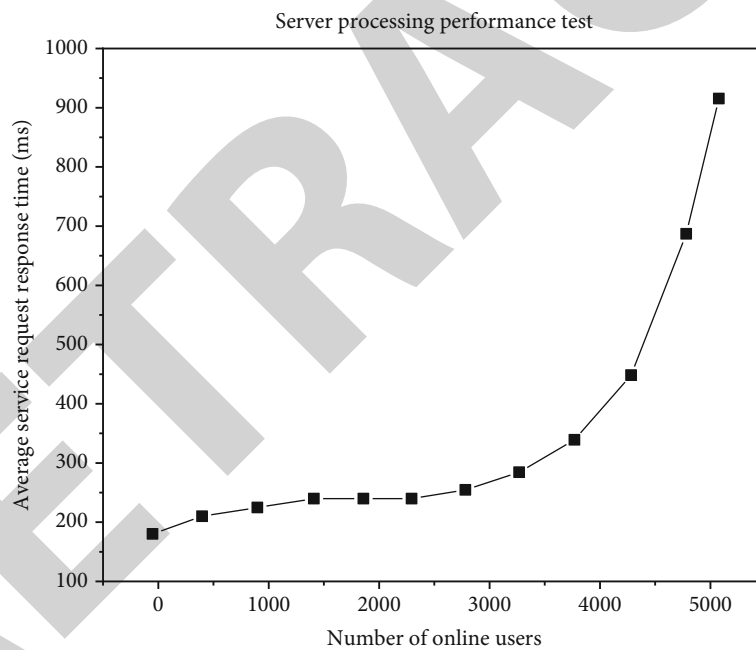
Figure 13: Personalized learning process.

Figure 14: Analysis of server access performance test results.

5.2.1. Administrator Function. The main functions of the administrator are the management of students and teachers on the platform, including the level and permission settings, the size and access rights of uploaded resources in the background program, the recovery and backup settings of data in the platform, the management of interactive exchange information and website access statistics in the platform, and the release of notice and announcement information on the platform, as shown in Figure 8.

5.2.2. Teacher Function. Upload teaching resources: through the teacher ID, you can log in to the platform background

management system and upload and update various teaching resources, including videos, PPT, word files, and text.

Announcement management: teachers can issue personal notices.

Q&A: teachers can answer questions through message boards, post posts related to teaching content through forums, and upload some materials, as shown in Figure 9.

5.2.3. Student Function

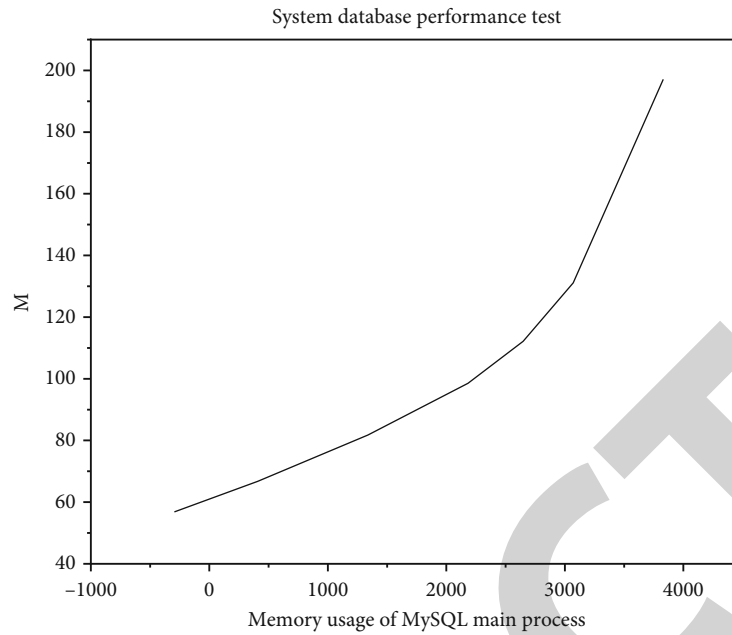(1) Online learning: enter the platform course center for online video learning

System database performance test

FIGURE 15: Analysis diagram of system database test results.

