

The Comparison between PBL and Situational Simulation Teaching Method

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Abstract: In current China, although Problem-based Learning (PBL) and Situational Simulation Teaching Methods are shown to be useful for teaching, there are few classes combining them together. This article compared these two teaching methods first and then explored how to integrate them together. The main findings of this paper were: 1) the application of PBL and situational approach respectively; 2) comparing the similarities and differences between PBL and situational approach; 3) the combined application of the two teaching modes. The above points show that both teaching modes can improve students' motivations to learn. Both of them increase students' communication ability in group discussion and simulation, and also broaden students' knowledge to master the knowledge. And the combined application of the two can maximize these benefits.

Keywords: PBL teaching method, Situational teaching method, Comparison, Integration.

1. Introduction

In the contemporary high-tech world, people need to be equipped with complete quality and solid professional capabilities. In other words, developing skills no longer requires adhering to the traditional teaching approach that emphasizes cramming for examinations. The PBL and the situational simulation teaching method are both approaches in the process of reforming the teaching methodology. PBL mainly encourages students to learn, explore and investigate actively a certain project or problem [1]. Unlike PBL, the situational simulation teaching method activates students' innovation potential and enables students to foster their imaginative thinking skills and understands the general rule of situations. These two teaching methods have already been applied to schools and colleges all around the world. More importantly, they are highly recommended by researchers and educators in terms of their achievement of developing students' comprehensive skills that have been widely demonstrated in various studies [2]. For example, Yang and other scholars conducted research to investigate how project-based activities develop sixth-grade students' Computational Thinking (CT). The results demonstrate that the activities helped students develop their extensive topic knowledge and gave them a chance to exercise their CT($p=.04$) [2]. The outcomes of the activities

were measured by a Bebra Challenges test which was to generally examine students' logic and CT skills.

These two teaching methods have several things in common to some extent. However, very few studies have made a concrete comparison of these two methods and systematically identified their similarities and differences even though they have been proposed for some time. In addition, dozens of experiments and studies have been carried out especially in China to combine PBL and situational simulation into the actual design of teaching [3][4]. Nevertheless, the combination applies almost exclusively to certain fields with strong practicality, such as nursing and pharmaceuticals.

Therefore, this paper mainly reviews on previous literature from the perspective of: to what extent these two teaching methods can combine and put into practical use. This can be separated into two following questions:

- 1) What are the similarities and differences between PBL and situational simulation teaching method?
- 2) How do they integrate and apply to practical use?

2. Overview of PBL & Situational Simulation Teaching Method

2.1. The Overview of PBL

PBL is a typical educational method applied and implemented in various domains. It originated in Canada around the 1950s when more and more weaknesses of conventional medical education methods had been exposed by studies and demanded prompt solutions. PBL requires students to utilize a train of integrated knowledge to solve a certain authentic problem in a structured and organized format. Barrows introduces a core model of PBL in his study, categories six characteristics of PBL in a general way [5]. This model confirms that PBL emphasizes on the process of problem-solving, which also challenges the students that they should be able to bring their previous knowledge to an authentic problem. As such, PBL has been proven to be significantly linked to students' collaborative learning, disciplinary subject learning, iterative learning, and authentic learning. These elements that are fostered will stimulate students' engagement in the study in turn [6]. Moreover, PBL activates a higher level of sense of involvement and develops skills and critical knowledge amid the exploration process [7].

PBL has sparked heated discussions since it was created. As Hung et al put it, the development of PBL is a journey of failures and modifications [8]. He identifies three waves PBL has experienced respectively [8]. With the dissemination of PBL, many researchers have focused on its outcomes and effectiveness [9]. Some researchers have investigated non-traditional PBL, virtually a mixture of PBL and other methods or technology, such as digitalization in PBL, which is likewise considered digital problem-based learning (i.e., online computer-based PBL lessons); hybrid PBL, whose delivery of several components is combined with traditional lecturing [10][11].

