

Exploration and Practice of Critical Thinking Education Model for Medical Students Based on Social and Emotional Ability Cultivation

Hemin Zhang¹, Zixun Dai¹, Jiahui Fu¹, Xiaoqing Qiu², Zhouyang Chen²,
Rongyang Zhou², Hanxiao Yang¹, Yutong Sun¹, Bican Xu², Junhao Zhu¹,
Liang Ying^{1,*}

¹Renji College, Wenzhou Medical University, Wenzhou, Zhejiang, China

²Wenzhou Medical University, Wenzhou, Zhejiang, China

*Corresponding author

Abstract: Traditional medical education lays too much emphasis on the teaching of professional knowledge and the training of clinical skills, while neglecting the development of students' social and emotional abilities. In view of this, this study suggests that medical education curriculum design needs to realize the paradigm shift from "skill-based" to "whole-person education", that is, on the basis of consolidating professional knowledge and skills, more attention should be paid to the cultivation of students' social and emotional abilities. Therefore, this study aims to construct a new way to effectively integrate social and emotional competence training with critical thinking education model. This requires educators to design interdisciplinary curriculum systems to ensure that the curriculum content closely follows the natural laws of critical thinking development; at the same time, it requires innovation in classroom teaching culture and the adoption of a variety of innovative teaching methods. Especially, this research innovatively introduces the critical thinking teaching model combining "midwifery" and metacognition, and establishes a comprehensive and detailed evaluation and feedback mechanism. This study aims to promote the profound reform and continuous optimization of medical education mode, aiming at cultivating a group of medical talents with high social responsibility and excellent clinical skills, as well as good social and emotional abilities, so as to contribute to the future development of medical and health undertakings.

Keywords: social and emotional competence, medical students, critical thinking, educational model, exploration and practice

1. Introduction

In today's medical field, the explosive growth of knowledge and the rapid development of medical technology pose unprecedented challenges to medical students' professional quality and lifelong learning ability. The traditional medical education model is difficult to cope with the complex and changeable medical environment and patients' needs. Therefore, the reform and innovation of medical education has become an urgent mission entrusted by the times. In this context, critical thinking as one of the core elements of medical education, its importance is increasingly prominent, however, how to effectively integrate and deepen the critical thinking ability of medical students has become an important issue in the current medical education reform. Although the value of critical thinking is widely recognized, in actual teaching practice, its training path often encounters bottlenecks, which are manifested in unclear course goal setting, difficult quantitative evaluation of learning outcomes, insufficient interdisciplinary integration, and excessive emphasis on knowledge memory and skill assessment, while ignoring the cultivation of SEL and critical thinking of students. Social and emotional competence, as a key factor for an individual to successfully cope with social challenges and achieve self-development, is deeply integrated with critical thinking, which is crucial for shaping medical talents with humanistic care, efficient communication, teamwork and excellent problem solving abilities.

This study is devoted to exploring and practicing a critical thinking education model for medical students, which focuses on the cultivation of social and emotional abilities. This model not only focuses on the teaching of basic medical and clinical skills, but also organically combines the cultivation of social and emotional abilities with the teaching of critical thinking through interdisciplinary teaching activities,

so as to train medical students to use critical thinking to analyze problems, evaluate evidence, predict risks, and demonstrate deep empathy, excellent communication skills and efficient teamwork in practice when facing complex medical situations. This model aims to comprehensively shape the future medical workers not only with solid medical knowledge, but also with keen critical thinking ability, while strengthening their social perception and emotional intelligence, so as to adapt to the complex and changeable medical environment and social needs, thus making greater contributions to the development of medical cause.

