

Exploration and practice of the mode of Integrating Ideological and political education into professional practice course under the background of new engineering -- Taking the comprehensive experimental course of product quality inspection as an example

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Abstract: according to the professional education requirements of the course, cultivate and practice the socialist core values. Taking the comprehensive experimental course of product quality inspection as an example, through the mode of organic integration of Ideological and political education content and professional knowledge and skills education content, cultivate students' craftsman spirit of being realistic and pragmatic, practical innovation and excellence, Guide students to deeply understand and consciously practice the professionalism and professional norms of the quality inspection industry.

Key words: curriculum ideological and political education; Experimental teaching; practice

1 Introduction

The guiding outline of Ideological and political construction in Colleges and universities points out that the fundamental issue of education is to cultivate who, how and for whom. The course of Ideological and political education must implement the fundamental task of moral education, and have the talent training goal of "Trinity" of value creation, ability training and knowledge teaching. We should fully reflect the elements of Ideological and political education, write the curriculum syllabus, teaching plans and other teaching documents that reflect the ideas of the ideological and political reform of the curriculum, clarify the curriculum objectives, classroom teaching objectives, reform teaching methods and evaluation methods, produce the evaluation evidence of the achievement degree of expected learning results, and form the teaching reform experience that can be popularized and replicated.

This paper takes the design of the ideological and political teaching mode of the comprehensive experiment of product quality inspection as an example, closely around the professional talent training program and educational objectives, deeply excavates the elements of Ideological and political education, and establishes the teaching mode of the organic integration of Ideological and political education and professional knowledge education.

2 Course introduction

Comprehensive experiment of product quality detection is one of the required professional practice courses for students majoring in

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material forming and control engineering. The course materials are from the physical products of industrial production. It is a comprehensive training for students to carry out quality inspection on three types of products of a certain type of steel and a certain specification, including section steel, strip and steel pipe, according to national standards, industrial standards, enterprise standards and foreign standards. Through this comprehensive and designed experiment, students can master the basis, steps and operation methods of rolling product quality inspection, and have the ability to directly engage in product quality inspection. In the course teaching process, we should adhere to the combination of value guidance and knowledge teaching, and cultivate students' excellent qualities such as being practical and rigorous, patient and focused, hard-working and pursuing excellence in theory and practice teaching; Cultivate the craftsman spirit of being realistic and pragmatic, practical and innovative, and keeping improving in the process assessment projects; Carry out patriotism education and discussion, deepen students' patriotism complex, guide students to establish the belief of self-improvement and self-reliance, and cultivate socialist core values.

3 Curriculum ideological and political teaching design

The course Ideological and political education runs through the whole teaching process, adheres to the student-centered, output oriented, and continuous improvement, so as to enhance the students' learning experience and learning effect, and eliminate the "two skins". Table 1 shows the key points of knowledge, ideological and political mapping and integration design and the expected teaching effect of Ideological and political education in the course of comprehensive experiment of product quality inspection. "Key points of knowledge" is the important and difficult content in the experimental course, and it is the means that quality inspectors must master. "Ideological and political mapping and integration design" is the design of how to integrate ideological and political education into professional knowledge points. "Expected teaching effect of Ideological and political education" is the effect achieved in Ideological and political education while teaching knowledge points.

Table 1 Contents of course design of comprehensive experiment of product quality inspection

