Construction and exploration of the practical teaching system for course-based ideological and political education in undergraduate specialty of food quality and safety

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Abstract. The practical teaching system for course-based ideological and political education in undergraduate specialty of food quality and safety in our university were constructed and explored. The training objectives and plans was optimized. The professional ideological and political practice teaching system with two dimensions and progressive levels of time and space was reformed. The integration of ideological and political elements and practical teaching content was explored. Our efforts have yielded positive results. In order to foster students’ professional ethics of love and dedication, and enhance the cultivation of professional innovative and applied talents, continuous and long-term exploration and practice are required.

1. Introduction

Food safety is the top priority for the people. With the continuous development of the national economy, people have put forward higher requirements for food safety and healthy eating. To adapt to the economic development, it is necessary to cultivate food quality and safety professionals that meet social needs [1]. This requires universities to unify moral education and intellectual education in theory, practice, and the second classroom, and to cultivate morality and talent in all aspects, including the entire staff, the entire process, and all aspects [2]. Persisting in learning from practice and the people is the only way for college students to grow and become successful.

Exploration and reform have previously carried out in the teaching content, teaching methods, and assessment system of the theoretical and experimental courses in food related majors, which mobilized students’ enthusiasm and initiative in learning, reformed classroom teaching in universities, and promoted the development of classroom education quality and connotation. In the previous period, multiple related ideological and political lesson plans have been established. However, there are still some urgent problems to be solved in the implementation of course-based ideological and political education (CIPE) in undergraduate specialty of food quality and safety of our university.

2. Present situation of CIPE in our specialty

2.1. Inconsistent understanding

Many teachers think that CIPE should be mainly carried out in theoretical courses, especially in the ideological and political theory courses. However, the realization of talent cultivation goals in universities not only depends on the teaching of theoretical courses, but also on the experimental and practical teaching system. Experimental and practical courses system have practical significance in applied undergraduate colleges.

2.2. Problems during the implementation of CIPE

Experimental and practical courses were mainly implemented on campus laboratories and off campus internship venues. The teaching system of experimental and practical courses has characteristics such as scattered venues, multiple operational links, and inability to communicate with language in specific situations. It is difficult to achieve full coverage of CIPE. On the other hand, experimental and practical courses contain plentiful elements of CIPE. However, unlike theoretical teaching, these elements often do not correspond to a certain chapter or specific knowledge points, making it difficult to attain the organic integration of ideological and political content and practical content in the curriculum [3]. Therefore, CIPE is difficult to form synergistic effects with ideological and political courses.

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2.3. Lack of in-depth exploration of the CIPE in experimental and practical courses

The aim of experimental and practical courses is to cultivate and train the students' experimental operation ability and professional skills [4,5]. However, the ideological and political aspects of experimental and practical courses was not enough. Although the teaching content, teaching methods, and assessment system of our major have been explored and reformed in the early stage, and multiple related ideological and political teaching plans have been established [6], these explorations and reforms are scattered among various courses. A systematic system has not been formed, and there is a lack of coordination among various courses within the curriculum system, making it difficult to achieve the division of labor and collaboration in educating students of various types of courses.

Therefore, it is necessary to explore the ideological and political aspects of experimental and practical courses, and to construct a practical teaching system with two dimensions of time and space and a progressive level for CIPE in our major.

3. Exploration strategies

3.1. To optimize training objectives and plans

Taking the revision of the professional training program and teaching outline of 2022 edition as an opportunity, we optimized the training objectives and plans for experimental and practical courses. We added the experimental and practical courses such as Food Safety Professional Labor and Social Investigation in the training program of our major. These courses encourage students to go deep into the grassroots, understand the national conditions, serve society, and exercise their abilities and enhance their abilities in participating in socialist modernization construction. Therefore, the courses could promote the close integration of social practice activities and ideological and political education (IPE).

3.2. To construct a practice teaching system with two dimensions and progressive levels of time and space for CIPE

Based on the training plan of our undergraduate specialty, the system for experimental and practical courses are divide into five modules, such as professional cognitive practice module, professional skills practice module, comprehensive practical training practice module, internship and graduation thesis module, and innovation and entrepreneurship ability module [7]. This system for experimental and practical courses can help students to learn knowledge from shallow to deep, from basic to cutting-edge [8]. The ideological and political content of the curriculum is provided at different levels based on the spirit of ideological guidance, unity of knowledge and action, and innovative exploration.

3.2.1. The professional cognitive practice module

The professional cognitive practice module includes courses such as Social Investigation and Food Safety Professional Labor, which focus on educating and guiding students to promote the spirit of serving the country, society, and the people. It combines "reading thousands of books" with "traveling thousands of miles" and guides students to take root in China, understand the national conditions and customs, grow their wisdom and talent through practice, and hone their willpower and character through hard work. This module promotes the close integration of social practice activities and IPE, encourages students to go deep into the grassroots, understand the national conditions, serve society, and exercise their abilities and enhance their abilities in participating in socialist modernization construction.

The key ideological and political objectives of this module: patriotism, ethics, core socialist values, and cultural self-confidence.

3.2.2. The professional skills practice module

This module includes independent experimental courses and non independent experimental courses, such as Food Toxicology Experiment, Food Analysis Experiment, Instrumental Chemistry Experiment, Food Chemistry Experiment, Marine Resources Comprehensive Utilization Technology Experiment, etc. According to the characteristics of different courses, the professional skills practice module aims: a. to guide students to form correct values; b. to guide students to learn relevant laws and regulations on food safety, management, and environmental protection; c. to guide students to learn the pollutant disposal plan and safety precautions; d. to guide students to learn about national biosafety and laboratory safety for food microbiological testing projects and food toxicology animal experiments projects; e. to guide students to understand the food production process, learn a rigorous and scientific work attitude, and cultivate the spirit of craftsmanship.

