



# Analysis of Simulation Training Teaching Effect Based on Project Based Learning by Online Software

Yunxia Jiang<sup>(✉)</sup>

Shanghai Sanda Institute, Shanghai, China  
april2002@126.com

**Abstract.** The rapid development of emerging information technology and the increasing abundance of teaching resources in colleges. The course reform based on Problem Based Learning teaching method can enable students to build a broad and flexible knowledge base and improve the quality of our training course. The necessity and existing problems of Project Management Simulation Training course are analyzed. The feasibility and adaptability of Problem Based Learning teaching method applied to Project Management Simulation Training course are also discussed. The implementation and application effect of this new teaching method are discussed emphatically by online application software. In this study, the online platform questionnaire software “Questionnaire Star” was used to generate online questionnaires, which were distributed online to 92 students in 3 classes. 92 questionnaires were collected. For the collected questionnaire data, the online platform statistical analysis software SPSSAU is used for data reliability analysis in this study. The results show that the data reliability coefficients are all higher than 0.8, and the data reliability quality is high, which can be used for further analysis. Further analysis results show that this new teaching method is beneficial to cultivate students’ comprehensive quality, innovative practice ability and teamwork ability. With the help of online application software, the research and analysis results prove that the implementation of this new teaching method is effective.

**Keywords:** teaching · online · software · simulation · data

## 1 Introduction

Because of the characteristics of large investment, long construction period, high quality requirements, many participating units and unforeseen factors, the construction management is very complicated and difficult. When the internship companies give feedback to students’ internship situation, it is mainly reflected in the following aspects: students’ weak hands-on ability, and the application of workflow and working methods is out of touch with reality. At present, our teaching system is actually a structured knowledge system, which divides the whole subject into several courses, and each course is taught independently. In this environment, students generally think in a hypothetical

environment, and the knowledge they learn is isolated, so it is difficult for students to practice their knowledge horizontally, thus forming a systematic understanding of the whole knowledge system. In addition, students lack the understanding of professional posts. Project Management Simulation Training which can be abbreviated as PMST in this paper breaks through the traditional theory and case teaching mode. It can integrate the effects of various professional courses, comprehensively apply the theoretical knowledge of many disciplines to the construction project management process. And the students' knowledge system is expanded by using the contents of Project Management Simulation Training course. Through practical operation, students can experience their post roles, learn and discuss with each other, and actively participate in the simulation work.

However, PMST course has the following problems: (1) there is a lack of systematic research; (2) The classroom teaching management is difficult, and the teaching effect needs to be improved. Because there are many students, it is sometimes difficult to find out in time, and students often learn from each other, and even plagiarize, which will affect our learning effect.

Therefore, it is of great significance to explore and study the teaching method of PMST course. In PMST teaching course, we can better grasp the key points of practical training only by constantly exploring and perfecting the course teaching design and teaching methods, so that students can deeply understand the principles and laws of construction project management.

## **2 Feasibility Analysis of PBL Teaching Method in PMST Course**

### **2.1 Feasibility of PBL Teaching Method**

Problem Based Learning, which can be abbreviated as PBL, is a teaching mode developed on the basis of constructivism theory, and it is a teaching method to cultivate students' autonomous learning and logical thinking ability through problem solving. PBL teaching method originated in 1950s, first put forward by a group of educators from Mc Master University School [1]. And it gradually replaced the more traditional teaching methods, so it was very popular. PBL teaching method has changed the passive learning mode of teachers' speaking and students' listening in traditional teaching methods, emphasizing student-centered and students' autonomous learning. This not only enhances students' participation in the teaching process, but also effectively mobilizes students' learning initiative. For example, Weixing Shao and others divided the teaching objects into experimental group and control group. In the online teaching of Construction Project Management, PBL teaching mode and traditional teaching mode were used to teach, and then they were compared [2]. The results showed that compared with the traditional teaching mode, PBL mode obviously improved students' learning interest, and made them generate learning motivation. Wenhui Cai and others applied CBL and PBL teaching methods to Engineering Training courses, which improved students' enthusiasm, initiative and creativity, thus improving the teaching quality of courses [3]. Liu Yang and others applied PBL teaching method in Engineering Drawing course, which effectively improved students' learning interest, initiative and learning efficiency, thus enhancing students' innovative ability in future study and work [4]. Zhao Qian

and others applied PBL teaching method to Engineering Materials online courses, and achieved good teaching results [5]. Guanglei Qu and others used PBL in the teaching reform of Civil Engineering Materials course, and compared the teaching effect between the teaching reform class and the traditional class [6]. The results show that the PBL teaching mode is more suitable for the course teaching and accords with the idea of engineering education professional certification.