2.2. Situational Simulation Teaching Method

The teaching method is similar to the PBL in some aspects. Situational teaching means that teachers provide students with good hints or enlightenment through the creation of teaching situations so that students are placed in the situation and learn actively in a relaxed atmosphere [12]. Comparing the traditional teaching methods, it can arouse students' interests to some extent. The implementation of situational teaching in teaching practice is not new. In the history of China and the West, there are discussions on this aspect. The situational teaching reflected by these discussions cannot be called the situation teaching method in the modern scientific sense. There are valuable enlightening and inducing thoughts in ancient China, western Greek, and Roman educational thoughts. In *Emile*, Rousseau's educational masterpiece, there is also the form of situational teaching [13]. A teacher

once took Emile to a forest to teach him to learn directions. Emile lost his way in the forest. He was hungry and tired and wanted to get home but could not find his way. The teacher then guided Emile to find his way home through the knowledge that the shadows of the trees face north at noon. Up to now, situational teaching has developed into a new and important teaching method and is increasingly valued by people [13]. Firstly, situational teaching helps to improve students' language abilities through the creation of situations. Secondly, it helps students to take what they have learned into practice in real life. Thirdly, it helps to cultivate students' creative thinking and improve their adaptability. However, there are still some problems when this method is used in classes nowadays.

2.3. Respective Application

Currently, teachers use PBL and situational simulation teaching methods to improve the traditional education methods to boost students' enthusiasm in learning and knowledge retention. This approach is particularly common in higher education because Simone and other scholars found that using PBL to teach computer-related courses can be good for improving students' learning ability and participation in teams. This use can also be very strong in terms of teamwork. In group discussions, each student can interact, express their point of view from multiple perspectives, and think about the problem holistically [14].

Moreover, teachers in higher education are also applying PBL to business English. They use the PBL education model in class to allow students to ask questions about the course and apply what they have learned in the past to reality. Secondly, students are allowed to discuss on their own so that they can practice their expression skills and confidence. The teacher also induces students to think about the questions and encourages them to give their own opinions [15]. It can be seen that in the application of PBL, students take the lead and are allowed to explore open-ended problems that they discover and build. This can be in the form of group discussions or colorful hands-on activities where students decide their own roles in the team, brainstorm solutions to problems, and deliver their ideas.

It not only challenges the students' thinking logic but also improves their organizational and presentation skills. The teacher plays a supporting role, acting as a facilitator and providing timely support and guidance when students encounter problems. In this way, they acquire knowledge and improve their overall ability all at once.

Secondly, the situational teaching method is also widely used, for example, in the subject of business negotiation. The teacher let the lecture class take on the negotiation task of Party A and Party B respectively, and recommended nine business negotiators, and their classmates served as the chairman and vice-chairman of the company, manager, and other positions respectively, as far as possible to meet each student to participate in the situational teaching, also lets students better understand and master the knowledge [16]. It can be seen that both PBL and situational education method have their own teaching methods, but the purpose of applying them is to let students better master what they learn.

3. Comparison between PBL and Situational Simulation Teaching Method

3.1. Similarities

Firstly, based on Liang and Liu's research, both teaching methods highlight the main position of students in teaching activities [17]. Different from traditional teaching methods, the PBL and the situational simulation teaching method put students in an important position. In all aspects of teaching implementation, students are required to give full play to their roles, learn continuously and change from teacher-led to student active participation, which can effectively improve enthusiasm for learning, mobilize enthusiasm for learning, and stimulate learning emotions, which can help students to quickly comprehend the learning content and be able to think more deeply [17].

Secondly, both the PBL and situational simulation teaching method are based on team learning, which is an important connection in both teaching methods. Through close cooperation between groups, students can share their views and reflect more deeply in combination with the views of others, so that they can have a deeper understanding of the problem, which can improve the overall effectiveness of learning. Wang believes that teamwork is closely combined with subject status, which can motivate students to a large extent and cultivate their ability to think independently. At the same time, it can also improve teamwork spirit, so that they can widely apply group learning methods to solve more problems in the future.

