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

Li Jing, Guangfeng He, Ji-Rui Tang*

Department of Hematology, The Affiliated Hospital, Southwest Medical University, Luzhou 646000, Sichuan Province, China

*Corresponding author: Ji-Rui Tang, 44732907@qq.com

Copyright: © 2024 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: 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

Online publication: February 26, 2024

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>
<thead>
<tr>
<th>Table 1. Differences between quality education and professional education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality education</strong></td>
</tr>
<tr>
<td>Mission of higher education</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
<tr>
<td>Learning strategies</td>
</tr>
<tr>
<td>Teacher-student</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Table 2. Difference between textbook logic and learning logic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Textbook logic</strong></td>
</tr>
<tr>
<td>Broad organization</td>
</tr>
<tr>
<td>Introduction to diseases</td>
</tr>
<tr>
<td>Teaching-learning</td>
</tr>
<tr>
<td>Applicability</td>
</tr>
</tbody>
</table>

3. Innovative initiatives in teaching and learning

3.1. Teaching objectives and contents

Nowadays, the concept and model of education have been transformed \(^1\) 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 

(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, 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
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 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 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.

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

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.

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 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. 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.

Funding

Southwest Medical University 2023 Education and Teaching Reform Research Project (No. 27)

Disclosure statement

The authors declare no conflict of interest.

References


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