Under the new engineering background, it is necessary to cultivate innovative talents in the new era. The cultivation of image thinking and logical thinking is particularly important. At the same time, it pays attention to the improvement of students' autonomous learning ability. Therefore, it is of great research significance to study the teaching of PMST course based on PBL teaching method.

Referring to the application of PBL in various courses, and combining with the problems existing in the teaching of PMST course, we can construct a new teaching system of PMST course based on PBL teaching method, which can be implemented concretely from the following aspects: changing traditional concepts, improving teaching methods, innovating teaching means, and perfecting assessment standards. In the research process, we will always take students as the main body, focus on the implementation of course teaching objectives and teaching tasks, pay attention to the individual differences of students' learning, optimize online and offline teaching resources, formulate teaching implementation plans, adopt diversified ways to carry out teaching and assessment, form a closed loop of our teaching process, and improve our learning effect.

In a word, the core element of PMST based on PBL teaching is the process of acquiring knowledge in the process of solving problems, which is student-centered, problem-based, and group-based.

## 2.2 Adaptability of PBL Teaching Method

Using PBL teaching method in PMST course can make students experience the whole process of the operation of construction enterprises in a series of activities, such as market analysis, planning, construction organization, resource integration and financial settlement. And this teaching method can make students master construction project management skills, increase hands-on ability, improve professional skills in an all-round way, and strengthen the sense of teamwork, which is conducive to the cultivation and promotion of students' employment competitiveness.

The adaptability of PBL teaching method in PMST course is embodied in: (1) The purpose of PMST course is the same as that of PBL teaching, which is to cultivate students' ability of autonomous learning and comprehensive application of knowledge to solve practical problems. (2) Both PMST course and PBL teaching methods are based on teamwork. On the basis of group division of labor, the formation of students' good interpersonal relationship is promoted, and their communication and expression ability, organization and coordination ability is enhanced. (3) The problem situation set by PBL teaching method simulates the real situation, which is also the task that PMST course needs to complete. (4) The problem-solving process of PBL teaching method is also the process in which students complete the whole project management task after playing roles in different positions in PMST course. In the process of solving problems and putting forward plans, students' application ability and innovation ability are

improved. (5) The process of achievement display, group mutual evaluation and teacher evaluation in PBL teaching method is also the process of team building introduction, project planning and implementation plan competition, and publication of the best plan in PMST course. Students can integrate professional core knowledge and enhance their engineering practice ability.

### **3 Implementation and Application**

#### **3.1 Research Object**

The teaching object of this course is 92 undergraduates in three classes of senior students majoring in Engineering Management. The opening time is the last semester of senior year, that is, the 7th semester. Prior to this, students have systematically studied the relevant professional knowledge of project management such as Project Management, Construction Organization Technology and Project Cost Management.

#### **3.2 Practical Teaching Content**

- 1) Practical teaching content and process: In the interpretation of the basic knowledge of PMST, PBL teaching method is adopted. Teachers will set up a group task on the online platform of the course, and ask each group to finish reading the relevant basic knowledge content after the teacher issues the requirements. Then, in class, they will ask each group to send representatives to summarize their own understanding and share their knowledge of the assigned reading content. At the same time, the teacher will set up a number of knowledge quiz assignments on the online platform of the course, and ask each student to complete the answers online. To sum up, PBL is used to combine team discussion learning with individual learning, so as to complete the preparation of PMST basic knowledge by PBL teaching method.
- 2) Team Building Display: Teachers explain the requirements of team building and show samples of previous team building. Using PBL teaching method, teachers set teaching tasks in this training link: team formation and role assignment, team LOGO design, motivation slogan, team name and design concept, and team display are required to be completed within a limited time. Each group needs to work together to discuss and complete this task.
- 3) Sand Table Drill Training Link: In this link, it is usually carried out according to the project construction period set by simulation. When the first project officially starts construction, the teacher will lead the students to carry out the first month's operation. The purpose is to make the students familiar with and master the contents of the knowledge preparation stage in the practice sand table drill in this process. After that, each group completes the construction task of the whole project by itself. Therefore, from the second month, the teacher adopts the problem-setting method in PBL teaching method, and will issue a problem-based task to everyone. At the same time, each group is required to show their own implementation ideas and plans after completing the construction task of the whole project. Each team should make its own implementation plan, and consider the financing and utilization of funds.

