

Research on the Teaching of the PLC Technology Course under the Background of Curriculum Political Ideology

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Abstract: This paper studies the teaching of the PLC technology course under the background of curriculum political ideology from the aspects of the formulation of curriculum standards, the integration and compilation of ideological and political teaching cases, teaching implementation, and teaching evaluation. Through the way of letting students learn professional knowledge and skills and accept ideological and political education, the problem of integrating ideological and political education and professional education in technical colleges can be solved.

Keywords: Curriculum ideological and political education; PLC technology; Ideological and political education

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1. Introduction

Curriculum ideological and political education refers to a comprehensive educational concept in which all kinds of courses and ideological and political theory courses are integrated to form a synergistic effect in the form of building a comprehensive education course that takes cultivating morality and educating people as the fundamental task of education ^[1].

2. The significance of research

In the 14th Five-Year Plan for National Economic and Social Development and the long-term goals for 2035, it is proposed that by 2035, China will be transformed into a strong cultural country, a strong educational country, a strong talented country, a strong sports country, and a healthy country. The quality of the people and the level of social civilization will reach a new height, and the country's cultural soft power will be significantly enhanced. Whether it can train qualified builders and reliable successors for the country tests the effectiveness of the "Fourteenth Five-Year Plan" education reform and development ^[2].

Who to train, how to train people, and for whom to train people is the fundamental problem of education ^[3].

Transportation colleges and universities should train sophisticated technology professionals with both virtue and ability to meet the great development of the cause of transportation power. The effect of cultivating people by virtue is the fundamental standard to test all the work of the school. To carry out the fundamental task of educating people in the school, educators must integrate value shaping, knowledge imparting, and ability training into one, which cannot be separated^[4]. This strategic measure will affect and even determine the succession issue, affect and even decide the long-term stability, national rejuvenation, and the rise of the country^[5-6].

Combining the Opinions on Strengthening and Improving the Ideological and Political Work in Colleges and Universities under the New Situation, the Notice of the Ministry of Education on Issuing the Basic Requirements for the Teaching of Ideological and Political Theory Courses in Colleges and Universities in the New Era, and the Guiding Outline for the Ideological and Political Construction of the Curriculum in Colleges and Universities issued by the Ministry of Education, the ideological and political education runs through the personnel training system of transportation education and comprehensively promotes the ideological and political construction of the curriculum^[5, 7-8]. Giving full play to the role of each course in educating people and cultivating a large number of talents with both moralities, abilities, and good skills is the main focus of education.

3. The existing problems in carrying out curriculum ideology and politics

3.1. Teachers' ideological and political consciousness is not strong

Most professional teachers believe that only other specialized teachers will teach ideological and political courses. They believe that students' ideological education is carried out by special ideological and political teachers, counselors, class teachers, and so on. through ideological and political classes, class meetings, and heart-in-heart talks. Professional teachers think they only bear the responsibility of imparting knowledge and skills to students^[9]. Therefore, professional teachers lack the consciousness of integrating ideological and political education into professional courses, which artificially separates the task of educating students from that of educating talents. They feel confused about how to integrate ideological and political elements into professional courses and carry out ideological and political education^[10].

3.2. Integrate ideological and political education in professional education

In 2019, the college proposed the idea of "thinking about politics for five minutes before class", that is, teachers of professional courses give students ideological and political education in the first five minutes of class, and then carry out professional teaching. In this way, there is a disconnect between the ideological and political content taught by the teacher and the course content, which cannot be effectively integrated, so the students will feel that they have first taken the ideological and political class, and then attended the professional class. This teaching of ideological and political education and professional education causes the phenomenon of contrast. Therefore, educators need to apply the ideological and political education resources contained in each course, so that students can learn professional knowledge and skills at the same time, understand the world's principles, shape character, and strive to become socialist builders and successors with all-round development of morality, intelligence, physical fitness, and labor^[5].

3.3. Lack of ideological and political teaching resources

As teachers pay more attention to the teaching of professional knowledge and skills in daily teaching, the ideological and political elements contained in many professional knowledge have not been explored, and the ideological and political teaching resources have not been effectively used. Therefore, it is necessary to form

a professional teaching team to explore the ideological and political elements in the teaching materials and accumulate them continuously.

4. Curriculum teaching objectives

Curriculum political ideology is a view of curriculum put forward in the background of the new era. To carry out research on curriculum under the background of curriculum political ideology, schools must first clarify what ideological and political teaching objectives this course needs to achieve. The programmable logic controller (PLC) technology curriculum standard after integrating the curriculum political ideology should reflect the ideological guidance and guiding role of the curriculum political ideology and adjust the needs accordingly.

