

## New engineering core literacy training and curriculum ideological and political collaborative education

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**Abstract:** The construction and practice of the ideological and political education model of application-oriented college courses under the background of "new engineering" can enhance the ideal identity and road confidence of engineering innovative talents through ideological and political theory courses, general education courses improve humanistic quality and compound ability, and professional education courses Nurturing professional quality and professionalism, practical education courses to cultivate sense of responsibility and innovative personality are carried out in four aspects. Curriculum ideological and political education is an important carrier of ideological and political education in colleges and universities, and an effective way to achieve the fundamental task of building morality and cultivating people. In the new era, the demand for the core literacy and ability of outstanding engineering talents has also risen to an important level in the path of construction of "new engineering". That is to say, under the background of the new economy and new industries, it is necessary to continuously adapt to the changes of the times, increase the strength of leadership, expand the inheritance, complete the coordinated development, and implement the innovative approach based on the foundation of the new economy and the new industry. extend. On the basis of "professional" and "communication" and other abilities, expand the horizon, improve the pertinence of ideological and political education, and meet the construction needs of integrity, dedication, friendliness, and patriotism.

### 1. Introduction

With the further development of science and technology, the society has put forward a better demand for the training of engineering talents [1]. It is not only necessary to have knowledge and academic skills, but also to improve the adaptability of the society to achieve a synergistic effect. The effective construction of large "course ideology and politics" [2]. The new engineering concept puts forward new ideas for talent training, focusing on classroom teaching, and infiltrating ability training and ideological and political education into the whole process of curriculum teaching [3]. The construction and practice of "new engineering" is a major strategic deployment and blueprint, and its main goals and tasks are to cultivate engineering innovative talents in the new era and build a strong country in engineering education [4]. Therefore, its core always revolves around the question of what to cultivate people for, what kind of people to cultivate and how to cultivate people [5]. New engineering puts forward new requirements for cultivating a large number of future new engineering talents with international vision, engineering literacy and innovation ability [6]. Its core competencies mainly include personal effectiveness, knowledge ability, academic ability, technical ability and social ability [7]. The leap-forward development of new technologies has brought about the diversified integration of new industrial forms and new economic forms, which has put forward new requirements for higher engineering education, and has given birth to the "new engineering" concept of large-scale engineering or large-scale engineering concepts, that is, innovative, comprehensive, Full-cycle engineering education "new concept" [8]. Under the background of new engineering, the effective development of ideological and moral and professional quality education in the course of professional course teaching is a direction of the

current professional course reform. Integrating ideological and political education into all aspects of teaching is to achieve full education, whole process education, and comprehensive education [9]. An important means of educating people in orientation has extremely important practical significance.

## **2. Commonalities between socialist core values and new engineering core literacy**

### **2.1. Honesty and Integrity - Integrity**

Whether it is a revolution or a construction, it is necessary to maintain the spirit of bearing hardships and standing hard. Students should also maintain a hard-working spirit and maintain good quality in their studies [10]. Zhou Enlai's "going into the mud without being stained, not being corroded by bourgeois sugar-coated cannonballs is the most valuable revolutionary quality" and Lu Xun's "cultivating them with hard-working physical strength, pure and noble morality, broad freedom and ability to accommodate new people [11]. The spirit of the tide, that is, the power to swim in the new tides of the world without being overwhelmed" all illustrate the importance of honesty and integrity. In life, if you are an honest and upright person, you will be respected by more people and loved by everyone. If you are an honest and upright person in your studies, many students are willing to share or cooperate with you [12]. Integrity is an important quality that gives you a strong affinity and allows others to accept you unconditionally. From Confucius to the later humanists, they all reflect the importance of honesty and integrity.

The core literacy construction of new engineering needs to be combined with honesty and integrity, and maintain a good inheritance to find the foundation of academic construction. In life, if you are honest and upright, you will be respected and have a good relationship with people; in study, if you are honest and upright, your classmates will be willing to cooperate with you, and your future employers will also pay special attention to you. After the mechanical engineering and electrical majors are combined with each other, they will be well transformed, and the effectiveness of ideological and political education will be improved, laying a good foundation for future development. Academic integrity and integrity are one of the most important elements of academic norms. Integrity, as one of the core qualities of new engineering, is not only the inheritance and development of socialist values, but also an inevitable requirement for the current academic development of the discipline, which is the most fundamental requirement for the basic academic integrity of contemporary college students. In the teaching of new engineering majors, teachers should strengthen the construction of ideological values and maintain a good curriculum construction on the basis of honesty and integrity. When writing a graduation thesis, it is necessary to ensure the authenticity of the data and not cause problems of academic integrity.