At the same time, the team must also deal with various risk events, team crises and conflicts. Finally, the results displayed by the group also have their own advantages and disadvantages because of the different ideas and schemes of each group. Teachers should comment and summarize the final results. The team also needs to evaluate and summarize the performance of the members in the team.

- 4) Sand Table Simulation Training Link: In this training session, PBL teaching method is adopted. Teachers will release the engineering disclosure materials of the project, and issue tasks to each group. Each group will complete the planning scheme of the project, that is, the tasks, according to the released engineering information materials and the ideas of the group team after discussion and communication. Project planning is the key to the success of project management. In this link, students make planning ideas and plans according to the engineering information, complete the corresponding plans of construction progress, cost, resources and other aspects, and show their own planning plans in class.
- 5) Sand Table Comprehensive Training Link: In this training session, teachers use PBL teaching method to release new project information materials to each group and the tasks that each group needs to complete. After receiving the tasks, each group needs to: (1) Clarify the basic information of the new project, and clarify the interrelations among the components. (2) Complete the planning of the new project, correctly draw the crossing chart of the schedule, and complete the demand plan of various resources such as labor, materials and machinery according to the plan, so as to maximize the profit of the project. Clarify the importance of further “reasonable decision-making”. (3) Complete the execution of new engineering projects, correctly calculate the projects, and become familiar with the use of analysis tools in this course. (4) Finally, each group makes PPT report, personal report and teacher’s comment.

### **3.3 Introduction to Research Methods and Tools**

In order to test the effect of PMST course based on PBL teaching method, this questionnaire survey is designed. At the end of the course, it was distributed to students to fill in, and interviews were conducted between teachers and students to evaluate the effect of this teaching reform. This research uses the online platform questionnaire software “Questionnaire Star” to generate online questionnaires and distribute them to students. For the collected questionnaire data, the online platform statistical analysis software SPSSAU is used for data reliability analysis. If the data reliability coefficient is high, the implementation effect of the new teaching method will be further analyzed according to the returned questionnaire.

### **3.4 Design of Questionnaire Contents**

The questionnaire on the implementation effect of PMST courses based on PBL was conducted among 92 students in 3 classes of Engineering Management major. The questionnaire is mainly designed from three aspects: students’ satisfaction, recognition and learning gains with PBL teaching method. The specific contents of the three aspects and the corresponding number of items are shown Table 1, Table 2 and Table 3.

**Table 1.** The questionnaire contents on Satisfaction degree

| Item Number | Survey Content  |
|-------------|---|
| A1          | The division of labor in your group is clear, and the collaboration is appropriate. |
| A2          | You are satisfied with your contribution in the group.                              |
| A3          | You are satisfied that your team members have made due contributions.               |
| A4          | You are satisfied with the teaching method of this course.                          |
| A5          | You are satisfied with the evaluation method of this course.                        |
| A6          | Teachers are effective in organizing classroom learning.                            |

**Table 2.** The questionnaire contents on recognition degree

| Item Number | Survey Content  |
|-------------|---|
| B1          | The PBL teaching mode is very necessary, and the learning effect is obviously improved.   |
| B2          | I will actively participate in teaching situations and group discussions.   |
| B3          | The evaluation methods are very diversified, which promotes my study and makes me spend more energy and time on this course than other courses. |
| B4          | The situation is fascinating, and the personalized situation is challenging, but it can be realized as long as efforts are made.                |

**Table 3.** The questionnaire contents on harvest degree

| Item Number | Survey Content   |
|-------------|--|
| C1          | Self-evaluation of the degree of knowledge mastery of this course.               |
| C2          | The ability of self-learning has been cultivated and improved.                   |
| C3          | There is effective communication with the members of the group.                  |
| C4          | PBL teaching method is suitable.   |
| C5          | There is a new understanding of the ways and methods of problem-solving ability. |
| C6          | The ability to summarize and summarize problems has been improved.               |
| C7          | The ability to analyze problems has improved.                                    |
| C8          | The degree of giving and receiving PBL teaching method for future study.         |
| C9          | You recommend this method to other students.                                     |

In addition to the survey items with options in the above three tables, the questionnaire is also designed with subjective questions, such as “What aspects do you think this course needs to be further improved and why?”, “Please talk about your suggestions for this course specifically?”.

