

# Research Progress on the Application of BOPPPS Teaching Model in Domestic Emergency Education

Lishuo Gao\*, Sijia Chen, Yang Bai, Juan Wang, Qing Gao, Tingting Liang

Department of Internal and Surgical Nursing, School of Nursing, Tianjin Medical University, Tianjin, China

\*Corresponding author: Lishuo Gao, gaolishuo@tmu.edu.cn

**Copyright:** © 2025 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:** The BOPPPS teaching model is a student-centered teaching model that has been widely applied in various teaching fields. This paper summarizes the overview of the BOPPPS teaching model, its application in emergency teaching and training, as well as its advantages and disadvantages, aiming to provide references for the further promotion and application of the BOPPPS teaching model in emergency education.

**Keywords:** BOPPPS teaching model; Emergency; Teaching; Training

**Online publication:** February 10, 2025

## 1. Introduction

The BOPPPS teaching model originated in the 1970s and was created by Douglas Kerr's team at the University of Vancouver. It is the primary training model used in the Instructional Skills Workshop (ISW) program for teachers in the province of British Columbia, Canada <sup>[1]</sup>. This teaching model is goal-oriented and student-centered <sup>[2]</sup>, with good compatibility that can be applied to various subjects to enhance students' interest in learning and improve their self-learning abilities. Since its introduction in China, the BOPPPS teaching model has gradually been applied in medical education, and the results have shown that it is superior to traditional teaching models. It can effectively mobilize students' enthusiasm for participating in learning, benefit the improvement of students' theoretical knowledge and practical abilities, and achieve good teaching effects in both theoretical and practical teaching <sup>[2-5]</sup>. Emergency education is an important part of medical education. This article will review the concept, characteristics, steps, advantages, and disadvantages of the BOPPPS teaching model, as well as its application research in emergency teaching and training in China, to provide a reference for further promoting the BOPPPS teaching model and the development of emergency education in China.

## **2. Overview of the BOPPPS teaching model**

### **2.1. Concept and characteristics of the BOPPPS teaching model**

The BOPPPS teaching model, also known as guided interactive additive education, is an emerging teaching model that involves teachers in course design<sup>[6]</sup>. This teaching model is based on constructivist and humanistic theories, emphasizing a student-centered approach in the teaching process<sup>[7]</sup>. It stimulates students' interest in learning, effectively increases their participation in classroom teaching, fully leverages their subjective initiative in learning, and enhances the effectiveness of classroom teaching<sup>[4]</sup>. This teaching model values the teaching process, focuses on constructing student participation in learning and classroom feedback sessions, and is known for its effective teaching design. It is highly operable and targeted, serving as a standard for teacher training and classroom instruction in Canadian higher education. It has also received widespread recognition from international educators and has become one of the most commonly used teaching methods in Europe and the United States<sup>[6]</sup>.

### **2.2. Steps of the BOPPPS model**

The BOPPPS teaching model divides the classroom teaching process into six steps based on human attention characteristics: Bridge-in, Objective, Pre-assessment, Participatory learning, Post-assessment, and Summary<sup>[8]</sup>. The BOPPPS teaching model constructs a complete teaching process and theoretical framework aimed at achieving teaching objectives, forming a closed-loop teaching unit with a complete system<sup>[7]</sup>. The main tasks of the six steps in this teaching model are as follows<sup>[6]</sup>: (1) Bridge-in: Introduce the teaching content, attract students' attention, and stimulate their interest in learning; (2) Objective: Clarify the learning objectives and let students understand the purpose of this knowledge; (3) Pre-assessment: Test students to understand their prior knowledge and readiness for the upcoming content, laying the foundation for subsequent teaching; (4) Participatory learning: The core step that involves students in classroom activities, guides them to actively learn, and transforms passive learning into active thinking; (5) Post-assessment: Use various methods to assess students' learning effectiveness and teachers' teaching effectiveness; (6) Summary: Conclude the course by reviewing key teaching content, summarizing knowledge points, echoing and reinforcing learning objectives, and introducing the next course.

