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Exploration and practice of ideological and political teaching in computer courses under the background of new era -- taking Product prototype design as an example

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Abstract:
College computer courses play a vital role in cultivating the professional ability and quality of new engineering students. It is indispensable to train new engineering talents with craftsman spirit for curriculum ideological and political construction. This paper explores the connotation and significance of thinking and politics in the course of computer major, takes "product prototype design" as an example, deeply excavates the elements of thinking and politics contained in the course content, explores the diversified model of adding blood, and aims to improve students' computer professional ability and scientific literacy, so as to achieve the effect of education.

Keywords:
Curriculum ideological and political, Computer professional courses, Teaching reform

1.Introduction

It is the fundamental task of education and the foundation of colleges and universities to cultivate morality and cultivate people. In May 2020, the Ministry of Education issued the Guiding Outline for Ideological and Political Construction of Curriculum in Colleges and Universities, pointing out that ideological and political education should run through the talent training system, comprehensively promote the ideological and political construction of curriculum in colleges and universities, give full play to the educational role of each course, and improve the quality of talent training in colleges and universities(Notice of the Ministry of Education on Issuing the Guidelines for Ideological and Political Construction of Curriculum in Colleges and Universities (No. 2020), 2020). Promoting the ideological and political construction of college curriculum is a strategic measure to play the role of curriculum education. Under the background of the new era, the fundamental task of training high-quality compound talents is to educate people. "Product prototype design" is the basic course of computer major. In teaching practice, we should combine professional knowledge with ideological and political education content, give full play to the education function, and achieve the teaching goal

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of collaborative education.

2.Research background

2.1Research background

Shanghai Municipal Party Committee and Municipal government first proposed the term "curriculum ideology and politics" in 2014. "Curriculum thinking and politics" is not to add a course, nor to add an activity, but an educational concept, is to integrate ideological and political education into all aspects of college curriculum teaching and teaching reform, to achieve moral education, cultivate people, and smooth things silently. To carry out the basic task of building moral and cultivating people, the curriculum should integrate the three aspects of value shaping, knowledge imparting and ability training, and cannot be separated. Teachers are the "main force", curriculum construction is the "main battlefield", and classroom teaching is the "main channel". The main function of the curriculum is to train students to grow and become talents through the education and teaching of systematic professional knowledge system and practical skills, and consciously integrate the love of national conditions, the ambition of strengthening the country, and the practice of serving the country into the struggle of upholding and developing the cause of socialism with Chinese characteristics, building a powerful modern socialist country, and realizing the great rejuvenation of the Chinese nation, mainly reflecting the characteristics of cultivating people and cultivating talents(‘Exploring the Organic Combination of Ideological and Political Curriculum around the Fundamental Task of Lide and Creating People’, 2019).

2.2Problem statement

Under the background of the new era, the ideological and political teaching of computer courses is becoming more and more important. This teaching method not only helps to cultivate students' professional skills, but also improves their ideological and political literacy, so that they can better understand and apply what they have learned. Taking the course of "Product prototype Design" as an example, the research problems of its ideological and political teaching can be discussed from the following aspects:

1.Integration of ideological and political elements: How to organically integrate ideological and political elements into the course of "Product prototype design", so that students can receive ideological and political education while learning professional knowledge is a problem worth studying. For example, by analyzing the design cases of excellent products at home and abroad, students can be guided to think about the social value and cultural significance of products and their impact on users, so as to cultivate their sense of social responsibility and innovation.

2.Innovation of teaching methods and means: In the course of "Product prototype design", traditional teaching methods may not be able to fully meet the needs of ideological and political teaching. Therefore, it is necessary to explore and innovate teaching methods and means, such as using project-based learning, case teaching, reverse class, etc., in order to stimulate students' learning interest and enthusiasm, improve their practical ability and innovative thinking.

3.Evaluation and feedback of ideological and political teaching of the course: How to evaluate and feedback the effect of ideological and political teaching of "Product prototype design" course is also a problem

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that needs to be studied. We can make scientific evaluation system, collect students' feedback and observe students' behavior to evaluate the teaching effect of ideology and politics, so as to adjust teaching strategies and methods in time.

4.Improvement of teacher quality: In the ideological and political teaching of computer courses, the quality of teachers plays a crucial role. Therefore, how to improve teachers' ideological and political accomplishment and teaching ability, so that they can better undertake the task of ideological and political teaching, is also a problem worth studying. We can improve teachers' ideological and political accomplishment and teaching ability through training, discussion and communication.