This survey used online software “Questionnaire Star” to generate online questionnaires, which were distributed online to a total of 92 students in 3 classes. The number of questionnaires recovered: 92 in total, 31 from Class 1, 30 from Class 2 and 31 from Class 3. The recovery rate of this questionnaire is 100%.

### 3.5 Data Reliability Analysis of the Returned Questionnaire

For the collected questionnaire data, the online platform statistical analysis software SPSSAU is used for data reliability analysis. The data reliability of the questionnaire of three dimensions of three classes was analyzed.

1) Introduction to Data Reliability Analysis Methods: Reliability analysis is to verify the consistency, stability and reliability of data conclusions. The higher the reliability coefficient is, the more consistent, stable and reliable the results of the questionnaire data are. Cronbach  $\alpha$  reliability coefficient is the most commonly used reliability coefficient at present. This analysis will authorize the questionnaire data of each class to the online platform statistical analysis software SPSSAU for data reliability analysis. The value of the reliability coefficient can test the reliability of the data. If the total reliability  $\alpha$  value is above 0.8, it indicates that the data reliability is high and the analysis conclusion is completely reliable; if  $\alpha$  value is between 0.7 and 0.8, it indicates that the data reliability is good; if  $\alpha$  value is between 0.6 and 0.7, it indicates the data reliability is acceptable; If  $\alpha$  value is less than 0.6, it indicates that the data reliability is poor. Cronbach  $\alpha$  coefficient calculation formula is shown in (1).

$$\alpha = \frac{k}{k-1} \left( 1 - \frac{\sum_{i=1}^k S_i^2}{S_x^2} \right) \quad (1)$$

In (1),  $k$  is the number of questions for a specific questionnaire;  $S_i^2$  is the variance of the current observation sample;  $S_x^2$  is the variance of the total sample [7].

2) Conclusion of Data Reliability Quality Analysis of the Questionnaire: The student questionnaire mainly includes 19 options designed from 3 aspects. The reliability of the questionnaire of each class was analyzed by online statistical analysis software SPSSAU. The reliability analysis results are shown in Table 4. Cronbach  $\alpha$  reliability coefficient of Class 1 is 0.816. Cronbach  $\alpha$  reliability coefficient of Class 2 is 0.936. Cronbach  $\alpha$  reliability coefficient of Class 3 is 0.918. The three coefficients are greater than 0.8. It shows that the reliability quality of the questionnaire data is very high and can be used for further analysis.

### 3.6 Analysis of the New Teaching Method Effect

Because the data reliability coefficient is very high, the implementation effect of the new teaching method can be further analyzed according to the returned questionnaire. The statistical results of the questionnaire by online platform software “Questionnaire Star”

**Table 4.** Data reliability analysis results

| Class Number | Cronbach Reliability Analysis - Simplified Format |                        |                          |
|--------------|---|------------------------|--------------------------|
|              | <i>Cronbach <math>\alpha</math> coefficient</i>   | <i>Number of items</i> | <i>Number of samples</i> |
| Class 1      | 0.816   | 19                     | 31                       |
| Class 2      | 0.936   | 19                     | 30                       |
| Class 3      | 0.918   | 19                     | 31                       |

are shown in Table 5, Table 6 and Table 7. The numerical analysis of each item in the three tables is based on the combination of the corresponding data items of each class. That is, there are 92 study samples in each row of the three table.

1) Survey and Analysis of Student Satisfaction: PBL teaching method is a problem-based learning method. It takes students as the main body, takes the form of group discussion, and with the participation of teachers' related tasks and corresponding guidance, studies around the planning and implementation problems of a specific project. For a specific project, each group jointly completes the planning scheme and implementation tasks in the whole process management of the specific project, so as to achieve the goal of cultivating the project management ability. Therefore, in Table 5 and Table 1, the participation and satisfaction in the group are investigated, such as "clear division of labor in the group", "your contribution in the group" and "whether all the members of the group have contributed". The survey results show that students are satisfied with the group-based teaching method adopted in PBL teaching, with more than 70% satisfaction very much, more than 20% satisfaction, less than 5% general satisfaction and 1% dissatisfaction. It shows that students are successful in teaching PBL in small groups. In addition, the survey results in Table 5 and Table 1 show that students' satisfaction with the teaching methods of the course is as follows: 69% are very satisfied, 29% are satisfied, only 2% are average, and none are dissatisfied; students' satisfaction with the evaluation methods of courses is: 71% are very satisfied, 27% are satisfied, only 2% are average, and none are dissatisfied. It shows that the implementation of this course in PBL teaching method is successful and effective. At the same time, it also shows that this teaching method can not only enable students to learn the necessary professional knowledge, but also cultivate the ability of teamwork and self-study, stimulate learning motivation, achieve teaching objectives and cultivate students' comprehensive quality.