Medical education is standing at the crossroads of transformation and shouldering unprecedented historical mission in the background of rapid development of medical technology and coexistence of challenges and opportunities. As a key link in cultivating the core strength of the future medical field, medical education not only needs to teach students solid medical knowledge and clinical skills, but also needs to focus on cultivating their critical thinking ability, which is the key factor for medical students to successfully cope with complex clinical situations and make scientific decisions in their future careers [1][2]. Critical thinking, a comprehensive ability integrating analysis, evaluation, reasoning and decision-making, is the cornerstone for medical students to be able to make scientific decisions in complex clinical situations. It requires medical students to have the courage to think independently, dare to question existing ideas, seek true knowledge in uncertainty, and make correct judgments based on the best evidence [3]. At the same time, critical thinking involves multidimensional skills and is a basic quality that medical professionals must possess [4][5]. However, when we examine the traditional medical education model, we can easily find that it overemphasizes one-way knowledge instillation and mechanized training of clinical skills, while neglecting to some extent the comprehensive cultivation of students' social emotional abilities such as critical thinking, effective communication skills, teamwork ability and empathy. Although this educational model can lay a solid professional foundation for students, its limitations will gradually be exposed when dealing with many challenges in future medical practice, and it is difficult to fully meet the needs of cultivating all-round development talents [6]. Therefore, innovating the medical education model, elevating critical thinking education to a strategic level, and actively exploring new paths to integrate it with the cultivation of social emotional abilities have become an urgent issue facing the medical education community at home and abroad. This is not only a profound reflection and strategic adjustment of the current medical education system, but also a forward-looking layout for the sustainable development path of the future medical cause.

2. Theoretical Basis and Concept Definition

2.1. Social and Emotional Skills(SEL)

Social and emotional skills is a multidimensional concept that encompasses the emotional intelligence and a range of related abilities that individuals exhibit in social interactions. This ability is not only related to personal emotional state and emotion management, but also involves self-awareness, self-motivation, social skills, and interpersonal management.

The theoretical basis of social and emotional competence mainly comes from the study of personality characteristics. Human's practice includes two kinds of subjective activities: recognizing the world and transforming the world. These activities need to exert personal subjective initiative, and social and emotional abilities are important components of this initiative.

2.2. Critical Thinking(CT)

Although there are nuances in how critical thinking is defined by different scholars, it is generally considered a logical and evidence-based way of thinking that requires people to analyze, evaluate, and judge information, opinions, and evidence in order to make informed decisions and judgments. Robert Ennis, one of the founders of the critical thinking movement in the United States, defined critical thinking as "the mental activity of making personal judgments about the truth, accuracy, nature, and value of what is learned, thereby making rational decisions about what to do and believe." [7][8]

The theoretical basis of critical thinking involves many disciplines, including philosophy, pedagogy, psychology and so on. From the perspective of education, critical thinking is regarded as an important way of learning and thinking, aiming at cultivating students' reasoning and critical abilities to enhance their academic performance and problem-solving skills.

3. Theoretical Relevance Appropriateness and Value Analysis

3.1. Consistency of Theoretical Foundations

Both of them emphasize the core status and subjective initiative of the individual as the main body of development. They are not only the two pillars that strengthen each other in shaping the overall quality of the individual, but also the solid foundation stone that promotes the overall development of the individual in the subtle differences of definition and connotation. This consistency reflects the profound insight into the harmonious unity of individual internal potential and external behavior in educational philosophy.

3.2. Complementarity of Educational Goals

Critical thinking is the foundation of rationality, giving individuals the ability to analyze accurately and make wise decisions; social and emotional competence is the display of emotional intelligence, improving students' sensitivity and effectiveness in emotional communication and social interaction. They complement each other. The former focuses on the rigor and depth of thinking, while the latter focuses on the richness of emotion and the harmony of interpersonal relations, which together constitute two essential aspects of the overall educational goal.

3.3. Synergy of Teaching Methods

In the exploration of teaching methods, critical thinking uses more innovative modes such as problem-oriented learning (PBL) and flipped classroom to stimulate students' active exploration and deep thinking; while social and emotional ability teaching focuses more on emotional experience, role-playing, team cooperation and other elements, so that students can get emotional wisdom and social skills in practice. The two are skillfully integrated to form synergy in teaching methods, such as integrating the guidance of emotional resonance into case analysis, or emphasizing the guiding role of critical thinking in team cooperation projects. This synergy not only enriches teaching methods, but also significantly improves teaching effect, and plays a very good role in cultivating students' thinking ability and social communication skills.