To sum up, the exploration and practice of ideological and political teaching of computer courses under the background of the new era requires us to conduct research and practice from many aspects in order to cultivate outstanding talents with both professional skills and good ideological and political literacy.

2.3Research significance

Under the background of the new era, the core connotation of curriculum ideology and politics is to train high-quality and high-skill compound talents, and train socialist builders and successors with all-round development of morality, intelligence, physical fitness, the United States and labor. "Product Prototype Design" belongs to the basic course of computer majors. It is a basic introductory course for computer majors in the first year of higher vocational colleges. It has the characteristics of professionalism and guidance, and its main teaching is to cultivate students' basic computer thinking, research methods and innovation consciousness, and improve students' professional application ability, problem analysis and solving ability and practical problem solving ability. As a basic professional course in the first grade of higher vocational colleges, teachers have a certain influence on the growth of students, which is the most important practical basis for strengthening curriculum ideology and politics(Z. Wang et al., 2023). Professional basic course teachers play a good role as the "main force" and the "main channel" of classroom teaching. Focusing on the development needs of computer technology and disciplines, the "craftsman spirit" learning is internalized in classroom teaching, and the professional quality of professional norms, realistic innovation, unity and cooperation, and the courage to take responsibility are targeted to cultivate students, so as to achieve value shaping, knowledge imparts and ability training. Therefore, it is of great significance to carry out the basic course of computer science in higher vocational colleges. It is an important measure to implement General Secretary Xi Jinping 's important discussion on education(Comprehensively Promote the University Curriculum Ideological and Political Construction Work Video Conference Held, 2020), and it is an inevitable requirement to implement the fundamental task of cultivating people by virtue, so as to achieve full and all-round education of all staff.

3.Research review

With the rapid development of information technology and the deepening of globalization, computer professional education plays an increasingly important role in cultivating high-quality information technology talents. At the same time, in the face of the social change and the diversification of value concepts in the new era, how to integrate ideological and political education in computer courses and realize the organic combination of knowledge imparts and value guidance has become an important topic of concern in the current edu-

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cation field.

3.1Theories related to this study

Zhao Haiyong et al. believe that it is difficult to achieve the ideological and political goals of the curriculum through the traditional teaching mode based on teacher indoctrination, and the two-way question chain-driven curriculum ideological and political teaching mode transforms the mining process of curriculum ideological and political elements into the construction process of question chain(Zhao et al., 2024). Chen Mingxing et al. believe that carrying out curriculum ideology and politics in the course of "engineering physics and chemistry" can organically integrate materialized knowledge with ideological and political education, so that students can not only master professional knowledge, but also think deeply about social, cultural, ethical and other issues involved(Chen & Zhang, 2024). Gu Deyin et al. believe that curriculum ideological and political education should be centered on moral cultivation, with the goal of cultivating professionals with both moral and ability, aiming at the national green development strategy, the "double carbon" strategic goal and regional development needs, and combining the positioning and development goals of the school, to establish a comprehensive, rich, progressive and mutually supportive professional curriculum system structure(Gu et al., 2024). Wang Chun et al. believe that teachers of specialized courses are the main force of ideological and political construction of courses, and they set a good example for students(C. Wang et al., 2023). Shi Jingjing et al. believe that students are the real subjects in the teaching process of computer courses in colleges and universities. In the process of classroom learning, students need teachers' active assistance and guidance in the face of abundant learning resources(Shi et al., 2023). Shao Xiaoyan et al. believe that ideological and political education in curriculum should be continuously strengthened through various means to guide students to change from childhood to big self, gradually improve their ideological cognition, and finally be more active in their work(Shao et al., 2023). Zhou Qiao believes that curriculum ideology and politics is the key content of higher vocational education, and the construction of ideological and political resources is a long-term process of continuous improvement and enrichment(Zhou, 2023).

