

# Exploration and Practice of Improving the Quality of Surgical Clinical Skills Training Courses

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## ABSTRACT

Taking the surgical clinical skills training course as an example, based on the cognitive development laws of students, closely adhering to the characteristics of surgical clinical training courses, ideological and political education in the course runs through the entire process; Optimize course design, hierarchical teaching content, and divide course content into four major modules: medical record writing, surgical aseptic technology, basic surgical operations, and cardiopulmonary resuscitation operations; Innovate teaching methods and enrich teaching methods; Reform assessment and evaluation, comprehensively develop education, and provide strong reference for improving the effectiveness of surgical clinical skills training teaching reform and supporting the construction of "Double First Class".

## KEYWORDS

Surgical Clinical Skills Training; Teaching Reform; Innovation Capability; Double First Class.

## 1. INTRODUCTION

Surgical Clinical Skills Training is an independent training course that focuses on basic surgical clinical skills and has strong operability. It covers the basic surgical skills that medical students must master. According to the sub items of clinical skills by the World Health Organization (WHO) Expert Committee and the National Medical Examinations Commission (NBME) in the United States, as well as the training goals for clinical medical professionals in China, clinical medical students should have the ability to perform clinical operations, language expression and communication skills, clinical thinking ability, and professional attitude<sup>[1]</sup>. However, for a long time, medical majors have been limited by educational concepts, teaching models, teaching methods, and teaching conditions, neglecting the cultivation of abilities and qualities, and not paying enough attention to the construction of practical training curriculum systems. Therefore, based on the characteristics of our school's students and after several years of exploration and practice, we have effectively reformed and innovated the teaching content and mode of surgical clinical skills training courses<sup>[2-4]</sup>.

## 2. THE IDEAS AND STRATEGIES FOR THE REFORM OF EXPERIMENTAL TEACHING IN SURGICAL CLINICAL TRAINING COURSES

### 2.1. Adhering Closely to the Characteristics of Surgical Clinical Training Courses, Ideological and Political Education is Integrated Throughout the Course

With the concept of "infiltrating knowledge points and moistening things silently" as the ideological and political concept of the course<sup>[5]</sup>, based on industry and job requirements, as well as the current situation of scientific development in China and abroad, combined with the actual teaching of surgical clinical skills training courses in our school, and based on professional characteristics, through investigation and research, literature review, and collective discussion, this course focuses on medical ethics, professional ethics, and professional ethics. The socialist core values and the education of excellent traditional Chinese culture are deeply rooted in the ideological and political elements of the curriculum in the field of external sciences. By relying on the fixed resources of the curriculum and flexibly applying relevant resources, the ideological and political elements are silently integrated into various aspects of surgical clinical skills training teaching (see Table 1 for the ideological and political methods and content of the curriculum).

**Table 1.** Course Ideological and Political Methods and Content

| Method                                 | Integration points of ideological and political education in the curriculum | Concrete content  |
|--|---|---|
| Based on courses<br>Solidify resources | Development of surgical disciplines   | History of scientific development both domestically and internationally   |
|  | Advanced surgical techniques  | Major innovative technological achievements in surgical technology  |
|  | Typical clinical cases  | Patients who can cooperate, partially cooperate, do not cooperate, or apply new technologies  |
|  | Student assessment and evaluation   | Classroom teaching, in school practice, clinical assignments, final exams   |
| Flexible application                   | Important Speech Spirit   | Important Speech on Teacher Ethics and Medical Conduct  |
|  | National policy documents   | Healthy China construction, disciplines, majors, industries, etc  |
|  | The deeds of advanced figures   | Advanced deeds of surgical experts such as Fu Peibin, Qiu Fazu, and Ling Feng   |
|  | The great spirit of fighting against the epidemic                           | Putting life first, uniting the whole country, sacrificing life and forgetting death, respecting science, and sharing destiny with others |
| Related resources                      | Examples of doctor-patient disputes   | Medical disputes related to surgical techniques and diagnosis and treatment   |

### 2.2. Optimizing Course Design and Hierarchical Teaching Content

Surgical clinical training courses are an important component and indispensable foundation of surgery, and a key link in the combination of surgical theory and practice for medical students. They

play a very important role in promoting the development of clinical surgical diagnosis and treatment technology, as well as the cultivation of surgical professionals. In this course, we follow the principle of easy first, difficult later, and shallow to deep. Based on the cognitive development laws of students, we design the content of surgical clinical training courses in a hierarchical manner from simple to deep through the common elements and internal connections of knowledge. The specific modules are: medical document writing such as medical records, sterile surgical techniques, basic surgical operations, and cardiopulmonary resuscitation operations (see Table 2).

