Analysis of Problems in Application of "Mine Ventilation" Project Teaching

Lianghui Guo\textsuperscript{1,*}, and Wenting Jia\textsuperscript{2}

\textsuperscript{1}Xinjiang Institute of Engineering, College of Safety Science and Engineering, Urumchi, China
\textsuperscript{2}Xinjiang Institute of Engineering, Asset Management Service, Urumchi, China

Abstract. In order to better improve the quality of teaching, from the original teacher-centered to student-centered transfer, it is urgent to carry out the reform of teaching methods and methods. Taking the course of "mine ventilation" as an example, this paper studied the problems existing in the process of implementing project-based teaching, and put forward reasonable and feasible Suggestions according to the problems. This paper discussed the necessity of carrying out project-based teaching research in the course of "mine ventilation". The traditional teaching way and the effect of project teaching method has carried on the contrast analysis, the results show that the project teaching in the course of "learning" of mine ventilation applications have more advantages than the traditional teaching way, mainly reflected in the student's study enthusiasm, significantly improve grades, hands-on practice ability and problem solving skills, etc. This paper analyzed three problems of project-based teaching and put forward corresponding solutions.

1 Introduction

"Project teaching method" is a new teaching method of constructivism learning theory, the essence of it is through the teachers set tasks, grouped by the students complete the task, to complete the task before the student completes the plan, oneself start work to practice, teachers can give guidance in the process, students are also free to discuss, more is to students to think independently explore, mission accomplished when students learn the related knowledge, improve the ability to solve problems. "Project teaching method" emphasizes that the center of teaching is students, whose teaching process is a process of experiencing team spirit, applying knowledge and improving ability [1]. "Project-based teaching" originated from the work-study education in Europe in the 18th century and the cooperative education in the United States in the 19th century, and basically matured in the middle and late 20th century, becoming an important guiding ideology of teaching theory [2-3]. The concept of "project-oriented teaching" was formally put forward by Canadian educator Chad and American educator kaz, and spread in Europe, America and Asian countries. At the end of last century, the concept of "project-based teaching" was introduced into China. Under the background of the theoretical foundation research of overseas study plan, "project-based teaching" mainly refers to the "dual system" vocational education in Germany [4] to cultivate the skilled talents needed by the society for employment, and develops the education model of curriculum based on the actual situation.
of Chinese education. In April 2001, Dr. Chad came to China to teach "project teaching method". This talent training model has been promoted in China, and various schools have carried out the exploration and research of "project teaching". Based on the project-based teaching method, this paper explores and studies the course of "mine ventilation".

2 The necessity of carrying out project-based teaching research in the course of "mine ventilation"

The course of "mine ventilation" mainly teaches the knowledge and theory of underground ventilation in coal mines. Students need to master some skills related to the measurement of ventilation instruments. In general, students have never been to a mine or been in a mine before learning this course. Even though the school has arranged an internship in cognition or production, and once or twice they have been in a mine, most students still have difficulty in understanding the knowledge related to a mine. In this case, when the traditional teaching mode is adopted to teach the course of "mine ventilation", the students feel frustrated and have no interest in it. The teaching effect is not good, and it is difficult for the students to acquire the corresponding skills. Therefore, it is necessary to choose a teaching mode suitable for teaching "mine ventilation". The teaching effect of "mine ventilation" by traditional teaching method is not outstanding. The reason for this situation is that traditional teaching cannot well combine field practice with theory, emphasize theory over practice, and fail to give play to students' enthusiasm for using their hands and brains. As a result, it is difficult for them to improve their ability due to passive learning. Project-based teaching just makes up for the deficiency of traditional teaching. This teaching method adheres to the close combination of theory and practice, and is characterized by practicality, autonomy, development, comprehensiveness and openness. At the same time, project-based teaching also conforms to the national requirement of student-centered education, so it is necessary to carry out research on project-based teaching of "mine ventilation" course.

