

Exploration of Ideological and political education in Instrumental Analysis Teaching

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Abstract: Instrumental analysis is an elective course for biology majors. In undergraduate teaching design, there are many ideological and political elements that can be combined with professional knowledge. The core of this paper is to advocate the spirit of innovation and practice, scientific spirit, humanistic quality, patriotism, etc., and integrate ideological and political teaching into the course teaching, so as to jointly play the role of Ideological and political education.

Keywords: Curriculum ideological and Political Education; instrumental analysis; teaching

Instrumental analysis plays an important role in many fields, such as biology, medicine, food, agriculture, chemical industry, environmental detection and so on. "Instrumental analysis" is one of the professional basic courses of biotechnology professional training program, and it is also one of the disciplines with strong connection between theory and practice. Due to the progress of science and technology, many colleges and universities have introduced a large number of high-sensitivity precision analytical instruments and related new detection and analysis technologies to improve and cultivate students' practical and innovative ability, integrate science and education, and promote the improvement of scientific research and teaching level of the college. Many analysis and detection technologies set up by instrumental analysis are important ways to solve biotechnology processing and biological science detection. How to embody the ideological and political education of instrumental analysis in every link of daily work, carry out targeted Ideological Cultivation teaching and thinking training for students, cultivate the basic ability to explore, analyze and solve various problems, and cultivate the craftsman spirit of students' hard work is an important issue in the new era.

1 The goal and significance of Ideological and political education in Curriculum

The fundamental function and task of teachers is to cultivate morality and cultivate people. Educator Rogers once said that the fundamental purpose of teaching is to cultivate and educate people with personality, fully coordinated development, strong initiative and sense of responsibility, and realize self creation value. Mr. Liang Qichao, a modern educationalist, once said that if you are a person, the more knowledge you have, the better. If you are not a person, the more knowledge you have, the worse. It can be seen that the primary task of a school should be to shape and cultivate students' thoughts, which will determine students' emotional attitudes and values. The university period is an important turning point in life. The course teaching and ideological and political theory go in the same direction, forming a synergistic effect. Guide and expand the connotation of students' political literacy at the level of comprehensive teaching of professional knowledge system, so as to achieve the purpose of strengthening students' individual identification with the moral concept of the national social environment. Cultivate students' professionalism, enhance the socialist legal consciousness of the student group, and make each student have a more sound personality. Teachers should guard this section of canal, plant responsible fields, and educate people for the party and the country.

There are many ideological and political elements to be excavated in the course of instrumental analysis. The first major task of teachers is to adhere to teaching and educating people, and also to combine the study of Marxist theoretical knowledge with the practice of socialism with Chinese characteristics, and integrate it into the instrumental analysis theory course. Since professional courses are the main force, battlefield and channel of Ideological and political courses, teachers should educate people in the whole process. Professional courses are the concrete embodiment of Ideological and political theory under the guidance of Ideological and political courses, and are hidden courses. Therefore, teachers should strive to integrate the accurate teaching of teachers' knowledge concept, the reasonable cultivation of students' ability, and the conscious shaping of ideological personality into the teaching of this course.

2 Professional characteristics of instrumental analysis under the background of classroom ideological and Political Education

Instrumental analysis is a comprehensive engineering science and technology course in Colleges and universities, which integrates the achievements of culture, scientific and technological inventions and social innovation, and plays a key role in the rise of China. The core goal of the concept of scientific and technological development is to keep scientific research achievements oriented to the frontiers of science and technology in the motherland and the contemporary world, the major needs of the country, the main battlefield of the national economy, and people's life and health.

1. Cross fusion

The development and progress of instrumental analysis can not be separated from the mutual penetration and intersection of multiple disciplines to solve complex engineering and technical problems. Under the background of implementing the innovation driven development strategy and building the transformation of knowledge production mode, the implementation of interdisciplinary has practical significance

to improve the quality of students' training. There are more than 30 Nobel prizes in instrumental analysis, which are distributed in physics, chemistry and other fields. In the process of implementing interdisciplinary ideological and political education in science and engineering, it is necessary to follow the principle of integrated education and promote the integration of disciplines; Course reconstruction, pointing to high-level thinking; The value implication of Building Morality and cultivating people to achieve all-round development.

2. School enterprise cooperation

For science and engineering disciplines, school enterprise cooperation is one of the important modes of running a university, and it is also the practice basis and theoretical innovation source of Ideological and political teaching. Both schools and enterprises have their own unique advantages in Ideological and political education. Excellent enterprises with strong cultural atmosphere are used as the base for educational practice, and students are nurtured from the spirit of craftsman, professional ethics, corporate culture and other aspects. To explore the teaching and experimental content suitable for our students. For example, detection instruments are widely used in local "ecology", "health", "food", "pesticide" and other industries, and the use of relevant instrument analysis can be increased.

3. Deep learning

The progress of instrumental analysis is inseparable from the major breakthroughs in science and technology, cultivate the craftsman spirit of keeping improving, enable students to face the future through learning, solve problems with new technology, and cultivate students' potential to lead the development of technology and industry in the future. By explaining the development history of analytical instruments, students will be guided to have the spirit of innovation, not bound by authority and classics, and the scientific spirit of perseverance. China has always been at the leading level in the world in the study of atomic fluorescence spectrometry, which are the results of the combination of scientific research innovation and major national needs.