3.4. Extensive Academic Field of Practical Application

In academic research, students need to use critical thinking to screen, analyze and evaluate complex literature materials to ensure the rigor and innovation of research; social and emotional skills are the bridge between them and academic colleagues to jointly promote academic progress. In the workplace, doctors need to have good social and emotional skills to build good relationships with patients and colleagues while solving problems and making decisions.

4. CT Education Model Construction Based on SEL

4.1. Educational Goal Setting

4.1.1. Clear Training Objectives

At the beginning of constructing the SEL-based CT education model, the primary task is to clarify and clearly define the training objectives of education. In addition to improving students' computational thinking ability, it is also necessary to integrate the core concept of social emotional learning, and strive to cultivate compound medical talents who not only have solid technical foundation, but also have good emotional intelligence, efficient communication and cooperation, outstanding problem-solving ability and strong self-management ability. Ensure that the educational process focuses on both the transmission of knowledge and skills and the development of emotional attitudes.

4.1.2. Set Specific and Measurable Learning Outcomes

In order to guarantee the attainment of educational goals and objectivity of evaluation, we further refine the training goals into concrete and measurable learning outcomes. These outcomes include not only specific measures of computational thinking skills, such as algorithm design, programming implementation, and problem solving, but also achievements in social-emotional learning, such as leadership in teamwork, empathy display, emotional management, and self-reflection and adjustment.

Based on specific measurable learning outcomes, students' academic progress will be assessed more accurately, and teaching strategies will be adjusted in time to ensure that each student can achieve balanced development in both knowledge and emotion dimensions.

4.2. Teaching Content Design

4.2.1. Design Interdisciplinary Teaching Activities

Medical courses should be based on humanities (such as philosophy, literature, psychology, etc.) to construct an interdisciplinary educational framework integrating medical ethics, bioethics, doctor-patient communication, etc. Through innovative teaching design, the interaction between SEL and CT is ingeniously embedded in various teaching activities, so as to achieve the goal of comprehensively improving students' comprehensive ability. Take medical course as an example, in case analysis part, we need to go beyond the inculcation and analysis of pure medical knowledge to guide students' emotional resonance. By selecting cases close to clinical reality and rich in emotion, we should not only diagnose and analyze treatment strategies from the perspective of medical profession, but also encourage empathy and humanistic care from the perspective of patients. In teamwork projects, we should emphasize the guiding role of critical thinking. While focusing on cultivating their independent thinking and questioning spirit, students are also guided to listen to different opinions, respect diversity, and cultivate teamwork and communication skills to meet the changing challenges of the future medical field.

4.2.2. Strengthen Social and Emotional Practice in Clinical Practice

In addition to skill training, students are encouraged to write practice diaries to record their emotional changes, ethical choices and team work experiences in clinical work, and to reflect on themselves in order to integrate social and emotional skills into their work. At the same time, regular case discussion meetings are organized to guide students to analyze cases from social, emotional, ethical and other dimensions, and cultivate their comprehensive judgment ability in complex clinical situations. In addition, "the peer mentoring system" can be introduced, in which senior students or experienced physicians guide junior students, passing on social and emotional knowledge to students in words and deeds, and promoting cross-generational learning and growth. Through the above methods, students can not only improve their professional skills, but also get comprehensive exercise in emotional and social abilities.

4.2.3. Following the Law of Critical Thinking Development and Constructing a New Classroom Teaching Culture

Go with the tide and make the best use of it. Follow the law of critical thinking development, guide them step by step to cross the obstacles of thinking, move towards a deeper and broader field of wisdom, and realize the transformation of thinking level. This change urges educators to examine and reflect on the shackles that restrict students' innovative thinking and personality development with a broader vision and deeper thinking, and to begin to devote themselves to building a brand-new, vibrant classroom teaching culture, a two-way interactive and co-growing classroom ecosystem [9].

