Construction and Implementation of Open Computer Innovation Experiment Teaching Mode

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Abstract. The organic combination of open and innovative practice teaching mode and computer application helps to improve the backward practice education mode and enhance the design, comprehensiveness and innovation of innovative experimental teaching, so it has high research value. Based on this, this paper first analyses the current situation and problems of open innovation experimental teaching, then studies the construction of open computer innovation experimental teaching platform, and finally gives the implementation strategy of open computer experimental teaching mode.

Keywords: Open Computer Innovation Experiment, Teaching Mode

1. Introduction

With the application and popularization of computer technology, the practice teaching based on computer brings new opportunities and challenges to the innovation of talent education. On the one hand, the application of computer makes the cultivation of innovative talents have more powerful tools and ways; on the other hand, the application of this technology also puts forward higher requirements for the computer literacy and ability of users [¹]. Computer innovative experimental teaching mode plays an important role in promoting the cultivation of practical talents urgently needed by society and various industries, so it has been paid more and more attention.

![Diagram](image)

Figure 1. The aspects of cultivation of students' abilities

As a key ability to meet the sustainable development of the industry, practical ability has become an important goal and an important teaching link of current practice teaching [²]. As an important part
of practical education, the organic combination of open and innovative practice teaching mode and computer application helps to improve the backward practical education mode, enhance the design, comprehensiveness and innovation of innovative experimental teaching, so as to strengthen the cultivation of students' abilities in several aspects as shown in Figure 1 above. Therefore, it is of great practical value to study the construction and implementation of open computer innovation experiment teaching mode.

2. Current Situation and Problems of Open and Innovative Experimental Teaching

2.1. The concept of experimental teaching is relatively backward
The current concept of experimental teaching still focuses on the teaching of theoretical content, but ignores the teaching of practical content. For example, the operation of instruments and equipment and the management of experimental teaching are still teachers rather than students. This phenomenon has seriously affected students' creativity, personal imagination and practical ability [3]. In this backward experimental teaching concept, students still passively accept the teaching content, which not only is not conducive to improving their learning initiative, but also leads to the serious lack of independent problem-solving ability, which leads to the disconnection between the experimental teaching process and the needs of social industry.

2.2. The experimental form and content are inefficient
At present, most of the experimental courses can build an effective, systematic and complete experimental teaching system, not only the experimental form and content are single and obsolete, but also seriously divorced from the practical requirements. The management mode of open experiment is still based on manual processing mode, and there is still no information teaching, which leads to the low efficiency of teaching process. And the artificial experimental teaching management results in the heavy workload of the experimental management personnel, and limits the students' timely and accurate access to the relevant information of the open experimental project.

In addition, the current experimental form is lack of comprehensive and innovative design, and is still based on the content and form of demonstration and verification, and the form setting is still more than single verification, which seriously limits the realization of students' ability to explore and develop through the experimental process [4]. The lack of interaction and communication in the experimental teaching process also leads to students' problems and questions cannot be answered in time, as well as the ability of problem discovery and self-determination, innovation ability training and play.

2.3. The experimental organization is not scientific and reasonable
First of all, most of the current experimental teaching is too fixed in both form and content, which is not conducive to students' flexible and independent arrangement of experimental subjects, resulting in the low efficiency of sharing and utilization of experimental resources and the development of students' inquiry ability. Secondly, the experimental form and content are lack of comprehensiveness, inquiry and research, which leads to the students' simple replication and repetition of teachers' teaching content in the experimental process, which seriously deviates from the goal of open and innovative experimental teaching.

In addition, the unreasonable and scientific experimental organization leads to the lack of sense of participation of students in the experimental teaching process, which makes the experimental resources cannot effectively improve the teaching effect of professional experiments, and cannot make full use of existing resources to cultivate students with innovative consciousness and innovative ability. In order to enhance students' sense of participation and innovation, the construction and implementation of efficient and open experimental teaching platform and management mode by fully using computer technology has become the construction goal of open computer innovation experimental teaching.
3. Construction of Open Computer Innovation Experiment Teaching Platform

3.1. Open computer experimental teaching platform system

The open computer experimental teaching platform should be based on the teaching objectives to carry out the design of the platform system, so as to design the specification of the platform construction, and lay the foundation for the establishment of the open computer experimental teaching platform system [5]. The construction of laboratory network platform includes information management system, experimental reservation system, online question answering system, distance education system, etc. The specific classification and construction contents are shown in Table 1.

**Table 1. Open computer experimental teaching platform system**

| System types               | Contents                               | Functions                      |
|----------------------------|----------------------------------------|--------------------------------|
| IMS                        | System management                      | System maintenance             |
|                            | Experiment management                  | Data backup                    |
|                            | Instrument management                  | Course arrangement             |
| Experimental reservation system | The core of network platform         | Information browsing           |
| Online question answering system | Make the communication platform   | Report submission              |
|                            | between teachers and students         | Booking resources              |
| Distance education system  | Auxiliary means of teaching            | Booking experimental site      |
|                            |                                        | Appointment of instructor      |
|                            |                                        | Students ask questions         |

The open computer innovation experiment teaching platform provides a unified information sharing entrance, allowing teachers, students and administrators to choose the login location and access time more freely. In addition, the platform will carry out targeted function settings for different users, such as the management of experimental teaching platform and the sharing and interaction of teaching resources.

First of all, the manager of the open computer innovation experiment teaching platform is to manage and analyze the platform resources, realize the maintenance and management of the system platform, as well as data statistics and analysis. The teacher, one of the users of the platform, is mainly to operate the software and hardware of the experimental information and teaching resource platform, so as to organize and release the data and information. Another important user of the platform is to participate in online learning and testing, and to record their own experimental process. In addition, teachers and students can fully communicate and communicate through the interactive function of the platform. The overall architecture of the platform system is shown in Figure 2 below.
3.2. Construction of three dimensional experimental teaching system and mode
In order to cultivate students' innovative consciousness and comprehensive quality, it is necessary to build a three-dimensional experimental teaching system and mode, so as to fully mobilize students' learning autonomy and inquiry, and improve their comprehensive practical ability and innovation ability [6]. In addition, the platform based experimental teaching should be modularized and different functional modules of the experimental teaching system should be integrated to realize multi-level, diversified and systematic experimental teaching system.

4. Implementation of Open Computer Experiment Teaching Mode
First of all, in the construction of laboratory scientific management system, it is necessary to clarify the responsibilities, ensure the normal and efficient operation of the laboratory, improve the rules and regulations, carry out standardized management, and establish incentive policies to improve the enthusiasm of experimental teachers. Secondly, at the level of experimental team construction, we should attract high-level and highly educated professional teachers to participate actively, improve students' innovation ability and promote the professionalism of the overall teaching. In addition, it is necessary to make the architecture of virtualization integration meet the requirements of multi system resources of different applications and users.

5. Conclusion
In summary, computer innovative experimental teaching mode plays an important role in promoting the cultivation of practical talents urgently needed by society and various industries, and helps to improve the design, comprehensiveness and innovation of innovative experimental teaching. Therefore, this paper from the construction of open computer experimental teaching platform system, as well as the construction of three-dimensional experimental teaching system and mode, points out that at the level of experimental team construction and laboratory scientific management system construction, we should attract high-level and highly educated professional teachers to actively participate, improve students' innovation ability, promote the professionalism of the overall teaching, and ensure the normal and efficient operation of the laboratory.

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