First of all, the core of curriculum political ideology is to integrate political identity, family feelings, cultural literacy, moral cultivation, and other ideological and political education guidance into professional courses, highlighting ideological and political education and practical teaching, so that students can learn professional knowledge while improving ideological and political quality. Therefore, in the formulation of curriculum standards, the professional learning standards, ideological moral character, professional quality, and other standards should be clarified. PLC technology courses should give play to the collaborative education effect of professional courses and ideological and political courses in the same direction to cultivate students' patriotic and dedicated responsibility, professional standards of safety norms, and the spirit of craftsmanship of excellence.

Secondly, ideological and political education should be reflected in the definition of teaching objectives and teaching contents^[11]. As PLC technology is a professional theory and skills training course in mechatronics technology major of technical school, this course has the value of leading and highlighting innovation and creation. In the teaching method, it is necessary to highlight the student as the main body, strengthen practical teaching, and pay attention to independent exploration, practice, and innovative training.

Thirdly, in addition to the achievement of students' professional knowledge and skills in the teaching evaluation, students' ideological and political quality after learning this course should be evaluated.

5. The path of ideological and political integration in the curriculum

Ideological and political elements and course content should be combined to integrate curriculum teaching and ideological and political teaching closely. When the ideological and political elements are related to the course content and close to the actual life of students, it is easy to arouse the resonance of students, so students can understand and master the course more easily. Ways to organically combine ideological and political education with professional teaching is a problem that most colleges are thinking about.

There are three specific ways to explore the ideological and political elements of this course. First is through the analysis of the professional ability and requirements, clear the professional post on the ideological ethics, professional quality, and other aspects of the requirements of students. The second is to analyze and study the actual situation of students, and strengthen the requirements of students' mental health, Chinese traditional culture, socialist core values, and other aspects of education, to lead students to establish a correct world outlook, life outlook, values, and ethics. Thirdly, according to the curriculum standards, schools should dig deep into the intellectual and political elements contained in knowledge to realize the organic combination of knowledge goals, skill goals, and ideological and political goals.

6. PLC technology course ideological and political practice

The PLC technology course consists of six modules. Module one is the motor unidirectional continuous circuit PLC control, including understanding PLC, learning the use of GX software, programming, and debugging unidirectional continuous control circuits. In the understanding of PLC, the introduction of automobile manufacturing production lines, industrial robots, machining and other scientific and technological sense of the picture tells the status quo of China's manufacturing industry and the direction of future development, stimulates students' national pride and sense of identity, promote patriotism. In the process of changing to a manufacturing power, a large number of professionals who master advanced automation technology are needed, which helps students establish a high sense of social responsibility and mission. In this way, students will be inspired to learn long-term knowledge, practice fine technology, through personal efforts, achieve scientific and technological power, and make greater contributions to promoting the high-quality development of China's manufacturing industry. Among the PLC output circuit modules, a good output type should be chosen from the three, otherwise it will cause errors. There are also many forks on the road to guide students' lives, and different choices will produce different results. To guide students, they should establish a correct outlook on life, practice the core values of socialism, grasp the fork in the road of life, treat each one carefully, and take every key step on the road of life.

The second module is the PLC control of the transport car and the garage automatic door. Watching a series of safety accident videos lets students feel the importance of safe production and cherish life to establish professional responsibility for students. The forward and reverse motor can guide students to hold a dialectical attitude. The garage automatic door opening or closing at the specified time, too early or too late, will produce some cases of safety problems, so students can realize the importance of accurate control of time, as the PLC timer is like the clock in life, which should be accurately controlled, for example in campus life, where students should be punctual, and not leave early or arrive late.

Module three is the PLC control of the transmission line. The start and stop of the three motors through the conveyor are carried out in a certain order, otherwise it will cause the case of accumulation of goods. This guides students in daily public places, such as not cutting in lines, and consciously abiding by and maintaining public order, which can improve their moral quality. The counting and piecework control of the transmission line guide students to grasp the road of life, and also learn to use subtraction, to reasonably arrange the retreat of life, make themselves harmonious, let the people around harmonious, maintain a relaxed state of life to explore a rich and colorful life journey.

Module four is the PLC control of the liquid mixing device. The program design improves students' PLC engineering application ability and technical innovation ability. The installation, wiring, and debugging of the system guide students to connect according to professional and technical specifications and cultivate students' normative consciousness. Integrating labor education into the course can strengthen students' awareness of safety, responsibility, and rules, and cultivate students' craftsman spirit, professional quality, and professional ability.

