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Research on the design of the platform of "teaching and learning" in Colleges and Universities

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Abstract: *In order to further improve the quality of education and teaching service, strengthen the communication and interaction between teachers and students, develop a student-centered teaching mode, and promote the continuous improvement of talent training quality, this study aims to build a teaching and learning social network platform with the help of Internet technology and artificial intelligence technology, based on the existing teaching management information system of the school, so as to improve the sharing of teaching resources and the mutual promotion between teachers and students It has five functions, such as the construction of dynamic and experimental platform, the combination of supervision and teaching, and the visualization of teaching data.*

Keywords: *artificial intelligence technology,teaching resource sharing,Interaction between teachers and students, Data visualization*

1. Introduction

In January 2018, the Ministry of Education issued the "National Standards for the Quality of Undergraduate Teaching in General Higher Education Institutions" in China, which emphasizes that teaching should establish a school quality assurance system, combine normal monitoring with regular evaluation, evaluate in a timely manner, provide timely feedback, continuous improvement, and promote the continuous improvement of the quality of personnel training. In July 2017, the State Council issued the "New Generation Artificial Intelligence Development Plan", which states that the intelligent learning platform should be fully developed to better serve aithic education[1]. With the rapid development of Internet technology and artificial intelligence technology, new technologies such as big data, cloud computing, virtual reality, mobile Internet, Internet of Things and so on are constantly updated and iterative, which provides strong technical support for improving the quality of education and teaching services and establishing the teaching quality assurance system, making it possible to dynamically monitor teachers' teaching effects and creating favorable conditions for students to provide personalized learning environment[2].

To further improve the teaching service quality of colleges and universities, improve teachers' teaching level, strengthen the communication and interaction between teachers and students, develop a student-centered teaching mode, and promote the continuous improvement of talent training quality. Around the two aspects of "teaching and learning", build a social network platform for the interaction between supervision experts and teachers, teachers and teachers, teachers and students, students and students, so as to better serve teachers' teaching and students' personalized learning.

2. Literature review

The improvement of teaching quality should focus on students' actual learning effect, stimulate students' learning interest and potential, and improve teachers' teaching leve[3]. At present, there are some urgent problems to be solved in the teaching of College Teachers: the teaching quality of teachers can not be effectively guided and supervised, the teaching ability of new teachers cannot be verified, the connection of classroom content among team teaching teachers, the lack of motivation for teachers to participate in teaching, the lack of interaction between teachers, etc. some teachers in Colleges and universities have solid professional knowledge It has a more cutting-edge discipline perspective and rich experience in scientific research projects, but it lacks teaching practice experience, and the teaching level needs to be further improved, which is mainly reflected in the lack of prominent key and difficult points in the design of teaching content, the lack of organized teaching expression logic, the

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dependence on Multimedia courseware teaching, and the lack of communication and interaction with students, so as to fail to achieve the expected teaching effect. There are also some problems in the learning process of college students: course homework cannot get complete and detailed feedback; There is little interaction between teachers and students and little learning and communication between students. In addition to the learning of curriculum theoretical knowledge, students' learning effect and knowledge application are not paid enough attention, and the link of curriculum experiment and practice needs to be strengthened.

Although many people place their hopes on technology, To achieve various breakthroughs in teaching and learning, most technologies have been delivered. So far, education is not enough. Designing online systems is relatively easy, support the practice of rote learning skills and facts, but create various rich learning opportunities required for in-depth learning[4].

3. Research and discussion

At present, Internet technology and artificial intelligence technology are relatively mature. The research focuses on the needs of users and constructs the functional design scheme of teaching and learning network social platform based on research, to lay the foundation for the later development and operation of the platform. The purpose of the construction of social platform is to provide all-round services for teachers, provide teachers with teaching services, teaching guidance and teaching resources that can be used for reference, enhance the interaction between teachers and students, strengthen the teaching of experimental practice, make the teaching effect transparent, strengthen teachers' awareness of quality, improve teachers' sense of responsibility and honor for teaching, and promote teachers' investment and enthusiasm in teaching, Build a high-quality college faculty with reasonable knowledge structure, top education and scientific research level and great international influence; Strengthen the interactive communication between teachers and students, analyze the problem-solving rate of students, pay attention to the learning effect of students in combination with students' theoretical knowledge learning and practical learning, form an intuitive learning effect map, analyze students' self-study, and outline the track of individual chemistry practice of students of the same type.

