

# Analysis of the Exploration of Hematology Integration Education Model Guided by “Social Learning Theory”

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**Abstract:** Diseases of the blood system are highly complicated and involve many aspects. This article aimed to put forward the necessity of integrating quality and professional education, the necessity of learning logic, and the importance of establishing an integrated medical education model when teaching about blood system diseases. According to the requirements of the new medical science, this article puts forward the integration of an “online + offline + clinical” medical education mode based on the social learning theory and a learning evaluation mode based on medical literacy. The fundamental task of cultivating human beings into clinical medical talents with professional ethics, independent learning abilities, interpersonal communication abilities, complex problem-solving abilities, innovative consciousness, and critical thinking was implemented. This article aims to propose an improved construction plan to create a new and improved teaching system in medicine.

**Keywords:** Hematology; Social learning; Fuse; New medicine

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## 1. Introduction

The hematological system is one of the major systems of the human body, and malignant hematological disorders such as leukemia, lymphoma, and multiple myeloma are major diseases that pose great danger to human health. Hematology is a compulsory course for undergraduate students studying clinical medicine. The goal is to help students master the etiology, pathogenesis, clinical manifestations, diagnosis, and prevention of common and frequent diseases in hematology, and to lay a foundation for clinical work in hematology and other clinical disciplines in the future.

Since the establishment of the department, we have been responsible for teaching hematology and internal medicine diseases. In 1980, we started to teach undergraduate students in this discipline, and in 1998, we started to teach postgraduate students in this discipline. Throughout the years, we have continuously improved and perfected the medical education model of “online + offline + clinical” under the guidance of the social learning theory.

## 2. Analysis of teaching pain points

### 2.1. Lesser integration of quality education and professional education

Quality education and professional education are both important, but there are obvious differences between the two. As shown in **Table 1**, traditional teaching mainly prioritizes the transfer of knowledge and skills through training, which inevitably results in the students obtaining high scores but is correlated with low performance and heavy burden. There is insufficient emphasis on education in medical humanities, the importance of a doctor's benevolence in saving lives, and the courage to bear the responsibility of professionalism, resulting in tension between doctors and patients and low social satisfaction. The deep integration of both quality and professional education is imperative.

**Table 1.** Differences between quality education and professional education

	Quality education	Professional education
Mission of higher education	To pass on and develop human civilization	To impart and innovate human technology
Assessment	Value judgment (no standard answer)	Knowledge judgment (standard answer)
Learning strategies	Consistent- "conscience" (additive)	Unlimited knowledge (subtraction)
Teacher-student	Teaching value judgments	Teach thinking

### 2.2. The logic of the textbook is not the logic of learning

Learning is a process of constant inquiry, analysis, and mastery-based on survival and curiosity, and is a comprehensive process. Traditional teaching is often a linear and dull process. As the new generation grows up in the era of the internet, traditional classroom settings are no longer attractive, hence incorporating technology and the internet to make learning interesting may be the answer to this issue. The differences between textbook logic and learning logic are shown in **Table 2**.

**Table 2.** Difference between textbook logic and learning logic

	Textbook logic	Learning logic
Broad organization	Subject knowledge system	Student cognitive system
Introduction to diseases	Mature structural framework	Reasonable divergence of thinking
Teaching-learning	Isolated knowledge points (substitutable)	Layers of progression from shallow to deep (high level of participation)
Applicability	Professional reference guide (standardized patients)	Integration into the logic of life (close to reality)

## 3. Innovative initiatives in teaching and learning

### 3.1. Teaching objectives and contents

Nowadays, the concept and model of education have been transformed <sup>[1]</sup> from teacher-centered to student development-centered, focusing on the needs, goals, and environment of students' growth. We have done some thinking and exploration in the following aspects.