**Table 2.** Clinical Training Courses in Surgery

| Teaching module                                  | Training content   | Class hour |
|--|--|------------|
| Writing medical documents                        | Writing various medical documents such as medical records              | 2          |
| Surgical asepsis                                 | scrubbing  | 2          |
|  | Wearing and removing sterile surgical gowns and wearing sterile gloves | 2          |
|  | Disinfection of skin in the surgical area                              | 2          |
|  | Lay sterile tissue sheets  | 2          |
| Essential Surgical Skills                        | Surgical instrument identification and application                     | 2          |
|  | Tie a knot   | 1          |
|  | Incision, separation, and hemostasis                                   | 2          |
|  | Suture   | 2          |
|  | Dressing change  | 2          |
|  | clearing   | 1          |
| Cardiopulmonary cerebral resuscitation procedure | External chest compression   | 1          |
|  | The Use of Automatic External Defibrillation (AED) Devices             | 1          |

### 2.3. Innovate Teaching Methods and Enrich Teaching Means

On the basis of retaining the advantages of traditional face-to-face teaching, online learning is added to fully reflect the teaching philosophy of "two lines, three sections, and five rings", which is led by teachers and students as the main body<sup>[6-7]</sup>. Online and offline hierarchical learning is carried out before, during, and after class. In classroom teaching, five stages are adopted: scenario introduction, autonomous learning, cooperative exploration, guidance and induction, and effective training, to cultivate students' autonomous learning Teamwork and innovative thinking. The surgical clinical skills training course will send experimental materials, such as experimental lecture notes and preview materials, to students in advance through WeChat groups. Students can use fragmented time to preview, and set online mandatory learning measures for some key content, such as experimental safety precautions. Students can browse online resources and test scores, which are linked to the final course grades, to supervise their learning. In addition, we have made some routine surgical experimental operations, such as aseptic techniques and wearing and removing isolation gowns, into online resources. After students learn online and combine with the teacher's demonstration, they can solidly master basic practical training skills to solve the problem of poor basic experimental operation ability caused by reduced experiments. At the same time, it can also cultivate students' self time planning ability. After class teachers upload PPT in the course group, pushing social hot topics, extracurricular supplements, and other content to timely understand students' learning dynamics,

answer their questions, help students acquire interdisciplinary knowledge from multiple perspectives, spaces, and times, and significantly improve the quality of practical training teaching.

## 2.4. Reform, Assessment and Evaluation, Comprehensive Development and Education

Evaluate teachers and students through both online and offline methods, which are divided into professional teaching and ideological and political education<sup>[8]</sup>. The evaluation of students focuses on both knowledge objectives, ability objectives, and literacy during the experimental process. Evaluate the growth potential of goals, while also focusing on the effectiveness evaluation of ideological and political education. A scientifically sound evaluation mechanism helps teachers obtain feedback information on experimental teaching, reflect and adjust their teaching behavior, and improve their professionalism.

Teaching and ideological and political education level; At the same time, it enables students to understand themselves, establish confidence, enhance teamwork skills, enhance practical and scientific research innovation abilities, shape correct values, and achieve comprehensive development and education during the practical training process.

## 3. REFORM EFFECTS

The reform of the surgical clinical skills training course has improved and innovated multiple experimental contents. Through the study of this course, students can effectively strengthen their understanding of surgical clinical skills training practice, improve their literature research and reading abilities, possess basic thinking and operational skills in surgical experiments, and master the ability to comprehensively apply multiple experimental techniques to solve problems and analyze results. Currently, good teaching results have been achieved. Compared with before and after the reform (Table 3), it was found that students' learning interest and research enthusiasm have significantly improved, and the failure rate of student course assessment is 0. Although the reformed course has achieved a series of results, we believe there are still some shortcomings. In the future, we will continue to deepen teaching reform, improve the integration design of surgical clinical skills training theory and experimental courses, enhance the integration of online and offline teaching, expand virtual simulation links, deeply explore ideological and political content, optimize assessment methods, and other aspects of reform, further improving the quality of surgical clinical skills training experimental teaching.

**Table 3.** Comparison of effects before and after the reform of surgical clinical skills training courses

| Assessment   | Before the reform |  | After the reform |  |
|--|-------------------|--|------------------|--|
|  | Score             | Evaluate   | Score            | Evaluate   |
| Student evaluation                                 | 85.78             | The course is dull and the interest in learning is low   | 91.26            | Reasonable course design and close connection between teaching, research, and practice |
| peer review  | 86.38             | Single teaching mode and slow knowledge updating speed   | 93.24            | Diverse teaching methods and rich classroom content                                    |
| Expert evaluation                                  | 83.26             | The experimental content is single, and the exploration of ideological and political content is insufficient | 90.28            | The course content is hierarchical and well-designed                                   |
| Participation rate in scientific research projects | 36.25             | Students have low sense of identity and weak interest in scientific research                                 | 85.36            | Students have strong professional identity and strong interest in scientific research  |

## 4. SUMMARY

After continuous attempts and efforts, surgical clinical skills training has become more reasonable in course design, breaking the problem of disconnection from scientific research practice or weak basic experimental operation ability of students caused by excessive emphasis or weakening of confirmatory experiments in the past. By increasing the difficulty of classic experiments, integrating them into the social context, stimulating students' interest in basic practical training, and integrating emerging new technologies and theories into practical teaching, students can broaden their horizons. Adopting a blended online and offline teaching approach, and actively carrying out the second classroom, the problem of insufficient class hours has been solved, achieving effective integration of teaching, research, and practice. Fully tap into the ideological and political elements of this course, carefully design the ideological and political aspects, and guide students to establish correct scientific research and values while ensuring the quality of professional teaching.

In summary, the reform has effectively improved the teaching quality of surgical clinical skills training courses. At the same time, the surgical clinical skills training experiment, as a representative of clinical training courses, provides ideas for the reform of practical teaching in other medical courses in universities.

## CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

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