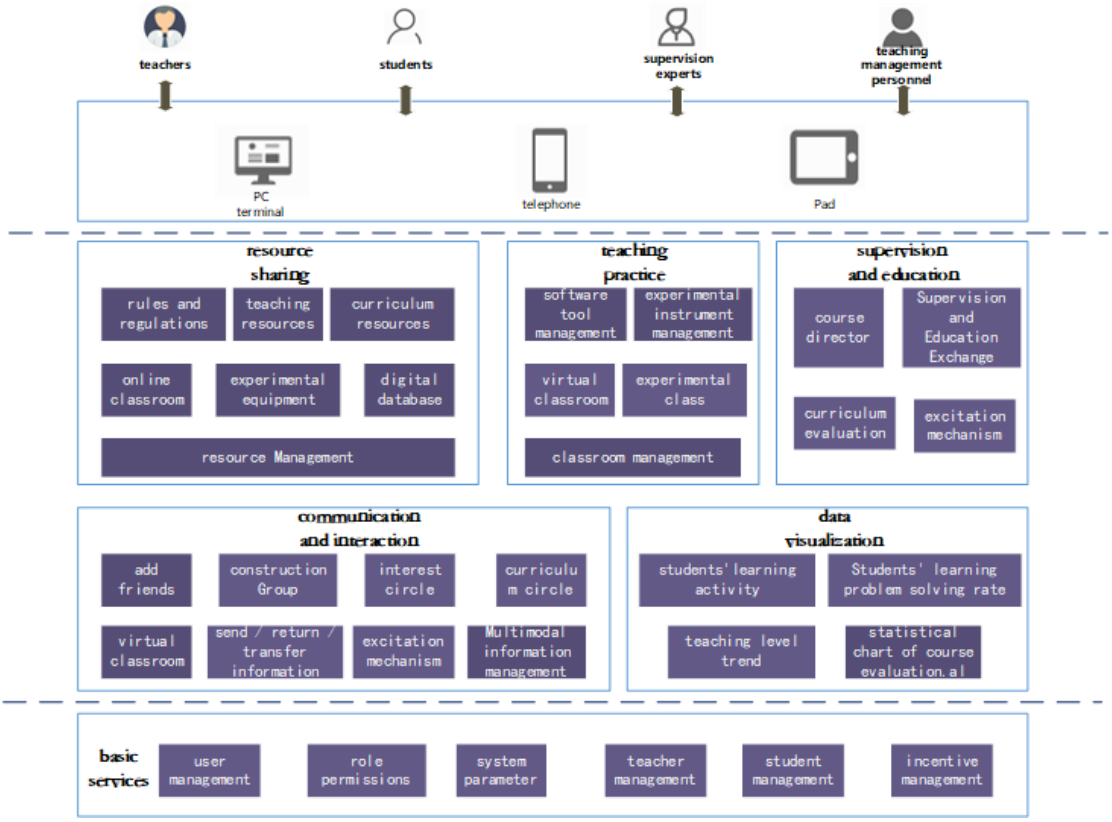

Figure 1 Functional application architecture of social network platform under multimodal operation of teaching and learning in Higher Education

According to the needs of each user on the platform, the functional application architecture of the

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social network platform under the multimodal operation of higher education teaching and learning is preliminarily designed, as shown in Figure 1. The overall application architecture of the platform is divided into three layers: presentation layer, functional layer and basic service layer. The presentation layer represents the terminal directly interacting with users, including pc-web and mobile terminals; The function layer is a business unit that provides services to users according to user needs and domain; The basic service layer mainly provides support services for the upper layer and sinks the function of back office management to this layer[5].

The main functional modules of the platform include five modules: resource sharing, communication and interaction, teaching practice, combination of supervision and teaching, and data visualization.

3.1 Resource sharing

Resource sharing is the core module of the system, which provides resource storage and data sharing resource management platform for teaching team teachers, supervision experts, students and managers. The platform resources are classified and stored by subject keywords, which can realize the centralized classified storage and effective management. It not only provides systematic knowledge structure, but also queries through keywords. The system will automatically recommend similar information and resources according to the user query records. In addition, the integration incentive method is adopted to promote teachers and students to upload and download materials and build an open-source mode of resource sharing and co construction.

3.2 Communication and interaction

Learning exchange is set up for mutual learning and exchange between teachers and students. It divides subject groups, forms a professional teaching team, promotes effective communication between teachers, and encourages teachers to consciously participate in online professional training; After landing, students can improve their personal information, including major, research direction, hobbies and other information. They can pay attention to students with the same views as themselves, or they can build groups to discuss and cooperate with a certain interested knowledge, so as to put innovative thinking into practice and constantly stimulate students' innovation.

The platform system provides the function of teacher-student interaction. The College Management teacher opens and activates the virtual course. Each teacher can view the authority of all virtual classes in the college. A virtual class is only open to the students who choose the course. Import the information of selected students into the course notes column for teachers to query; Students can use multimodal information to interact with teachers and other students. The interactive information can be stored in the branch content of a specific course in a specific discipline. It is helpful for other students to find the content of their own similar questions through keyword view, avoid repeated questions and reduce the workload of teachers.

