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Construction and Research of Experimental Teaching Platform for Applied Undergraduate Universities in the New Media Environment

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***Abstract*—Applied undergraduate universities focus on cultivating students' practical ability, and new media technology should be used to improve teaching environment, teaching quality and resource utilization rate. By analyzing the characteristics of new media technology and combining the practical situation of experimental teaching in applied undergraduate universities, this paper builds an experimental teaching platform by combining PHP, MySQL database access technology and B/S structure. The application of this platform can improve the quality of experimental teaching, the frequency and efficiency of communication between teachers and students, and the utilization rate of laboratory and equipment. It proves that the experimental platform is scientific and teaching in applied universities.**

Keywords—experimental teaching platform; new media technology; applied undergraduate college

I. INTRODUCTION

In today's high-speed development of new media environment, new media has become an important way for people to obtain information and transmit information, and has also been applied to various fields such as business, service industry and education industry in human society. The experimental teaching method of applied undergraduate colleges will become an important factor in the cultivation of practical talents in colleges and universities in the future, and it also plays an increasingly important role[1].Therefore, based on the innovative research of experimental teaching methods in applied undergraduate colleges in the new media environment, its greatest advantage is that it can make full use of the laboratory resources of the school, transform the center of experimental teaching from teachers to students, and improve students' hands-on practical ability and subjective initiative[2]. Applying new media technology to experimental teaching, compared with traditional teaching, its superiority is incomparable.

Based on the analysis of the characteristics of new media technology and the actual situation of experimental teaching in applied undergraduate colleges, this paper proposes the research method and design ideas of experimental undergraduate experimental teaching platform based on new media environment, and introduce PHP technology and MySQL database. Access to technology, method design of various functional modules and processes, focusing on the functional modules, process design and functional practices of the experimental teaching platform combined with new media technology.

II. THE NECESSITY OF THE EXPERIMENTAL TEACHING PLATFORM SYSTEM

Entering the new media era is another leap forward[3] based on modern technology and big data to facilitate human life and information dissemination. The new features of new media that are similar to traditional media are mainly reflected in the digitization, large-capacity and easy-to-detection of information, and high interactivity. Compared with traditional media, new media has revolutionized the previous state of communication. Multi-points become multipoint-to-multipoint. For example, traditional media is the subject of editorial decisions, collecting facts by reporters, then editing them into news, and then spreading them to the public in the form of programs or newspapers, except for these people, even Non-editing staff of news organizations are also unable to do so[4].Nowadays, anyone can spread information to others in an economical and convenient way through new media such as the Internet and mobile communications. Moreover, for the users of the new media used, their needs also have unique places, mainly reflecting the initiative of the subject, the purpose of using the medium, the way of interpreting the text, the diversity, and the subjectiveness of participation in communication. Mobility[5].The new media has made the state of mass communication and the format of the mass media happen and continues to undergo profound changes.

The development of the times puts forward new requirements for the teaching of college laboratories. Only by innovating the existing university laboratory teaching and constructing a proprietary university laboratory teaching platform can the laboratory practice education be fully utilized[6-7].At present, the teaching mode of college laboratories in China is single, which can’t cause students' interest in learning and hands-on practice. The location of learning experiments and operational experiments has regional and limitations, which are not conducive to the deepening of experimental teaching reform and can’t solve the full use of experimental teaching resources. Extensively improve students' hands-on practical ability and interest in learning. Therefore, the research and design of university laboratory teaching

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platform has practical necessity and is the only way to improve experimental teaching in undergraduate universities.

III. Design of Experimental Teaching Platform System

A. Basic design ideas

Investigate the requirements and expectations of the school's experimental teaching platform, read other journals related to laboratories and new media technologies, learn from, study, and build an experimental teaching platform suitable for general-purpose undergraduate colleges. The experimental teaching platform is required to be put into practical use and meet the basic functional requirements of general undergraduate colleges. It can have high reliability, safety and easy maintenance, and has high transmissibility, which can improve the teaching level and management level of the experimental course. The experimental teaching platform system is expected to realize the authority verification, experimental teaching, teachers and students. Online communication, laboratory management, system management and other functions.

The main task of the experimental teaching platform is to inform the business process of the experimental teaching center, mainly around the development of the experimental course and the daily affairs management of the laboratory. The platform-oriented users are mainly teachers, students, experimenters, etc. Users of each category access the client home page through the browser to complete the query and business processing. The platform design should make a reasonable division of the functional modules of the platform, and the interaction between the modules. This involves information about the data structure and fault-tolerant processing of the platform, the organization and structure of the platform modules, the combination and division of functions, and the design of interfaces. To lay the foundation for later work and minimize duplication of work, the platform can be accelerated[8].

The basic functions expected to be realized by the experimental teaching platform system are shown in Fig. 1.

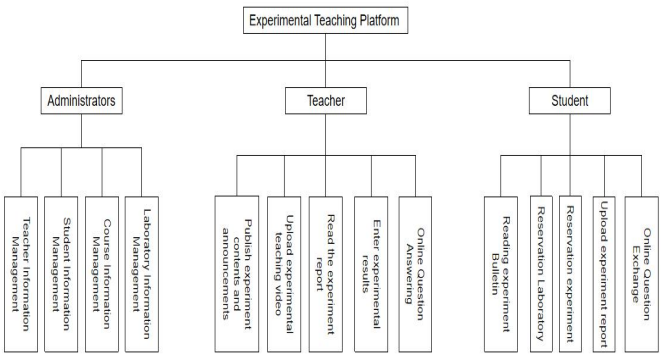

Fig. 1. System basic function diagram

B. Building a modular design

1) Module division

Through the investigation and analysis of the requirements and expectations of the experimental teaching, the structural modules are divided according to the functions to be realized by the method.

