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Exploration of Ideological and Political Education Elements in Practical Teaching of Surveying and Mapping Engineering

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Abstract

Practical teaching is an important part of course teaching, and ideological and political education is an important part of course ideological and political construction. How to integrate ideological and political education elements into practical teaching is the core of course education. As one of the core courses of surveying and mapping engineering specialty, engineering surveying is one of the main positions for surveying and mapping specialty to shape "people". Starting from the necessity of practical ideological and political teaching, this paper refines the ideological and political elements of practical teaching in combination with the two aspects of teachers and students. At the same time, combined with the characteristics of the curriculum, it expounds the research on the integration of ideological and political education elements in practical teaching, which has certain reference significance for realizing the unity of professional knowledge teaching and ideological education, and realizing the educational goal of building morality and cultivating people.

Keywords: ideological and political education; ideological and political elements; practical teaching; fuse

1. Introduction

On December 7-8, 2018, President Xi delivered an important speech at the National Conference on Ideological and Political Work in Higher Education Institutions, deeply answering the fundamental questions of “what kind of people universities cultivate, how to cultivate people, and for whom to cultivate people (Xie, 2022)”. He emphasized the need to "integrate ideological and political work throughout the entire process of educational activities", "The fundamental aspect of ideological and political work in higher education institutions is “the work of being a person, the central link is to cultivate virtue, and the core is to improve talent cultivation ability”.

Since February 2017, the Ministry of Education has actively promoted the construction of new engineering disciplines, forming the "Fudan Consensus", "Tianda Action", and "Beijing Guidelines". It has also issued the "Notice on Conducting New Engineering Research and Practice" and the "Notice on Recommending New Engineering Research and Practice Projects", fully exploring the formation of a Chinese model and experience that leads global engineering education, and assisting in the construction of a strong higher education country.

As a part of curriculum teaching, the ultimate goal of ideological and political education (Jiang 2020) is to cultivate morality and cultivate people, and it should also follow teaching laws. The ideological and political education in the classroom can be "highlighted" and "knock on the blackboard", and belongs to the category of "explicit education"; Under the ideological and political education system (Tang 2011, Zhang 2020) in practical teaching, students are no longer just passive recipients, but should be active participants and implementers. In the process of practice, teachers can guide students to independently accept and identify, and even construct ideological and political teaching content, creating a scene of "moistening things silently" in the process of ideological and political education. The core value of ideological and political education has always been hidden in "teaching and educating people". As the "main battlefield" of ideological and political education, both ideological and political courses bear the function of educating people. In the practical education system, ideological and political education also plays an important role in "casting

the soul". Therefore, ideological and political education, as a compulsory education course for college students, has a lifelong impact on students and is crucial.

The elements of ideological and political education include theoretical knowledge, value concepts, and spiritual pursuits of ideological and political education. The curriculum of ideological and political education itself means a change in the educational structure, that is, the realization of a diverse unity of knowledge transmission, value shaping, and ability cultivation. Integrating ideological and political education into curriculum teaching and practice, subtly influencing students' ideological awareness and behavior; In the new era, social change, educational development, and individual progress require "people" to adapt, which requires universities to strengthen ideological and political education work to achieve the ultimate goal of "educating people" in education. Practical teaching is a supplement to theoretical teaching, a test of the effectiveness of theoretical teaching, a cultivation of students' comprehensive abilities, and a shaping of students' engineering consciousness. The excavation of ideological and political elements in the process of implementation is more difficult than ideological and political courses themselves. It needs to start from the characteristics of the course, not simply list and instill, but rather "nourish" and "educate" people.

2. The Integration Path of Ideological and Political Education Elements and Curriculum Construction

The Master Says: "Teachers are the ones who preach and impart knowledge to dispel doubts. People are not born with knowledge, and who can have no doubts? If they are confused and do not follow a teacher, they are truly confused and will eventually not understand; Confucius said, "If three people walk together, there must be my teacher. Therefore, disciples do not need to be inferior to their teachers, and teachers do not need to be superior to their disciples. There is a sequence of teachings, a specialization in the arts, and that's all.

