

# Innovation and Practice of Deeply Integrating the Spirit of the 20th National Congress of the Communist Party of China into the Ideological and Political Education of New Engineering Courses: A Case Study of "Fine Chemical Technology"

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**Abstract:** In response to the problems in the ideological and political process of fine chemical technology teaching courses, the spirit of the 20th National Congress of the Communist Party of China has been integrated into the teaching of surprise chemical technology courses. Overall, the satisfaction of students has been improved through ideological and political education courses, and their learning enthusiasm and grades have also been enhanced.

**Keywords:** Ideological and Political Education, Engineering Students, The Spirit of the 20th National Congress of the Communist Party of China, Fine Chemical Technology.

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## 1. Introduction

Socialism with Chinese characteristics has entered a new era. People's yearning for a better life is even stronger. Building an educational powerhouse is a fundamental project for the great rejuvenation of the Chinese nation, and higher education has been given a higher status and mission. Education, technology, and talent are the keys to the rise of a strong country. Higher education is an important integration point for the integrated development of education, technology, and talent. As an important task of cultivating virtue and nurturing people, the comprehensive construction of the ideological and political education system of "consolidating the foundation and forging the soul" aims to emphasize the need to solidify the soul of Marxism, which is the fundamental guiding ideology for us to establish the Party and the country; Emphasizing the need to consolidate the excellent traditional Chinese culture, which is the foundation for us to stand firm in the turbulence of world cultures. Cultivating a new generation of people who are loyal to the Party, the country, the people, and socialism, and who firmly believe in Marxism, socialism with Chinese characteristics, and the great rejuvenation of the Chinese nation, is the starting and ending point for comprehensively building a solid and soul building ideological and political education system[1-5].

## 2. The Problems Discovered in the Practice of Ideological and Political Education in the Course of Fine Chemical Technology

This course has 32 hours and 2 credits, and is offered in the second semester of the third year. The prerequisite courses include physical chemistry, surfactant chemistry, colloid and interface chemistry, etc. From the perspective of student source quality, students come from second tier universities with relatively weak foundations. In teaching practice, the course team found that students have the following problems:

### (1) The nihilization of ideals and beliefs

Currently, college students, especially senior students, generally suffer from a lack of faith, spiritual emptiness, blind and wavering beliefs, utilitarian beliefs, and secular vices. It is urgent to strengthen ideological and political education in professional courses.

### (2) Weakening of practical ability

Our school is located in an area with a developed fine chemical industry and urgently needs high-quality applied talents. However, most students have weak practical skills and insufficient ability to integrate theory with practice. It is urgent to improve their engineering practice ability by combining it with the actual situation of enterprises.

### (3) Confusion in future planning

The phenomenon of confusion among junior college students is a common reality. Especially in local universities, the quality of student sources is generally average, the teaching level of faculty is limited, the investment in disciplines and majors is insufficient, students lack competitiveness, and third year students are generally confused, frustrated, and at a loss for the future. They urgently need to recognize professional culture and identify with the role of quasi professionals.

### (4) Normalization of Yin prosperity and Yang decline

From kindergarten to university, the phenomenon of "yin flourishing and yang declining" has shown a normalized trend. In recent years, the number of admissions for the Applied Chemistry major at our university has shifted from more males than females to more females than males; The average score of boys is 5-15 points lower than that of girls, and the gap is significant. There are significantly more male students skipping and sleeping in class than female students, and it is urgent to take incentive measures to help male students learn..

## 3. Methods for Solving Pain Points

The key to solving the "pain points" problem lies in eight dialectical and unified dimensions including autonomy, innovation, application, quality, history, development, ethics,

and safety, as well as 16 curriculum ideological and political standard indicators.

### 3.1. Systematic Reconstruction of Ideological and Political Elements

Dig deep into the ideological and political elements in professional courses, design teaching contents and curriculum resources that are deeply integrated with the spirit of the 20th National Congress of the Communist Party of China, and

construct and carry out teaching practices of curriculum-based ideological and political education that integrate professional knowledge, professional ethics, scientific thinking, craftsmanship spirit, etc. A "curriculum ideological and political compass" is constructed to organically combine professional knowledge with ideological and political elements, and actively explore the design of teaching content and curriculum resources that deeply integrate the spirit of the 20th National Congress of the Communist Party of China as shown in Table 1.