4.2.4. Critical Thinking Teaching Model Based on Midwifery and Metacognition

"Midwifery", with the dialogue-style teaching method, cleverly guides the interlocutor to gradually expose and examine the limitations and errors of his own cognition of things, thus stimulating the spark of his inner desire for knowledge and critical thinking, and then through the teacher's persistent guidance, through the repeated dialogue process, so that the interlocutor can achieve correct understanding of things in the continuous improvement of critical thinking quality [10]. The concrete implementation operation is as follows: First, take the medical cases close to clinical reality and rich in emotion as the teaching starting point, and let the students quickly enter the situation through multimedia display, role-playing and other ways. Then, using the art of "midwifery", the teacher guides the students through questions that expose their initial understanding, assumptions, or misunderstandings about the case and encourage them to express different views. By contrasting different viewpoints, creating cognitive conflicts, stimulating students' curiosity and critical thinking. At this time, teachers, as guides, use rhetorical questions and clarification strategies to guide students to gradually go deep into the core of the problem and correct themselves until they form a more comprehensive and profound cognition.

The practice process based on "midwifery" provides a metacognitive experience for the next process. Metacognition guides students to activate metacognition knowledge by metacognition experience, and then understand metacognition experience by metacognition knowledge. Metacognition control then monitors and adjusts cognitive process according to information provided by metacognition experience, and then activates metacognition experience again and modifies metacognition knowledge for the next

adjustment of cognitive process [10]. Students are encouraged to monitor and adjust the subsequent learning process according to the information provided by metacognition experience, such as adjusting learning strategies and enhancing self-motivation. Think of the above process as a cycle, after each study, meta-cognitive reflection and adjustment are carried out, and the learning process is continuously optimized to form a closed loop of continuous progress.

What this teaching strategy constructs is a dynamic learning ecosystem full of vitality and vitality. Combining the essence of “midwifery” with the linkage requirements of SEL-CT, through the core engine of conversational learning, students not only deeply stimulate critical thinking sparks, but also cultivate their social emotional abilities in parallel. The introduction of metacognition provides students with tools for self-reflection and adjustment, endows them with the ability of self-driving and self-evaluation on the road of autonomous learning, and urges them to locate their growth point more accurately in each learning cycle, realizing double leap of learning efficiency and quality. This cyclical process builds a dynamic learning ecosystem, in which every conversation, every reflection, and every adjustment is a step toward higher levels of cognitive and emotional competence.

4.3. Evaluation and Feedback Mechanisms

In order to assess the development of social and emotional competence of medical students more comprehensively, a diversified feedback mechanism including student self-evaluation, peer evaluation, teacher evaluation, patient feedback and community evaluation should be established. This feedback should focus on both academic performance and actual performance in communication, teamwork, empathy, and so on. This feedback is collected and analyzed regularly to help students identify strengths and weaknesses in social and emotional abilities and develop targeted personal improvement programs. At the same time, educational institutions should use these data to continuously optimize teaching programmes and ensure the timeliness and relevance of training programmes.

5. Conclusion

The results of this study emphasize the indispensability of social and emotional competence training courses in medical education, suggesting that educators should pay attention to both the teaching of professional knowledge and the cultivation of clinical skills, and the development of students’ social and emotional competence in curriculum design. This shift aims to guide students beyond traditional learning, encouraging them to question, explore, and make rational and scientific decisions in complex and rapidly changing clinical practices. Therefore, medical education circles should explore and practice actively, and open up a new way to cultivate social emotional ability in critical thinking education mode. This requires us to innovate classroom teaching culture, adopt a series of innovative teaching methods, and construct an interdisciplinary curriculum system that closely fits the natural track of critical thinking development. Especially important is that we innovatively propose to adopt a critical thinking teaching model combining “midwifery” and metacognition, and implement it in combination with a comprehensive and detailed assessment feedback mechanism. This model not only draws on Socratic “midwifery”, that is, stimulating students’ active thinking and self-discovery through guided questions, but also integrates metacognition strategies, that is, helping students monitor and regulate their own thinking processes, so that students’ critical ability can be deepened. Through the implementation and follow-up evaluation of this model, the growth trajectory of medical students can be measured more comprehensively and systematically in the dimensions of social and emotional competence, providing more solid data support and improvement direction, and continuously improving the quality of medical education.

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