From the perspective of knowledge transmission, learning, and absorption, it is reflected in the following aspects:

- (1) Knowledge is not just a simple transmission, passive and forced acceptance, but should be actively constructed through students' learning;
- (2) Teachers should not only focus on what they are saying, but more importantly, they should pay attention to what students are learning. There should be an influence mechanism between teachers and students, and a bridge between teaching and learning should be established;

(3) Teaching and learning should be effective, reflecting what is taught, what is learned, how it is taught, and how it is learned. We should continue to maintain the good aspects and strengthen the improvement of the shortcomings.

(4) The advancement of teaching and learning, the updating of subject knowledge, and the improvement or change of teaching methods should all be in line with the times, especially with information technology.

As one of the core courses of surveying and mapping majors, "Engineering Surveying" often contains professional knowledge that can affect the life of college students, and the ideological and political education of the core course is even more crucial and important for the education of college students to become "human". The learning and practice of professional courses are more closely related to future work and survival. Therefore, the selection of ideological and political education elements and the process of ideological and political education in professional courses require not only students to learn, but also teachers to learn, and the effectiveness of learning also needs to be tested and evaluated (Qiu 2017). Based on years of professional course teaching, it is summarized that ideological and political education and professional practical activities can be studied from the teacher and student levels, respectively. The process is as follows figure 1:

