Research on Open System of Economic and Management Laboratory Center Based on Cloud Platform

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Abstract: The traditional open management mode of economic and management experimental teaching center can no longer meet the needs of personalization, mobility and digitalization of college students in the new era. Through the questionnaire research of 56 experimental centers, we get the valid data of 56 experimental project managers and 372 college students’ questionnaire, and use SPSS19.0 software to analyze the data. Based on the analysis results and the design of laboratory teaching management, college entrepreneurship contest, open laboratory center and project management, this paper proposes that the traditional laboratory management mode should be transformed to the modern management mode supported by mobile, digital and WeChat public number technologies.

1. Introduction

How to make full use of the teaching resources of the experimental center of economics and management, provide the students with the basic experimental conditions such as the teaching site, the opening of teaching instruments and equipment, and the teaching software service in the experimental teaching project, and provide the students with the management of the opening of the extra-curricular experimental center, so as to improve the experimental ability of college students in various experimental forms, cultivate the students’ interest and innovation ability in the experiment Strength and scientific research quality are the basic ideas and requirements for the opening of the school experimental center[1]. For a long time, the open operation mode of the economic management experimental center in Colleges and universities has been carried out. Due to the limitations of management mode, experimental staff, capital investment, operation mode and many other conditions, the effect of the open management mode of the experimental center is extremely unsatisfactory. With the emergence of new technologies such as the Internet and cloud computing, and the continuous popularization of mobile devices such as mobile phones and notebooks, the old and closed experimental center management mode must provide services to mobile terminals such as smart phones, notebook computers and WeChat public numbers. With the involvement of interconnected networks and mobile terminals, personalized teaching services for students will gradually become a trend of development[2]. At the same time, the open mode of the experimental teaching service of economics and management in Colleges and universities will be further enriched and individualized[3].

In view of the above problems, Huang Hailong and other experts conducted in-depth discussion and Research on the open form of the economic and management experimental center. Cong Yang scholar proposed to take the innovation and entrepreneurship competition of college students as the starting
point, expand the opening time of the laboratory, and take the independent management of students as the main line to realize the self-management of students. Yan Jiaxing scholars focused on the analysis of the specific problems in the process of the opening management of the experimental center, such as the treatment of the experimental staff is not high, there is no enthusiasm, the management method is traditional, and the level of teaching methods is low. Juhansing and other scholars divided the management mode of economic management experiment center into scientific research experiment management, student appointment type, off campus practice base, integrated experiment and design experiment management separately. Some scholars focused on the content, key points and measures of the management mode of the experimental center. The research results of the above experts and scholars focus on quantitative research and elaboration, and there is no research data and questionnaire to provide targeted research suggestions[4]. Based on the experimental curriculum design, college students' innovation and entrepreneurship competition, project management and other three aspects, this paper systematically analyzes the management mode of the economic management experimental center, and discusses a new open system based on cloud technology[5].

2. Sample analysis and data collection
This time, the data was collected and analyzed in the form of questionnaire survey. Based on the experimental centers of colleges and universities, 53 experimental centers in Shenyang, Dalian and Changchun were sampled and 53 questionnaires were collected, involving various types of experimental centers, such as food, machinery, information, chemical industry, etc. the subjects of the survey were the president in charge, the director, deputy director, and experimental technology of colleges and universities Surgical personnel. In order to reduce the impact of data homology error, this research uses paired sample analysis[6]. At the same time, college students were collected to conduct questionnaire survey on the opening, management and operation mode of the experimental center. 20 questions were set up with students as the theme. 376 questionnaires were distributed to college students, and 370 questionnaires were collected. After 70 invalid questionnaires were eliminated, 300 effective questionnaires (81.8% effective) were participated by college students. Spss19.0 software was used to analyze the effective data. The target positioning of sample survey and questionnaire survey is good, which ensures that the statistical results are reliable and the data is relatively reliable. Meanwhile, some laboratory directors and individual students are interviewed by telephone to obtain the opinions and constructive ideas on specific problems. With the development of society, the progress of economy and the improvement of people's awareness, the concept of network security has gradually entered the hearts of Internet users, and has been given a certain attention[7].

3. Data analysis and result test
The questionnaire research on the open mode of economic management experimental center is mainly based on the following aspects: laboratory teaching management, college students' entrepreneurship competition, the opening of experimental center, experimental project management, etc.

