

# Study on the Application of Pbl Teaching Method in Clinical Operation Skills Teaching of Thoracic Surgery

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**Abstract:** PBL (Problem-based learning), or problem-oriented teaching method, is a student-centered education method based on the real world. The principle is based on clinical problems, with medical students as the main body, in the form of group discussions, with the participation of tutors, and a study process that focuses on the diagnosis and treatment of certain medical topics or specific cases. Thoracic and cardiac surgery is highly professional and practical, and its teaching is a relatively heavy work in the entire medical teaching. It has always been the focus and difficulty of surgical teaching. Therefore, there is an urgent need for a new teaching method in the teaching of thoracic and cardiac surgery, so that students can master more basic theoretical knowledge and clinical thinking methods and skills in a short time. This is the PBL teaching method to be explained in this article.

## 1. Introduction

PBL (problem-based learning) is a novel teaching method. It is based on problem-based, student-centered, and teaching teacher-led group discussion teaching. This teaching mode was first proposed by American professor of neurology Barrows at McMaster University in Canada in 1969. After years of improvement and development, it has been widely recognized by the world's education community and widely promoted in various countries. At present, the PBL teaching model has become the new direction of medical clinical teaching reform in China. Thoracic surgery is a subject with strong professionalism and practicality. The teaching content is extensive and tedious, with a lot of knowledge points and many basic operation items. It requires a high degree of mastery and practical ability for students. However, students have relatively short internships in thoracic surgery, so how to enable students to better master basic theoretical knowledge and improve clinical skills in a short time, and at the same time stimulate students' interest in learning thoracic surgery, has become one of the faces problem. In response to these circumstances, our teaching and research department introduced the PBL teaching model in clinical practice teaching, and achieved good teaching results.

Thoracic surgery is a difficult second-level clinical subject. It is a specialized and practical subject, covering the diagnosis and treatment of chest wall, esophagus, lung, mediastinum and other diseases. The research field involves breathing, digestion, circulation, tumor, Imaging and other disciplines. Clinical internship requires that students not only master the basic theory of thoracic surgery, but also cultivate clinical thinking and operation ability. However, compared with other departments, thoracic surgery has a shorter internship time and a higher proportion of critically ill patients. Students tend to spend their time in the field, and the internship effect is poor, which brings many problems and challenges to clinical teaching. Problem-based learning was first proposed by American professor of neurology Barrows in 1969. It is a problem-based, student-centered and teacher-led open teaching method that can fully mobilize students' enthusiasm and cultivate students' independent learning literacy.

## 2. Features and Applications of Pbl Teaching Method

The PBL teaching method is a vertical teaching method, with carefully selected and designed questions as the main line, through the basic and clinical, through solving clinical practical

problems to enable students to gain basic theoretical knowledge, cultivate their ability to analyze problems, solve problems and autonomous learning, And learn to use systematic methods to deal with clinical problems. The fundamental difference between the PBL teaching method and the traditional teaching method is that it emphasizes the students' initiative in learning, and emphasizes the acquisition and comprehensive application of subject knowledge. The teachers only “preach the teaching and dispel the puzzle” and no longer occupy the dominant position in the teaching. It is characterized by breaking the disciplinary boundaries and carrying out comprehensive teaching around practical problems to shape students' independence, cultivate students' independent learning ability, and effectively use basic knowledge to solve clinical problems and improve students' innovation quality.

In the framework of the syllabus, the PBL teaching method is designed by the teacher for a set of cases that will be studied. The students are asked to consult the data to find out the characteristics of such cases and draw the diagnosis points under the guidance of the questions. During the internship, the student will collect the medical history, perform physical examination, etc., and analyze the clinical characteristics of the patient, and finally determine the treatment plan. After the lecture, the teacher or student representative will make the final summary and induction. Specific implementation method: Select the five-year clinical medical undergraduates who entered the clinical internship stage as the teaching objects, and the teaching process is based on the group. (1) According to the knowledge background, understanding and cognitive ability of students of different majors or levels, select appropriate clinical cases, including typical, atypical and misdiagnosed, and ask questions in a targeted manner. Guide students to review the relevant knowledge of anatomy, physiology, pathophysiology, pathology and pharmacology related to the case. (2) Ask the questions that have been designed. (3) The students go to the ward with questions themselves, independently conduct medical history inquiry and physical examination, and use this as a basis to consult books and documents on their own. (4) Organize students to discuss the clinical characteristics of the cases, the required further examination, preliminary diagnosis and treatment plan, and simulate the actual diagnosis and treatment process. (5) The instructor summarizes the cases and comments on the students' knowledge and ability. The assessment of students includes summary reports, theoretical tests and case analysis tests. The essence of the PBL teaching method is to give play to the guiding role of clinical problems in the learning process and fully mobilize the subjective initiative of students. In the case analysis test, it was found that the students' clinical thinking ability was improved, which was manifested in admission examination, preliminary clinical diagnosis and treatment, follow-up examination and the formulation of treatment plan. Through students' answers to questions and stage tests in the discussion, it was found that students' understanding and mastery of knowledge have been improved. More importantly, through the students' description of their learning process, they found that their interest in learning and various abilities such as autonomous learning, problem solving, communication and cooperation have been improved.