## **3. Application of the BOPPPS teaching model in emergency education**

### **3.1. Application in emergency teaching**

Domestic scholars have applied the BOPPPS teaching model, either singly or combined with other teaching methods, to emergency practical or theoretical teaching. Teaching design and implementation have been carried out according to the six steps of the BOPPPS teaching model, achieving good teaching results. Lv and Zhang<sup>[9]</sup> applied the BOPPPS teaching model to the teaching of cardiopulmonary resuscitation (CPR) skills training. The results showed that the BOPPPS teaching model can activate the classroom atmosphere, increase students' interest in learning, exercise students' language communication skills, cultivate students' active learning abilities, and improve the success rate of CPR. Deng<sup>[10]</sup> combined the BOPPPS teaching model with simulated situational dramas and applied it to CPR teaching. The results proved that this mixed teaching model conforms to the characteristics of emergency medicine teaching and can improve students' CPR performance and teamwork ability. Lu *et al.*<sup>[11]</sup> also applied the BOPPPS combined with situational simulation teaching model to the international course of trauma hemostasis for medical undergraduates. After the class, students' confidence in various hemostasis skills improved, and the proportion of students choosing to perform hemostasis assistance

on strangers at the first scene increased. Students' satisfaction with the course was also high. Du *et al.* [12] conducted research on a new teaching method for hemostatic belts based on the BOPPPS teaching model and the goal of unconscious competence. They conducted theoretical lectures on hemostatic belt operation according to the BOPPPS teaching framework and designed the course based on the intensive stimulation required for the transition from unconscious incompetence to conscious incompetence, then to conscious competence, and finally to unconscious competence. Research has proven that this teaching method can improve teaching effectiveness and enhance students' hemostatic belt operation skills. Other scholars [13,14] have also applied the BOPPPS teaching model to adult continuing education and the teaching of emergency medicine graduate students, confirming that the BOPPPS teaching model can improve student engagement, self-directed learning abilities, and learning outcomes. In addition, scholars have explored the application of the BOPPPS teaching model in ideological and political teaching of emergency courses, which has also achieved significant results. Duan [15] explored curriculum ideological and political teaching based on the BOPPPS teaching model, combining ideological and political elements such as loving the motherland, dedication to work, and healing the sick with professional knowledge in critical illness identification, treatment, and monitoring. The results showed that curriculum ideological and political teaching based on the BOPPPS teaching method can enrich teaching content, stimulate students' interest in learning, and facilitate students' understanding of the knowledge they have learned. Shang [16] also explored the effect of ideological and political teaching in emergency and critical care nursing courses based on BOPPPS for undergraduate nursing students. It also proved that ideological and political teaching in emergency and critical care nursing courses based on BOPPPS can improve students' course performance, teaching satisfaction, and self-directed learning abilities. Other scholars have successively explored the integration of the BOPPPS teaching model into basic life support [17] or CPR curriculum ideological and political teaching [18,19], confirming that the BOPPPS teaching model can promote the seamless integration of ideological and political education and professional knowledge [19], improving students' emergency knowledge, attitudes, and behaviors to varying degrees [17]. In summary, the BOPPPS teaching model has demonstrated its value and advantages in emergency medical education, not only improving students' abilities in multiple areas but also effectively enhancing teaching effectiveness and learning outcomes, while promoting the deep integration of ideological and political education and professional knowledge. Meanwhile, many scholars have made innovative attempts in various forms based on the BOPPPS teaching model, further expanding the application boundaries of this teaching model.

### **3.2. Application in emergency training**

As direct parties involved in emergencies, members of the public can often provide "assistance" to the injured in the first instance while waiting for professional rescue personnel, thereby reducing disability and mortality rates. Strengthening public emergency knowledge and skills training, as well as improving social emergency training, is of great significance for increasing the survival rate and quality of life of injured patients during emergencies [20]. However, due to variations in public cultural levels and regional customs and lifestyles, China currently lacks unified teaching materials and training methods for public emergency knowledge education, and has not yet formed a comprehensive and standardized continuing education and training model [21]. From the forefront of research on public emergency training, it can be seen that the academic community has been committed to improving the effectiveness of public emergency training [22], including the application of the BOPPPS teaching model in emergency training for various groups. Tan *et al.* [23] applied the BOPPPS teaching model combined with virtual simulation technology in neonatal asphyxia resuscitation simulation training. They