In addition, both of these two methods focus on practical utilization, which breaks away from the traditional cramming education framework. They emphasize the application of the results of problem-solving in practice rather than just learning concepts and theories. Both learning methods are based on practical application. Students can combine theoretical knowledge with real life, which helps them to grasp knowledge more accurately and can effectively apply the knowledge they have learned, it promotes ability to integrate theory with practice, which is beneficial for students' long-term development. In spite of differences, they essentially resemble each other, and both can provide a more optimized teaching path. Besides there is the possibility of combining the two methods in the application of actual teaching.

3.2. Differences

The PBL is a problem-centered and situation-centered teaching method, which originated in the 1950s and is now widely used at home. It is a relatively mature and perfect teaching method. In Li's opinion, it makes students become the main body of teaching that is at the center of the class, inspires students to learn independently [18]. It can improve comprehensive application ability, stimulate students' enthusiasm for learning, and significantly enhance the learning effect by guiding students to find problems and solve problems. The most outstanding feature of the PBL is student-centered, group discussion. Students can research and study-specific topics under the guidance of tutors [18].

As what has been summarized in Table 1, it is demonstrated that PBL and situational simulation have a lot in common. However, what is worth mentioning is that the latter method is about making students part of the problem situation and enacting the problem. Students understand and dissect the problem more from a point of view, and then eventually solve the problem in other ways. In the meantime, In classes based on PBL, students solve problems by exploring and parsing them from a point of view, such as group discussions, group work, and creating the appropriate tools to produce results.

Meanwhile, according to the views of Wang, Ning, Sun, Pan, and Xing, the situational simulation teaching method allows learners to experience and place themselves in a simulated environment, to enhance students' comprehensive quality and their emotional experience. It is to let the students become the main character and let the students complete different learning tasks in the class, and achieve the purpose that is set by the teacher. Instead of the rigid evaluation method in the past, teachers are supposed to evaluate students' learning according to their physical condition, hobbies, motor skills, and other characteristics. In the end, students can benefit from the class, achieve the purpose that is made before the class, and enjoy the happiness of learning [25].

In the specific implementation, the situational simulation teaching method focuses on simulation exercises, and its essence is to combine role-playing and situational teaching to stimulate interest and enhance their practical ability. In the class, teachers should first set the teaching situation according to the teaching purpose, and guide the students into the class to simulate the actual situation, also to stimulate the initiative, enhance their sense of responsibility, effectively promote communication and cooperation. The biggest advantage of this method is that it puts participants in the main position and becomes the main body of thinking and implementation. In the actual teaching condition, teachers

only assist them to achieve the purpose of learning, play an organizational and helping role, and effectively solve the disconnection between learning and practice.

Table 1: Main features of PBL and Situational stimulation teaching method from theoretical and practical perspective.

Differences	PBL	Situational Stimulation Teaching Method
Theoretical perspective	1.Constructive learning; self-directed learning; collaborative learning; contextual learning [19]	1.Make the abstract knowledge become more visualized; students' practical activities [23]
	2.Student-centered; community-based learning environments [20]	2.Artificially optimized environment; teaching model that combines emotional activities and cognitive activities [24]
	3.Learning-appropriate goals; problem-based learning as a scaffold for projects; formative evaluation; social participation [21]	3.Construct students' knowledge in the environment of target language; gain understanding through group discussion and debate
	4.A driving question; scientific practices; scaffolded with learning technologies; tangible artifacts [22]	4.Stimulate students' emotions [13]
Practical perspective	1.Pre-practice: generally solve one problem (The situation simulation teaching method may have multiple problems)	1.Used in applied classes rather than purely theoretical ones; other aspects of knowledge taught in the traditional way; teacher should use a specific format to simulate knowledge [16]
	2.While-practice: pay more attention to problem orientation and do not deviate from the solution of target problems	2.(In the process) To design scenarios according to the teaching objectives, let students play the role and simulate the process
	3. Post-practice: the results can be diversified [17][18][25]	3.(Result) Improve students' interest in learning through practice, enhance their understanding and proficiency in professional knowledge, and thus improve the teaching effect

However, the student-centered approach of the PBL in the implementation process is not just about a single individual, but allowing students to solve problems in groups. Team members solve problems through investigation or data collection, and each person will influence on the outcome of problem-solving. Due to each knowledge background, investigation environment, and thinking angle being different, the final results are also multi-structured. Members reflect on the results through brainstorming. In the process of problem-solving, members can gain more through group cooperation, including friendship, listening ability and communication skills, etc., which will help to improve their comprehensive ability and make it easier for them to integrate into society.

