

Evaluation of the Effect of Integrating Ideological and Continuous Improvement Measures of Integrating Curriculum Ideology & Politics into Physiology Teaching

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Abstract: As the "university hall" for cultivating the builders of the socialist cause, colleges and universities undertake the important task of cultivating young students into newcomers of the era who are worthy of great responsibilities. In the professional education of colleges and universities, integrating the content of ideological and political education and realizing the collaborative education of intellectual education and moral education is an important requirement of the concept of "curriculum ideology and politics" in the new era, and there is no perfect evaluation mechanism for how to evaluate the implementation effect of curriculum ideology and politics. This paper combines the five basic steps of physiology to implement curriculum ideology and politics, namely, determining the goals of ideological and political education, digging deep into the elements of ideological and political education, clarifying the form of ideological and political implementation of the curriculum, determining the content and evaluation method of curriculum ideological and political assessment, and analyzing and improving the effect of effect evaluation, focusing on exploring and improving the assessment and evaluation methods of the implementation effect of curriculum ideological and political implementation, analyzing the shortcomings of the feedback from the ideological and political assessment and evaluation of the curriculum, and providing the correct direction for the continuous improvement of ideological and political teaching in the next step.

Keywords: Curriculum ideological and political education, Physiology, effect evaluation.

1. Introduction

On March 18, 2019, General Secretary Xi Jinping, during a symposium with teachers of ideological and political theory courses at the school, emphasized the need to "adhere to the unity of values and knowledge, integrating the guidance of values with the imparting of knowledge." This sets forth a new and higher requirement for the ideological and political theory courses in universities to play a leading role in nurturing individuals [1]. In May 2020, the Ministry of Education issued the "Guidelines for the Construction of Ideological and Political Education in Higher Education Courses," which emphasized the requirement to "comprehensively promote the construction of ideological and political education in courses." It clearly defined the significant role of specialized courses as the fundamental carriers of ideological and political education in course construction. Integrating ideological and political elements into professional education in universities is a crucial measure to implement the cultivation of students' moral character. The practice of ideological and political education in courses requires the application of scientifically effective methods, aiming for the organic integration of ideological quality education with the imparting of specialized knowledge and skills. Currently, the implementation of ideological and political education in courses involves five basic steps (Figure 1): (1) defining the objectives of ideological and political education; (2) exploring the elements of ideological and political education in courses; (3) specifying the forms of implementing ideological and political education in courses;

(4) determining the content and evaluation methods of ideological and political education in courses; and (5) evaluating the effects, analyzing the results, and making improvements. Many universities have made significant attempts in advancing the teaching reform of "ideological and political education in courses," but these efforts are primarily concentrated in the first two steps [3-5]. Regarding the implementation forms and effectiveness evaluation of ideological and political education in courses, there are still shortcomings, particularly manifested in the incompleteness of content evaluation, lack of clarity in evaluation standards, insufficient dimensions in evaluation criteria, and unclear purposes of ideological and political education evaluation [6-9].

Against this background, this study focuses on students majoring in Medical Imaging Technology at Chengdu Neusoft University. It integrates socialist core values into the teaching of different chapters in physiology, guiding students to make correct value choices with the aim of enhancing students' enthusiasm for learning and professional confidence. Finally, the effectiveness of ideological and political education in courses is evaluated, and the feedback results are analyzed and summarized, providing valuable experience for the next round of teaching.

2. Ideological and Political Design and Educational Goals of Physiology Courses

Physiology is one of the crucial disciplines in life sciences, focusing on the physiological functions and life processes of

living organisms. The course content primarily encompasses the structure, function, regulation, and adaptability of various systems and organs in the human body, serving as a foundational course for related fields such as medicine. To enhance the value-oriented role of this course and lay the groundwork for subsequent professional courses, instructors delve into ideological and political focal points. Clear objectives are established for both professional knowledge and qualitative skills. The introduced ideological and political content includes:

(1) Historical development of physiology: Integrating the developmental history of physiology, the course introduces the life stories and achievements of physiologists to inspire a spirit of persistent exploration and a commitment to innovative scientific research.

