

# *Application of CBL Combined with PBL Teaching Method in the Practice Teaching of Gastrointestinal Tumor Discipline*

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**Abstract:** This study aims to investigate the application and effectiveness of Case-Based Learning (CBL) and Problem-Based Learning (PBL) in the practical teaching of gastrointestinal oncology. The study seeks to enhance students' understanding and practical skills in this field by implementing a teaching approach that combines both CBL and PBL. The research will be conducted through a comparative analysis of two groups of students: one group will receive traditional lecture-based teaching, while the other group will receive CBL and PBL teaching methods. The students' performance, knowledge acquisition, and satisfaction will be assessed through pre- and post-tests, evaluations, and feedback surveys. It is anticipated that the incorporation of CBL and PBL approaches will foster active learning, critical thinking, and problem-solving skills among students. The results of this study will contribute to the scholarly understanding of effective teaching methods in gastrointestinal oncology education and inform future curriculum development for medical students.

## 1. Introduction

Gastrointestinal (GI) tumors, as a common type of malignant digestive system tumors, have an increasing incidence rate and have become one of the major threats to human health. The study of gastrointestinal oncology mainly focuses on the etiology, pathology, clinical manifestations, diagnosis, and treatment of gastrointestinal tumors<sup>[1]</sup>. By studying gastrointestinal oncology, clinicians can better understand the pathogenesis, clinical features, and treatment methods of gastrointestinal tumors, thus improving the prevention and treatment outcomes, effectively reducing patients' suffering and burden, and ensuring their life and health. Therefore, mastering the relevant knowledge of gastrointestinal oncology is of great significance to clinicians. In the current medical education field, with the increasing emphasis on the practical teaching of gastrointestinal oncology, traditional teaching methods are no longer sufficient to meet the needs of modern medical education<sup>[2]</sup>. In response to this challenge, educators are actively seeking a new teaching method to improve teaching quality and cultivate students' clinical practice abilities. Among them, CBL (Case-Based Learning) and PBL (Problem-Based Learning) are two representative new teaching methods that have received extensive

attention in the field of medical education and have been increasingly applied in practical teaching. CBL teaching method focuses on guiding students to conduct in-depth analysis and thinking through specific cases and examples, thereby improving their clinical analysis and problem-solving abilities<sup>[3]</sup>. On the other hand, PBL teaching emphasizes problem-oriented approach, aiming to enhance students' autonomous learning and team cooperation abilities by letting them find and solve problems themselves. These two teaching methods have their own characteristics and have brought new perspectives and methods to medical education. This article aims to study the application of CBL combined with PBL teaching method in the practice teaching of gastrointestinal tumor discipline, and further explore its actual effect in improving teaching quality and students' clinical practice abilities. By combining CBL and PBL teaching methods, we hope to give full play to the advantages of both teaching methods, stimulate students' interest and enthusiasm for learning, cultivate their clinical practice abilities and team cooperation spirit, thus making greater contributions to medical education field<sup>[4]</sup>.

## 2. Overview of CBL and PBL teaching methods

Both CBL and PBL are student-centered teaching methods aimed at cultivating students' autonomous learning abilities and problem-solving skills. These two teaching methods are relatively advanced in the education field and have their own characteristics and advantages<sup>[5]</sup>.

CBL (Case-Based Learning) is a teaching method that focuses on the analysis of clinical cases. It guides students to identify problems in cases and propose corresponding solutions. This teaching method encourages students to actively participate in classroom discussions to improve their critical thinking and teamwork abilities.

PBL (Problem-Based Learning), on the other hand, is a teaching method that sets realistic problems to guide students to autonomously learn related knowledge and ultimately solve the problems. This teaching method helps to cultivate students' autonomous learning, inquiry, and problem-solving abilities<sup>[6]</sup>.

CBL combined with PBL teaching combines the advantages of both methods to form a more effective teaching approach. In this teaching method, students first analyze clinical cases to identify problems, then autonomously learn related knowledge to propose solutions, and finally deepen their understanding and mastery of the learned knowledge through the process of problem-solving<sup>[7]</sup>.

In summary, CBL and PBL teaching methods not only improve students' autonomous learning and problem-solving abilities but also cultivate their teamwork spirit. They are teaching methods worth promoting.

## 3. Application of CBL and PBL Teaching Methods in the Practice Teaching of Gastrointestinal Tumor Discipline

### 3.1 Teaching Design

In the practice teaching of gastrointestinal tumor discipline, in order to effectively implement the combined teaching method of CBL (Case-Based Learning) and PBL (Problem-Based Learning), teachers need to reasonably design teaching activities according to course objectives and teaching content. Specific aspects include the following:

Selecting appropriate cases and problems: Teachers need to collect and organize real cases and problems related to course content in practice, so that students can better understand and master related knowledge during the learning process<sup>[8]</sup>. When selecting cases and problems, teachers should ensure that the content selected is representative and typical, and can inspire students' interest in learning.

