

Enhancing Obstructive Pregnancy Teaching in Chinese Medicine Gynecology Through PBL and Flipped Classroom

Xiujun Chen¹, Dan Liang^{2*}, Ming Wang¹, Qiuyun Chang¹, Yue Hao¹

¹Graduate School of Guangxi University of Traditional Chinese Medicine, Nanning 530200, Guangxi Zhuang Autonomous Region, China

²The First Affiliated Hospital of Guangxi University of Traditional Chinese Medicine, Nanning 530023, Guangxi Zhuang Autonomous Region, China

*Corresponding author: Dan Liang, ldan1025@qq.com

Copyright: © 2023 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: With the advancement of medical specialties, there arises a crucial need in today's society for the continual development of high-quality medical talents and physicians. Traditional teaching models have become inadequate to meet the current demands of teaching Chinese medicine gynecology. To further advance the implementation of the student-centered education concept, the Teaching and Research Office of Chinese Medicine Gynecology at the First Affiliated Hospital of Guangxi University of Traditional Chinese Medicine has embraced a teaching approach that combines problem-based learning (PBL) with a flipped classroom model, specifically applied to the chapter "Traditional Chinese Medicine Gynecology – Obstruction of Pregnancy." This paper delves into the PBL combined with flipped classroom teaching mode, discussing its effectiveness and laying out specific requirements for both teachers and students. These efforts aim to establish a robust foundation for the cultivation of clinical and practical medical talents.

Keywords: PBL; Flipped classroom; Traditional Chinese medicine gynecology; Pregnancy obstruction; Teaching model

Online publication: December 26, 2023

1. The necessity of integrating PBL with a flipped classroom model in the teaching of Chinese medicine gynecology

1.1. Current challenges in teaching Chinese medicine gynecology

Chinese medicine gynecology serves as a crucial bridge course that connects the foundational knowledge of Chinese medicine with clinical practice, focusing on various diseases and highlighting the significance of clinical application ^[1]. As such, the demands on both "teaching" and "learning" are exceptionally high. Within traditional Chinese medicine (TCM) undergraduate education, fostering students' clinical abilities in TCM stands out as a primary objective ^[2]. Relying solely on classroom theory, instructed by teachers, proves insufficient in effectively developing students' comprehensive skills in clinical theoretical thinking, identification methods, and practical clinical operations.

Despite the remarkable achievements in nearly half a century of contemporary Chinese medicine undergraduate education, the clinical abilities of Chinese medicine graduates are acknowledged as a notable shortcoming^[3]. With the evolution of the era and advancements in science and technology, the teaching of Chinese medicine can now seamlessly integrate various “scientific and technological elements.” This allows for flexible and diverse forms and methods of teaching, combining the traditional with the modern^[4].

1.2. The origin, introduction, and evolution of problem-based learning (PBL)

Problem-based learning (PBL), also known as the problem-based teaching method, was initially proposed by Howard S. Barrows, a neurology professor in the United States. This teaching approach places a significant emphasis on students, with the problem serving as the focal point for acquiring relevant knowledge. The PBL method necessitates educators to incorporate lecture content into a variety of problems. Students, through collaborative learning, discussions, and guided problem-solving facilitated by the teacher, achieve a comprehensive understanding of the knowledge points.

By integrating students’ thinking, reasoning, and analytical skills into the teaching process, PBL stimulates their interest in learning, enhances their capacity to address practical issues, fosters communication and interaction between teachers and students, and attains the objective of joint teaching and learning. The PBL education model functions as a valuable supplement to the traditional education model. Through the amalgamation of theory and practice, specifically employing problem-case-scenario-based learning. This approach aims to improve medical students’ self-learning abilities and medical literacy^[5].

1.3. The origin, introduction, and evolution of the flipped classroom

The inception of flipped classroom teaching dates back to 2007 when two American high school teachers first embraced this innovative approach. The flipped classroom model serves to ignite students’ interest, enthusiasm, and initiative in learning. It fosters the development of students’ habits and abilities for independent and lifelong learning, contributing to the enhancement of Chinese medicine students’ evidence-based thinking, innovation, expression, communication, and collaboration skills^[6,7].

When applied to undergraduate medical classroom teaching, the flipped classroom exhibits distinct advantages over traditional teaching methods, presenting itself as a noteworthy and promotable teaching technique. It stands out as an effective supplement to the teaching methods employed in medical undergraduate courses^[8]. This novel educational concept and teaching mode provide instructors with a personalized teaching platform, facilitating the effective cultivation of diverse professional qualities among undergraduate medical students^[9].