3 The excavation of Ideological and political elements of Ideological and political education in Instrumental Analysis Teaching

At the university stage, the focus is on the formation of theoretical thinking. Instrumental analysis experiment is an important professional basic course. Engineering technology, which combines culture, technology and social innovation, plays a key role in the rise of China. Carrying out ideological and political education in the curriculum is particularly important for the cultivation of innovative talents with comprehensive application in the new era of social development. The six ideological and political elements of instrumental analysis are: patriotic education element, legal education element, professional education element, integrity education element, humanistic feelings education element, friendly life education element, which is the core content of Ideological and moral education. Therefore, according to the professional characteristics, combined with the specific requirements of Ideological and political education in the course, combined with the corresponding teaching content, teachers should deeply explore the ideological and moral education elements involved, and then design the corresponding teaching plan to carry out teaching, which is conducive to the perfect integration of Ideological and political elements into teaching.

1. Cherish the motherland and put life first

Review ancient and modern China and foreign countries from an international perspective, cultivate humanistic character according to specific knowledge, add a brief introduction to the development of science and technology in ancient and modern China and the development of world civilization, cultivate students' sense of national pride, and arouse students' sense of urgency and self-confidence in pursuing technological progress. Due to the wide range of application of instrumental analysis, which is usually interdisciplinary and interdisciplinary, involving medical and health care, food, drugs, etc., on the basis of humanistic and scientific spirit, the cultivation should also have a special engineering spirit: the spirit of responsibility, the person responsible for the ecology, quality and safety of the project; The spirit of seeking truth conforms to the national conditions, the people's conditions and the spirit of cooperation. Examples of lunar soil analysis can be introduced in frontier teaching. On December 17, 2020, the chang'e-5 returner successfully landed and brought back 1731 g of precious lunar soil. New technologies and methods are urgently needed to stimulate students' interest in instrumental analysis and improve their enthusiasm for serving the country in scientific research.

2. Brave to climb the peak and innovate

By guiding senior students to participate in projects and social practice courses, we should promote the spirit of labor, take root in China, and grow talents in practice. Cultivate students with the spirit of scientists, the spirit of exploring the moon, the spirit of Beidou in the new era and the spirit of innovation. In 2002, Finn of the United States and Kenichi Tanaka of Japan invented the mass spectrometry analysis of biological macromolecules, so they won the Nobel Prize. He said that interest in learning can trigger the desire for scientific research and innovation. Even if there is no new achievement in the short term, it will have a subtle impact on the future development of college students.

3. Pursuit of truth and rigorous scholarship

The education of Marxist standpoints and the cultivation of scientific spirit are conducive to improving students' ability to analyze and solve problems, cultivating the spirit of Xueshen, a great country craftsman who strives for perfection, and stimulating students' feelings of serving the country through science and technology and their mission. Through professional practice courses, students' innovative spirit for exploration, practical ability to solve problems, seeking truth from facts and questioning will be enhanced. The natural integration of Ideological and political elements and professional content will make professional course education more contemporary and practical. The most important function of instrumental analysis is the extension of human five sense organs. For example, atomic spectrometry has the advantages of high sensitivity, low relative cost, simple operation, fast analysis speed, strong anti-interference ability and good

reproducibility, which plays an important role in the analysis of trace elements.

Roentgen, a German physicist, followed the operating rules in his scientific research experiments, maintained a rigorous and serious learning attitude, and investigated the accuracy of the method. Finally, he persuaded his wife to act as the experimental object, taking her wife's hand as the first X-ray object, and won the Nobel Prize for physics for X-ray. Roentgen's humble attitude, noble character, the courage to contribute to science, and the scientific research spirit of unremitting exploration in order to solve problems are worth learning by everyone.

4 Solving problems in experimental teaching with ideological and Political Education

The ideological and political content of the course has a main line and five key points. One main line is to strengthen students' ideals and beliefs and love the collective; Turn flood irrigation into precise drip irrigation, into the eyes, ears, brain and heart, and get the students' heart recognition, into his chemical reaction, and into his values; It is in line with the characteristics of professional education, not superficial and hard integration. Experimental instruments are used in biology courses. For example, titrator, Olympus microscope, HPLC and other instruments used in potentiometric analysis are expensive. Each experimental group has only 1-2 sets. At this time, students need to learn the use of instruments in groups in turn. Teachers need to master the time and order, and explain the use of instruments before use, Cultivate students' excellent qualities of loving the collective, cherishing public property, cherishing learning opportunities and cherishing experimental instruments. At the same time, the use of "wisdom tree", "super star Erya" and other modern teaching resources push software to promote the transformation of teaching methods. For example, before each experiment, the preview content of video, text and brief introduction such as the development history, working principle and experimental content of the instrument is pushed to students, so that students can have a more comprehensive perceptual understanding and cognition of the experimental process in the preview; In the experimental teaching, the virtual simulation software is used to introduce the structure of each part. Strengthen their understanding and mastery of professional knowledge, and establish the core values of integrity in classroom ideological and political education. If students are engaged in detection and analysis in the future, they should give play to their sense of responsibility and mission. Teaching practice has found that students have a strong interest in the invention and use of instruments, which has stimulated students' awareness of invention and creation. Not only have students been admitted to graduate students in this direction, but also students are engaged in the sales of instruments after graduation.

Summary

Classroom ideological and political education has always kept up with the pulse of the times, and is organically and closely integrated with various new scientific theories and new development ideas. In order to adapt to the development trend of online teaching and respond to the school running concept of cultivating applied technical talents in local colleges, the characteristics and requirements of professional school running are combined. While imparting professional knowledge in professional teaching, we should fully explore the ideological and moral education elements contained in it, grasp the breakthrough point and run through the whole process, so as to truly "preach, teach and solve doubts". Through the exchange and learning of the "course material library" discussion platform under the ideological and political network established by the school, the good ideological and political work literacy of teachers and students in the school has been improved. At the same time, the Chinese dream of realizing the great rejuvenation of the Chinese nation will be run through classroom education.

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