3.2Summary

Through the review of the research on the exploration and practice of ideological and political teaching in computer courses, we can draw the following conclusions:

First of all, the ideological and political teaching of computer courses is particularly important under the background of the new era. With the rapid development of science and technology and the advancement of social change, the simple teaching of skills can no longer meet the needs of the society for talents. Therefore, integrating ideological and political elements into the teaching of computer majors is helpful to cultivate students' comprehensive quality, sense of social responsibility and sense of mission, so that they can better adapt to the needs of social development. Secondly, researchers and educators have carried out active exploration and practice in the ideological and political teaching of computer courses. By innovating teaching methods and means, integrating curriculum content with ideological and political elements, establishing evaluation and feedback mechanism and improving teachers' quality, they strive to promote the development of ideological and political teaching of computer professional courses. These practices provide valuable experience and reference for the subsequent research. However, there are still some problems and challenges in current research

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and practice. For example, how to integrate curriculum content with ideological and political elements more effectively, how to evaluate the effect of ideological and political teaching scientifically, and how to improve teachers' ideological and political literacy and teaching ability. These problems need to be further discussed and solved in the future research.

To sum up, the research on the exploration and practice of ideological and political teaching of computer major courses has achieved certain results and experience, but it still needs continuous efforts and innovation. Through the continuous strengthening of relevant research and practical exploration, we can promote the ideological and political teaching of computer courses to a higher level, and make contributions to cultivating more excellent information technology talents.

4.The overall design and implementation plan of ideological and political construction of computer specialized courses.

The integration of ideological and political elements into the basic course of computer specialty is a major change to the traditional teaching mode. It is necessary to make an overall plan, do a good job in the top-level design, coordinate the whole teaching process, find a favorable foothold in each link of practical teaching, and do a good job in the ideological and political teaching of "precise, accurate and deep" courses(Sun et al., 2021).

4.1 Overall design of curriculum ideological and political construction

4.1.1Reconstruct teaching content and optimize curriculum ideological and political supply

Under the background of the new era, vocational education should not only teach students professional knowledge, but also pay attention to cultivating students' ideological and political literacy, so that they have a correct world outlook, outlook on life and values. For computer majors, how to reconstruct teaching content and optimize curriculum ideological and political supply has become an urgent problem to be solved.

"Product Prototype Design" is a basic course of computer specialty. Its conventional teaching method is teacher's explanation and operation demonstration, and students' implementation, so as to realize the purpose of learning by doing, learning by doing, and thus achieving knowledge imparts. The integration of course content and ideological and political elements is a big difficulty. How to integrate ideological and political elements into the teaching and learning of this course is a problem that must be considered and solved in the teaching process. To add ideological and political elements into the existing curriculum system, we must clarify the teaching objectives and refine the teaching content. In addition to teaching students computer professional knowledge, we should also pay attention to the social responsibility, ethical awareness and innovative thinking ability of students. Through the study of professional knowledge, students can understand the social significance of technology, master the ethical norms of technology, and have the ability to apply technology to solve practical social problems.

When designing the ideological and political teaching reform of the course, the course optimizes the teach-

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ing content and adopts case module teaching while keeping the main structure unchanged. After in-depth study, students can finally complete the design and production of the project independently. Meanwhile, students are guided to look up the product prototype design and the development history of prototype design on the Internet by themselves, so that students can learn independently and proactively. Cultivate students' self-learning ability and improve students' professional cognition. In the process of analyzing and solving problems, students can exercise their thinking ability and practical ability, and deepen their understanding of ideological and political knowledge.

4.1.2Based on position analysis, the goal system of ideological and political education is established

First of all, we need to conduct an in-depth demand analysis of related positions in the computer industry. This includes understanding the responsibilities of each position, the skill requirements, the working environment, and the challenges that may be faced. Through job demand analysis, we can clarify what professional knowledge and skills students need to have, as well as the ideological and political problems they may encounter in the process of work.

The tasks of the corresponding positions of Internet product manager or interaction designer in this course include the basic components of interaction design such as mind mapping, navigation bar, data verification, rotation diagram, short message countdown, etc. Finally, the whole site high-fidelity website demonstration diagram is taken as the assessment result requirements. Through the knowledge, ability and quality analysis of the job demand, I have condensed the "five hearts" ideological and political education goal system of this course together with ideological and political teachers and enterprise engineers, as shown in Figure 1.