2) Investigation and Analysis of Students' Recognition: The survey results in Table 6 and Table 2 show that 91% of the students think that PBL teaching is very necessary. 90% of the students think that they actively participated in the problems and tasks related to the teaching content released by teachers in the classroom before and after class, and actively thought and offered suggestions in group discussions. This part of the students also spoke most actively in group presentations. 9% of them said that their participation in the learning process was average, and 1% of the students hardly participated or invested. From the experience and summary of the four training sessions submitted by the students, it is found that the students who hardly participate in the classroom and group tasks are inattentive in class, and the assignments submitted by



**Table 5.** Analysis of students' satisfaction Degree

| Survey Content Number | Survey Options |               |               |            |
|-----------------------|----------------|---------------|---------------|------------|
|                       | <i>Best</i>    | <i>Better</i> | <i>Common</i> | <i>Bad</i> |
| A1                    | 73%            | 20%           | 7%            | 1%         |
| A2                    | 73%            | 22%           | 5%            | 0%         |
| A3                    | 76%            | 22%           | 2%            | 0%         |
| A4                    | 69%            | 29%           | 2%            | 0%         |
| A5                    | 71%            | 27%           | 2%            | 0%         |
| A6                    | 90%            | 6%            | 4%            | 0%         |

individuals published on the online platform also fail. As for evaluation methods, 92% of students think that diversified evaluation methods can effectively promote learning; 8% of the students think that the evaluation method is average, and a small number of students do not seriously do classroom review, summary and thinking in each study experience homework, and their learning experience is very general, which is why these students fail to meet the requirements in many evaluation links. Students don't think it doesn't matter, which shows that students as a whole still attach importance to and recognize the setting of the evaluation link. In the aspect of PBL situation setting, 93% of students agree with this problem situation that needs to be explored and completed by individuals and groups, and are willing to complete their own exclusive project plan in the process of learning in combination with their own learning state. From the personal gains and experiences of the collected students, there are indeed few students who are willing to be directly explained by the teacher and don't like to explore independently. Students don't think it doesn't matter, which shows that students as a whole are still very willing to this kind of teaching method.

3) Investigation and Analysis of Students' Learning Gain: According to the feedback information of the nine survey contents in Table 7, the students' learning harvest degree of PMST practical teaching course based on PBL teaching method is still very high, and the positive feedback is above 90%, which is mainly reflected in the great improvement of students' self-learning ability, effective communication ability, solving

**Table 6.** Analysis of students' recognition Degree

| Survey Content Number | Survey Options |               |            |
|-----------------------|----------------|---------------|------------|
|                       | <i>High</i>    | <i>Common</i> | <i>Low</i> |
| B1                    | 91%            | 9%            | 0%         |
| B2                    | 90%            | 9%            | 1%         |
| B3                    | 92%            | 8%            | 0%         |
| B4                    | 93%            | 7%            | 0%         |

practical engineering problems ability, analysis and summary ability, etc. For example, it can be seen from “the self-learning ability has been cultivated and improved” in Table 3 and Table 7 and that through the study of this course, 92% of students think that self-learning ability has been greatly improved, and another 8% students also think that their learning ability has been improved. According to the survey in Table 7 and the evaluation of some students’ interview feedback, it is found that the PBL teaching method has been generally recognized by students, which can enable students to have higher gains in mastering project management concepts and knowledge, project management methods, project management tools, job division, teamwork and other aspects. On the whole, students have a higher sense of acquisition.

In the application of PBL teaching, students need to cultivate the ability of autonomous learning, finding and solving problems through independent thinking of project information in the preview stage before class; in the implementation stage of group discussion, the ability of collaboration and communication with group members has been cultivated. Facing the problems and tasks issued by teachers, they can look at them objectively, think independently, and take the initiative to propose and solve problems. In each link of the course, students’ comprehensive abilities are constantly improved, reflecting the goal of training the comprehensive quality of the course.

4) Analysis of Students’ Questions and Suggestions: Besides the survey contents in Table 5, Table 6 and Table 7, at the end of this course, students were asked that “What aspects do you think this course needs to be further improved and why?”, “Please talk about your suggestions for this course specifically?”. From the content of feedback, students’ suggestions for the course mainly include the following aspects: more preparation time can be reserved before class; the practice time in class is not enough, and the number of hours of course training can be appropriately increased; the supervision and guidance in the process of group discussion can be strengthened and so on.