Looking ahead, the flipped classroom teaching mode holds the potential to further revolutionize the teaching of Chinese medicine courses, particularly clinical practice courses^[10].

1.4. Advantages and characteristics of PBL combined with flipped classroom mode

The integration of PBL with the flipped classroom mode serves to champion the concept of student-centered education, fostering the development of high-caliber medical talents better suited to the demands of our evolving times^[11,12]. While the PBL teaching mode may lack a pre-instructional independent learning stage, relying solely on this approach can diminish student motivation due to a lack of understanding and familiarity with the knowledge points. This can inadvertently prolong teaching times and impede the seamless execution of the teaching program.

Conversely, employing the flipped classroom teaching model may result in students lacking essential clinical experience, potentially leading to the misguided judgment of teaching content focus and restraining

questions to surface-level concerns. The synergy of PBL and flipped classroom methods allows for a complementary relationship in teaching, leveraging each other's strengths and mitigating weaknesses^[13]. PBL's focus on pre-course learning leads directionality to the flipped classroom, addressing issues of insufficient independent learning and comprehension of knowledge points in the PBL teaching method.

The amalgamation of these two approaches innovates the teaching paradigm from "student-oriented, teacher-led" to a collaborative model^[14]. This fusion enhances students' problem-solving abilities, cultivates a spirit of teamwork, and yields superior teaching outcomes^[15]. The PBL combined with flipped classroom mode not only sparks students' interest in independent learning but also hones their problem-solving and collaborative skills while nurturing clinical thinking, which is a development of paramount importance in elevating teaching quality^[16].

Applied to the teaching of pregnancy malignant obstruction section of Chinese medicine gynecology, this combined mode optimally motivates students to actively and creatively apply knowledge, facilitating an active learning experience. This approach fosters internalization and deep understanding of knowledge, empowering students with the flexibility to apply acquired knowledge adeptly. Consequently, the research and exploration of this teaching reform in the Chinese medicine gynecology curriculum provide effective methodologies and ideas for the continued development and construction of a diversified curriculum teaching system.

2. Construction of the PBL combined with flipped classroom model in teaching Chinese medicine gynecology

Nausea and vomiting represent common symptoms in pregnancy, exhibiting varying prevalence rates across different regions worldwide. A recent meta-analysis, assessing global prevalence rates, estimated the likelihood of experiencing nausea and/or vomiting during any pregnancy at 69%^[17]. Notably, dry heaves have been identified as a significant and distinct symptom with independent health implications^[18]. This paper delves into the utilization of the PBL combined with the flipped classroom model specifically in teaching the topic of nausea during pregnancy.

2.1. Pre-course preparation

The teacher's pre-class responsibilities involve three key steps: Initially, organizing study groups based on the study topic and the number of students; Subsequently, furnishing students with typical clinical cases and presenting core questions along with learning guidance; Finally, crafting courseware and videos for students to engage with before the class. This pre-class material assists students in grasping basic theoretical knowledge and contemplating core questions independently. It is important to note that, in contrast to the "guided learning plan" provided before the class, a more condensed set of learning materials is essential at the end of the flipped classroom. These materials aid students in consolidating their knowledge outcomes and constructing a learning framework. As a result, teachers need to prepare two types of courseware materials, one for use before class and another for use during the classroom session.

Students, too, are assigned tasks before the class, involving three sequential steps: Firstly, completing the learning content released by the teacher, such as learning videos and courseware, within the specified time; Secondly, engaging in independent thinking or group discussions, a crucial step in the overall process. If students effectively utilize this pre-class time for thorough study and reflection, subsequent in-class tasks will proceed seamlessly. On the contrary, students who do not adequately prepare before class may struggle to keep pace with the classroom activities; Lastly, students are encouraged to record questions that arise during independent study and attempt to answer them individually or discuss them collaboratively during the class.

2.2. Interactive sessions in class

This exemplifies the PBL combined with flipped classroom teaching mode within the “Pregnancy Obstruction” chapter of Chinese medicine gynecology. To commence the class, students undergo a round of random quizzes designed to assess their understanding of the definition, etiology, clinical manifestations, diagnosis, and differentiation related to “Pregnancy Obstruction.” Following this, students are organized into small groups to present their findings. During these presentations, questions arising from their pre-course studies can be raised and addressed by the teacher. Finally, the teacher consolidates theoretical challenges in pregnancy-related theory and clinical problem areas concerning diagnosis and treatment.

2.3. Consolidation and assessment after class

Following the class, teachers administer post-class tests on online teaching platforms such as Wisdom Tree and Learning Channel. These tests encompass both objective and subjective questions, enabling teachers to promptly review them and gauge students’ learning progress. In addition, teachers initiate online discussion groups and implement teaching feedback questionnaires to closely monitor students’ learning dynamics. This proactive approach facilitates timely adjustments to teaching methods, ensuring they remain effective and responsive to student needs.