3.1. Experimental teaching management
This part mainly aims at college students’ investigation on the experimental curriculum, experimental computer operation and experimental teaching effect, as well as the opinions and suggestions to be improved in the future, as shown in Table 1.

| Analysis item      | Satisfied % | commonly % | Dissatisfied % | Other % |
|--------------------|-------------|------------|----------------|--------|
| Experimental results | 36.17       | 54.36      | 6.23           | 3.24   |
| Curriculum setting  | 30.27       | 56.24      | 7.36           | 6.13   |
| Attendance         | 20.16       | 30.65      | 47.29          | 1.9    |
From table 1, it is shown that 36.17% of the students have good operation effect in experimental teaching, 54.36% of them have general effect, 6.23% and 3.24% for unclear and other reasons, respectively. Many students clearly point out the specific problems in school experimental teaching management. For the experimental course design, 36 experimental teaching settings and effects of big data major, human resource management major, international economy and trade major, business management major, logistics management major and other six majors were investigated by questionnaire, with good effect (30.27%), general effect (56.24%), bad effect (7.36%) and indifference (6.13%) .

According to the above statistical data, the following research conclusions can be drawn: for the management of experimental teaching of college students, it is necessary to increase the opening and management of laboratories, strengthen the management of practical instructors and experimental technicians, and strengthen the working methods of experimental instructors (QQ remote desktop guidance, wechat video remote guidance, etc.), which will become a trend of experimental teaching development[8].

### 3.2. Entrepreneurial activities of College Students

The State encourages college students to participate in the innovation and entrepreneurship activities of college students. For the national, provincial and school level competitions organized by schools and colleges, college students have a very high degree of participation, as shown in Table 2.

| Big innovation project                        | Number of participants | Satisfied % | Dissatisfied % | Other % |
|-----------------------------------------------|------------------------|-------------|----------------|--------|
| National Market Research Competition          | 140                    | 61.36       | 34.57          | 4.07   |
| National Textile Design Competition           | 170                    | 56.87       | 27.45          | 15.68  |
| Wahaha marketing competition                  | 130                    | 46.89       | 32.67          | 20.44  |
| ERP sand table competition                    | 120                    | 49.14       | 28.65          | 22.21  |
| Learn to create cup competition               | 100                    | 52.32       | 41.28          | 6.4    |
| Xinghai cup entrepreneurship competition      | 106                    | 56.89       | 42.54          | 0.57   |
| Cross border e-commerce competition           | 60                     | 47.38       | 29.63          | 22.99  |
| Star of entrepreneurship Simulation Competition| 70                     | 63.25       | 35.26          | 1.49   |
| Talent recruitment competition                | 90                     | 59.12       | 36.45          | 4.43   |
| Linjia shop marketing competition             | 130                    | 45.69       | 30.56          | 23.75  |
| Resume Design Competition                     | 50                     | 61.64       | 20.43          | 17.93  |

It can be seen from table 2 that the number of students participating in the innovation and entrepreneurship competition of college students is very large, but the satisfaction survey of students after the competition is not ideal. The satisfaction of the star of entrepreneurship simulation competition with the highest satisfaction is only 63.25%, the dissatisfaction of students accounts for 35.26, and the proportion of students with indifference accounts for 1.49%. Through table 2, it is also found that the satisfaction of Xinghai cup entrepreneurship competition is 56.89%, dissatisfaction The degree of satisfaction was 42.54%, and the rate of satisfaction and dissatisfaction was close to 50%. Although the University encourages students of different majors and grades to form teams to participate in the innovation activities, the results of innovation are not very ideal. According to the statistical results, 50 students were selected for further investigation. It was found that whether participating in the
competition could improve their ability, 60.3% of the students thought it was ok, 36.8% of the students could not feedback, and 2.9% of the students did not know[9].

3.3. **The experimental center is open to the outside world**

In the face of the objective problems existing in the opening of the experimental center, a questionnaire survey was conducted on the effect, form and time of opening. Increasing the opening of the laboratory can improve the comprehensive quality, innovation and entrepreneurship ability and employment ability of college students. 64.38% of the students think it has improved, 20.56% think it can't, and 15.06 students don't pay attention. For the open form of the experimental center, the WeChat public number is more concerned about 63.64% of the students. The APP accounts for 53.46% of the mobile phone, 50.91% of the open campus experiment booking, 56.36% of the design experiment, and 17.69% of the cloud terminal. The results show that students have great expectations for the opening of the experimental center and lack of understanding and attention to cloud terminal services . Through the sample statistics, questionnaire results and interview research, we can draw the following conclusions: college students have a strong desire to improve the experimental practice ability and the results of the big innovation competition. Many students hope that the academic affairs office and the experimental center of the university will build a more open experimental platform and open time to improve the comprehensive ability of students[10].