verified that the combination of BOPPPS and virtual simulation technology had a good teaching effect, helping to increase learners' interest and confidence, and better grasp theoretical knowledge and operational skills related to neonatal resuscitation. Some scholars <sup>[24,25]</sup> also used the BOPPPS teaching model when conducting CPR training among non-medical college students, achieving positive results. The application of the BOPPPS model can enhance students' initiative in training and learning, improve theoretical and skill assessment scores and satisfaction, and effectively promote college students' confidence in CPR practice. Tao *et al.* <sup>[26]</sup> also applied the BOPPPS model in CPR training for non-medical personnel, finding that this training model can effectively enhance CPR training effectiveness and improve pre-hospital emergency response capabilities of non-medical personnel in hospitals, thus having high application value and being worthy of promotion and reference. Jiang *et al.* <sup>[27]</sup> designed and applied emergency training courses based on the BOPPPS teaching model to improve the teaching effectiveness of public emergency training. The results confirmed that such training methods can enhance public enthusiasm and initiative in emergency participation, ensuring the quality of pre-hospital emergency care. Rao *et al.* <sup>[28]</sup> explored training methods to improve the pre-hospital emergency skills of community general practitioners by combining the BOPPPS teaching model with the "problem-discuss-guidance" (PDG) training model. They found that this hybrid training model can create a lively learning atmosphere, effectively stimulate learners' enthusiasm, improve general practitioners' pre-hospital emergency skills, cultivate clinical thinking ability, and enhance clinical skills, thus having promotional significance in the community. Furthermore, scholars <sup>[29-31]</sup> have also applied the BOPPPS teaching model in emergency training for resident physicians, clinical nurses, and newly hired nurses, integrating elements such as the Mini-CEX assessment scale, scenario simulation, or problem-based learning, all achieving positive results. Participants' learning initiative and comprehensive abilities were enhanced, and their emergency theoretical knowledge and skills were also improved. In summary, the BOPPPS teaching model has demonstrated effective application in emergency training, not only improving participants' abilities in multiple areas but also enhancing their satisfaction and enthusiasm for training, ultimately achieving positive training outcomes.

## **4. Advantages and disadvantages of the BOPPPS teaching model**

### **4.1. Advantages**

The BOPPPS teaching model constructs a complete teaching process and theoretical framework to achieve teaching objectives. It proposes six steps centered around teaching objectives, providing a clear direction for teachers' teaching activities. This helps teachers systematically organize teaching content and ensures the logicity and coherence of the course <sup>[32]</sup>. The core of this model is emphasizing students' subject status, participation, and interaction. It stimulates students' interest and enthusiasm through questioning, discussion, and other methods, improving classroom participation. This active participation in the learning process helps students deepen their understanding and memory of knowledge, enhances their communication and team collaboration skills, and cultivates their innovative thinking and problem-solving abilities <sup>[4,5]</sup>. The "pre-assessment" step allows teachers to understand students' basic knowledge level, enabling them to adjust teaching content and methods based on students' actual situations, achieving personalized teaching. The "post-assessment" step provides teachers with an opportunity to understand students' learning effects, allowing timely feedback and guidance to help students consolidate their knowledge. This timely feedback and adjustment contribute to optimizing the teaching process and improving students' learning outcomes.

## 4.2. Disadvantages

The BOPPPS teaching model has high demands on teachers, requiring them to have strong teaching abilities in course design, classroom control, and student guidance during the classroom design and implementation process. If teachers lack the corresponding abilities, it may affect the final teaching effect. This teaching model consists of six steps, and each step requires a certain amount of time to implement. With limited classroom time, some steps may not be fully implemented or time allocation may be unreasonable. This requires teachers to prepare adequately before class and plan classroom time reasonably. For students accustomed to traditional lecture-style teaching, this model may pose certain challenges and discomforts. Student participation in participatory learning may be low, not meeting the expectations of the teaching plan <sup>[33]</sup>. Some students may need time to adapt to this new teaching model and learning style. Teachers need to pay attention to students' adaptation during implementation and provide timely guidance and assistance. Although the BOPPPS teaching model has been applied in multiple fields, it is more suitable for subjects that are more practical and discussion-focused. For more theoretical subjects, its applicability may be relatively limited. Additionally, fixed teaching steps can make the teaching model rigid and inflexible <sup>[32,34]</sup>, hindering teachers from flexibly setting classroom sessions based on their experience and the characteristics of the teaching content. This requires teachers to continuously expand their teaching research horizons and flexibly design each teaching segment during application and research.