By incorporating diverse assessment methods and establishing a comprehensive learning evaluation system, teachers can objectively and comprehensively evaluate students’ abilities across various dimensions, providing a thorough assessment of the teaching impact. Teachers can integrate various elements, including students’ learning outcomes, classroom participation, test assessments, and other comprehensive scores. However, the challenge lies in effectively leveraging assessment tools and maximizing their regulatory influence, which is a matter that requires ongoing attention and refinement ^[19].

3. Conclusion

In recent years, the education sector has been questioning the discrepancy between high scores and low abilities among medical students. This era is witnessing a surge in reform and development in medical teaching, with colleges and universities placing increased emphasis on the effective cultivation of diversified professional competencies among medical undergraduates ^[20]. The implementation of PBL combined with the flipped classroom model elevates the demand for teaching concepts, technological support, information literacy, and resource management ^[21]. For medical students burdened with substantial learning tasks, managing a vast amount of materials and assessments poses a challenge, necessitating a balanced allocation of time across multiple subjects.

In this context, establishing a scientifically sound teaching model holds great significance for cultivating students’ comprehensive clinical abilities. Regardless of the blended teaching mode chosen, it should be anchored in students’ cognitive levels and cognitive patterns while adhering to the natural progression of learning ^[22]. Blended teaching methods, including PBL combined with the flipped classroom, represent not only innovation but also a manifestation of teaching practice. However, teachers may risk falling into the trap of “formalism” without a deep understanding of blended teaching modes. Therefore, refining the teaching supervision mechanism becomes crucial for effectively controlling teaching quality ^[23].

Successfully implementing this blended teaching mode demands higher subject competence and instructional skills from teachers, presenting a notable challenge ^[24,25]. While no teaching model is flawless, continuous improvement through tireless exploration is essential. Introduced alongside traditional teaching modes, blended teaching methods can mitigate the shortcomings of the traditional approach, significantly

enhancing teaching quality^[26]. In medical undergraduate education, the advantages of traditional classrooms are irreplaceable. Blended teaching represents the convergence of information technology and knowledge, emphasizing that true teaching cannot rely solely on technology; it is merely a means^[27]. Teachers may need to strike a balance between different teaching methods in practice to elevate teaching quality and ensure effective outcomes^[28].

The Department of Chinese Medicine Gynecology remains committed to advancing the combined teaching mode of PBL and the flipped classroom, refining and enhancing it in the teaching process. Exclusively through sustained dedication and unwavering commitment can make substantial contributions to the cultivation of medical talents within the nation, fostering a distinguished cohort of exemplary medical professionals.

Funding

The First Affiliated Hospital of Guangxi University of Traditional Chinese Medicine 2022 Faculty Education and Teaching Reform and Research Program (2022JG05B)

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Wang Z, Feng Y, 2019, Exploration on the Teaching Methods of Gynecology of Traditional Chinese Medicine Based on Student-Centered Mode. *Chinese Medicine Modern Distance Education of China*, 17(13): 30–32.
- [2] An Z, 2006, Discussion on the Actuality and Development Approach of College Education of TCM. *Guiding Journal of Traditional Chinese Medicine and Pharmacy*, 2006(3): 86–87 + 90.
- [3] Zhang H, Che N, Li W, et al., 2007, What Tasks Should Be Completed in Cultivating Famous Doctors-Undergraduate Education of Traditional Chinese Medicine. *Jiangsu Journal of Traditional Chinese Medicine*, 2007(1): 52–54.
- [4] Lin C, 2018, Some Thoughts on the Cultivation of Chinese Medicine Talents. *Journal of Guangxi University of Traditional Chinese Medicine*, 2018(3): 112–114.
- [5] Liu Z, 2023, Evaluation and Improvement of PBL in Teaching Basic Medicine. *Heilongjiang Medical Journal*, 2023(14): 1733–1735.
- [6] Li Q, Lv S, Wen X, 2019, Practical Research on Flipped Classroom Teaching Mode in Gynecology Teaching of Traditional Chinese Medicine. *World Latest Medicine*, 2019(52): 365–366.
- [7] Meng F, Wang S, Xu J, 2023, Xuzhou Medical University Progress, Hotspots and Frontier Trends of Medical Teaching Reform Research in China: Analysis of Core Journals of CNKI Based on Citespace. *Health Vocational Education*, 2023(12): 147–151.
- [8] Li Y, Wang Q, Wang J, et al., 2021, Meta Analysis of Teaching Effect with Flipped Classroom Teaching Mode Applied in Undergraduate Course in Clinical Medicine Major in China. *China Medical Education Technology*, 2021(3): 356–362.
- [9] Yang J-B, Zhao M-T, 2023, Application Effect of Flipped Classroom in Teaching Internal Medicine to Chinese Medicine Students. *Xinjiang Journal of Traditional Chinese Medicine*, 2023(1): 41–43.
- [10] Cao H, Yan Y, Han A, et al., 2021, Systematic Review of the Application of Flipped Classroom in the Teaching of Traditional Chinese Medicine. *Education of Chinese Medicine*, 2021(6): 9–15.
- [11] Li W, Li X, Zhao Y, 2019, Research Status of Blended Teaching Mode in Medical Education in China. *China Medical*