3 "Mine ventilation" implementation of the project teaching analysis

3.1 Effect analysis of "mine ventilation" project teaching

For the course of "mine ventilation", two different teaching methods are adopted, one is the traditional teaching method, the other is the project teaching. How would the effect be different? The study situation of students in the project-based teaching class was compared with that of students in the traditional teaching method. In terms of learning enthusiasm and initiative, project-based teaching can stimulate students' interest in learning, and enable them to take the initiative to complete assigned learning tasks. The traditional teaching method, students in the classroom learning is very boring, cannot muster up the spirit to come, for the knowledge learned do not have a solid grasp and in-depth understanding. In terms of ability, project-based teaching has greatly improved students' practical ability, as well as their thinking ability and innovation ability. In order to complete the project, students need to consult a lot of materials for design after class, and sometimes they need to discuss with each other. Every search of information, every discussion, are to learn the knowledge of the re-learning, the unknown knowledge of learning. The ability of students to study independently has been greatly improved and their ability to solve problems has been improved. Traditional teaching, in which the teacher speaks above and the students listen below, does not give the students much time and space to think, nor does it give them
the opportunity to operate. In terms of learning performance, project-based teaching pays attention to the process assessment. For the project tasks assigned at ordinary times, each task should have corresponding assessment results. Finally, there is a written test result. As shown in table 1, the final scores of the two teaching methods are distributed at the end of the semester. Taking a class of 40 students as an example, the scores of the students receiving project teaching account for 10% with excellent comprehensive scores, 80% with good scores, 5% with medium scores, and 5% with failing scores. On the whole, the scores are very consistent with the normal distribution. The result of the traditional teaching examination method, the written test at the end of the term, is relatively heavy, generally accounting for 70% of the overall result. The results of students receiving traditional teaching, for example, in a class of 40 students, accounted for 5 percent of the overall outstanding performance, 60 percent of good performance, 20 percent of medium performance and 15 percent of failed performance. The excellent and good performance rate of the students who accepted the project-based teaching method reached 90%, which was 25% higher than that of the traditional teaching, and the failure rate of the project-based teaching was 5%, which was 10% lower than that of the traditional teaching, which was 15%. In contrast, students who received project-based instruction performed better than those who received traditional instruction.

| Teaching methods   | Excellent(%) | Good(%) | Medium(%) | Fail(%) |
|--------------------|--------------|---------|-----------|---------|
| Project teaching   | 10           | 80      | 5         | 5       |
| Traditional teaching| 5           | 60      | 20        | 15      |

### 3.2 Problem analysis of "mine ventilation" project teaching

There are also some problems in carrying out project teaching in the course of "mine ventilation". First of all, project-based teaching has higher requirements on hardware, and the classrooms of the school should have the corresponding equipment and instruments with integrated functions. At present, colleges and universities are still weak in the integrated classroom construction, so it is necessary to increase the investment of funds to carry out the integrated classroom construction and promote the reform of project-based teaching. Secondly, project-based teaching has higher requirements on teachers, who need to spend a lot of time and energy on designing project-based teaching. Teachers of specialized courses have a large teaching workload, so it is difficult to spare more time to design. For the course of "mine ventilation", there has been no systematic project teaching design in the corresponding domestic universities, so there is no relevant reference materials or good experience for reference. It is necessary to introduce teachers, increase the ratio of teachers to students, guarantee the teachers' strength, make the teachers have enough research time, and improve the teachers' teaching and research level. Thirdly, project-based teaching has high requirements on students. According to the normal class arrangement, some projects are difficult to be completed in time in class, so students need to take time to finish them after class. After class, students are often interfered by various external factors, such as club activities, student work, online games, online videos, etc., so they cannot complete the project tasks well. In view of this situation, the supervision and incentive mechanism should be established to promote students to actively carry out project tasks so that students can reasonably plan their spare time. Can not only complete the task assigned by the teacher, but also enrich their own leisure life.
4 Endnotes

Taking the course of "mine ventilation" as an example, the advantages and disadvantages of traditional teaching and project-based teaching are compared. Project-based teaching shows superiority in many aspects. Students' enthusiasm is enhanced, their thinking ability is improved, their practical ability is improved, and their learning fields are broadened. This paper analyzes the problems existing in the application of project-based teaching, from hardware to software, and puts forward higher requirements for schools and teachers. Project teaching in the application of the course "mine ventilation" is a small part of the education reform, the problems existing in the project teaching in this course shall, in the process of project teaching in other courses also exists, the solution to the problem can provide reference for the other to carry out project teaching, work is very meaningful to promote education reform.

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