### **2.2. Be good at learning and go up - dedication**

"Han Feizi·Yu Lao" pointed out that dedication means to concentrate on study or work. Today's dedication means that people have a high sense of professionalism, responsibility and a high sense of honor for the cause they are engaged in. It is the dedication spirit of loving one's post, loving the factory, keeping the business and being happy. New engineering is the learning of new knowledge. It is necessary to maintain the spirit of love and dedication, and maintain a good learning attitude. No matter what kind of career, you need to be dedicated, diligent and serious. This attitude is professionalism. In this sense, dedication is to realize one's life value by concentrating on one's career. Dedication is a direct reflection of one's own life values. Students need to maintain a positive attitude in school and abide by the basic principles that a citizen needs to have. Dedication in the socialist core values is a value criterion at the individual level of citizens, and it is also what current college students need. Cultivating quality is especially important for engineering students under the background of new engineering. Do not miss work in the usual attendance, and listen carefully to every class explained by the teacher. Secondly, when realizing it, it is necessary to continuously improve the engineering practice ability, exercise the quality of love and dedication, and effectively implement this quality into future work or individual actions. For the education of

professionalism, we mainly focus on two aspects. One is the usual attendance.

Usually, students are called on a regular and random basis for class, and students are required not to be late or to leave early. In particular, experimental classes require students to strictly abide by laboratory regulations. Let students understand the essence of listening to the class is the embodiment of professionalism. The second is industrial apprenticeship and graduation practice. Under the background of new engineering, even if you work with a master, you need to abide by the company's time. What time the company requires you to go to work and leave work, then you need to go to get off work on time within the specified time. If there is a situation where night shifts are required, students are required to follow the requirements and do not engage in specificity. Industrial apprenticeship and graduation practice are important links in the cultivation of engineering practice ability of students majoring in chemical engineering technology. We should intersperse students' professional education with the whole process of industrial apprenticeship and graduation practice.

### **3. The construction and practice of the ideological and political education model of local colleges and universities under the background of "new engineering"**

#### **3.1. Using online courses to blend online and offline teaching**

According to different subjects and individual differences of courses, teachers of professional courses should be able to grasp the organic connection between ideological and political education and professional courses, and find the right fit point. The online course of road surveying and design was rated as an excellent online open course at the school level. Based on "Internet + course ideology and politics", online and offline mixed teaching was carried out, teaching content was optimized and teaching methods were enriched, and the ideological and political education functions of professional courses were sorted out to realize ideological and political education. educational goals. Infiltrate the ideological and political humanistic literacy and professional ethics literacy into professional courses, strengthen the value-leading role of engineering professional courses, and realize the organic unity of knowledge transfer and value guidance in professional teaching. In the pre-class preparation stage, according to the characteristics and teaching objectives of the course, teachers connect the teaching content of line selection and alignment, plane design, longitudinal section design and cross section design through a complete and specific highway route design project. , covering almost all the knowledge points that need to be mastered to meet the requirements of students' ability development. Focusing on the ideological and political requirements of the course, we will deeply develop the teaching materials for professional courses, and systematically establish a teaching material system suitable for the ideological and political courses of the course. Upload basic course knowledge resources on the teaching platform, such as course standards, unit teaching design, course PPT, teaching micro-videos, etc.; expandable knowledge resources, such as online test exercises, animations, picture libraries, reference materials, etc.; extracurricular extension resources, such as Engineering cases, specifications, simulation videos, etc., reflect the diversity and multi-dimensionality of online resources.

Based on the guiding ideology of the organic integration of ideological and political education and professional curriculum education, a teaching team composed of ideological and political theory teachers, professional teachers, and teachers of pedagogy and curriculum theory regularly conducts seminars on the development of ideological and political teaching materials for professional courses , to sort out and specifically express the content of ideological and political education undertaken by professional courses, and deploy and concretize them according to the distribution of course chapters, so as to form the overall arrangement of course ideological and political education. In the face-to-face teaching stage of the classroom, teachers need to carefully design the ideological and political elements such as socialist core values and craftsmanship throughout the course teaching. Reform the teaching and design of ideological and political courses. Starting from the top-level design, combined with the teaching effects of courses such as moral literacy, physical and mental quality, and teamwork, we will discover the convergence of

ideological and moral education in the teaching content and the knowledge point education of professional courses, and accumulate ideological and political education materials related to professional courses.

### 3.2. The combination of theory and practice, multi-channel coordinated education

The training of "new engineering" talents should "comprehensively improve students' sense of social responsibility, innovative spirit and practical ability, and enhance the international competitiveness of my country's engineering education". In order to cultivate students' ability to comprehensively apply the basic theoretical knowledge and professional knowledge they have learned, as well as the skills of road survey and design, a practical teaching link of curriculum design is set up to comprehensively improve students' comprehensive design ability. In the course design stage, teachers need to carry out ideological and political education throughout. Highlighting practical ability is an important feature of new engineering talents, and practical teaching is an important link and main carrier for cultivating compound engineering talents. The work order practice process is shown in Figure 1.