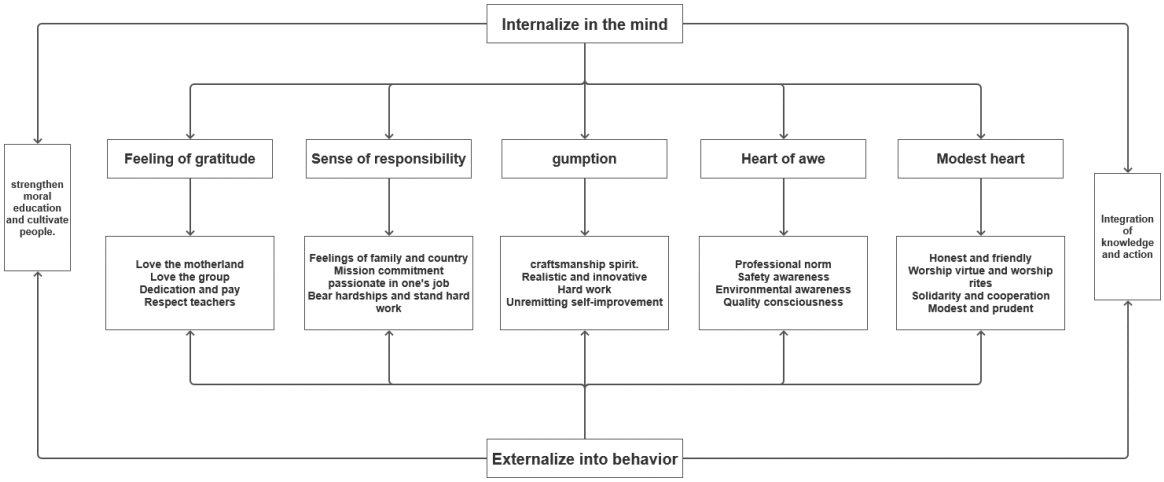


Figure 1. "Five hearts" educational ideological and political goal system.

Under the leadership of "five hearts", the characteristic ideological and political curriculum with "craftsman spirit" as the core is constructed. Develop and establish a curriculum ideological and political resource base based on job analysis, and internalize the "craftsman spirit" learning through a variety of learning methods. The teaching method of case discussion based on knowledge, ability, ideology and politics is implemented to train students' professional quality of professional norms, realistic innovation, unity and cooperation, and the

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courage to take responsibility, so as to realize the close integration of value shaping, knowledge imparts and ability training.

4.1.3Strengthen theoretical study, build ideological and political teaching team

Teachers of specialized courses are the main force of ideological and political construction of courses. They are examples for teachers and set examples for students. "Product Prototype Course" belongs to engineering, and most of the teachers are from engineering backgrounds. Compared with teachers of ideological and political course, ideological and political field is relatively weak. Integrating ideological and political elements into course teaching is also a challenge for teachers. Curriculum ideology and politics is a new attempt, which requires professional training for course teachers, collective lesson preparation, in-depth exploration of ideological and political elements in the course content, in-depth analysis of the cultural background of disciplines and knowledge points, constant updating of knowledge structure, enhancement of humanistic quality, exploration of diversified teaching modes, collective wisdom and efforts, and stimulating the teaching enthusiasm and enthusiasm of teachers. Strengthen theoretical study, collective study and discussion for teaching knowledge points, dig the lesson to add ideological and political materials and elements, so that ideological and political education into the classroom.

4.2 Curriculum ideological and political construction implementation plan

4.2.1Clarify ideological and political elements, and dig deeper into the compatibility with the course content

In computer education, in order to integrate ideological and political education more effectively, we need to first clarify the specific connotation of ideological and political elements, and further explore the compatibility between these elements and the course content. This can not only ensure the organic combination of ideological and political education and professional education, but also enhance students' learning interest and depth.

In combination with the teaching tasks of the course, the ideological and political goals are determined. According to the ideological and political goals of the course, the course team breaks down the ideological and political points of the course and integrates them into different teaching contents. In each task, ideological and political materials are introduced, including national industrial needs, the comparison and replacement of domestic sensor products and foreign products, current political hotspots, the spirit of craftsmanship of excellence, etc. According to the course content, the same ideological and political point can be repeatedly integrated, and different ideological and political materials and resources can be cited to achieve ideological and political goals. The application of ideological and political elements in different tasks has its own emphasis. The ideological and political elements of each task practice are shown in Table 1.

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Table 1. Task practice ideological and political elements corresponding table.