Education Technology, 2019(5): 518–522.

- [12] Jiang Q, Wu L, Xie G, et al., 2016, Discussion on the Application of Flipped Classroom Combined with PBL Teaching Method in Medical Education. *Modern Medicine Journal of China*, 2016(8): 87–90.
- [13] Liu J, 2023, The Application of PBL Teaching Mode in the Cultivation of Clinical Thinking in Medical Education. *Journal of Higher Education*, 2023(25): 42–45.
- [14] Hai P, Li L, 2022, Reflections on the Era of Traditional Chinese Medicine Talents Training Under the Concept of New Medicine. *Journal of Changchun University of Chinese Medicine*, 2022(10): 1167–1170.
- [15] Zhu S, Wang J, Sun D, et al., 2023, Application of PBL Teaching Method Combined with Flipped Classroom in Internal Medicine Teaching. *China Continuing Medical Education*, 2023(18): 85–88.
- [16] Chen Y, Tan L, Shi L, et al., 2020, Application and Thinking of PBL Combined with Flipped Classroom in Internal Science Teaching of Integrated Traditional Chinese and Western Medicine. *Popular Science & Technology*, 2020(8): 89–91.
- [17] Einarson TR, Piwko C, Koren G, 2013, Quantifying the Global Rates of Nausea and Vomiting of Pregnancy: A Meta Analysis. *J Pop Ther Clin Pharmacol*, 20(2): e171–e183.
- [18] Zhou Q, O'Brien B, Soeken K, 2001, Rhodes Index of Nausea and Vomiting – Form 2 in Pregnant Women. A Confirmatory Factor Analysis. *Nurs Res*, 50(4): 251–257. <https://doi.org/10.1097/00006199-200107000-00009>
- [19] Hu H, Shu J, He W, et al., 2019, Thinking and Exploration on the Cultivation of TCM Talents – Taking Shanghai University of Traditional Chinese Medicine as an Example. *Education of Chinese Medicine*, 2019(4): 3–6.
- [20] Zhong Y, 2020, To Cultivate the Comprehensive Ability of Medical Undergraduates as The Focus to Promote Medical Teaching Reform. *Course Education Research*, 2020(48): 123–124.
- [21] Zhang J, 2014, Flipped Classroom and Teaching Reform. *Basic Medical Education*, 2014(10): 825–828.
- [22] Huang Z, Liu Y-L, Lu X, et al., 2019, Study on the Construction of Synchronous Practical Teaching Mode in Traditional Chinese Medicine Nursing Course. *Guiding Journal of Traditional Chinese Medicine and Pharmacology*, 2019(10): 131–134.
- [23] Cao X, Liu Y, 2021, Innovation of the Supervision Work of the Mixed Teaching Mode of Basic Medical Courses in the New Era. *Comparative Study of Cultural Innovation*, 2021(20): 74–77.
- [24] Yu Y, Li X, Huang L, et al., 2012, The Importance of Teachers in PBL Teaching Mode. *Northwest Medical Education*, 2012(1): 116–118 + 126.
- [25] Li L, 2010, Functional Positioning and Thinking of Teachers Role in PBL Teaching. *Medical Bulletin of Shanghai Jiaotong University*, 2010(1): 17–19.
- [26] Wen J, 2019, Analysis of Multi-Mode Integrated Teaching Method in Clinical Medical Teaching Reform. *World Latest Medicine*, 2019(34): 304 + 306.
- [27] Wang N, 2016, Enlightenment of ‘English for Specific Purposes’ Teaching Mode on ‘English for Traditional Chinese Medicine’ Teaching. *Global Chinese Medicine*, 2016(5): 613–615.
- [28] Wang B, Zhou C, Li Y, et al., 2023, Problems and Solution of PBL Teaching of Medical Undergraduates. *China Medical Education Technology*, 2023(2): 136–139.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.