TABLE 6: Analysis of physical security test results.

Test number	Test content	Test phenomenon	Result
01	Unexpected power failure of the server, including the disconnection of the standby power supply	The system stops working and returns to normal operation after power on	After 50 tests, the server can run normally and save data well
02	Disconnect the hard disk module of the server and see if the system can process the old data and restore it	After inserting and unplugging some hard disks, the system can restore the affected data from the backup process to ensure the normal operation of the system	Five hard drive modules are tested for normal backup and restore operations and meet design standards

(2) Online self-test: you can conduct self-test and check the answers in detail

(3) Online Q&A: interact with teachers through online QQ conversation on the platform

(4) Forum exchange: interaction and cooperative learning through the forum of the platform

(5) Teaching evaluation: students evaluate the platform design and courses

(6) Download resources: you can download various resources after registering and logging in to the platform

See Figure 10.

5.2.4. Platform Functions. The design of the platform function is divided into two stages. The first stage is the overall design stage, which is to design the total module of the platform and the relationship and connection between modules. The second stage is the detailed design stage, which designs each sub module and writes language and program code.

This platform contains eight navigation bars, which are teaching trends, course center, famous teachers' style, teaching resources, simulated self-test, communication and interaction, teaching evaluation, and platform introduction. The overall functional structure of the platform is shown in Figure 11.

Students can evaluate the course content and other related teaching materials and presentation methods of the student platform. Teachers can update teaching resources and improve teaching strategies in time according to students' evaluation information to meet students' requirements. The platform can also recommend learning content using data mining technology according to the course information frequently accessed by students, as shown in Figure 12.

5.2.5. Data Table Design of Knowledge Point Base. The knowledge point information table stores the content of the knowledge point, including the following data items: knowledge point number, knowledge point name, knowledge point content summary, and its chapter. The details are shown in Table 4.

The knowledge point relationship table stores the relationship of knowledge points, including the following data items: knowledge point number, knowledge point precursor, knowledge point number, and knowledge point relevance [25] (Table 5).

According to the number of a knowledge point 12012, the following SQL statements can be used to find the subsequent knowledge points of the knowledge point:

Select knowledge point number and correlation degree from knowledge point relation table where precursor knowledge point number = "12012".

Then, recommend 12012 learning resources to learners.

The teaching resource information table contains the following data items: knowledge point number, teaching resource content, and resource type.

The course learning resources are divided into "teaching plans," "electronic textbooks," "electronic courseware," "lecture videos," "exercises," "experiments," and so on. Teaching is organized by teaching, cases, discovery, and research. It is divided into text, animation, video, etc. from the form of expression and PDF file, video file, flash animation file, PPT file, etc. from the type of file.

"Electronic textbooks" are the text materials of course-related textbooks, including chapter overview, key and difficult tips, and detailed content.

"Lecture video" is a short teaching video recorded by the lecturer of this course according to the knowledge points.

"Electronic courseware" is an auxiliary material for teaching, including PowerPoint courseware and animations made for some abstract concepts and theoretical knowledge to help students learn more intuitively.

"Exercise" is an exercise divided by chapters synchronized with the textbook, which is convenient for students to consolidate the knowledge learned in this chapter. "Homework submission" is used for students to view the homework assigned by the teacher through the network and submit it to the server after completing the homework. Since our course is for the first-year liberal arts students in the university, there are a large number of students and classes, the "homework submission" system enables students to view the homework assigned by the teacher in this class, and the teacher can see the homework of students in his own class.

"Experimental guidance" is an experimental task designed to help understand knowledge. The experiments in each chapter include experimental materials, experimental tasks, and expansion exercises.

The learning resources of the above courses are given chapters and knowledge points to facilitate subsequent search and recommended learning.

5.2.6. Personalized Learning Process.
After students log in to the platform for the first time, they can choose the learning method in sequence according to the chapters and can also obtain recommended learning content according to the initial cognitive level test. The learning process of students is shown in Figure 13.