Serial number	Knowledge module	Detailed knowledge point	Ideological and political point
1	Product manager thinking	Product prototype design overview	Love the motherland, professional norms, hard work, home and country feelings
2	Design tool use	Knowledge and installation of mind mapping and Xmind	Hard work, home and country feelings, mission responsibility, unity and cooperation
		Axure 9 software usage and component construction	
3	Data verification implementation	Prompt text (data verification for compliance)	Safety consciousness, hard work, family feelings, modesty and prudence
		Interactive style	
4	Interactive event	Interactive Events (Navigation bar)	Love the collective, quality awareness, national feelings, unity and cooperation
5	Dynamic panel	Dynamic panel (Meaning and common functions)	Love the motherland, artisan spirit, realistic innovation, quality awareness, integrity and friendly
		Dynamic panel properties (adaptive, 100% width, fixed to browser)	
		Dynamic panel adsorption and push-pull	
		Dynamic panel drag	
6	Carousel map	Carousel map	Love the collective, hard work, national feelings, professional norms, Worship virtue and worship rites
7	SMS countdown	The text change of the variable	Dedication, safety awareness, realistic innovation, national feelings, Worship virtue and worship rites
		Function (back to top)	
		SMS countdown	
8	Advanced application	Axure master version of the explanation and use	Love the motherland, quality awareness, realistic innovation, dedication, modesty and prudence
9	Prototype combat	"People's Net" login, registration, home page production and overall link	Love the motherland, bear hardships and stand hard work, realistic innovation, hard work, unity and cooperation

With the continuous development of society and the continuous progress of technology, we need to continue to update and improve the combination of curriculum content and ideological and political elements. By paying attention to industry trends, collecting student feedback, and conducting teaching research, we constantly optimize and adjust teaching content and methods to ensure the combination of ideological and political education and professional education.

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4.2.2Explore diversified teaching modes

In the teaching case of "Product prototype Design" course, the teaching content selects typical cases, runs through the whole teaching process, and combines the teaching content of the course to provide positive guidance to students' career planning, career outlook, world outlook and life outlook. The combination of traditional teaching mode and modern teaching technology makes the teaching content more vivid, vivid and interesting. At the same time, the combination of online teaching and offline practice is adopted to improve students' practical ability and comprehensive quality through online learning of theoretical knowledge, offline practical operation and team cooperation. The project teaching method enables students to apply what they have learned to projects while learning knowledge points and improve their ability to deal with practical problems.

For example: the first lesson "self-introduction" mind map teaching implementation plan design: for the characteristics of vocational students, through the story of the tortoise and the hare to make students realize that learning to persevere, can not be half-hearted, halfway, leads to students' career planning, and how to plan their career, starting from the understanding of themselves, that is, self-introduction is also called self-portrait. How to paint a picture of yourself, using a mind map, is what this lesson is about.

Set this as a task after class, teachers first explain the practice, students consolidate after class. Implementation method: The teacher explained the concept of mind mapping, demonstrated the method of making mind mapping, explained the precautions for making mind mapping, showed the excellent cases of students who used mind mapping to introduce themselves, and asked students to draw mind mapping to introduce themselves. Key measures: Students are required to draw according to their own characteristics, including: personal basic information, strengths, strengths, weaknesses, ideal career and so on. After the completion of the drawing, I will introduce myself in class, and students and teachers will evaluate. Those who draw and explain well will get extra points. In the classroom display, students are encouraged to enhance their self-confidence and improve their speech ability. Through the drawing of the "self-introduction" mind map, students can better understand themselves and formulate future life goals. Mind mapping teaching objectives and ideological and political objectives are shown in Table 2.

Table 2. Mind mapping teaching objectives and ideological and political objectives.

Teaching task	Professional teaching objective	Curriculum ideological and political teaching objectives
Mind mapping	1. Master the steps of mind mapping; 2. Master mind mapping techniques and precautions	1. Understand your own characteristics and make life goals; 2. Understand the importance of setting goals; 3. Understand good outlook on life and values

Exploring diversified teaching mode is an important way to optimize ideological and political education. Through the combination of traditional teaching mode and modern teaching technology, online teaching and offline practice, project-based teaching and other methods, we can create a more colorful learning environment for students, improve their learning interest and initiative, and cultivate their comprehensive quality and

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ideological and political literacy.