## 5. Conclusion

The BOPPPS teaching model is student-centered and teaching goal-oriented. Through six steps: Bridge-in, Objective, Pre-assessment, Participatory learning, Post-assessment, and Summary, it constructs a closed-loop teaching unit, effectively enhancing students' interest in learning, self-learning abilities, and classroom participation. This model has demonstrated significant teaching advantages and broad application prospects in domestic emergency teaching and training. To further promote the prominent role of BOPPPS teaching model in emergency education, future research and promotion can focus on the following points: strengthening teacher training to enhance their ability and level in using the BOPPPS teaching model and ensure maximized teaching effectiveness; optimizing teaching design by creating more targeted and practical teaching content and activities for different emergency knowledge and skills; deepening integration with information technology, utilizing modern technical means such as virtual simulation and online learning platforms to broaden learning channels and enhance the learning experience; and strengthening the combination with other teaching models to form a more comprehensive teaching system.

## Funding

Scientific Research Program of Tianjin Municipal Education Commission (2023SK011)

## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Chen L, Tang XJ, Chen XK, et al., 2022, Effect of the BOPPPS Model Combined with Case-Based Learning Versus Lecture-Based Learning on Ophthalmology Education for Five-Year Pediatric Undergraduates in Southwest China. *BMC Med Educ*, 22(1): 437.
- [2] Hu K, Ma RJ, Ma C, et al., 2022, Comparison of the BOPPPS Model and Traditional Instructional Approaches in Thoracic Surgery Education. *BMC Med Educ*, 22(1): 447.
- [3] Ji J, Wang L, Hao L, et al., 2022, Meta-Analysis of the Application Effect of BOPPPS Teaching Model Among Chinese Medical Students. *Journal of Yan'an University (Medical Science Edition)*, 20(3): 105–112.
- [4] Zhang J, Han L, Lv L, 2022, Meta-Analysis of the Teaching Effect of BOPPPS Teaching Model in Medical Student Courses. *Chongqing Medicine*, 51(5): 854–858.
- [5] Xie C, Sun L, Cui L, et al., 2023, Meta-Analysis of the Impact of the BOPPPS Teaching Model on the Learning Effects of Chinese Medical Students. *Health Vocational Education*, 41(3): 117–121.
- [6] Li H, Dang Y, Li Y, et al., 2020, Research Progress of BOPPPS Teaching Model in Undergraduate Nursing Clinical Teaching. *Qilu Nursing Journal*, 26(9): 113–115.
- [7] Wang Y, Chen Y, Wang L, et al., 2024, Assessment of the Effectiveness of the BOPPPS Model Combined with Case-Based Learning on Nursing Residency Education for Newly Recruited Nurses in China: A Mixed Methods Study. *BMC Med Educ*, 24(1): 215.
- [8] Wen H, Xu W, Chen F, et al., 2023, Application of the BOPPPS-CBL Model in Electrocardiogram Teaching for Nursing Students: A Randomized Comparison. *BMC Med Educ*, 23(1): 987.
- [9] Lv Y, Zhang M, 2018, Application and Research of BOPPPS Teaching Method in Cardiopulmonary Resuscitation Skill Training. *Journal of Community Medicine*, 16(7): 81–83.
- [10] Deng H, 2017, Research on the Application of Simulation Situational Drama Teaching Method Based on BOPPPS Teaching Model in Cardiopulmonary Resuscitation Teaching. *Education Teaching Forum*, (25): 197–198.
- [11] Lu C, Liu G, Chen S, et al., 2022, Application of BOPPPS Combined with Scenario Simulation in International Trauma Hemostasis Courses. *China Continuing Medical Education*, 14(12): 5–10.
- [12] Du W, Zong Z, Qin H, et al., 2020, Research on Hemostasis Teaching Method Based on BOPPPS Teaching Model and Unconscious Competence as the Goal. *Chinese Journal of Medical Education Exploration*, 19(8): 903–906.
- [13] Ye H, Chu D, Qian R, et al., 2022, Application of BOPPPS Teaching Model in Emergency Nursing Teaching for Adult Continuing Education. *Nursing Practice and Research*, 19(2): 290–293.
- [14] Zheng G, Lin J, Fang Z, 2023, Application of Mixed Teaching Based on BOPPPS Model for Post Competence Training—Taking Graduate Students in Emergency Medicine as an Example. *Education Teaching Forum*, (37): 129–132.
- [15] Duan H, 2023, Exploration of Ideological and Political Teaching in the Course of “Emergency and Critical Care Nursing” Based on BOPPPS Teaching Method. *Teacher*, 8: 117–119.
- [16] Shang F, 2023, Exploration of Ideological and Political Teaching in Emergency and Critical Care Nursing Courses Based on BOPPPS. *Health Vocational Education*, 41(22): 110–112.
- [17] Li X, Zhou X, Yu X, et al., 2023, Ideological and Political Teaching Design of Emergency and Critical Care Nursing Courses Based on the BOPPPS Model—Taking “Basic Life Support” as an Example. *Medical Higher Vocational Education and Modern Nursing*, 6(5): 393–401.
- [18] Liu Y, Liu Z, Quan H, et al., 2022, Research on Cardiopulmonary Resuscitation Teaching Integrating BOPPPS Model and Ideological and Political Factors. *Health Vocational Education*, 40(14): 97–100.
- [19] Zhang Y, Zhang J, Zhao B, et al., 2021, Ideological and Political Teaching Design and Application of Emergency