Clinical medicine is both a practical science and an art that deals with people and involves a degree of uncertainty. The ultimate goal of clinical medicine is to educate and produce professional doctors. The hematological system is known to have the following characteristics: (1) Diseases of the hematological system are very specialized and have low diagnosis and treatment rates in primary health care units. (2) Hematological diseases are a cutting-edge discipline, and our country has made great contributions to the international field of

hematological disease diagnosis and treatment. (3) It involves a wide variety of aspects, and the hematological system's hemorrhage and coagulation involves almost all systems of the organism, and it is one of the key indicators for the diagnosis and treatment of many other systemic diseases.

The teaching objectives and content of hematological system diseases include: (1) Cultivation of medical quality by adhering to the school motto of "Virtue and Excellence, Benevolence and Love for the World", and the school spirit of "Self-improvement, Integrity, Newness, Respectfulness, Diligence, Benevolence and Harmony." This is also done by adhering to a teaching style that promotes uprightness and erudition to build people and an academic style that focuses on diligent learning and good thinking, knowledge, and action. By combining new medical science and the aforementioned teaching ethics, clinical medical personnel with professional ethics, independent learning abilities, interpersonal communication skills, the ability to solve complex problems, innovative awareness, and critical thinking can be cultivated <sup>[2]</sup>. (2) Understanding professional knowledge on the diagnosis of diseases in the general theory of hematology anemia and hemorrhage is important, especially regarding the etiology, clinical manifestations, diagnosis, differential diagnosis, and treatment of hematological diseases, such as aplastic anemia, leukemia, lymphoma, primary thrombocytopenia, etc.; and the correct reading of routine blood tests, bone marrow smears, flow, genes, chromosomes, and other commonly used auxiliary tests. (3) Training in professional skills to establish a comprehensive, systematic, and correct medical history and physical examination, to propose targeted auxiliary examinations based on symptoms and signs, and to make a reasonable preliminary diagnosis and propose a treatment plan. Students will be able to perform routine operations of hematology (bone marrow aspiration biopsy) under the guidance of teachers.

### **3.2. Teaching activities, scenarios, and methods**

Blended teaching is often divided into three segments: online independent learning of knowledge points (video) by students before class; offline seminars, case presentations, and interactions; and clinical extended learning and test question banks. Such blended teaching greatly improves the effectiveness of traditional teaching, but some of its drawbacks have also been found in practice.

#### **3.2.1. Online teaching**

During the pandemic, online teaching became the mainstream learning method for students. Even after the pandemic, online teaching still has great potential and prospects for development. The future development of the field of education on a larger, broader, and deeper level by relying on the Internet is unavoidable. This way, not only can the constraints of resources on education be reduced, but the marginal cost of educational products can also be reduced. Given the bigger picture, online education has great application and commercial value <sup>[3]</sup>, as shown in **Table 3**.

#### **3.2.2. Offline teaching**

Education is an industry that requires interaction between teachers and students. In online learning, teaching and learning are always separated by two screens and this is not the ideal state of education. Offline education in the classroom allows students to communicate directly with the teacher, and the teacher can adjust their teaching methods based on the classroom's atmosphere, and the degree of concentration of the students. Close interaction between teachers and students can create a healthy social environment for learning, and provide physical and mental benefits. Offline education will not be completely replaced by online education due to its superiority. As such, many courses integrate learning logic, PBL (Problem-Based Learning), CBL (Case Based Learning), BOPPPS (Introduction - Learning Objectives - Pre-test - Participatory Learning - Post-test - Summary), flipped classroom, integrated teaching, formative evaluation and other teaching tools: (1) Classroom teaching uses stories to and real-life cases to enhance students' interest and integrate the teaching of medical humanities. By

**Table 3.** Advantages, disadvantages, and countermeasures of online teaching and learning

Disadvantages	Countermeasures
Online teaching resources vary	Integrate information retrieval courses to enhance information literacy
Polarization of student learning outcomes	Integrate quality education to improve self-management ability
Difficulty in deep learning	Carry out teamwork tasks and rely on big data analysis
Lack of interaction between teachers and students	Strengthen course management and information platform communication
Limited by network conditions	Study pass, nail live, Tencent conference, etc.
Lack of standardized evaluation system for online teaching	Emphasis on the examination of thinking and logic
Students are prone to anxiety	Positive guidance to improve teachers' internal teaching skills
Advantages	
Learn anytime, anywhere, wide audience; can watch and learn repeatedly; a variety of teaching resources and teaching methods; flexible learning tailored to the needs of the students; good teacher-student relationship; higher student initiative	