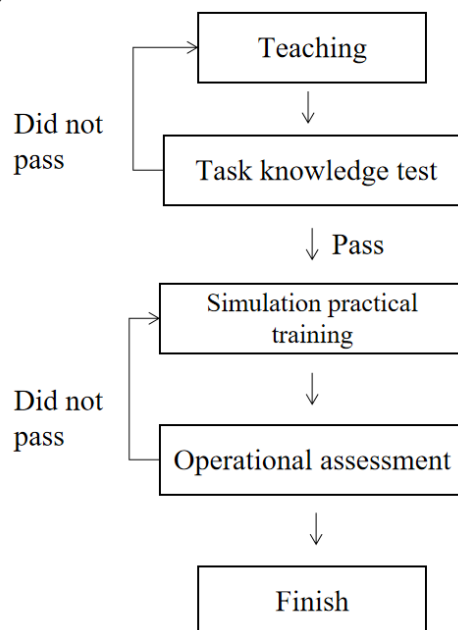


Figure 1 Task work order practice process

"It is necessary to encourage and create conditions to guide students to use various means such as club activities, scientific and technological competitions, innovative industrial practice, professional social practice, etc. to connect theory with practice, and to develop practical ability, application ability and professional quality." Exercise training and other teaching methods to enhance students' initiative and enthusiasm for learning. Students are required to carefully review the drawings according to the topographic map and design the road route according to the norms and standards, so as to develop the habit of abiding by various norms and standards, enhance the awareness of law-abiding, and cultivate the students' strict, dedicated, lean and dedicated work style. Practical courses are a form of teaching organization with rich connotations of moral education. They have the characteristics of openness, autonomy, interaction and generativeness, which are conducive to improving students' comprehensive engineering literacy. In the field of social life, in a series of interpersonal interactions and social interactions, the functions of "learning by doing, understanding by learning" and "unity of knowledge and action" are exerted, and the sense of responsibility and innovative personality of engineering talents is cultivated. Under the guidance of teachers, students cooperate with each other to complete tasks, which is conducive to cultivating and exercising students' teamwork ability and cultivating students' collective sense of honor. The development process of train control simulation training course content is shown in Figure 2.

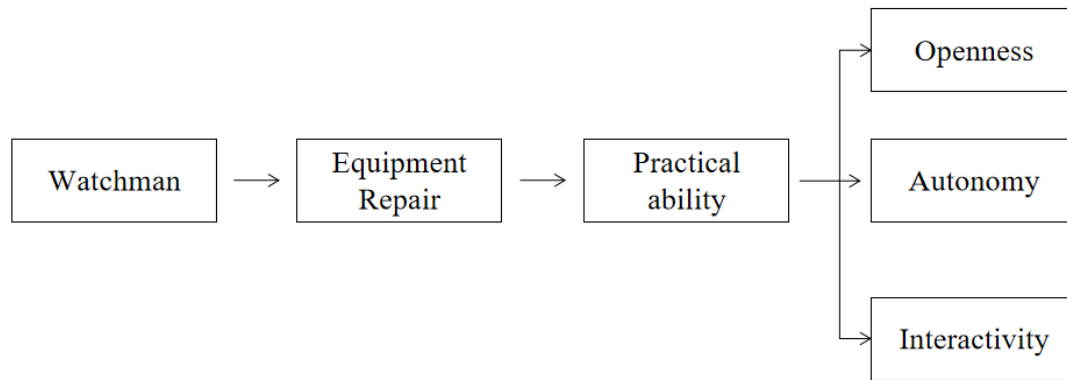


Figure 2 The content development process of the train control simulation training course

Cultivate students' innovative awareness and teamwork spirit through basic practical courses, and form two practical teaching systems inside and outside the classroom, including graduation design, curriculum design and expansion courses in the first classroom; club activities, social practice, social investigation, volunteering in the second classroom service etc. There will inevitably be various difficulties in the process of practice. Through the analysis and resolution of the difficulties, students can correctly view the adversity in life development and cultivate their optimistic and healthy attitude towards life.

#### 4. Conclusions

With the progress of society, in the process of building the core literacy of new engineering, it is necessary to clarify the training objectives, and establish a scientific training system based on the actual situation. The seamless link between course ideology and politics and professional teaching content, and the ingenious integration of course ideology and politics can greatly improve the timeliness and appeal of ideological and political education. Reform the existing teaching concepts and teaching methods, establish a scientific and reasonable multi-directional two-way evaluation system, and achieve the invisible "course ideology and politics" purpose of "literate people and educate people with culture", so as to realize the value shaping, ability training, knowledge development of college education. Teach Trinity's pedagogical goals. In order to meet the needs of the times, we should increase infrastructure construction and implement the extension towards the comprehensive development path of "morality, intelligence, physique, beauty and labor". In addition, teachers also need to integrate literacy courses with curriculum ideology and politics, maintain the integration of core literacy and social values, and on the basis of knowledge coordination and education, strengthen moral education, master technology, and improve ability for future lifelong Learning provides a good foundation of preparation.

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