(2) Connection with Chinese politics and development: Aligning the course knowledge with the current political and developmental situation in China, the curriculum bridges professional knowledge with policies, regulations, and real-life scenarios. This approach aims to educate students for a comprehensive understanding of the national situation and cultivate political identity and literacy among Chinese youth.

(3) Relevance to current healthcare issues: Incorporating current medical and health-related events and cases that are socially relevant, the curriculum aims to stimulate student interest, guiding them to enhance personal qualities such as patriotism, party loyalty, dedication to their professions, and selfless contribution[10].

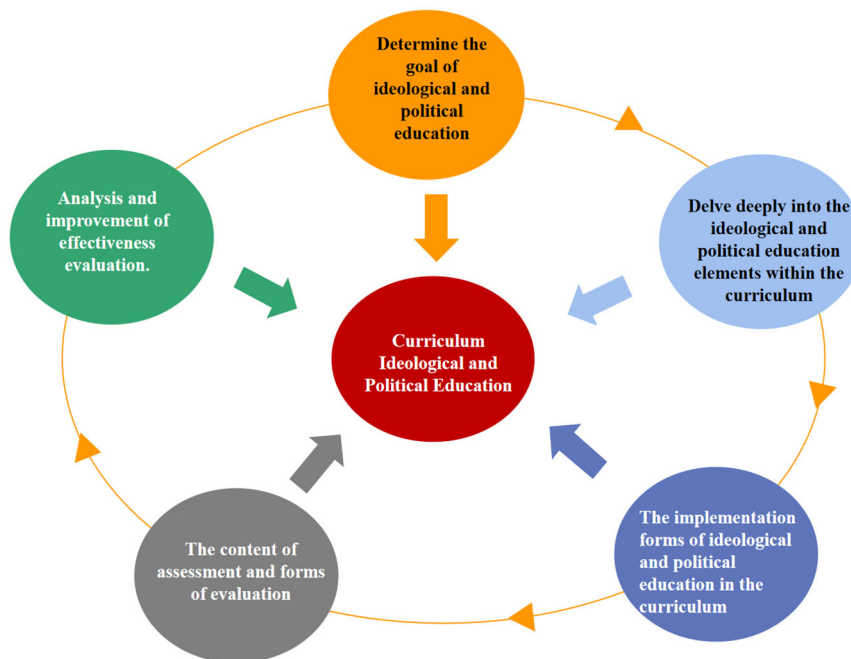


Figure 1. Five basic steps for the ideological and political implementation of the curriculum

3. The Form of Implementation of Ideology and Politics in The Physiology Course

In the process of teaching, conducting ideological and political education should use professional knowledge as a carrier and guide students in a subtle and unobtrusive manner. The main implementation forms include the following four methods:

(1) Flipped classroom approach: Taking the content of Chapter Two, "Cellular Transport Mechanisms," as an example, the instructor will post questions in advance on the learning platform (e.g., What are the ways of transmembrane substance transport in cells? In conjunction with the completion of the "Hong Kong-Zhuhai-Macao Bridge" in China, what significance and inspiration does it have?). Students will preview and research related materials based on these questions, and in the classroom, a random selection of students will answer questions related to professional knowledge. They will also share insights gained from the completion of the "Hong Kong-Zhuhai-Macao Bridge." Peer evaluation among students will take place, and the teacher will provide appropriate corrections and supplements to deficiencies. This approach not only enables students to learn professional knowledge but also educates them on

understanding the country from multiple perspectives.

(2) Discussing ideological and political aspects before teaching content: Using the content of Chapter Nine, "Retinal Function," as an example, a case study method will be employed. Taking "Causes and Correction Principles of Myopia" as a case, the instructor will explain relevant professional knowledge about visual organs and retinal function. This will lead students to discuss how to reduce the incidence of myopia. First, students will be guided to analyze the causes of myopia using physiological knowledge, leading to the introduction of "retinal function." Then, in conjunction with the "Notice on Issuing the 14th Five-Year National Eye Health Plan by the National Health Commission," students will be guided to analyze the background of the eye health plan, cultivating the political identity literacy of Chinese young students, helping them establish correct values, and thus achieving the purpose of promoting students' thinking and learning through ideological and political education in the curriculum.