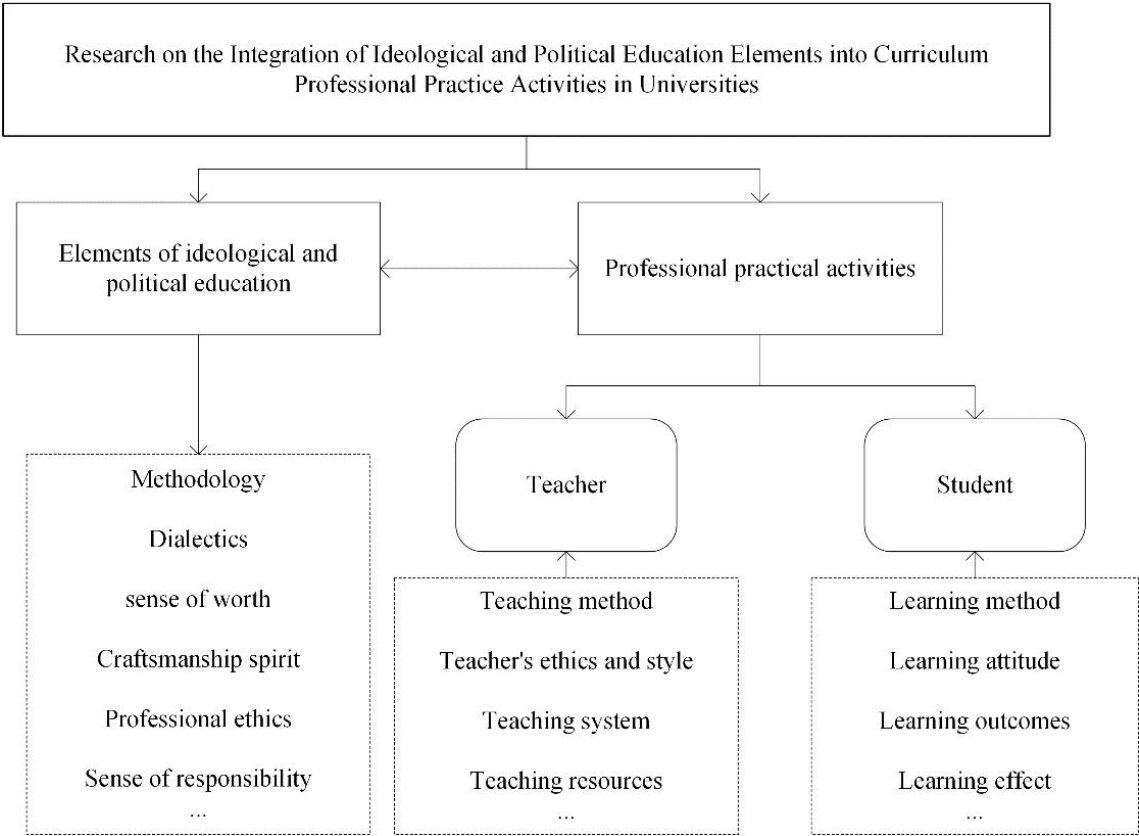


Figure 1. Integration of ideological and political elements into the practical process

3. The Course Positioning and Practical Teaching Design of Ideological and Political Education for Engineering Surveying

The course "Engineering Surveying" is one of the core courses determined by the Higher Education Guidance Committee of the Ministry of Education. For many years, the teaching has adopted a five stage teaching approach with the implementation goal of "acquiring knowledge through theoretical learning, solving problems through practical exploration, creating tasks through thinking and analysis, gaining knowledge through experimental practice, and gaining ability through understanding and analysis". This approach aims to enable students to learn, think, and provide feedback in the design of course content teaching. Get busy with the real rewards.

The experimental part is the key and difficult part of the course content, which is conducted in a single experiment and independent form. The experimental design is "2 group experiments and 2 individual experiments", with the aim of reflecting both group cooperation and individual independent experimental ability. The experiment was conducted using a model of "theory+instrument operation+computer verification", using theory to guide practice, verifying theory with practice, and integrating theory with practice. The internship part is designed as a complete measurement workflow, including the entire process of data archiving and report submission. The design of internship content reflects the core content and key and difficult points of theoretical teaching, and adopts an integrated approach of theory and practice, which is interconnected. The quality mode adopts the PDCA model to test the effectiveness of theoretical learning and the exercise of practical abilities.

Internship (practical training) courses should focus on the integration of learning and thinking, the unity of knowledge and action, and enhance students' innovative spirit of exploration, practical ability to solve problems, dedication to hard work and diligence in thinking and exploration. In the internship and practical training, we will carry out the cultivation of cooperation awareness and labor education of "teamwork, compliance with rules, advocating labor, and being willing to contribute". At the same time, we will focus on strengthening students' engineering ethics education, cultivating students' spirit of striving for excellence as a great craftsman, and stimulating students' national sentiment and mission responsibility for science and technology to serve the country.

Through years of practice, in the teaching of ideological and political education in the curriculum, ideological and political education is integrated throughout the entire cycle of pre

class, during class, and after class, including the entire process of the curriculum (textbooks, outlines, lesson plans, assignments, and assessments). At the same time, ideological and political education in the curriculum is integrated into teaching construction. In various links such as classroom teaching, teaching discussions, experimental training, and homework papers, teaching should be tailored to local conditions and students' abilities, and problem-solving methods, real-time interaction methods, and case studies should be used to improve teaching effectiveness.

4. The selection of ideological and political education elements in practical teaching

The "ideological and political elements" in professional courses do not refer to the "embedding" of ideological and political elements in professional courses or the "integration" of ideological and political elements in professional courses, but rather the exploration of the "ideological and political elements" contained in professional courses, namely the "educational elements" [8]. For university education teachers, they generally choose fixed textbooks that are suitable for students. The content of the textbooks is almost fixed, but how to lecture can make students feel knowledgeable and interesting, and how to explore the inherent "ideological and political elements" in professional courses to act on students, so that they can learn to take the profession as the foundation and trigger problems related to the profession, thus achieving ideological and political education. While imparting knowledge, Achieve the goal of value leadership. The "educational" effect of ideological and political elements must first "cultivate morality". "Cultivating morality" must enable students to have an impact on their thoughts, feelings in their hearts, role models in their behavior, and gains in their actions, achieving a balance between morality and talent. Integrating the cutting-edge development of disciplines, professional theoretical knowledge, practical technologies, and major engineering applications, fully exploring the ideological and political elements of surveying and mapping services for national major strategies (such as the Beidou satellite navigation and positioning system) and key projects (such as the FAST project) in terms of discipline development, industry status, typical figures and events, professional norms and surveying standards, and integrating emerging technologies and engineering cases into the course content. You can choose from the following aspects:

- (1) Establish patriotism, enhance national pride and sense of responsibility;
- (2) Establishing a correct outlook on life, values, and success;

- (3) A rigorous scientific attitude and spirit;
- (4) A spirit of teamwork, dedication, and mutual assistance;
- (5) Love science, embrace technology and innovative spirit.

5. Exploration of Ideological and Political Education Elements in Practical Teaching of Engineering Surveying

5.1 Establishing patriotism and enhancing national pride and responsibility

Surveying and mapping technology is changing rapidly, and technological means are updating rapidly. Cross disciplinary research with other disciplines is becoming increasingly close, and the information age is becoming increasingly fierce. Combined with the development of traditional surveying and mapping, digital surveying and mapping, information-based surveying and mapping and intelligent surveying and mapping, relevant major scientific research projects and achievements have been transformed into high-quality teaching resources, such as the "Hong Kong Zhuhai Macao Bridge", the "Beijing Daxing International Airport", the world's largest "radio telescope FAST", the "high-speed railway" as the name card of China Cases such as the independently developed "Beidou Satellite Navigation and Positioning System" in China have been integrated into the classroom. On the one hand, let students see the tremendous achievements made in China's surveying and mapping industry, and cultivate their sense of national pride; On the other hand, it also makes students realize clearly that in high-precision surveying and mapping equipment (such as high-precision gyroscopes, inertial navigation systems, and over 80% of ocean surveying and mapping equipment) that rely on imports, there are still some "bottleneck technologies" that need to be solved urgently, inspiring students' feelings of serving the country through science and technology and the mission of surveying and mapping personnel, and inspiring students' sense of responsibility. Cultivate students' spirit of striving for excellence as a great craftsman.

5.2 Establishing a correct outlook on life, values and success

Drawing on the advanced deeds of the National Testing First Brigade for ideological and political education. Since the establishment of the National Survey First Brigade, it has successively surveyed Mount Everest 7 times, twice to the South Pole, 39 times to the wasteland of Inner Mongolia, 52 times to the uninhabited areas of Tibet, and 52 times to the hinterland of Xinjiang. Its footprint covers all provinces, autonomous regions, and municipalities except Taiwan in the country, with a hiking distance of nearly 60 million kilometers, equivalent to more than 1500 circles around the Earth, measuring nearly half of

China's geodetic control results. The essence of the "surveying and mapping spirit" reflected by the National Surveying Brigade is to "make every effort, at all costs, to complete the tasks assigned by the Party and the state, even at the cost of one's own life". Why is the national testing team so excellent? Why are you so persistent? Why are you so brave to move forward? The work reflects the team members' outlook on life and values. As a college student, one should be able to draw nourishment and strength from the surveying and mapping spirit of "loving the motherland, loyal to the cause, hard work, and selfless dedication" that all members of the National Testing First Brigade have dedicated their youth and blood for decades, and establish a correct outlook on success. For practical teaching of courses, students are encouraged to understand the process of practice, experience the process of practice, feel the charm of practice, gain knowledge from practice, enrich themselves, and refine life.