Mainly divided into the following five modules:

- Experimental project modules: experimental instruction materials, experimental content, experimental operation demonstrations, experimental teaching courseware and research experiments.
- Experimental teaching module: the teacher's online work platform, including the experimental teaching video, reviewing the experimental report, managing the experimental results, counseling and answering questions, etc. The teacher can grasp the student's preparation before the experiment and the operation in the experiment and the experiment through online real-time. The completion of the situation.
- Online communication discussion module: a platform for communication between teachers and students, using real-time and non-real-time communication through chat rooms and forums. You can also create a discussion group with your classmates, teachers, or people with the same interests, to communicate with each other, share experiences, and exchange experiences.
- Laboratory management module: The management staff monitors the equipment of the laboratory and the safety of the laboratory and laboratory personnel through the background of the experimental teaching platform.
- System Management Module: Maintains the system and manages users to ensure system stability and scalability and support for concurrent access.

2) Main function

The main functions to be implemented by each structural module are:

- Experimental project module

  The instructor pre-releases the experimental project and experimental instructional materials and related experimental teaching videos on the platform; the students read the experimental announcements on the platform, watch the experimental teaching videos to understand the experiments to be done and preview the experimental contents.

- Experimental teaching module

  Students watch professional experimental teaching videos on the platform, and then make an appointment for the lab according to the laboratory opening time; record the experimental video during the experiment and upload it to the experimental teaching platform for sharing. By watching the experimental videos posted on the platform, you will be interested, and then learn

the knowledge and practice practical skills through hands-on practice, eliminating the limitations of time and place, and you can watch the study anytime, anywhere.

- Online communication discussion module

  In the process of learning and practice, students can ask questions about more professional knowledge. Students can ask their own questions on the platform for a certain experimental project or the knowledge points involved in the experiment. Teachers can answer questions on the platform and view the students. Feedback, on the platform, teachers and students can discuss experiments and practical experiences and problems together, and discuss freely the contents of experimental operations.

- Laboratory management module

  Arrange fixed laboratory opening hours; install laboratory access control equipment and laboratory power supply equipment to start the device to improve students' awareness; conduct real-time monitoring of laboratory and experimental teaching platform to ensure the safety and maintenance of laboratory and laboratory equipment. The data of the experimental teaching platform is safe to prevent illegal attacks from leaking.

- System management module

  The experiment administrator publishes the experimental announcements to be carried out, the open schedules of each laboratory, and the experimental appointment statistics tables in the announcement area on the platform, systematically manage the users and user interfaces on the platform, and the platform the data on it is backed up and restored.

The overall structure ER diagram of the experimental undergraduate experimental teaching platform system in the new media environment is shown in Fig. 2.

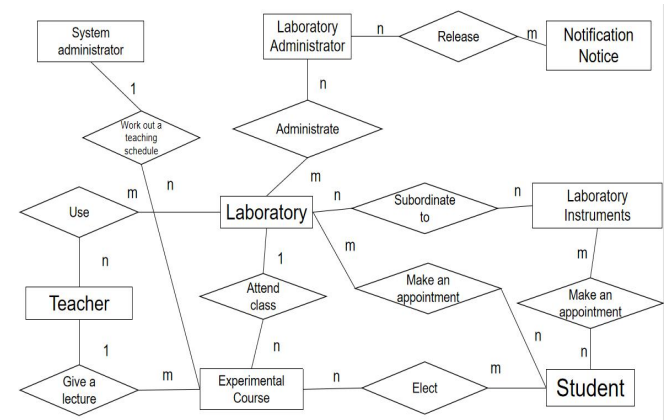

Fig. 2. Experimental teaching platform system overall structure diagram

IV. Conclusion

In the new era, the construction of colleges and universities needs to keep pace with the development of the times[9].In addition to the necessity of experimental teaching innovation in the new media environment, the analysis of the advantages and disadvantages of innovative experimental design and new media technology, the design of the experimental teaching platform system, and the realization of expected functions, this paper also introduces new media. Basic content and development of technology-related information, new media environment introduction, etc.

This paper believes that the connection between the experimental teaching platform of applied undergraduate colleges and new media should be increasingly close. The development model and development route of this experimental teaching platform is based on improving the quality of experimental teaching, cultivating the basic ideas of innovative practical talents, and making the experimental teaching mode More diversified, open, interesting, informative and integrated into practice, promote the deepening reform of experimental teaching in applied undergraduate colleges, improve the effectiveness of experimental teaching in applied undergraduate colleges, and finally provide more abundant learning resources for schools and society. Improve the quality of the people. In the past, the traditional teaching of experiments in applied undergraduate colleges has been unable to meet the needs of current experimental personnel for a large number of information resources. Therefore, it is imperative to design and construct experimental teaching platform based on new media environment[10].Since the design and construction of this experimental teaching platform is conceived in the process of learning, there are still many shortcomings. I hope that the written text of this paper can effectively improve the current experimental teaching and provide effective reference suggestions.

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