

Application Analysis of Combining Scenario Simulation with the Problem-Based Learning (PBL) Model in Orthopedic Teaching

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Abstract: The development of medical expertise demands a meticulous and scientific approach, relying not solely on extensive theoretical foundations but also on ample practical experience to reinforce theoretical applications. This is particularly evident in orthopedic teaching, where an understanding of the skeletal system, analysis of pathogenesis, and treatment are essential. Practicality becomes crucial in this context. To augment teaching effectiveness, it is imperative to employ effective teaching methods and strategies. Integrating scenario simulation with the Problem-Based Learning (PBL) model allows for a more intuitive presentation of pathological knowledge to students. This method aids students in better absorbing theoretical content, fostering deeper communication and learning during scenario simulation, and ultimately achieving superior learning outcomes.

Keywords: Scenario Simulation; PBL Model; Orthopedic Teaching; Application Strategies

Introduction

Given the specificity and complexity of orthopedic learning, advancing the training of applied and compound medical talents necessitates active innovation in teaching methods and models. By amalgamating scenario simulation with the PBL model, a more authentic situational atmosphere is created. This enables students to embark on practical exploration and problem-solving under specific scenarios, emphasizing their subjectivity and initiative. Consequently, this approach deepens students' understanding and enhances their learning outcomes. This paper begins by analyzing the significance of combining scenario simulation with the PBL model in orthopedic teaching and subsequently briefly discusses relevant application strategies for reference ^[1].

1. Importance of Integrating Scenario Simulation and PBL Model in Orthopedic Teaching

Orthopedics plays a crucial role in the human body's structural organization, involving a wide range of content with strong cross-disciplinary knowledge. Given the dynamic nature of orthopedic knowledge and its frequent clinical applications, high-level orthopedic treatment and rehabilitation require robust support from quality medical education. To enhance the effectiveness of combining theory and practice for students, it is essential to actively explore feasible paths and effective methods in orthopedic teaching methods and models. Based on the unique characteristics of orthopedic learning, employing a teaching model that combines scenario simulation with the Problem-Based Learning (PBL) model proves valuable in elevating the quality and efficiency of orthopedic education.

By integrating the scenario simulation and PBL model, a more realistic setting can be created for students. The human body exhibits variations in skeletal characteristics, functionality, and distribution across different areas. Additionally, patients' specific manifestations and clinical representations differ, leading to variations in treatment methods. To reflect the specificity and scientific nature of orthopedic teaching, combining scenario simulation with the PBL model meets the diverse needs of students in theoretical knowledge learning, practical training, and assessment. This approach places theoretical learning in a more realistic context, facilitating more intuitive teaching. With the support of content, scenarios, and tangible materials, students can better comprehend abstract medical terms. In particular, for surgical teaching, the absence of scenario simulation hampers the transformation of surgical procedures into observable phenomena, hindering the effective improvement of students' practical skills. In the context of combining scenario simulation with the PBL model, students can repeatedly practice certain procedures without trauma, overcoming the limitations of theoretical explanations and translating theoretical knowledge into practical application. This method helps students master specific requirements and steps proficiently. Moreover, under the combined scenario

simulation and PBL model, students can engage in simultaneous operations, discussions, practices, and explorations. This facilitates effective problem-solving, providing answers to questions and uncertainties, reinforcing knowledge impressions during interaction and communication.

2. Application of Integrating Scenario Simulation and PBL Model in Orthopedic Teaching

2.1 Effective Design of Integrating Scenario Simulation and PBL Model

In orthopedic teaching, enhancing teaching quality by integrating scenario simulation with the PBL model requires thorough design and preparation. This involves selecting specific teaching content resources, and preparing for scenario simulations, such as constructing a realistic clinical setting with necessary equipment and auxiliary materials like orthopedic images and surgical tools. Simultaneously, during the simulation and reenactment process, relevant questions need to be designed to stimulate students' enthusiasm for learning and exploration. Through the presentation of questions, students are encouraged to immerse themselves in the scenarios, identify key clues, and solve problems, realizing the initial purpose of integrating scenario simulation with the PBL model.

2.2 Implementation of Scenario Simulation

Orthopedic knowledge covers a wide range and exhibits strong interconnections and logical coherence. To achieve better teaching outcomes and help students grasp theoretical concepts while reinforcing practical skills, it is essential to integrate scenarios with case studies. This combined approach of integrating situations with problems guides students to absorb and consolidate knowledge effectively. The integration of scenario simulation with Problem-Based Learning (PBL) serves this purpose and plays a crucial role, contingent upon several foundational elements. Apart from meticulous planning and thorough preparation, the implementation process of scenario simulation is equally significant. Successful scenario simulation relies not only on the preparatory groundwork but also on the execution of simulations and guidance provided to students during the process. Particularly in the context of complex orthopedic treatments, which involve not only orthopedic knowledge but also the application of interdisciplinary knowledge from fields such as anatomy and anesthesia, the need for comprehensive preparation becomes even more pronounced. To further enhance the quality of teaching, especially in the simulated implementation of surgical scenarios, significant coordination of personnel and instruments is required. Establishing a well-constructed setting and context is crucial for students to immerse themselves effectively in the scenario. This approach allows students to comprehend the significance of different roles and the positive impact each role contributes to the treatment process. Furthermore, students can assume various roles such as doctors, nurses, or patients, based on scenario simulation cases, engaging in performances that require the application of their learned theoretical knowledge through practical operations and communication^[4].

2.3 Guidance Through Problem-Based Learning

The integration of scenario simulation with the PBL model in orthopedic teaching aims to immerse students in real situations and guide them through in-depth exploration, understanding, and cognition based on changing scenarios. Therefore, guidance through well-crafted problems is crucial. As mentioned earlier, in scenario simulation, students can play different roles and be assigned corresponding tasks. Students, according to their roles and tasks, can pose questions and uncertainties. Teachers and other students can engage in discussions and provide answers collaboratively. During this process, teachers play a guiding role, helping students discover, analyze, and solve problems. Students are encouraged to propose questions and uncertainties, and using their acquired knowledge and skills, conduct in-depth analysis and research on these questions. Teachers guide students in contemplating the essence of problems, exploring solutions, and providing necessary assistance.

2.4 Timely Summation and Evaluation

While employing the scenario simulation and PBL model in orthopedic teaching, it is imperative to not only focus on the process but

also to promptly summarize and evaluate the teaching results. This provides insights into students' specific situations and their absorption of professional knowledge. In the summarization and evaluation process, perspectives from both students and teachers are considered. It involves analyzing and explaining issues that arose during the process, identifying their root causes, and making improvements accordingly.

3. Conclusion

In conclusion, under modern teaching philosophies, cultivating high-caliber orthopedic talents necessitates active exploration in teaching methods. By integrating scenario simulation with the PBL model and using diverse scenario-based practical activities, the integration of theoretical and practical aspects is promoted, stimulating students' subjectivity and enhancing their professional competence.

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