3.3 Teaching practice

According to the characteristics of the subject, some of the courses that can use the simulation virtual laboratory to carry out the practical experiment teaching can be managed by the school management teachers through the working platform, such as the experimental course resources, instruments, software tools, etc. the course teachers can complete the teaching content of the course practical experiment link through the platform, and the students can carry out the practical experiment school through the platform, and submit the practical homework, The course teacher or teaching assistant will correct the homework and give feedback to the students in detail.

The teacher prepares the question bank in the system in advance, and the students submit their personal programming homework or group programming homework to the system through the platform test system for self-verification. The system will give detailed comments according to whether the program prompts submitted by the students are correct or what part of the problem is, and complete the correction and practice of mistakes. In addition, by checking the submission of students' homework and the statistics of system homework correction, teachers focus on explaining some common problems in the program homework in the form of micro class in the practice platform, so as to promote the absorption and digestion of students' practical learning content.

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3.4 Combination of supervision and education

The combination of supervision and education module is to provide a working platform for teaching exchange and communication between supervision experts and teachers. It mainly includes course supervision and teaching exchange. The steering committee determines the work focus of teaching supervision in this academic year and divides the supervision courses of each supervision expert. The supervision experts carry out supervision work by combining remote supervision and on-site supervision on the courses they supervise, and communicate with the lecturers in real time, At the end of the semester, the supervision experts can summarize and evaluate the course.

3.5 Data visualization

Through supervision evaluation and student evaluation, describe the teaching quality and teaching level trend of each lecturer. Optimize the construction of teacher teaching evaluation system, fair and reasonable organization of various teaching awards evaluation. Optimize the teaching quality monitoring and guarantee index system, form visual data report on the basis of data, make teaching data open, fair and transparent, enhance teachers' sense of responsibility and honor, and promote the improvement of school teaching level with big data. Analyze the students' problem-solving rate, combine the students' theoretical knowledge learning and practical learning, pay attention to the students' learning effect, and form an intuitive student learning effect map. This paper analyzes the situation of students' self-study, and outlines the behavior track and knowledge map of the same type of students' personalized learning.

4. Conclusion

After the platform design and development is put into operation, we can continuously evaluate the teaching quality evaluation system in the process of collecting, counting and analyzing teaching data, and gradually build a perfect evaluation system. At the same time, according to the students' learning behavior, outline the students' learning track, and according to the students' learning effect, the teachers constantly adjust the teaching content. And then form the education and teaching mechanism of improving teachers' teaching service, improving teaching quality, improving students' learning effect, statistical analysis of students' learning effect, and further serving the virtuous circle of teachers' teaching.

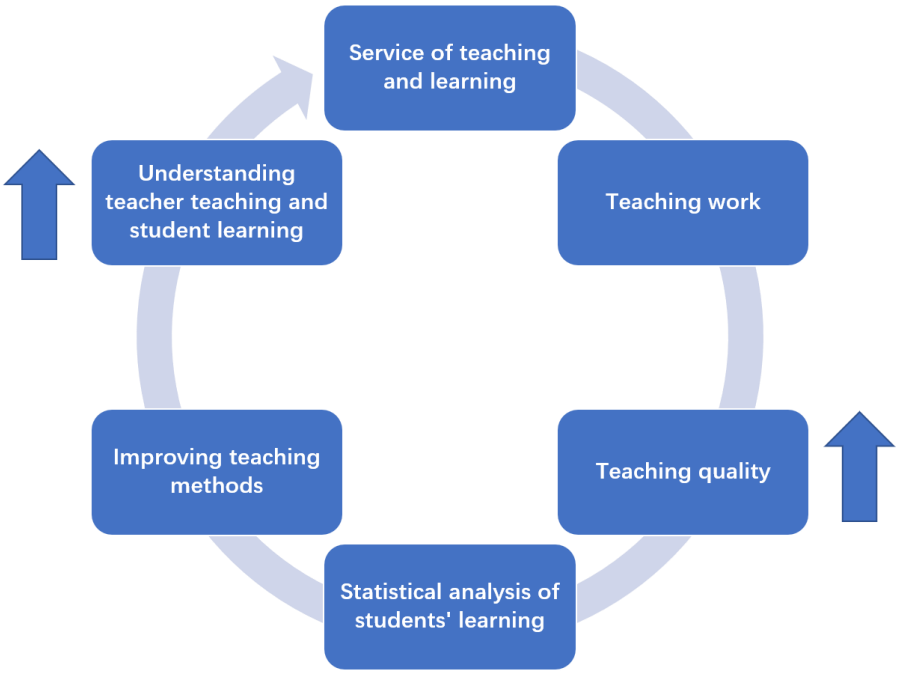

Figure 2 Closed loop diagram of teaching quality improvement

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