

Research on the Integration of Ideological and Political Elements in the Curriculum of Mechanical Specialty under the Background of Emerging Engineering Education

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Keywords: Emerging Engineering Education, Engineering Education, Mechanical Specialty, Ideological and Political Elements.

Abstract: Education is the foundation and focus of national development. Under the background of industrial and scientific and technological innovation in the ascendant, the corresponding attention of higher engineering education is also rising, and there is a shortage of new engineering talents. Emerging engineering education came into being. "Emerging engineering education" corresponds to emerging industries, such as artificial intelligence, robotics and cloud computing and so on, which seems to have a great impact on traditional engineering education. However, the proposal of "new engineering" is not to completely abandon the traditional engineering education model, but to reform and upgrade the traditional engineering education and make it adapt to the changes of the trend of the times. As a pillar specialty of higher engineering education, machinery specialty is bound to need optimization and adjustment in all aspects under the background of emerging engineering education. This paper mainly expounds why the curriculum of mechanical specialty needs the integration of Ideological and political education, what ideological and political elements should be integrated in and how to integrate ideological and political education into the curriculum under the background of emerging engineering education. Taking the basis of machinery manufacturing technology in secondary vocational school as an example, this paper explains what ideological and political elements should be integrated into the machinery specialty, as well as the entry point and specific integration.

1. Introduction

"Emerging engineering education" is a dynamic concept relative to "old engineering education", and the construction of a new engineering course does not completely eliminate the old engineering education. There are three meanings of "new": "Emerging", we should set up and launch a number of new engineering majors to improve the quality of education; "New type", reform and innovate the existing engineering majors, remove the dross, extract the essence, and bring forth new ideas; "New born", the interdisciplinary combination of different disciplines, endows new development space and potential. The strategic policy of emerging engineering education will well serve the new needs of national strategic development, build new advantages in international competition and implement the new requirements of Building Morality and cultivating people better.

The horn of emerging engineering education construction and artificial intelligence innovation plan has been sounded. Machinery major as an important part of the old engineering specialty, the construction of the emerging engineering education will have a certain impact on the machinery specialty. Its reform and innovation are worthy of deeper exploration and exploration.

2. Current Situation of Ideological and Political Integration of Mechanical Specialty

Mechanical specialty is a typical specialty of science and engineering, which inherits the logical characteristics of science and engineering. Science and engineering courses take learning natural

knowledge as the basic logical main line, reflect the natural law and operation mechanism of things, distinguish right and wrong, have objectivity, and do not change with the change of human consciousness. The integration of Ideological and political elements belongs to the category of Humanities and social sciences. It originates, forms and finally serves people's thinking and consciousness. At this level, the logical thinking of science and engineering majors seems to be separated from the logical thinking of curriculum thought and politic. This makes it difficult to integrate ideological and political elements into science and engineering majors. The integration method is also relatively simple and linear. It is too stiff and rigid, which is not in line with the principle of curriculum ideological and political integration - "moistening things silently".

Although science and engineering courses seem to be separated from the ideological and political logic of the curriculum, the discovered natural laws should be applied to real life. How and by whom are they applied, which belong to professional ethics. Professional ethics provides the basis for professionals to make correct choices in professional moral and ethical issues. It is a kind of moral values and code of conduct. The professional ethics of mechanical specialty includes many aspects, such as accuracy assurance and operation safety when making parts. Professional teachers can take professional ethics as the starting point of Ideological and political integration of the curriculum to better integrate ideological and political elements.

3. A Case Study on the Integration of Ideological and Political Elements into the Fundamentals of Mechanical Manufacturing Technology

In view of the above shortcomings of the integration of Ideological and political elements of mechanical specialty, and combined with the new concept, new structure, new mode, new quality and new system of the new engineering department in the essence of the original engineering department. Referring to the new requirements of the new engineering course for higher engineering education, the following will focus on the elements and ways of Ideological and political integration in the course, taking the basic theory course of machinery major "Fundamentals of machinery manufacturing technology" as an example under the background of the new engineering course.

Table 1 Initial integration.

Course content	Entry point of Ideological and political integration	Ideological and political objectives
Chapter One Introduction		
The position and role of machinery manufacturing industry in the development of China's industrial national economy	Great country craftsman, China's manufacturing industry, one belt, one road, and other key words, manufacturing documentary, celebrity case illustrates the achievements and difficulties of our engineers	Stimulate students' feelings of home and country and sense of responsibility, and expand students' global vision
Production process and technological process of machinery manufacturing plant	"Assembly line", "production line" and other keywords, play a complete video of excellent production line, clarify the unity and cooperation of production line, and explain the importance of team building	Let students know that every occupation is very important and there is no good job or bad job. They should respect every occupation and abide by social order
Production type and process characteristics	Emphasize how much capacity, how much output, and ask for quality rather than quantity	Cultivate students' spirit of acting according to their ability
Benchmark	Show engineering drawings and look for design benchmarks. What changes will happen to drawings due to different benchmarks	Find the right line of life, lay a good foundation and buckle the first button of life
Clamping and positioning of workpiece	Show the positioning and clamping process of the workpiece. Positioning is a congenital outlook on life. Clamping is to reflect on yourself. Often reflecting and always being new, and improving yourself in reflection	Cultivate students' rigorous attitude and guide students to often reflect on themselves