(3) Interweaving ideological and political content while teaching specific knowledge points or cases: Taking the content of Chapter One, "Developmental History of Physiology - William Harvey Proposes the Blood Circulation Theory," as an example, students will be introduced to how William Harvey discovered blood circulation. On the one

hand, this conveys professional knowledge to students. On the other hand, combining the life stories and achievements of physiologists, students will be guided to analyze the deep-seated reasons for the achievements. This aims to stimulate students' spirit of scientific research, encouraging them to explore, learn from others, imagine boldly, and conduct meticulous scientific research. It also guides students on how imaging technicians can innovate technically and contribute to the country, prompting deep reflection and achieving the goal of fostering virtue and nurturing individuals.

(4) First teaching the content, then summarily presenting ideological and political content in conjunction with knowledge points: Taking the content of Chapter Six, "Functions of Bile," as an example, professional knowledge will be taught first, including the nature and components of bile, the functions of bile, bile secretion and excretion and its regulation, and the function of the gallbladder. Finally, students will use physiological knowledge to explain "why not eating breakfast for a long time can easily lead to the formation of gallstones," guiding students to follow the activity rules of the biological clock, promote healthy eating habits, and enhance physical fitness.

4. The assessment content and evaluation methods of course ideology and politics

The assessment content of ideological and political education in courses should not only include students' professional knowledge but also incorporate ideological and political education content. It should use professional knowledge as a carrier to achieve a high degree of integration between professional knowledge and values shaping. In terms of evaluation methods, currently, the emphasis is mainly on traditional classroom teaching by teachers, where students passively receive information. It is challenging to assess whether students truly agree with the ideological and political content received in the classroom. The assessment forms, such as mid-term or final exams, also struggle to evaluate whether students genuinely embrace the values education covered in the course or simply choose correct answers for the sake of grades [11]. Given these challenges, the discipline of physiology adopts a combined approach of positive and reverse evaluations in the assessment of ideological and political education within the curriculum.

Positive Evaluation: Taking inspiration from the assessment methods proposed by Zhou [12] and others, improvements have been made. Specifically, a unique subjective question, not contributing to the overall grade, is introduced in the final exam. This question integrates both professional knowledge and ideological and political elements. The purpose is to examine whether students genuinely accept ideological and political education embedded in their understanding of professional knowledge or if they are merely answering for the sake of scores. An example question selected is "Decreased Gas Exchange Function in the Lungs—How to Effectively and Correctly Diagnose COVID-19 Pneumonia," incorporating elements of epidemic prevention into medical

education. It introduces the ideological and political element of "hardcore counterattack" inherent in the development of domestic CT. The question is divided into four sub-questions: the first two mainly assess students' proficiency in professional knowledge, while the latter two focus on emotions, attitudes, and values. The analysis could be as follows:

(1) Analysis of reasons: a. The superiority of our socialist system, capable of concentrating efforts to achieve significant scientific and technological innovations. b. The great creative spirit, dedication, unity, and dream spirit of scientists, researchers, and technology workers. c. Strong policy support from the state and government, as well as close and effective cooperation between technology workers, enterprises, and the government.

(2) What medical workers should do: a. Love the country, the party, socialism, the people, and the collective; feel proud to be born in China and proud of the country's vibrant economic development. b. Inherit the fine qualities of the older generation of scientists—patriotic dedication and indifference to fame and fortune. Establish innovative technology and integrate life ideals into the realization of the great rejuvenation of the Chinese nation. c. Cherish time, study diligently, master scientific and cultural knowledge, and enhance humanistic literacy. d. Adhere to professional ethics in future work, serve patients with true talents and innovation, and contribute to the country.

The designed exam questions assess the following points: (1) students' initiative and proactive learning; (2) the extent of students' mastery of professional knowledge; (3) students' grasp of ideological and political elements and whether they are emotionally touched and inspired; (4) students' language expression and logical thinking abilities. Thus, the designed content and evaluation methods can objectively reflect the effectiveness of implementing ideological and political education in the course and students' comprehensive qualities.