using diagnostic ideas as a guide, teachers and students can interact and make a preliminary diagnosis to put forward a reasonable treatment plan based on the signs and symptoms of targeted auxiliary examination. (2) Integrated teaching integrates life experiences to draw meaningful connections. Medical students are taught the basic knowledge and concepts before diving deeper into sub-systems and sub-specialties. Internal medicine starts by integrating a small number of disciplines that are easy to work with. As the hematological system and the immune system are closely related, integration courses on this topic have been carried out in the physician excellence class. (3) PBL courses implore a traditional education model where students learn by applying learned knowledge to solve encountered problems. Internal medicine, including hematological diseases, is included in the PBL course<sup>[4]</sup> where the teacher participates by acting as a guardian. By using real cases as examples, students acquire knowledge through active learning, exploration, and practice through the process of solving problems.

### 3.2.3. Clinical teaching

Clinical teaching is a bridge between medical theory and practice and is an important part of the teaching process. Through clinical teaching, students can apply their theoretical knowledge in practice to consolidate and improve the basic theories and professional knowledge they have learned and master the basic diagnosis and treatment techniques. The student's clinical thinking and ability to analyze problems and work independently can also be cultivated. Good doctors with excellent medical skills and high medical ethics can be cultivated by allowing patients to gain experience working in real clinical settings and serving patients.

Clinical apprenticeship is an important part of medical teaching and is a beneficial supplement to theoretical teaching. Some students view clinical apprenticeship as a form of visiting hospitals. Therefore, it is necessary to increase the participation of trainee doctors and activate their interest in learning by combining various teaching methods, to cultivate and enhance the students' clinical thinking ability of analyzing and solving problems. Additionally, professional ethics education should be incorporated throughout the apprenticeship. Our department explored the application of PBL combined with WeChat in the teaching of hematology<sup>[5]</sup> and found that in the apprenticeship of hematology, the PBL teaching mode not only deepens the mastery of professional theory by medical students but also cultivates clinical thinking abilities.

Clinical internship is the process of combining theoretical knowledge with clinical practice. It signifies the change of roles from student to doctor, along with changes in thinking, work attitude, responsibility,

psychological quality, and many other aspects. Hematology internal medicine is a big field that requires strong professionalism and fast updating of knowledge involving immunology, genetics, molecular biology, and other related contents. Hence, students generally feel bored and find it difficult to remember all the content that was taught. Our department has proposed measures to solve this problem from various aspects with specific implementation methods, as shown in **Table 4** <sup>[6]</sup>.

**Table 4.** Clinical placement measures and modalities

Measures	Mode
Mentorship	Vertical integration of clinical practice models - continuity of teaching and learning
Medical record revision	Processing and organization of information - hypothesis-based information acquisition; curing steps to develop habits Self-study model
Self-study model	Clinical thinking training - understanding, thinking, expressing, reflecting
Teaching enhancement	Clinical practice - admission education, mini-lecture, case discussion, teaching rounds
Comprehensive assessment	Types of assessment - discharge examination, skills assessment, medical quality assessment, medical education cloud platform management

Many patients have an increased concern about personal privacy and awareness of rights; hence they might refuse to be operated by medical students. Through the implementation of virtual simulation practice, internal medicine has established a clinical skills training center with advanced clinical teaching simulation equipment and has greatly improved the teaching conditions and effectively ensured the development and implementation of professional skills training especially in bone marrow aspiration. The teaching goal based on closed-loop training, habit cultivation, knowledge, and practice has been fully realized. Our students have won many awards in clinical skills competitions among college students in higher medical schools nationwide <sup>[7]</sup>.