The textbook selected in this paper for the integration of Ideological and political elements into

design is the second edition of fundamentals of mechanical manufacturing technology published by machinery industry press. This course is a professional course to explore the basic theories, methods and technologies of mechanical manufacturing technology. It is a professional basic course for mechanical majors, laying a foundation for the study of later professional core courses. Taking the first chapter of this book as an example, the initial entry point and objectives of Ideological and political integration are shown in the table .^[5-7]

4. Exploration on the New Integration of Typical Ideological and Political Elements of Mechanical Specialty under the Background of New Engineering

By combing the basic chapters of the typical basic course of machinery major, Fundamentals of machinery manufacturing technology, and analyzing the knowledge and skills required in each chapter, it is found that the ideological and political elements integrated into the course of fundamentals of machinery manufacturing technology of machinery major can be roughly divided into two levels and two elements^[8,9]:

Ideals and beliefs: 1. Chinese characteristics, native land emotion, serving the society;
Professional spirit: 2. Craftsman spirit of excellence.

4.1. Chinese Characteristics, Native Land Emotion, Serving the Society

The nineteen major reports of the Party pointed out that China should take China's socialist road of education with the guidance of Xi Jinping's socialist ideology with Chinese characteristics in the new era. The education front must be based on the new era, grasp the new situation, earnestly enhance the sense of hardship and strengthen the responsibility of mission. The keyword of Chinese characteristics has become a beacon of education. Education that conforms to Chinese reality and serves Chinese society is high-quality education.

"Every man is responsible for the rise and fall of the world". The native land emotion is the emotion that every citizen should have. It is one of the connotations of China's excellent traditional culture. We should make the feeling in the dream and patriotism in the heart. Patriotism is not only about loving one's motherland, but also about people's sense of belonging and identity to their country, nation and culture. President Xi Jinping emphasized on the speech of the the May 4th Movement 100th anniversary conference in 2019: For every Chinese, patriotism is not only a duty, but also a duty. It is the place of heart and emotion. The emotion of native land is also an important part of the ideological and political elements of the curriculum, which should run through the class.

People can turn their patriotic feelings into their own actions and strive for the happiness of their motherland and compatriots. In other words, the stronger the patriotic feeling is, the stronger the spirit of serving the people and contributing to the society is. In education, teachers integrate patriotic ideological and political elements into the education of professional courses, and students give back to the society with their professional knowledge and skills, so that the society can continue to prosper and develop.

4.2. Craftsman Spirit of Excellence

In recent years, words such as "Made in China", "Chinese creation" and "Craftsman spirit" have frequently appeared in mainstream media and newspapers. The series of programs of "Craftsman in a big country" tells the story of a skilled craftsman in different positions building dreams with their ingenuity. Craftsman spirit has been deeply rooted in the hearts of the people. The seeds of craftsman spirit have taken root in the hearts of ordinary people and are waiting to sprout.

In the teaching of professional courses, cultivating students' craftsman spirit of excellence is also one of the key objectives of the implementation of Ideological and political courses. Many contents in the textbook fundamentals of mechanical manufacturing technology selected in this paper are closely related to craftsman spirit, such as the selection of benchmark, the control of machining accuracy, the positioning and clamping of workpiece and other theoretical knowledge. In the teaching process, it can be explained in conjunction with the contents related to the mechanical specialty in the great country craftsman. For example, Gu Qiuliang, chief fitter in charge of Jiaolong

manned submersible, China shipbuilding industry group. As we all know, the requirements for parts installed on the submersible are very high, but Gu Qiuliang, with his superb skills, can process parts with precision of two dmms, so he is known as "Gu two dmms". The story of this great craftsman is closely related to the chapter of precision in the mechanical specialty, which can be deeply combined when explaining the content of precision. With the videos and deeds of craftsman masters, we can better integrate the craftsman spirit of excellence into the mechanical courses.

5. Conclusion

As president Xi Jinping pointed out at the National Conference on Ideological and political work in Colleges and universities, "good ideological and political work should be like salt, but not eating salt only. The best way is to dissolve the salt into all kinds of food and absorb it naturally." In the process of Integrating Ideological and political education into the curriculum, we can't lose the essential content of the curriculum, which will become an ideological and political curriculum, only the requirements for students' moral education, but the requirements for the improvement of students' professional ability.

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