Forming learning groups: In order to better implement the combined teaching method of CBL and PBL, teachers need to divide students into several learning groups. Each group member needs to have

different professional backgrounds and skills to learn from and promote each other in collaborative learning<sup>[9]</sup>.

**Developing teaching plans:** Teachers need to formulate detailed teaching plans according to course objectives and teaching content. The teaching plan should include learning objectives, teaching content, teaching methods, and assessment methods at each stage<sup>[10]</sup>. In addition, teachers also need to consider how to reasonably allocate teaching time to ensure that students can achieve the maximum learning effect within a limited time.

**Implementing teaching activities:** Teachers need to implement the combined teaching method of CBL and PBL in an orderly manner according to the teaching plan. During the implementation process, teachers need to pay close attention to students' learning situation, provide guidance and feedback in a timely manner to help students solve problems encountered in learning<sup>[11]</sup>, and pay attention to stimulating students' learning enthusiasm and participation to improve teaching effectiveness.

By designing the above aspects, teachers can effectively implement the combined teaching method of CBL and PBL in the practice teaching of gastrointestinal tumor discipline, thereby improving teaching quality and effectiveness.

### 3.2 Implementation Process

During the practical teaching process, teachers will divide the class into several small groups, with an appropriate number of students in each group, in order to facilitate teamwork and interaction. First, teachers will present specific practical topics related to real-life problems<sup>[12]</sup>, guiding students to seek solutions through independent learning, group discussion, and teacher guidance. Teachers will also use multimedia teaching methods to show relevant cases and actual scenes, making it easier for students to understand the learned content.

Next, teachers will provide actual cases related to the topics and ask students to analyze and discuss them. In this process, students can consult materials, summarize, and deeply understand the key knowledge points in the cases and master the methods of problem-solving. Teachers will also guide students to combine cases with real problems, stimulating their innovative thinking and cultivating their ability to analyze and solve problems.

Finally, in the process of practical teaching, students will apply what they have learned to solve real problems, constantly consolidating and improving their practical skills. In addition, teachers will conduct periodic tests and evaluations to understand students' learning progress, adjust teaching strategies, and ensure that students fully master the learned knowledge, thus improving the effectiveness of practical teaching<sup>[13]</sup>.

### 3.3 Teaching Evaluation

In the practical teaching of gastrointestinal tumor surgery, in order to comprehensively evaluate the effectiveness of the combined CBL and PBL teaching method, we should conduct evaluations from multiple dimensions. These include the following aspects:

1) **Student Performance:** Through final exam scores, regular assignment scores, and practical operation scores, we can objectively understand the degree to which students have mastered the knowledge. Additionally, setting up periodical tests can help us understand students' learning progress at different teaching stages<sup>[14]</sup>.

2) **Classroom Participation:** Observing students' interactions in the classroom, including questions, answers, and participation in discussions, to evaluate their enthusiasm and participation in the classroom.

3) **Group Collaboration Skills:** Assessing students' communication skills, teamwork, and problem-solving abilities through their performance in group projects. Additionally, teachers can observe students' roles and contributions in the group to understand their leadership and execution abilities.

4) Innovation Abilities: Setting up some open-ended questions and tasks can encourage students to use their imagination and creativity, thereby assessing their innovation abilities. Teachers can analyze students' works and achievements to understand their potential in innovation.

By collecting and analyzing these data, teachers can promptly identify problems in teaching, adjust teaching methods, and optimize teaching effects. Moreover, these evaluation results can provide a basis for future teaching reforms and further improve teaching quality.

## **4. Effect Analysis of CBL Combined with PBL Teaching Method in Gastrointestinal Tumor Practice Teaching**

### **4.1 Student Learning Effect**

Through the implementation of case-based learning (CBL) combined with problem-based learning (PBL) teaching method, students have significantly improved in areas such as autonomous learning ability, problem-solving ability, teamwork, and innovation. This method combines the advantages of both teaching methods, providing students with a more comprehensive learning environment. Under this teaching mode, students can quickly master the relevant knowledge and skills of gastrointestinal tumors and apply them flexibly to actual clinical work, thereby improving their practical ability.

In addition, this teaching method also helps to stimulate students' interest and enthusiasm for learning, thus improving the overall teaching quality. Under this teaching method, students can not only learn theoretical knowledge but also learn how to apply these knowledge to actual clinical problems. This combined teaching method provides students with a more interactive and practical learning environment, which is helpful for improving students' comprehensive quality and ability<sup>[15]</sup>. Therefore, this teaching method has a wide application prospect and value in medical education.

### **4.2 Teacher's Teaching Effect**

After the application of the CBL combined with PBL teaching method in gastrointestinal tumor practical teaching, the teacher's teaching effect has been significantly improved. This teaching method not only enhances the comprehensive quality of students but also provides teachers with more innovative teaching ideas and methods. In the teaching process, teachers can fully play their roles as guides and organizers, continuously improving teaching quality and effectiveness.