### **3. The Advantages and Disadvantages of Traditional Teaching Methods and Pbl Teaching Methods**

The traditional teaching method is to take teachers as the guide to provide students with theoretical knowledge, and strive to achieve the purpose of better learning through students' memory. We can call this kind of teaching method “Problem-Solve” (question answering or question answering) teaching method. It is undeniable that traditional teaching methods have their own irreplaceable advantages by indoctrination-based teaching, such as: it enables students to systematically learn and master theoretical knowledge; lays down more solid and comprehensive basic knowledge and so on. But everything is contradictory and unified, and traditional teaching methods also have their inevitable shortcomings. Due to the teacher's “evangelism”, students are often in a passive position. In the eyes of the students, as long as they take the class seriously, they can master the knowledge once and for all. Over time, students will develop bad habits such as learning laziness, passiveness, and poor thinking, which is not conducive to the students' own

initiative.

PBL is a teaching based on the problem. Under this method, teachers also use “problems” as the starting point for guidance, while students use “problems” as the basis for learning. This is a method of finding problems and solving problems in practice, so it is called Problem Based Learning or Problem-Stimulated (problem-stimulating teaching). This teaching method has indeed overcome some of the disadvantages of traditional teaching methods to a certain extent. Under the guidance of the teacher, the teacher or the student will design and ask questions. The students will think around these questions, query related materials, and finally find the answer. This fully stimulates the students' subjective initiative, so that the students' enthusiasm for learning is high, and they can more consciously engage in theoretical and practical learning. At the same time, the teaching method requires more teachers and teaching equipment. There are also problems that students may change basic theory learning into clinical question-based discussions, which may miss some important theoretical knowledge and so on. In addition, PBL teaching requires an excellent self-study environment, excellent textbooks, abundant teaching equipment, and a large number of well-trained teachers to achieve the desired results. This is unachievable in most medical schools in China today, and it is also the primary reason that hinders the further widespread use of PBL.

The traditional probation class actually decomposes the large classroom into small classrooms, with the teacher as the core and lead. Under the leadership of the teacher, the students conduct activities such as checking the patient's condition, and then the teacher analyzes the condition, and finally draws a diagnosis and points out the corresponding treatment Program. Or the teacher asks the question and the student answers it. This way of learning is more passive. Correspondingly, within the framework of the syllabus, PBL teaching methods are designed by teachers or students for a set of cases that will be studied. Under the guidance of the questions, students look up information to find out the characteristics of such cases. And get the main points of diagnosis. During the internship, students will collect medical history, physical examination, etc., and analyze the clinical characteristics of the patient, and finally get the treatment plan. After the lecture, the teacher or student representative will make the final summary and induction. The essence of the PBL teaching method is to give play to the guiding role of clinical problems in the learning process and fully mobilize the students' subjective initiative and specific practical ability.

#### **4. The Problems We Should Pay Attention to about Pbl Teaching Methods**

The ratio of clinical teaching theory courses to probationary courses in most medical colleges in China is roughly 1: 1, so that there are sufficient theoretical and probationary hours. Therefore, theoretical courses are still taught according to traditional methods, that is, teachers systematically impart basic theoretical knowledge to students; while internship courses provide ideal teaching conditions for PBL teaching. The internship class has a wide range of clinical disease resources in the ward, and the clinical department can also draw a group of experienced teachers to ensure that there are sufficient teachers. In this way, students can not only master basic theoretical knowledge systematically and comprehensively, but also cultivate the ability to think independently and solve practical clinical problems. As a result, the questions designed by the students are more thorough and the answers are more reasonable. The PBL teaching method is also an incentive for teaching teachers. Teachers must carefully select cases, carefully design questions, find information and prepare to answer student questions, which prompts teachers to further improve their theoretical level.

When implementing the PBL teaching method, the following points should be noted: (1) The basic learning of students in the early stage is very important when using the PBL teaching method, and it can never deny the value of theoretical learning. Before implementing the PBL teaching method, students must have a solid theoretical foundation. Because students do not have a complete accumulation of pre-clinical knowledge, it is impossible to analyze the case information systematically, so when conducting PBL teaching, pre-class guidance is very important. (2) A team of instructors with rich teaching experience is needed. The instructor is a mentor and should be able to help students achieve the goals designed by the curriculum; it is a facilitator of student self-

learning and should be able to guide students to gradually implement all aspects of PBL; it is an evaluator of student learning behavior and should be able to reasonably evaluate students' performance in learning motivates students to actively complete data query and discussion; is a participant and adviser in case selection and problem design. (3) Case selection, problem design and systematic summary are the difficulties of PBL teaching. Since general cases often involve more disciplines and more complicated knowledge, the instructor should propose the main problems and minor problems that need to be solved in the case after a comprehensive evaluation of the case, and sum up in time after the case discussion, for the students Provide important concepts and professional terminology that need to be mastered, and at the same time summarize the important subject areas involved and important clinical scientific research progress, thereby enhancing the systematicity of PBL teaching.

## 5. Conclusion

Traditional teaching methods have neglected the cultivation of students' learning ability, and have neglected the inter-disciplinary connections and the application of medical disciplines. In order to train medical professionals of thoracic and heart surgery in the new century, the implementation of PBL teaching method based on cases in the teaching of thoracic and heart surgery, based on cases, and the active participation of students in simulating the whole process of clinical diagnosis and treatment can greatly mobilize students' initiative in learning Improve the students' awareness of the basic and clinical knowledge of the subject, stimulate students' interest in learning and their ability to learn independently, solve problems, and communicate and cooperate; can effectively guide students to use basic knowledge to solve clinical problems, so that students can establish the problem can be solved better, so as to improve the quality of teaching.

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