4. **Design and implementation of cloud platform**

In order to improve the utilization rate of the experimental center, improve the students' practical application ability and participate in the innovation competition level, this paper develops a complete management system based on cloud application technology. The system is built on a portal platform, highlighting the characteristics of the experimental center of the experimental center, with powerful functions and high practicability.

4.1. **System design ideas**

In order to reflect the flexibility and convenience of the system, the system is mainly set up with four users: Lecturer, instructor, teaching director and student. In order to reflect the safety performance of the system, the authority of the director of the experimental center is relatively large. The authority of teaching end supports the classification of college, experiment major and experiment class, and the authority allocation of system administrator and ordinary user (experiment teacher and student) is set up, which can add, delete and modify the information of teachers and students. At the same time, it can release the real-time dynamic of the experimental center and the use status of each laboratory. The teacher can release the class arrangement in the experimental platform, allow or prohibit the use of computers, teaching software, etc. in the process of remote teaching, monitor the experimental state of students in real time, and control the progress of experimental teaching. With the help of the school Internet platform, teachers can guide students to carry out relevant courses, monitor the progress of the competition, and realize the remote video and audio synchronization function of experimental teaching[10].

As the front-line staff of the experimental center, the experimental instructor adjusts the curriculum arrangement and the opening schedule of the experimental center as the administrator of the experimental course, effectively releases the occupancy distribution of each laboratory, classroom reservation and the curriculum arrangement of the experimental center, generates the experimental schedule, and releases all the experimental courses and opening schedules of the experimental center, which is convenient for the teachers and students to view. With the help of this platform, students can set up or apply for experimental appointment on the platform by mobile communication technology such as mobile phone APP, WeChat public number, etc., and arrange the experiment on their own according to the opening time of the lab. At the same time, students can upload experimental reports through the platform, report on the project and complete the experimental attendance. This platform supports one-to-one or one to many interaction and information exchange between students and teachers. The
design of the management platform for the participation and competition of College Students' innovation projects. Through the cloud technology platform, the server of Hangzhou beiteng Technology Co., Ltd. is linked to hold the national innovation and entrepreneurship competition of university students, and the external link of Beijing UFIDA sandbox business simulation competition is seamlessly linked to the laboratory server and client[11].

The participating students take part in the school trial and provincial Simulation Competition in real time in the laboratory. Fully realize seamless data docking between schools and enterprises, and direct data confrontation competition between schools and colleges. This platform releases the college students' competition activities through the WeChat public number. The students sign up online by the APP client of the mobile phone, freely organize the team, and independently agree with the laboratory teachers to participate in the competition time, training simulation time and so on. The platform also includes various provincial and national competition projects related to the students in school, such as the national undergraduate business competition project, Alibaba business simulation competition, national textile industry design competition, cross-border e-commerce business simulation competition[12]. New road cup national electronic sand table competition and other professional and innovative related competitions. Through this system, the teacher in charge of the project pays close attention to the enrollment, grouping and ranking of each team member online. The instructor can answer the difficult questions of each team and give online help at any time through this system. Through the school trials to eliminate some groups, participate in provincial and national competitions. The system greatly reduces the work intensity of the instructor and improves the efficiency of the instructor[13].

5. Summary

After the continuous experimental teaching reform and the exploration of the open model of the experimental center, with the help of the advanced technology of cloud platform, the construction of the characteristics of virtualization and distribution can continuously meet the needs of students' decentralized learning and experiment, increase the level of students' independent experiment theory, and strengthen the operation ability of students' experimental skills. With the help of this open platform, we have also improved and trained the excellent experimental technology teachers. Through the advanced management mode of substituting competition for practice and promoting learning through competition, we have successfully built a relatively complete experimental open and management platform, gathered and integrated the more advanced experimental teaching resources, and promoted the construction of school enterprise cooperation platform. As the state emphasizes the cultivation of College Students' innovation ability and the demand for top-notch talents in scientific and technological innovation, how to cultivate excellent high-quality talents is a subject that colleges and universities must face and explore constantly, which requires the constant exploration and practice of university teachers and laboratory managers.

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