

# Exploration and Practice of Pathology and Pathophysiology Course Based on the "Five-Education Simultaneously" Concept

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**Abstract:** Against the background of the "Five-Education Simultaneously" concept and the construction of "New Medicine", this paper takes the course of Pathology and Pathophysiology as the research object, and systematically analyzes the problems in current teaching, such as complicated content, difficulties in constructing knowledge systems, the impact of artificial intelligence on medical education, disconnection between theoretical teaching and clinical practice, and a single evaluation mechanism. On this basis, a curriculum reform pathway centered on the all-round development of morality, intelligence, physical education, aesthetic education, and labor education is proposed and constructed. The systematic implementation of the "Five-Education Simultaneously" concept in Pathology and Pathophysiology helps improve the comprehensive quality of nursing students, promotes the coordinated development of knowledge, ability, and values, and provides a feasible teaching pathway for cultivating interdisciplinary medical talents to meet the strategic needs of "Healthy China".

**Keywords:** Five-Education Simultaneously; Pathology and Pathophysiology; Teaching Reform.

## 1. Introduction

With the further advancement of the "Healthy China" strategy and the continuous deepening of medical education reform, the training goal of medical talents is transforming from a single professional skill-oriented model to interdisciplinary talents with both moral integrity and professional competence, achieving all-round development. The Education Law of the People's Republic of China (revised in 2021) clearly stipulates that education should cultivate socialist builders and successors who develop morally[1], intellectually, physically, aesthetically, and through labor, pointing out the direction for higher education in the new era.

As a core bridge course connecting basic medicine and clinical medicine, Pathology and Pathophysiology plays a vital role in nursing education. Characterized by extensive content, abstract knowledge, and strong practicality, this course faces multiple dilemmas under the traditional teaching mode. Based on the "Five-Education Simultaneously" concept, this study explores a teaching model integrating moral guidance, intellectual empowerment, physical foundation, aesthetic infiltration, and labor practice, aiming to promote the coordinated development of professional knowledge and comprehensive literacy and provide references for nursing curriculum reform.

## 2. Current Teaching Situation of Pathology and Pathophysiology

Pathology and Pathophysiology integrates Pathology and Pathophysiology. Pathology explores etiology, pathogenesis, pathological changes, and outcomes of diseases. Pathophysiology focuses on metabolic rules and mechanisms during disease progression. Both disciplines reveal disease essence and support clinical diagnosis, treatment, and prevention.

For nursing students, major teaching challenges include:

1. Extensive and difficult content, leading to obstacles in systematic knowledge construction.
2. The impact and application of artificial intelligence in medical education.
3. Insufficient connection between foundational knowledge and advanced professional content.
4. Disconnection between theoretical teaching and clinical practice.
5. Single-dimensional evaluation system lacking comprehensiveness and objectivity.

Recent reforms such as BOPPPS[2], PAD[3], WUMER[4], PBL, and CBL models have improved teaching effectiveness[5]. Integrating ideological and political elements has enhanced value guidance. However, problems such as insufficient integration and poor sustainability remain[6]. Therefore, constructing a multi-dimensional, operable "Five-Education" integrated teaching model is necessary for the all-round development of nursing talents.

## 3. Implementation of the "Five-Education Simultaneously" Teaching Model

### 3.1. Moral Education

A course ideological and political case library is established and integrated into teaching. Cases are selected to combine professional content, career requirements, current hotspots, and educational values, cultivating patriotism, medical professionalism, scientific spirit, cultural confidence, and respect for life.

- Liver cirrhosis: Integrated with the story of Jiao Yulu to convey dedication and professionalism.
- Thrombosis: Integrated with the Yellow River Protection Law to enhance patriotism and environmental awareness.
- Tumor: Integrated with China's tumor registration system to strengthen social responsibility.

### 3.2. Intellectual Education

Intellectual education focuses on cognitive, thinking, and innovative abilities.

- Integrating scientific frontiers, latest clinical guidelines, and research progress.
- Applying AI in pathological diagnosis, personalized learning, intelligent assessment, and smart classrooms.
- Combining clinical cases to improve analytical and problem-solving abilities.