and Critical Care Nursing Courses Based on BOPPPS Model—Taking On-Site Cardiopulmonary Resuscitation as an Example. *Science and Education*, (28): 101–103.

- [20] Du S, Qiu W, Wu H, et al., 2022, Experience and Enlightenment of Social Emergency Training Construction in Some Countries. *Chinese Journal of Emergency Resuscitation and Disaster Medicine*, 17(1): 37–41.
- [21] Zhang H, Cheng S, Wang P, et al., 2022, Expert Consensus on Public Response Measures During Pre-Hospital Emergency Waiting Period. *Chinese Journal of Emergency Medicine*, 42(5): 380–386.
- [22] Lei Z, Feng J, Xie W, et al., 2023, Visual Analysis of Public Emergency Training Research Literature Based on Web of Science. *Medicine and Society*, 36(11): 15–19.
- [23] Tan H, Hu L, Li Z, et al., 2022, Application of BOPPPS Combined with Virtual Simulation Technology in Neonatal Asphyxia Resuscitation Simulation Training. *Chinese Journal of Medical Education*, 42(2): 155–158.
- [24] Hao Z, Huang S, Lu Q, et al., 2024, Analysis of the Effect of BOPPPS Model in Cardiopulmonary Resuscitation Training for Non-Medical Undergraduate Students. *Lingnan Journal of Emergency Medicine*, 29(1): 15–19.
- [25] Wang X, Zhang C, Zhao G, et al., 2024, Practice of Mixed Training Mode of CPR for Students in Non-Medical Colleges and Universities. *China Higher Medical Education*, (2): 33–34, 79.
- [26] Tao L, Qin H, Wang W, et al., 2024, Study on the Application of BOPPPS Model in Cardiopulmonary Resuscitation Training for Non-Medical Staff. *Chinese Journal of Emergency Resuscitation and Disaster Medicine*, 19(2): 148–151.
- [27] Jiang Y, Wang Y, Long Q, et al., 2023, Design and Discussion of Public Emergency Skills Training Based on BOPPPS Model. *Chinese Journal of Emergency Resuscitation and Disaster Medicine*, 18(6): 821–824.
- [28] Rao L, Yi Y, Chen L, et al., 2023, Application Analysis of BOPPPS Combined with PDG Training Method in Pre-Hospital Emergency Training for Community General Practitioners. *Chinese Journal of General Practice*, 26(S1): 7–9.
- [29] Guo Z, Cao Y, Wang Y, et al., 2022, Research on the Application of BOPPPS Teaching Model Based on Mini-CEX in the Standardized Training of Orthopedic Residents. *China Medical Education Technology*, 36(3): 371–375.
- [30] Wang M, Zhang M, Liu C, et al., 2023, Application of Scenario Simulation Teaching Method Based on BOPPPS Model in Nurse Emergency Training. *Journal of Nursing Science*, 38(11): 77–79, 83.
- [31] Yao M, Ni S, 2022, The Influence of Diversified Training Mode Based on BOPPPS on Theoretical Knowledge and Emergency Response Ability of New Nurses in the Medical Community. *China Higher Medical Education*, (6): 100–101.
- [32] Li S, Fu L, 2020, A review of the Development of BOPPPS Teaching Mode in Domestic Universities. *Teaching in Forest Regions*, (2): 19–22.
- [33] Wang L, Li Z, Lang S, et al., 2021, Research Progress on the Application of BOPPPS Teaching Mode. *Agricultural Product Processing*, (11): 104–107.
- [34] Yang Y, You J, Wu J, et al., 2019, The Effect of Microteaching Combined with the BOPPPS Model on Dental Materials Education for Predoctoral Dental Students. *J Dent Educ*, 83(5): 567–574.

**Publisher's note**

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