### 3.3. Teaching evaluation

With the continuous development of medical teaching concepts, the purpose of medical teaching evaluation is not only to assess the performance of medical students but also to focus on the feedback and continuous improvement of students' performance. Comprehensive application of diagnostic evaluation (learning situation analysis), formative evaluation (feedback during the learning process), summative evaluation (judgment at the end of learning), procedural evaluation (web-based), and a variety of evaluation tools were used. Through continuous evaluation and feedback, network-based evaluation was constructed relying on big data <sup>[8]</sup> to help learners make meaningful interpretations and understand their personal academic career development. The evaluation of medical quality is a difficult part of the assessment due to the lack of clear evaluation standards, hence we conducted a comprehensive assessment using questionnaires from teachers, classmates, healthcare professionals, and patients; and continuous observation by tutors to assess their performance in the whole healthcare team.

### 3.4. Teacher training

A teaching qualification is the basic requirement for teachers to be appointed, while their teaching ability and management reflect the provided teaching quality. As trainers of future talents, teachers should not only influence students through the knowledge they possess, but also through their personality and moral strength, and influence students through their words and good deeds. By relying on the Department of Internal Medicine, the Department of Hematology has provided systematic training to clinical teachers and formed a teaching

team, and several teachers have won awards in teaching competitions and gained positive comments from students.

### **3.5. The “online + offline + clinical” medical education model oriented by the social learning theory**

Human beings are social animals and it is difficult for people without social skills to have a successful life. Social learning exists to break the spatial limitations of learning that are not confined to the classroom but extend into the community, through clinical observation, practice, experience, and evidence-based learning <sup>[9]</sup>. The training and development of a good doctor never takes place in a college, but instead in a hospital with the patient from start to finish of the treatment.

## **4. Further construction plans and reflections**

According to the requirements for the construction of the new medical department, we will further improve the “online + offline + clinical” integrated education model based on the social learning theory, and further innovate the learning evaluation methods and techniques oriented by medical literacy. After integrating and summarizing the teaching experience, we will further promote the model and establish a new standard curriculum system. The core values of virtue and excellence, benevolence, and love for the world will be conveyed from the classroom to society to cultivate clinical medical talents with a correct outlook on life and values and possess a great sense of love and dedication.

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## **References**

- [1] Yin K, Yao F, Yu K, et al., 2017, Research on the Construction of High-Quality Resource Sharing Courses in Higher Medical Schools. *Western Quality Education*, (1): 104.
- [2] He G, Xing H, Yuan K, et al., 2022, Exploration of Civic and Political Practice in Hematology Course. *Sichuan Journal of Physiology*, 2022(7): 1308–1309.
- [3] Cheng M, 2020, Education Industry Financing Doubled in the First Half of the Year, Online K12 Track is Favored, *Beijing Business News*, viewed 23 January, 2024, <https://m.xinnet.com/mweb/64/345289.html>
- [4] Tang J, Shi M, Huang C, et al., 2019, The Application of Wechat Joint PBL Teaching in General Medicine Training. *Continuing Medical Education*, 33(10): 17–19.
- [5] Tong J, Jing L, Yuan K, et al., 2019, Application of PBL Combined with Wechat in Clinical Apprenticeship of Hematology. *Medicine and Health*, 2019(4): 13–15.
- [6] Guo J, Yang Z, Feng J, et al., 2022, The Application of SP Pedagogy Supported by Wechat in Enhancing Interns’ Doctor-Patient Communication Training. *Mother and Child World*, 2022(23): 227–229.
- [7] Liao B, 2017, Seizing the Ideological “Soul” to Lead the Rise of Colleges and Universities. *Sichuan Party*

Construction (City Edition), 2017(6): 34–35.

- [8] Fan X, Zhou Q, 2023, Application and Evaluation of Network PBL Teaching in Inner Science Teaching. *Modern Vocational Education*, 2023 (19): 61–64.
- [9] Qiao P, Dong Y, 2023, A Study on the Impact of Social Learning on Students' Learning Effectiveness - A Meta-Analysis Based on 47 Experimental and Quasi-Experimental Studies. *Journal of Educational Science*, Hunan Normal University, 2023(1): 51–65.

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