Module five is the PLC control of lighting and display equipment. By showing the importance of traffic lights, the students can realize the reliability of the system, the significance of safety and stability, and strengthen the safety awareness of their education and their sense of social responsibility. At the same time, students are guided to do anything to obey the rules, understand the rules, abide by the rules and regulations of the school, and strictly obey the school arrangements. Students are also guided to love themselves, love their parents, love teachers, love the motherland, and love all the true, good, and beautiful things. Thus, students can learn to be grateful for everything and have a more pleasant life.

Module six is the PLC transformation of the X62W universal milling machine electrical control line. Because the milling machine line is more complex, students can be cultivated to be patient, meticulous, and not afraid of hard work.

7. Teaching evaluation

Based on the original diversified evaluation system of the curriculum, the evaluation of emotional attitudes and values will be added ^[12]. Emotional attitude values are a very important aspect, with recessive characteristics. To this end, according to the completion of the task, learning attitude, labor attitude, the spirit of excellence, and other aspects set up operational evaluation indicators focusing on the growth and progress of students. The assessment of emotional attitude and values is only a qualitative assessment and is not included in the evaluation score.

8. Conclusion

Ways to integrate ideological and political education into the PLC technology course are worth thinking about. When compiling ideological and political cases, the cases should not only serve the teaching of professional skills but also implant ideological and political elements, so that students can receive ideological and political education subtly while learning professional skills ^[12].

Given the problems of separation between ideological and political education and professional education in technical colleges, this paper studies the teaching of the PLC technology course under the background of curriculum ideological and political education from the aspects of curriculum ideological and political integration problems, goals, implementation ways, teaching evaluation and so on. Integrating ideological and political elements into the PLC professional teaching can make the content more interesting ^[13]. Inspiring students' experiences and feelings can arouse students' resonance and make students accept ideological and political education from the heart, thus improving the teaching effect.

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References

- [1] Ma JH, Zhao YF, 2023, A Probe into the Curriculum Construction of Electrical Control and PLC in Higher Vocational Colleges under the Threshold of Curriculum Ideological and Political Vision. *Journal of Handan Vocational and Technical College*, 36(04): 66–70 + 87.
- [2] Wang SL, 2023, Research on the Integration of Curriculum Ideology and Politics into Secondary Vocational Electrician and Electronic Technology Course under the Background of "Internet +". *China New Communications*,

25(24): 146–148.

- [3] Ren JL, Pei JX, Tian YY, 2023, Research and Practice of Curriculum Ideology and Politics from the Perspective of Online High-quality Courses: Taking Tunnel Electromechanical and PLC Application Courses as an Example. *Modern Vocational Education*, 2023(33): 45–48.
- [4] Wang XJ, Shi Y, 2019, The Connotation, Characteristics, Difficulties and Coping Strategies of Curriculum Ideology and Politics in the New Era. *Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition)*, 41(2): 9.
- [5] Yu HW, Gu YX, Zhang JJ, et al., 2023, Exploration and Practice of Ideological and Political Design of Multimedia Technology and Communication Course. *Journal of Jingdezhen College*, 38(06): 87–91.
- [6] Jiang BB, Luo D, 2022, The Ideological and Political Research of “PLC Application Technology” Course in Higher Vocational Colleges from the Perspective of Sanquan Education. *The Road to Success*, 2022(16): 130–132.
- [7] Huang L, Liu WL, Zhao HF, et al., 2019, Design and Exploration of Ideological and Political Teaching of College Physics Experiment Course with “Same Direction”. *Physics and Engineering*, 2019(S1): 3.
- [8] Xu SS, 2023, Analysis of Curriculum Ideological and Political Integration in the Teaching of PLC Technology Application in Five-year Higher Vocational Colleges. *Journal of Science*, 2023(35): 42–44.
- [9] Man ZX, Gao XY, Zhang YM, et al., 2023, Training of Big Data Technology Talents under the Background of “Curriculum Ideology and Politics”. *Popular Literature and Art*, 2023(22): 118–120.
- [10] Qiu WQ, 2017, The Value Implication and Generation Path of Curriculum Thought and Politics. *Ideological and Theoretical Education*, 2017(7): 12–16.
- [11] Yin YY, Wang BH, 2021, Discussion on Integrating “PLC Programming and Application Technology” into Ideological and Political Education. *Southern Agricultural Machinery*, 52(18): 157–159.
- [12] Zheng W, Li J, 2018, Construction of Flipped Classroom Teaching Effect Evaluation Index System based on BYOD. *Education Modernization*, 2018(28): 286–287 + 293.
- [13] Tao Q, 2021, Research and Practice on Ideological and Political Teaching Reform of PLC Application Technology Course. *Equipment Manufacturing Technology*, 2021(2): 148–152.

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