5.3. System Test Results and Analysis.
In terms of test platform performance, this system only pays attention to the server's access to system performance and performance data. The detailed test results are as follows.

5.3.1. Server Access Performance.
In the server access performance test, we simulate the client's access to the server by writing an automatic access program, simulate the operation by running on the client computer, and count the test results. Figure 14 shows the change of system access processing time with the increase of client access. From this figure, we can see that when the number of clients in this system is within 2000, the time for the server to process client related services is very short, and it can respond to client requests quickly within 200 ms, and the service processing speed does not change significantly with the increase of the number of clients. After the number of users reaches 3000, because the number of clients connecting to the server is too large, which exceeds the load capacity of the server, the performance of the server in processing service requests decreases significantly and the time increases significantly. According to the design requirements of the system, the simultaneous online support of clients is less than 1000, so the evaluation of the test results shows that the performance of the system can meet the needs of school education.

5.3.2. Database Performance.
In measuring the performance of the information system, we only measure the performance of the information system by recording the performance test of the server, updating the unused person into the data and information storage, and calculating the changes of the information system. Resources reside in data-related processes. The test results are shown in Figure 15, which shows that the data of this system can be used and input efficiently and evenly on the resources in the mass data storage. The CPU and memory resources occupied by its database remain basically unchanged within 2000 storage and access process. When the access process exceeds 100, there are changes in CPU processing. When it exceeds 3000, the CPU occupied by the database main process increases, reaching 10% of the current CPU used by the system, and the CPU utilization rate of the system reaches 70%. The system performance decreases significantly. The memory utilization rate of this process also increases to more than 130 M and rises sharply with the increase of access processes.

In terms of system security testing, we mainly test the physical security and network security of the system. The test results and analysis are as follows:

(1) Physical security

In terms of physical security test, it is mainly through illegally powering off the system server and illegally plugging in and out the server hard disk and then checking whether the system can run again and completely save data information. The test results are shown in Table 6.

(2) Network security test

As the system is deployed in the LAN, the firewall is a public firewall system, and other security performance and testing will not be considered in the design and testing of

this system. The network security test in this system test is mainly to analyze the encryption performance of the network data packets encrypted by the system. Before and after encryption, the randomness of packet distribution changes dramatically. Before encryption, the distribution of packets was regular and decision-making was weak. After encryption, the discreteness is significantly stronger, showing a regular distribution of states. In this way, even if the attacker intercepts the relevant message information through the network, it is difficult to obtain useful archive data information and user information.

6. Conclusion

The network teaching platform has changed the traditional education mode and communication mode. In traditional teaching, the closed and limited teaching environment cannot provide loose conditions for interaction and resonance, and there is only one-way information flow between teachers and students. The network teaching platform is characterized by flexibility, openness, individuality, and two-way interaction. This helps learners have the opportunity to raise doubts and get answers in time at any time and realize educational point-to-point targeted guided learning in the process of free expression and feedback.

Self-directed learning advocates put students at the center of learning. Therefore, the online teaching platform should be able to make teaching plans, progress individual learning plans according to the special circumstances of students, and adjust and improve teaching methods according to a variety of factors. Especially for secondary vocational colleges, the independent research and development of an online teaching platform suitable for the school plays an important supporting role in supporting the development of school papers. Tuition fees reduce the funding deficit of higher education institutions. This paper takes a science and engineering school as an example and successfully uses the network teaching platform as a personal learning method. By understanding the current situation and needs of independent online education in the author's school, we can create a personalized learning platform based on the intelligent algorithms of reinforcement learning and data mining through the investigation and combining educational philosophy and learning theory. The results of the test show that when the number of entries is less than 2000, the CPU and memory resources of the system remain unchanged. When the number of entries is less than 3000, the CPU usage increases to 70%, and the performance is degraded, but normal operation can be guaranteed.

Data Availability

The datasets supporting the conclusions of this article are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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