4.2.3Establishment of evaluation and feedback mechanism

Curriculum assessment is a necessary means to test the effect of curriculum ideological and political education. In order to realize the unity of professional quality and ideological and moral quality assessment, and realize the dual goals of moral education and professional knowledge imparting and application, we must abandon the result assessment based on the score theory and adopt the process assessment. By including students' usual classroom performance, chapter tests and group activities into the assessment scope, the teaching team highlights students' learning ability, and then lets students attach importance to teamwork, dare to challenge difficulties, cultivate innovative consciousness, work down to earth, and have the courage to take risks, and finally complete the fundamental task of "five hearts" education.

5.The exploration experience and summary of carrying out curriculum ideology and politics in computer specialized course

Under the background of the new era, today's society pays attention to quality education and all-round development of talents. Engineering courses in colleges and universities need to pay attention to students' engineering ethics education on the basis of knowledge imparts and ability training, cultivate students' spirit of excellence as craftsmen of great countries, and inspire students' feelings and mission of serving the country through science and technology. The ideological and political elements are integrated into the teaching of professional courses, the knowledge goal is combined with the moral education goal, and the ideological and political goal of the "five hearts" education course is innovated to lead the knowledge imtransfer and ability cultivation, and to cultivate the new people of The Times with both virtue and talent.

5.1 The teaching process is student-oriented

Students enter the stage of professional application background learning, like an "apprentice" who has mastered basic skills, because they have not been exposed to professional knowledge and have been confused about the professional prospect. Full-time teachers participate in the whole process of project practice, and help students to enter the state of professional course learning as soon as possible with actual case projects, and analyze and solve problems with professional thinking. The process of learning is a process of experience, internalization and absorption, which students should experience and internalize. Only relying on teachers to teach can not solve the current students' learning problems. Only when students take the initiative to participate in knowledge construction and try to solve problems, can their thinking ability and spirit of exploration be put into practice. For example, when explaining the use of dynamic panel to make a rotograph, the progressive teaching content is designed according to the cognitive process: First, the core knowledge point - the use of dynamic panel, the concept of rotograph, how to use dynamic panel to make a rotograph. Consider the difficulties of making a rotograph. Arrange students to discuss various kinds of deformation of the rotifed chart, difficulties encountered in making the rotifed chart, and problems in previewing the effect, and centrally solve them. This model combines the advantages of lecture-style classroom and discussation-style classroom, shorens the teaching time, and enables students to grasp the core content logically and clearly, and

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cultivates students' learning ability and expression ability. Let the students experience the craftsman spirit and carry forward.

5.2 Clarify the ideological and political purpose of the course and build its value

Ideological and political thinking in class should be "moistening things silently", in a subtle way to educate officials among them, to find the "meeting point"(Kuang et al., 2018). "Craftsman spirit" is the most needed quality for new engineering talents under the background of the new era. It is very urgent and necessary to integrate "craftsman spirit" as the core ideological and political elements into the teaching of computer professional courses. Through the overview of product prototype design, the development history of product prototype is combined with the development history of the Communist Party of China, so that students can understand the important role played by the Communist Party of China in the long river of history, understand the difficulties encountered by the Communist Party of China in the development process and the contributions made by revolutionary martyrs in the development of the Communist Party of China, and stimulate students' national pride and sense of national identity. Through master production, students can understand the importance of copyright information and know how to protect copyright information and copyright interests. Students understand and master the development path of socialist modernization with Chinese characteristics and the connotation of China's modernization, so as to enhance students' passion for learning professional courses and integrate their personal future into the future of the nation.

5.3 Find the meeting point and innovate the ideological and political goal system of the "five hearts" education curriculum

The five hearts are gratitude, responsibility, initiative, awe and humility. With gratitude as the first of the "five hearts", we skillfully use immersion, case, analogy and other ideological and political integration modes to guide students to be grateful to the Party, the country, the people, and their parents, and strengthen students' ideal feelings of learning to serve the country. The content of professional courses will be found to coincide with the "five hearts", combined with the ideological and political related life and timely materials to develop, in the subtle cultivation of students' "craftsman spirit".

5.4 Summary

With the rapid rise of emerging technologies, the world has entered a profound change unseen in a century. In this context, it is the mission and historical responsibility of higher vocational colleges in the new era to train new-type talents for the strategic development needs of the country's emerging industries. Curriculum ideological and political reform is a long-term and complex project. The computer course takes "product prototype design" as an example to elaborate the process of curriculum ideological and political reform exploration, and is committed to cultivating talents with "craftsman spirit".

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