**Table 1.** Integrating the spirit of the 20th National Congress of the Communist Party of China into the overall design of "Fine Chemical Technology"

Content of courses	Integration point of ideological and political education	Integration points of the spirit of the 20th National Congress of the Communist Party of China
Overview of Fine Chemicals The Formation and Development of Fine Chemicals	Marxist Capital Theory on Green Chemical Industry Chemical safety education Conversion of old and new kinetic energy Five Development Concepts	1. The work of the past five years and the great changes of the new era in the past decade 11. Promote the modernization of the national security system and capabilities, resolutely safeguard national security and social stability
Fundamentals of Surfactants Anionic/cationic surfactants nonionic	The deeds of Mr. Fu Ying, a famous chemist specializing in zwitterionic surfactants Yin-yang theory Binhua Transformation and Upgrading Case Carbon neutrality and peak carbon emissions	4. Accelerate the construction of a new development pattern and focus on promoting high-quality development
Overview of Food Additives The Secret of Delicious Food Food Safety and Development Trends	Gourmet Food and Cultural Confidence Cultural Connotations Behind Delicious Food Food Safety Law Xi Jinping on Food Safety	7. Uphold the Overall Law - based Governance of the Country and Promote the Building of a Law - based China 9. Improve People's Well - being and Enhance the Quality of People's Lives
Overview of Adhesives Various Types of Adhesives	Looking at the Essence Through Phenomena Case of Wanhua's Transformation and Upgrading	5. Implement the strategy of rejuvenating the country through science and education, and strengthen the talent support for modernization drive 6. Develop whole-process people's democracy and ensure that the people are the masters of the country
Overview of Coatings Natural Resin Coatings Synthetic Resin Coatings	J-20 and Stealth Coatings Domestic Coatings Ranking Lacquer Craftsmanship and Cultural Confidence The Culture Behind the Naming of Fine Chemicals	12. Achieve the centenary goal of building the military and open up a new situation in the modernization of national defense and the armed forces 13. Adhere to and improve the "One Country, Two Systems" policy and promote national reunification 14. Promote world peace and development and advance the building of a community with a shared future for mankind
Overview of Cosmetics Production of Emulsion Cosmetics	Ranking of Domestic and Foreign Cosmetics Enterprises The Yimeng Spirit of Harmony	2. Opening up New Horizons for Adapting Marxism to the Chinese Context and the Needs of the Times 3. The Mission and Tasks of the Communist Party of China in the New Era and New Journey
Overview of Fragrances Preparation of Synthetic Fragrances Safety and Development Trends of Fragrances	Ranking of Domestic and Foreign Perfume Brands The Counterattack Road of Domestic High-end Perfumes Perfume and Cultural Confidence	8. Promote cultural self-improvement and confidence, and create new brilliance in socialist culture
Oilfield Chemicals Chemicals Electronic Chemicals Water Treatment Agents	Papermaking Chemicals The Era Inheritance of the "Iron Man" Spirit China's Tertiary Oil Recovery and the Belt and Road Initiative General Secretary Xi's Talks on Independent Innovation Lucid Waters and Lush Mountains Are Invaluable Assets The Four Great Inventions	15. Unswervingly exercise full and strict governance over the Party, and further advance the great new project of Party building in the new era 10. Promote green development and promote harmony between humanity and nature

### 3.2. Systematic Reshaping of Curriculum Content

Fine chemical engineering involves numerous industries and a wide range of products. The teaching chapters are relatively independent, lacking connections, and the teaching content is deficient in cutting-edge and contemporary elements, being divorced from production practice. It is essential to integrate theory with practice and build a teaching content system that ranges from theoretical calculation to production practice.

Firstly, take surfactants as the main thread to systematically "link" various fine chemical products.

Secondly, combine with the frontier of the discipline to strengthen the knowledge logic of integrating theory with practice in fine chemicals. Taking the production of emulsion cosmetics as an example, design the whole-process teaching content from theoretical prediction of molecular dynamics simulation to laboratory research and then to production technology.

Thirdly, strengthen the cultivation of engineering practice ability, and promote enterprises to enter the classroom and students to enter the factory. Strengthen school-enterprise cooperation in co-constructing courses and the construction of practice bases, introduce typical cases of enterprise production, and combine with the existing chemical training center of the college to promote the connection between curriculum content and professional standards, and between teaching process and production process.

### 3.3. Comprehensive Innovation of Teaching Mode

On the basis of building a professional curriculum resource database deeply integrated with ideological and political elements, modern information technology is used to carry out reform and exploration of teaching modes and evaluation mechanisms.

In terms of teaching mode reform, follow the "Eight Unifications" principle put forward by General Secretary Xi Jinping for the reform and innovation of ideological and political courses to continuously improve classroom effectiveness. Make full use of information technology to carry out reform and innovation of teaching modes, and actively adopt methods such as critical teaching, fault-finding teaching, case-based teaching, inquiry-based teaching, interactive teaching, and vocational experience teaching to improve teaching effectiveness and quality.