Reverse evaluation: This involves interviewing students and using questionnaires to understand their subjective feelings about the integration of ideological and political education into the classroom.

5. Analysis of the Assessment Results of Course Ideology and Politics

The results of reverse evaluation (Figure 2) showed that 34.26% of the students thought that the integration of ideological and political elements into physiology was very helpful in improving their patriotism, professional ethics and innovative scientific research spirit, 42.96% of the students thought that the help was greater, 20.93% of the students thought that the help was average, 1.85% of the students thought that the help was small, and no students thought it was not helpful. It shows that this physiology ideological and political teaching practice has had a positive impact on students' patriotism and love for the party, the improvement of professional quality, and scientific and technological innovation. This time, the positive evaluation results are analyzed, and the statistical results are shown in Table 1.

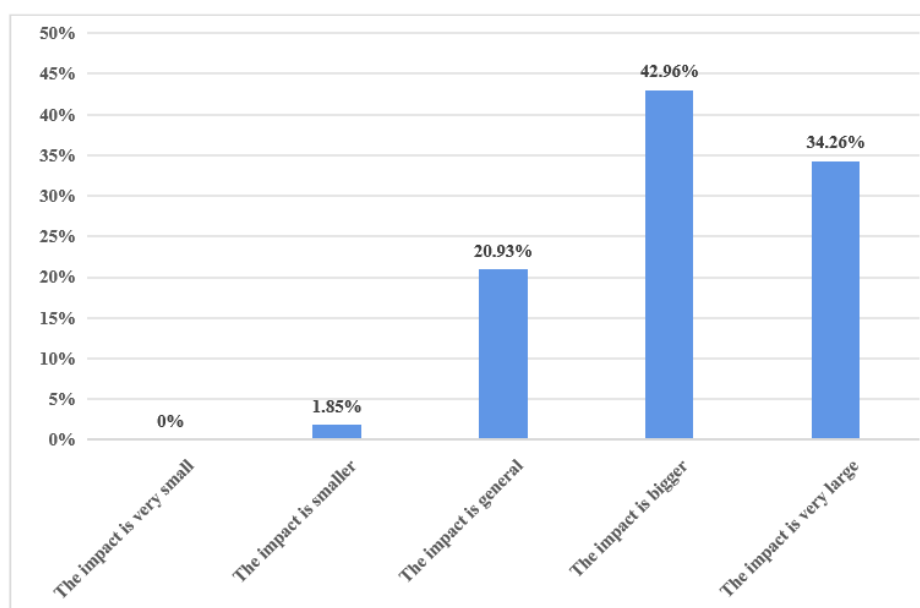


Figure 2. The degree to which ideological and political elements help students in terms of patriotism, professional ethics, and innovative scientific research spirit

Table 1. Statistical analysis of students' answers at ideological and political assessment points (234 students in total)

serial number	Assessment points	Number (Percentage of students)
One	The initiative and proactiveness in learning	
	Choosing not to answer this question	18 (8%)
Two	Degree of mastery of specialized knowledge	
	The two areas of expertise are answered completely	162 (69%)
	Answer only one aspect	42 (18%)
	Neither side answered	30 (13%)
Three	Understand the core content of ideological and political elements	
(1)	The "cause" analysis is understood and recognized	12 (5%)
	The Cause analysis gives only part of the cause	204 (87%)
(2)	Have a deep understanding of ideological and political content	154 (66%)
	Lack of in-depth understanding and perception of ideological and political content	62 (26%)
Four	Students' language expression and logical thinking skills	
	The answers are comprehensive, fluent and logical	98 (42%)
	The content of the answers is too small, the language is not clear, and the logic is poor	118 (50%)

5.1. Analysis of students' motivation for learning and motivation

Due to the fact that the questions set are not included in the final exam grades, answering is entirely voluntary for students. The statistical results of student responses indicate that 92% of students are willing to participate, demonstrating a high level of enthusiasm among the majority of students. However, 8% of students chose not to answer this question. A combination of paper analysis and discussions revealed the following reasons: (1) From the analysis of the papers, it is observed that 12 students scored below 60 points, indicating a less solid grasp of fundamental knowledge in the field. Some students provided feedback that physiology is too abstract, leading to a lack of interest and uncertainty about how to approach the question. (2) Two students mentioned that because this question does not contribute to the overall grade, they chose not to answer. (3) Four students expressed that the incorporation of ideological and political elements in professional courses yielded limited benefits and seemed insignificant, leading to their decision not to respond. This

indicates that the motivation for learning among some students still needs improvement, and there is a need for further guidance and reinforcement in terms of ideological awareness.