5.3 A rigorous scientific attitude and spirit

Engineering surveying is highly specialized and closely related to other disciplines such as computer, engineering, geological engineering, architectural engineering and graphics. It is a basic discipline, which not only provides basic data for engineering construction, but also provides safety monitoring guarantee for engineering construction. It is the base of various projects. With the application of new technologies, methods, materials, and processes, the requirements for measurement have also changed, especially in terms of accuracy requirements, timeliness of data, data processing and analysis of multiple carriers such as images, images, videos, and big data analysis. Surveying and mapping workers need to have a rigorous scientific attitude and scientific research spirit. Through the knowledge of height measurement on Mount Everest, understand the significance and measurement process of height measurement on Mount Everest in China. Through videos, students can understand the story behind the elevation measurement of Mount Everest, stimulate their interest in learning, and cultivate their spirit of fearlessness and facing challenges head-on. Therefore, in the process of practical teaching, it is necessary to cultivate students' scientific attitude, such as the completeness, authenticity, and reliability of data; Simultaneously researching and exploring unknown problems is forward-looking and requires the cultivation of a scientific spirit.

5.4 Teamwork, dedication, and mutual assistance spirit

From the perspectives of the major, industry, country, international, cultural, and historical aspects involved in the course, increase the knowledge and humanity of the course, and enhance its leadership, modernity, and openness. Teaching the connotation of "surveying and mapping spirit, Beidou spirit, Everest spirit, and Antarctic spirit" in theoretical classrooms,

cultivating students' spirit of teamwork and mutual assistance. Practical teaching has its own particularity. Unlike theoretical exams where one person has one paper, it requires multiple people to work together in teams, and the implementation path is not fixed or single. At the same time, due to the varying abilities of team members, it is more important to work together as a team; Individuals have different positions in the group, but the final tasks are the same, requiring mutual assistance and cooperation to complete.

5.5 Love science, embrace technology and innovation spirit

In the 1980s, most of the surveying and mapping instruments we used were produced abroad. After entering the year 2000, our domestic surveying and mapping equipment research and development production capacity has greatly increased. By introducing China's Beidou navigation system, we aim to understand the development process of China's Beidou satellite navigation system, and understand the unknown stories behind it through videos. We aim to promote the Beidou spirit of "independent innovation, unity and cooperation, overcoming difficulties, and pursuing excellence". Through the construction history of the Beidou system, we can appreciate the power of technology and the spirit of innovation.

6. Conclusion

Practical teaching is the best way to test theoretical teaching in the classroom. The practical teaching environment is often influenced by external factors. To complete practical teaching well, participants in practical activities need to have a sense of responsibility, cooperation, and dedication; In practical activities, it is necessary to follow objectivity, seek truth from facts, strictly adhere to the process, and strive for excellence. To implement moral education and cultivate talents, it is necessary to integrate ideological and political content with professional knowledge and apply it to education. With the rapid development of society and the ever-changing surveying and mapping industry, strengthening the excavation of ideological and political elements is a continuous exploration and updating process that requires the joint efforts of educators and participants to persistently promote and implement. In short, ideological and political education should make teachers and students serve as a community of teaching and education. Its content should ensure that teachers and students have an impact on their thoughts, feelings in their hearts, role models in their behavior, and gains in their actions. The diversity of ideological and political elements makes it an eternal topic for educators to explore and apply them in practical teaching to "nourish things silently" and "cultivate virtue and cultivate people".

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References

- [1] Xie Lifang. An Analysis of the value of ideological and political Education in Xi Jinping's quotation of classics [J].Journal of Jiangsu University of Science and Technology, 2022, 12(4):59-65.
- [2] Jiang Tianqiao, Hu Yanqing. The main problems and countermeasures in the current ideological and political education work in universities [J]. EDUCATION EXPLORATION, 2011, 238(4):36-37.
- [3] TANG Qian. Research on the Integration of Ideological and Political Elements into Innovation and Entrepreneurship Education from the Perspective of Emerging Engineering Education [J]. EDUCATION TEACHING FORUM, 2020(26):69-71.
- [4] Zhang Li-na. Elements of Ideological and Political Education in Social Practice of College Students [J]. Journal of Shenyang Agricultural University (Social Sciences Edition) ,2020,22(3):205-209.
- [5] Qiu Weiguang. The Value Connotation and Generation Path of Curriculum Ideological and Political Education [J]. Ideological and Theoretical Education, 2017(7):10-14.