Therefore, the PBL focuses on the analysis and solution of problems, as well as diversified thinking on the results of problems, while the situational simulation teaching method focuses on the construction of specific situations and the practical applications in the situations.

4. The Integration and Application of PBL and Situational Teaching Method

Indeed, PBL is different from situational teaching method, but that does not mean both of them cannot be combined. The two teaching methods are complementary. If they can be combined in teaching process, there will be unexpected effects.

Many researchers had found this point and had done some studies about the integration of PBL and situational teaching method in different aspects, especially in medicine. For example, Lin, Zhou and Lu did a research about Gynecology and Obstetrics Nursing Education, integrating the PBL and situational simulation teaching method comprehensively. The teaching implementation process is as follows. Teachers use multimedia to present cases and clinical situations in class, and inspire the students to ask questions. After classes there will be self-study and group discussion. Then it is the reappearance of clinical situations. Finally, it is the conclusion. The teaching method is also of positive significance to cultivate students' ability to flexibly use knowledge, communication skills and teamwork spirits [26]. It is a reasonable way for students to learn something in contexts and they are motivated to solve some problems in classes.

About another research in medicine, Wang and Hu did a study about "Experience of PBL Combined with Typical Case Situation Teaching Method in Obstetrics and Gynecology Teaching." According to Wang and Hu, PBL teaching method is problem-centered and student-led, which can mobilize students' learning enthusiasm and improve their ability of data retrieval, comprehensive analysis of problems and self-study [27]. Situational teaching method effectively makes up for the deficiency of clinical teaching resources, and overcomes the application bottleneck of PBL method in practice teaching, which is beneficial to cultivate the interest of students in learning, improve practical operation ability and the ability to solve problems to deepen their understanding of theoretical knowledge in order to improve the quality of teaching. Obstetrics and Gynecology is a very practical subject, requiring students not only to have a solid theoretical foundation, but also need to have agile clinical thinking ability. Through PBL combined with typical cases of situational teaching attempt, they believe that this model overcomes the disconnection between the traditional teaching theory and the practice. In the stage of clinical probation, the combination of tradition multimedia theory, PBL teaching and situational teaching of typical cases can promote the integration of interdisciplinary knowledge points in the knowledge system, deepening the understanding and mastery of the knowledge involved in clinical practice, and facilitate students' integration of professional knowledge and skills [26]. Even though the teaching method may have more demands for teachers and students, the effect is obvious sometimes.

The integration of PBL teaching method and situational teaching method has been applied in some aspects, but many cases are about medicine. There are still some factors may influence the application, but the research about applying the teaching method in school should be deepened.

5. Conclusion

To sum up, compared with the traditional teaching mode, both the PBL and the situational simulation teaching method are breakthroughs. PBL is problem-oriented to solve problems and learn theoretical knowledge, while the situational simulation teaching method guides students to solve practical problems by reproducing actual situations. Both teaching methods embody the importance of group cooperative learning, which can effectively mobilize students' enthusiasm for learning and curiosity. Then, they cultivate students' ability of independent inquiry and group cooperation to promote

students' in-depth thinking about the theory of knowledge. During the process of teaching and learning, asking questions is the beginning of learning knowledge, and knowledge is contained in the situation. Therefore, the combination of PBL and situational simulation teaching methods can promote students' understanding of knowledge.

The main argument of this paper is that the learning process of students is not only the process of simply accepting knowledge but also the process of discovering, analyzing, and solving problems. The two teaching methods are organically combined to break the state of isolated learning, which can form a learning community to stimulate students' desires for learning with situations. It also provides a chance to fully tap students' potential, developing their critical thinking and creative thinking. Ultimately, it enables students to promote their ability to address problems in reality, combining theory and practice together.

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