5.2. Analysis of students' mastery of professional knowledge

In the context of this study, the professional knowledge content of the questions primarily revolves around two aspects: (1) Understanding the factors leading to ventilation impairment in COVID-19 patients, focusing on factors affecting gas exchange in the lungs, assessing students' grasp of fundamental concepts and knowledge. (2) Analyzing the role of chest CT scans in the diagnosis of COVID-19, assessing students' ability to apply theoretical knowledge to problem-solving in a clinical context. The results of student responses indicate that around 69% of students can comprehend and master the fundamental knowledge and methods, applying theoretical knowledge to analyze clinical problems. However, a minority exhibit weaker analytical

skills.

5.3. Analysis of students' understanding of the core content of ideological and political elements

The ideological elements in the questions mainly focus on: (1) Evaluating students' comprehensive understanding of the reasons behind the "hardcore counterattack" in the development of domestically produced CT scanners. (2) Assessing the impact of ideological education on students' thoughts. Approximately 87% of students recognize the vital roles played by national scientific innovation, policy support for the medical equipment industry, and the hard work of researchers. However, a significant portion fails to recognize the decisive role of our socialist system in technological development and innovation, indicating the need for further guidance. The assessment of ideological education's positive impact on students' socialist core values reveals a stimulating effect, fostering patriotic sentiments and a sense of responsibility among students. About 66% of students exhibit a deep understanding and express commitments to lifelong learning, solidifying theoretical foundations, and contributing to the development of the nation's medical imaging discipline.

5.4. Analysis of students' language expression and logical thinking skills

Effective language expression and logical thinking are essential qualities for contemporary talent. Forty-two percent of students can provide comprehensive answers to questions at both levels, presenting well-organized points with clear language and logic. However, 50% provide simplistic and vague responses, lacking clarity in their points, indicating a deficiency in language expression and logical thinking. This highlights the need to cultivate these skills in future teaching.

6. Deficiencies and Improvement Measures of Curriculum Ideological and Political Teaching Reform

The assessment results also reflect shortcomings in the ideological education reform in the physiology classroom: (1) Students suggest that integrating ideological content with specific knowledge points or cases is more easily accepted and memorable. This emphasizes the importance of finding a balance between ideological and professional education. (2) Student motivation for learning needs improvement, especially when facing abstract and challenging physiological knowledge. Future teaching should focus on enhancing teaching methods, increasing interaction with students, and utilizing multimedia resources to aid understanding. (3) Although students have a certain understanding of socialist core values, their awareness of the decisive role of the socialist system in the development of imaging equipment is not profound. Future ideological education should emphasize the advantages of the national system, integrating it with professional knowledge to enhance the overall effect. (4) Language expression and logical thinking skills of students need improvement, and future teaching should incorporate more opportunities for students to express themselves, such as through flipped classrooms and group discussions. In conclusion, the assessment provides valuable insights into the integration of professional knowledge and ideological education in the physiology classroom. The findings suggest the need for a more balanced and targeted approach to ensure

a comprehensive education that equips students with both knowledge and a strong sense of ideological values.

7. Conclusion

This study is based on the physiological theory of teaching, incorporating elements of ideological and political education designed according to the objectives of professional knowledge. Through the exploration of ideological and political education, utilizing teaching methods such as flipped classrooms and case analysis, we have refined the evaluation mechanism for ideological and political education in the curriculum. An analysis based on student responses was conducted, highlighting shortcomings in the implementation of ideological and political education in physiology courses. The study concludes by proposing specific directions and measures for the continuous improvement of ideological and political education in the course. This aims to accumulate valuable experience for the next round of ideological and political education in physiology teaching.

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