Furthermore, teachers can further understand the essence of the CBL combined with PBL teaching method through practical teaching activities and apply it flexibly to other subjects, thus improving the overall teaching level. In general, the application of CBL combined with PBL teaching method in gastrointestinal tumor practical teaching is not only of great importance and value to the comprehensive quality improvement of students but also has a significant impact on teachers' teaching effect.

This innovative teaching method not only stimulates students' interest and enthusiasm for learning but also cultivates their teamwork and problem-solving abilities, thus improving their comprehensive quality. At the same time, teachers can continuously improve their teaching level, making their teaching methods more diverse and creative<sup>[16]</sup>. Therefore, the application of CBL combined with PBL teaching method in gastrointestinal tumor practical teaching is of great significance and value to both students and teachers.

## **5. Improved measures for CBL combined with PBL teaching method**

To ensure the effective implementation of CBL and PBL teaching methods, we need to strengthen teacher training, optimize teaching resources, and enhance team collaboration.

Firstly, we need to provide in-depth training for teachers. Through various forms such as seminars, workshops, and training courses, we can improve teachers' abilities to use CBL and PBL teaching

methods. This will enable them to better deliver these two teaching methods, thus ensuring improved teaching outcomes. Additionally, teachers need to understand the potential problems and difficulties students may encounter during the learning process, so as to better guide their learning.

Secondly, we need to regularly update and optimize teaching cases and questions to enhance their relevance and effectiveness. We can collect feedback and track teaching outcomes to evaluate and optimize existing teaching cases and questions on a regular basis, ensuring they align with current teaching needs and student characteristics. Moreover, teachers should be familiar with course content and understand students' interests and needs to better incorporate CBL and PBL teaching methods into course design.

Thirdly, we need to cultivate students' teamwork and communication skills to improve learning outcomes. During the teaching process, we can encourage teamwork through group tasks and discussions, helping students develop their teamwork and communication skills. Teachers can also provide guidance and feedback to help students enhance their teamwork and communication skills, thus improving learning outcomes.

In conclusion, to ensure the effective implementation of CBL and PBL teaching methods, we need to strengthen teacher training, optimize teaching resources, and enhance team collaboration. At the same time, we also need to continuously innovate and improve teaching methods to meet students' needs and enhance teaching effectiveness.

## 6. Conclusion

The Innovative Path of Gastrointestinal Oncology Practice Teaching: The Combination of CBL and PBL Teaching Methods Has Shown Remarkable Results. CBL (Case-Based Learning, case-based learning) teaching method is characterized by vivid case analysis, which enables students to fully understand the knowledge system of gastrointestinal oncology and develop their problem-solving abilities. Meanwhile, PBL (Problem-Based Learning, problem-oriented learning) teaching method emphasizes guiding students to engage in deep learning through self-directed learning and collaborative discussion. With the strong combination of these two methods, students not only acquire a solid theoretical foundation but also receive sufficient training in clinical practice.

In the field of medical education, the advantages of CBL combined with PBL teaching methods are particularly evident. Firstly, this teaching method uses real cases as the carrier, allowing students to gain an in-depth understanding of the pathogenesis, clinical manifestations, diagnosis, and treatment methods of diseases during the case analysis process. This learning method helps students combine theoretical knowledge with actual clinical problems, thus improving their clinical practice abilities. Secondly, CBL combined with PBL teaching method emphasizes students' self-directed learning and collaborative discussion, cultivating their independent thinking, communication, and teamwork abilities, which are of great significance in future medical practice.

In addition, CBL combined with PBL teaching method also helps to enhance students' learning interest and motivation. Through participatory and situational learning, students feel the pleasure of learning during the process of solving practical problems, thus stimulating their curiosity and exploring the spirit towards medical knowledge. This is helpful in developing students' innovative consciousness and the habit of continuous learning, laying a solid foundation for their career development.

To better promote CBL combined with PBL teaching method, the medical education field in our country has carried out a series of reform attempts. Some medical schools have adjusted course settings, teaching strategies, and evaluation systems to adapt to the needs of this teaching method. Meanwhile, educators have also organized seminars, training sessions, and other forms to improve the teaching and education level of the faculty. These measures are helpful in improving the overall quality of medical education and creating conditions for cultivating more outstanding medical talents.

However, in promoting the CBL combined with PBL teaching method, we also face some challenges, such as ensuring the quality of cases and the availability of teaching resources, training

the faculty to adapt to this teaching method, and adjusting course settings and evaluation systems to better promote student learning. These issues need to be continuously explored and addressed in future medical education reform.

In conclusion, the application of CBL combined with PBL teaching method in gastrointestinal oncology practice teaching has achieved remarkable results, providing an innovative path for medical education in our country. Through this teaching method, we have cultivated a group of medical talents with a solid theoretical foundation and clinical practice abilities, making a positive contribution to the overall improvement of medical education in our country. In the future, we will continue to deepen medical education reform, enabling more medical students to benefit from this effective teaching method and contributing to the development of the country's health and wellness cause.

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