In the teaching process, frontier research results are appropriately introduced to broaden students' academic vision and cultivate scientific thinking. AI technology is used to realize personalized learning guidance, which can automatically adjust the difficulty and progress of learning content according to students' learning situation, effectively improving learning efficiency. Clinical case discussions enable students to apply theoretical knowledge to practical scenarios, enhancing their ability to analyze and solve clinical problems.

### 3.3. Physical Education

Guided by the "health first" concept, physical education enhances physical fitness, practical skills, and psychological endurance[7]. Experimental operations such as animal feeding and surgical simulation train hands-on skills, concentration, and physical stamina, helping students understand the physical and psychological requirements of clinical work.

Clinical nursing work requires long-term standing, high-intensity operation and good psychological quality. Through experimental operation and practical training, students can exercise their physical strength and endurance, and cultivate stable psychological quality in the process of repeated practice. At the same time, combined with health education knowledge, students are guided to pay attention to their own health, so as to better undertake clinical nursing work in the future.

### 3.4. Aesthetic Education

Aesthetic education improves aesthetic and humanistic literacy. Students draw pathological sections under microscopes, design mind maps for disease mechanisms, and appreciate medical humanities works, cultivating aesthetic perception and innovative expression.

Observing pathological sections under a microscope and drawing with red and blue pencils can help students accurately grasp morphological changes while feeling the structural beauty and regularity of life tissues. Drawing mind maps can sort out complex knowledge systems and cultivate logical thinking and creative expression. Integrating literary works and poetry related to medicine can enrich humanistic connotation and improve aesthetic taste.

### 3.5. Labor Education

Labor education is implemented through experimental practice and clinical probation, including animal feeding, laboratory management, and clinical assisting work, to cultivate diligence, responsibility, craftsmanship, and professional ethics[8].

Experimental animal feeding, laboratory cleaning and finishing help students establish correct labor concepts and experience the importance of rigorous and meticulous work. Clinical probation enables students to personally participate in nursing work, feel the hard work and value of medical work,

and cultivate the spirit of hard work and dedication. Through personal practice, students can truly understand the meaning of professional labor and enhance their sense of professional identity and responsibility.

## 4. Teaching Methods and Implementation Pathways

### 4.1. Optimized BOPPPS Model

Combined with Xuexitong, medical morphology digital platforms, and mind mapping to improve initiative and efficiency. In the BOPPPS process, the introduction of ideological and political elements, the application of intelligent tools and the design of interactive links are integrated to make the teaching structure more complete and the classroom atmosphere more active.

### 4.2. Case-Based Learning (CBL)

Clinical cases are used to guide progressive inquiry, analysis, summarization, and expansion. Real and typical clinical cases are selected to closely connect with clinical practice, stimulate students' interest in exploration, and improve their ability to apply knowledge comprehensively.

### 4.3. Task-Driven Teaching

Complex chapters are divided into progressive tasks to break down difficulties and promote mastery. Tasks are set from simple to deep, guiding students to complete learning objectives step by step, enhancing their sense of achievement and promoting independent learning.

### 4.4. Practical Teaching

Online-offline integrated practice includes pathological observation, mapping, animal experiments, and clinical probation. The online platform provides rich learning resources for preview and review, while offline practical operation focuses on cultivating hands-on ability, realizing the complementary advantages of online and offline.

### 4.5. Practical Teaching

In order to match the "Five-Education Simultaneously" model, a diversified evaluation system is constructed, including usual performance, practical operation, classroom performance, homework completion, comprehensive quality performance and final examination. The evaluation covers knowledge mastery, practical ability, professional attitude, humanistic literacy and labor performance, which can reflect the learning effect and comprehensive development of students more objectively and fairly.

## 5. Conclusion

This study constructs a "Five-Education Simultaneously" teaching model for Pathology and Pathophysiology, embedding ideological and political education, AI application, clinical cases, aesthetic cultivation, and labor practice into the whole teaching process. It effectively alleviates problems such as difficult content, theory-practice disconnection, and single evaluation, and promotes the coordinated development of professional ability and comprehensive quality.

This exploration responds to national educational policies and provides a replicable paradigm for medical curriculum reform. Future research will further optimize the evaluation system, strengthen teachers' integrated teaching capacity, and

promote high-quality, humanistic, and practice-oriented medical education. With the continuous promotion of education reform, the five-education integrated teaching model will be further improved and play a greater role in the cultivation of medical talents.

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