In the creation of teaching environment, explore and build a teaching environment that is united, tense, serious and lively. According to the theory of the five elements (metal, wood, water, fire and earth) generating and restricting each other, students are divided into five groups corresponding to the five elements. Groups are formed by mixing male and female students to carry out division of labor and cooperation, so as to cultivate team spirit, while enhancing the enthusiasm of male students and the engineering practice ability of female students. In the discussion and report session, an interactive questioning link is set up to temper the ability to struggle.

## 4. Satisfaction Survey of Curriculum Ideological and Political Education

In this study, 32 college students from college junior

students majoring in the applied chemistry were selected as the research objects, with an average age of 21 years. Questionnaire survey was employed with ten questions to study students' satisfaction with the curriculum ideological and political teaching, nine of which are choice questions and one is subjective question as shown in Table 2 and the results are shown in Figure 1~4.

Table 2. Survey by Questionnaire

No.	Questions	Options
1	Does the course Ideological and political education improve my ideological and political consciousness?	A: Totally agree B: Agree C: Not sure D: Don't agree
2	Does the course Ideological and political education increase my interest in learning?	A: Totally agree B: Agree C: Not sure D: Don't agree
3	Do you feel the correct guidance of ideals, beliefs and values in the course of Ideological and political teaching?	A: Often B: Occasionally C: No D: I don't remember
4	Are you satisfied with the ideological and political teaching of the course?	A: Very satisfied B: Quite satisfied C: Basically satisfied D: Not satisfied

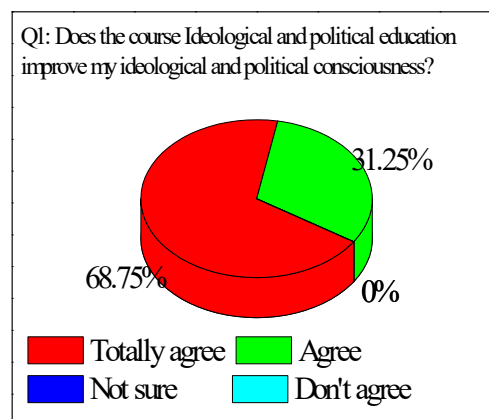


Figure 1. Question 1 statistics of of students

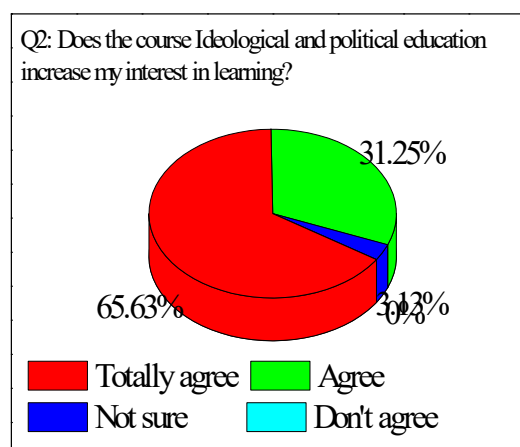


Figure 2. Question 2 statistics of of students

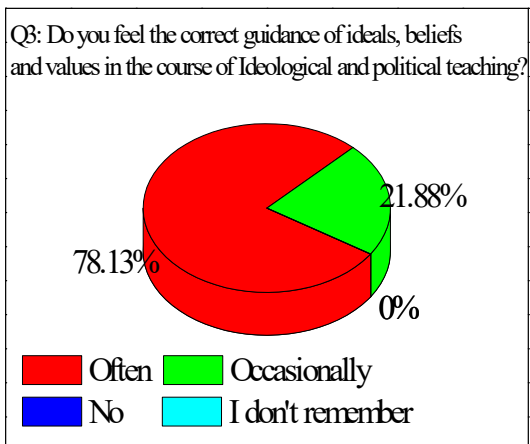


Figure 3. Question 1 statistics of of students



Figure 4. Question 2 statistics of of students

The results showed that the students generally believed that curriculum ideological and political education can improve

their ideological and political consciousness, improve their English level, increase their interest in learning, and can give them the correct guidance of ideals, beliefs and values in the course of Ideological and political teaching.

## 5. Conclusion

In our study, the spirit of the 20th National Congress of the Communist Party of China was integrated into the teaching of ideological and political education in the surprise chemical technology course. Overall, the satisfaction of students has been improved through ideological and political education courses, and their learning enthusiasm and grades have also been enhanced.

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