Key points of knowledge	Ideological and political mapping and integration design	Expected teaching effect of Ideological and Political Education
Macro inspection and mechanical property inspection of profiles	1. From the experimental safety education as the integration point, the significance of learning laboratory rules and regulations and warning signs 2. Taking the typical laboratory fire accident as an example, students should always establish the idea of "safety first".	Students consciously abide by laboratory safety rules and regulations and maintain laboratory equipment
Microstructure detection of profile and plate	1. By guiding students to consult and learn the national standard GB-T 13298-2015 test method for metal microstructure, industry standards and test methods, students are guided to deeply understand and consciously practice the professionalism and professional norms of the testing industry.	Students consciously complete the test items according to the requirements of national standards
Micro grain size detection and inclusion detection	1. This paper introduces the R & D and manufacturing process of advanced experimental equipment used in the experiment, reflects Chinese wisdom, Chinese power and Chinese technology, improves students' feelings of home and country, establishes the belief of self-improvement and self-reliance, and cultivates the socialist core values. 2. Learn the white paper "Chinese youth in the new era". The future belongs to youth, and hope is placed on youth. Encourage students to strive to become the vanguard force to realize the great rejuvenation of China, and enhance students' ambition, morale and confidence to be Chinese, so as to live up to the times, youth and the ardent expectations of the party and the people.	Realize patriotism education, and students consciously practice the socialist core values
Mechanical property test of plates and pipes	1. Through professional case study, students are required to respect the experimental results, cultivate students' in-depth thinking, serious, rigorous and realistic craftsman spirit. 2. Through practical evaluation and process assessment, students are trained not to forget the original intention, adhere to the original intention, adhere to the truth, be realistic, not afraid of difficulties, dare to explore, respect the quality of results, and carry forward the great party building spirit in practice.	Cultivate craftsman spirit and carry forward the great party building spirit

4 Integration mode of Ideological and political education in Curriculum

The integration point of Ideological and political education in the course should be appropriate. Next, the integration mode of Ideological and political education in the course should focus on improving the students' sense of safety, cultivating the students' ability to correctly understand, analyze and solve problems, cultivating the students' spirit of being a great craftsman, cultivating the students' sense of responsibility and professional ethics, and stimulating the students' feelings of serving the country with science and technology and the

courage to explore.

1. Experimental safety education

From the experimental safety education as the integration point, learn the significance of warning signs, clarify the hazard information and emergency treatment scheme of each laboratory, and master the fire passage route map of each experiment; Taking typical accidents as cases, students should always establish the idea of "safety first". Integrating Ideological and political education elements into laboratory safety education can correct students' learning attitude, improve the quality of experimental teaching, and improve students' sense of responsibility and safety.

Due to the integration of disciplines and the intersection of academic research in Colleges and universities, the contents of laboratory safety hazards are more complex, and safety accidents occur from time to time. Before students enter the laboratory, they should learn laboratory accident cases, cultivate students' laboratory safety awareness, and be able to self-discipline after entering the laboratory, so as to consciously prevent accidents.

Establish an experimental safety test bank, guide students to learn experimental safety knowledge, fire safety knowledge, laboratory emergency treatment and laboratory waste treatment, carry out experimental safety assessment, improve students' safety consciousness and responsibility consciousness, and let students deeply understand and experience who safety is for, why safety is guaranteed, and whose safety is guaranteed. Let the passive "others want me to be safe" become the active "I want to be safe". Over time, safety will become a habit and become one's own obligation.

2. Patriotism education

The hardness tester is required for the experiment of the "hardness testing" experimental project. Firstly, various hardness testers used for hardness testing are introduced, including Rockwell hardness tester and Vickers hardness tester. From manual Rockwell hardness tester to advanced micro digital hardness tester, taking the development and change of hardness tester equipment as the breakthrough point, lead students to review the development history of China's manufacturing industry, guide students' recognition of the national manufacturing equipment industry, and tell students that these achievements are inseparable from the hard work of China's scientific research staff. Introduce the case of Qian Xuesen, the father of China's aerospace industry and the king of rockets, who resolutely returned to the embrace of his motherland, wholeheartedly serving the people and selfless dedication; Wang Jinxi, an iron man who is patriotic, entrepreneurial, realistic and dedicated. As college students in the new era, they should dare to take responsibility and have the feeling of being able to contribute to the construction of the motherland. So as to stimulate the patriotic feelings of young students and establish the lofty ideals and beliefs for the great rejuvenation of the Chinese nation.