5) Summary: Based on the feedback of students’ questionnaires and interviews with professional teachers and some students who participated in the practical training, the

**Table 7.** Analysis of students’ harvest Degree

| Survey Content Number | Survey Options |               |            |
|-----------------------|----------------|---------------|------------|
|                       | <i>Highest</i> | <i>Higher</i> | <i>Low</i> |
| C1                    | 68%            | 27%           | 5%         |
| C2                    | 92%            | 8%            | 0%         |
| C3                    | 92%            | 8%            | 0%         |
| C4                    | 91%            | 9%            | 0%         |
| C5                    | 93%            | 7%            | 0%         |
| C6                    | 92%            | 8%            | 0%         |
| C7                    | 91%            | 9%            | 0%         |
| C8                    | 91%            | 8%            | 1%         |
| C9                    | 87%            | 12%           | 1%         |

advantages of PBL teaching in PMST course are affirmed: (1) Take the team as the unit. The learning task is changed from an individual to a team, so that the team members form an atmosphere of helping each other learn. (2) The classroom atmosphere is good. As the teacher will release the group tasks to be completed in the course, at the end of the course, the best scheme should be evaluated according to the results of each group, thus forming a competitive atmosphere among each group, which greatly improves the enthusiasm and interest of students in learning. (3) The interaction between teachers and students is strong. Using PBL teaching method, teachers do not use traditional cramming teaching, but give priority to guidance. Teachers and students have established a friend relationship. When students encounter problems in completing group tasks, they can ask the teacher. Instead of telling the answer directly, the teacher can ask the group and other members to give answers or make enlightening suggestions. It is helpful for students to absorb and master knowledge by commenting and explaining knowledge pertinently. (4) In a word, this teaching method can stimulate students' interest in learning, improve students' autonomous learning ability and cultivate the spirit of teamwork. More importantly, the course connects the professional core knowledge learned in the past, improves students' knowledge integration and engineering project management ability, and makes students more confident to be competent for internship.

Meanwhile, there are some problems to be solved and corresponding countermeasures. First, a small number of students are accustomed to the teaching method that teachers directly teach knowledge, but they are not quite adapted to the requirements of PBL teaching method for their self-study, cooperation, tolerance, communication and interaction, etc. Second, in the process of problem discussion, students hide their true views in order to express their unanimous opinions or cause conflicts because of different opinions. In order to solve these problems, in the preparatory stage of PBL teaching method, teachers should encourage students to put forward their own opinions. PBL teaching should pay attention to the problem discussion process, and the group can set up special personnel to record the different views of the group members and the conflict handling process, and give encouragement and extra points for positive and well-concluded conflicts. Third, PBL teaching method used by the teachers has not been used for a long time, and the teaching concept has not completely changed. In practical training, when students encounter difficulties and slow tasks, they unconsciously assume the role of traditional teaching explanation, which limits the creativity of students. Fourth, the numbers of teachers using PBL teaching method are obviously insufficient. PBL practice teaching is carried out in groups. There should be enough teachers to track the progress of group discussions, evaluate the mastery of knowledge points by team members, and give timely guidance and encouragement to prevent students from being passive and tired. Therefore, it is hoped that schools should pay attention to the implementation effect of PBL teaching method, strengthen the training of PBL teaching method, and reasonably set up PBL teaching teams.

## 4 Conclusion

“Student-centered” PBL teaching method is a problem-oriented teaching method. The research results of PMST course based on PBL teaching method show that this teaching method can stimulate students’ interest in autonomous learning, fully arouse students’ enthusiasm and initiative, and cultivate their habit of autonomous learning. In PBL teaching, the key is to design problems. Students have a strong desire to explore new problems, actively solve them, and their ability to analyze and solve problems has also been improved. In PBL teaching, group discussion is adopted to learn and complete the related tasks in the whole process of a project management. Each group needs a clear division of labor and good cooperation to complete the group tasks assigned by the teacher. In the process of completing the group tasks, students’ knowledge integration and ability to solve practical engineering problems are cultivated, and their comprehensive qualities such as team cooperation ability are improved. To sum up, the students who participated in this training course are satisfied with the PBL teaching method, and the practice of PMST course based on PBL teaching method is relatively successful. However, this teaching method still needs to be continuously improved in practice before it can be extended to other practical courses.

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