The key ideological and political goals of this module are patriotism.

3.2.3. Comprehensive practical training module

This module offers courses such as Vocational Skills Training and Professional Comprehensive Practice Course. These courses aim to cultivate the students' job group abilities and professional qualities, and adopts a fully open teaching approach based on the highly skilled nature of the course. In addition to cultivating students' ability to design solutions, the Professional Comprehensive Practice Course also cultivates good professional norms, a sense of social responsibility, and the ability to understand and comply with engineering professional ethics and norms in testing tasks. The Professional Comprehensive Practice Course also cultivates students to handle personal and team relationships well and cultivate students' innovative awareness in the design of comprehensive experimental
plans, taking into account factors such as society, health, safety, law, culture, and the environment. Through the establishment of enterprise standards and HACCP system, students are familiarized with the national food production design, quality and safety, and national standard system, enabling them to effectively communicate with classmates and mentors during off campus internships and on campus experiments.

The key ideological and political goals of this module include professional literacy, social responsibility, legal awareness, and teamwork.

3.2.4. Internship and graduation thesis module

This module courses include Professional Internships, Graduation Internships, and Graduation Theses. In this teaching process, attention is paid to strengthening students’ understanding of safety and responsibility awareness, cultivating their hands-on ability, and strengthening the training of teamwork spirit. Ideological and political elements are integrated into the practical teaching. It will cultivate students’ professional ethics and scientific spirit [9].

The key ideological and political goals of this module are: dedication to work, academic integrity, craftsmanship, and environmental awareness.

3.2.5. Innovation and entrepreneurship ability module

This module courses include subject competitions, innovation and entrepreneurship training programs, and entrepreneurship incubation, which runs through the entire four-year undergraduate learning process. Students are encouraged to participate in scientific and technological innovation activities, and subject competitions, scientific research training, industry certificates, etc. These are used as effective carriers for undergraduate students’ innovation practice. By utilizing the platform and policies of the college, students are encouraged to apply for the National College Student Innovation and Entrepreneurship Project, Zhejiang Province New Miao Talent Support Program, extracurricular academic and technological projects for college students, and innovative experimental projects, etc. Through various stages such as project application, project approval, implementation, and achievement acquisition, students can understand the entire process of scientific research, and more importantly, cultivate their ability to independently think, comprehensively summarize, and analyze problems.

This module encourages students to actively participate in innovation and entrepreneurship competitions and subject competitions, cultivating their spirit and ability of deep analysis, bold questioning, and innovation.

3.3. To achieve the organic integration of ideological and political elements and practical teaching content

On the basis of constructing a practical teaching system for the CIPE in experimental and practical courses, we explored the construction path of carrying out IPE in experimental and practical courses from the aspects of optimizing the teaching syllabus, designing teaching plans, innovating teaching methods, and enhancing teaching abilities, so as to truly integrate IPE into the entire process of talent cultivation in science and engineering.

3.3.1. To optimize the teaching outline and training program of practical and experimental courses

Taking the revision of the 2022 edition of the training program and teaching outline as an opportunity, we optimized the teaching outline of practical and experimental courses and develop a teaching guide the CIPE.

3.3.2. To innovate teaching methods and gradually improve students’ comprehensive professional abilities and professional literacy

The courses focus on cultivating students’ job group abilities and professional literacy, and adopt a fully open teaching approach based on the strong technical characteristics of the courses. To arrange unit project teaching and training that integrates teaching, learning, and practice, as well as comprehensive skill training focused on routine inspection projects of typical food, we gradually improved the students’ professional comprehensive abilities and professional literacy.

3.3.3. To enhance teachers’ ability for the CIPE

In the process of carrying out the CIPE, the teachers were guided to fully recognize the inherent relationship between professional courses construction and professional talent cultivation, and guided to focus on enhancing the political height, humanistic sentiment, and responsibility of course construction. On the basis of constructing a practical teaching system for IPE in professional courses, the profession has put forward clear ability requirements for the construction of IPE in courses, formulated relevant training plans, and improved teachers’ability in IPE.

4. Achievements

Professional teachers actively participate in teaching reform and professional construction. In the past three years, the teachers from our major have won 7 teaching awards such as the Second Prize for Excellent Teaching Cases of IPE in Zhejiang Province. Among them, professors and associate professors have won 5 awards as the first winners, and have undertaken 9 research projects such IPE in Zhejiang Provincial higher
education Courses, Industry University Research Projects of the Ministry of Education of China, and Zhejiang Provincial Virtual Simulation Experimental Teaching Recommendation Projects. The teachers from our major have undertaken 7 tasks to reform and explore the curriculum system and talent cultivation mode, to reform the teaching of ideological and political courses.

In recent years, our major has cultivated a group of outstanding professionals with comprehensive development in morality, intelligence, physical fitness, aesthetics, and labor. Students have a strong sense of social responsibility and good professional ethics. Students have strong innovation spirit and practical application ability, good team spirit, communication ability and Lifelong learning ability.

In the past three years, students majoring in food quality and safety have published 11 articles as the first author in the top journal in the food field. They have won 11 national college student innovation and entrepreneurship training programs, and 6 awards such as the "Challenge Cup" extracurricular academic and Technological Works Competition for College Students in Zhejiang Province.

5. Concluding remarks

We optimized the training objectives and plans of our undergraduate specialty, and reformed the practice teaching system with two dimensions and progressive levels of time and space for CIPE. Further, we integrated the ideological and political elements and practical teaching content. Finally, we constructed the practical teaching system for CIPE in our undergraduate specialty. Our practice and exploration have obtained some good results. However, long-term and continuous exploration and reform are needed to train talent better.

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