3. Professional ethics

In the course outline, students are required to master the national standards for microstructure detection of profiles and plates. When teaching knowledge points, students are required to correctly master the basic metallographic microscopic analysis methods, and correctly use the metallographic microscope to observe and analyze the metal microstructure; The microstructure of the alloy was observed, photographed and the defects in the microstructure were analyzed. Metallographic inspection is a complex and rigorous work, which requires not only the inspectors to have professional inspection skills and solid basic knowledge, but also high professional quality and practical operation ability. In the actual material inspection process, it is necessary to carry out repeated tests and tests on the research materials, accurately analyze the materials, and study the change laws between the materials, and operate in strict accordance with the requirements of national standards.

The microstructure analysis of product quality inspection is inseparable from the detection basis, and the national standard is the most important basis for students to carry out experiments. GB-T 13298-1991 test method for metal microstructure was first published as the national standard for test method for metal microstructure, which was later replaced by GB-T 13298-2015 test method for metal microstructure. The national standard has added sample preparation, two cases of sample selection, schematic diagram of inspection surface, band structure rating, "sample marking" part, vibration polishing part, microscope lighting mode, image analysis part, on-site metallographic inspection and common metal etchant. China's national standard formulation process is divided into nine stages: pre stage, project approval stage, drafting stage, consultation stage, review stage, approval stage, publication stage, review stage and repeal stage. Every point of the national standard update reflects the upgrading of inspection equipment and the increasingly advanced inspection methods, and embodies the painstaking efforts of generations of material scientists.

Integrate the professionalism and professional norms of the quality inspection industry into the whole process of learning and experiment of the national standard for metallographic inspection. Students are required to operate in strict accordance with the inspection process, respect the experimental results, and pay attention to the analysis and reflection of the results. Consciously overcome some students' psychology of coping and muddling through in the process of experimental operation, and completely put an end to individual students' bad behaviors such as piecing together experimental data, or even copying or fabricating experimental data.

4. Cultivate craftsman spirit

The test item of "microstructure analysis of pipe weld" firstly introduces the microstructure changes of each area of pipe welded joint during the welding process of pipe weld, and analyzes the influence of heat affected zone on the performance of welded joint; Then explain the sample preparation method and metallographic detection method of pipe welds. In order to reduce the surface roughness of the welding sample, it is necessary to manually grind the sample to improve its accuracy.

When explaining the sample preparation method of pipe weld, the influence of the spirit of excellence in the sample preparation process on the sample preparation is emphasized. Introduce some experts related to welding and use some video cases as auxiliary resources for students to learn. Among them, panjiluan, a welding expert who has made important contributions to the localization of parts and components in China's nuclear power industry, liwanjun, a master of high-speed rail welding, gaofenglin, a rocket heart welding expert, and so on. Putting vivid cases in front of students has realized the integration of Ideological and political elements such as "craftsman spirit", "ideals and beliefs" and "professional ethics", which has further stimulated students' love for their majors and interest in learning, and also encouraged students to study hard. When students carry out sample grinding operation, they should be guided to pay attention to details, be meticulous and strive for perfection, and emphasize the importance of practical operation, so as to teach students to practice and produce true knowledge. Through the post examination and the writing of the experimental report, this paper analyzes the influence of welding heat affected zone on the performance of pipe welded joints, consolidates and deepens the professional knowledge, and cultivates the craftsman spirit of students' attention and excellence.

5 Concluding remarks

At present, the construction of continuous curriculum ideological and political mode can actively inspire and correctly guide students to solve problems in the experiment, and teachers can form teaching methods to stimulate students' innovative ability in teaching. The ideological and political education of the course is combined with the experimental content, which is compatible with the development of science and technology and the actual production of enterprises. The wide coverage of the ideological and political content of the course can effectively improve students' understanding of the importance of professional practice courses, clarify the learning purpose, realize active learning, actively solve the problems in the process of practice, and realize self-management.

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Supporting items: 2022 undergraduate teaching reform research project of Liaoning Province's general higher education: research and Practice on the reform of the hybrid teaching mode of the course "Fundamentals of materials science" based on knowledge visualization; 2022 undergraduate teaching reform research project of Liaoning Institute of science and technology: research and practice of teaching reform of "metallographic series experimental courses" integrated with competition and education; The first class curriculum project of Liaoning Province in 2022: rolling principle.