Exploring the Construction and Practice of Thinking Politics in Engineering Programming Classes

Xiaogang Liu

School of Information Technology, Zhejiang Institute of Economics and Trade, Hangzhou 310018, China

Abstract:

If the engineering programming courses need to carry out ideological and political construction, there are many difficulties: first of all, it's not easy to find out the ideological and political integration point, in addition, there is a big gap between engineering knowledge and ideological and political elements, and the connection between the two is difficult to harmonize and easy to be blunt; thirdly, for engineering pupils, they have formed fixed study habits and mindsets, which make their perception and absorption of ideological and political cultivation poor. In the paper, it's to explore and study from the two aspects of subject construction ideas and practical methods so that these difficulties can be broken through, and the ideological and political cultivation effect of engineering programming courses can be improved. The article addresses the difficulties of constructing course for ideological and political in engineering programming courses, introduces the theoretical elements and proposes new construction ideas. The article proposes new ideas for the construction of the course, such as the multi-faceted design to integrate Ideological and Political elements into the course, the innovative assessment and evaluation methods and the integration of Ideological and Political assessment contents, the deep analysis to explore the correlation factors, and the harmonious and smooth integration of Ideological and Political elements. With regard to the practical method to improve the ideological and political cultivation effect of engineering pupils, it's necessary to cultivate under the guidance of positive psychological theory, based on textbooks, papers, projects and topics, tutoring and research offices, ideological and political counselors jointly with the training bases inside and outside the campus, and adopt a variety of tutoring methods to comprehensively improve the effect of ideological and political cultivation together. After the implementation of this course on Ideological and Political Theories tutoring in All Courses, pupils feel benefited by improving their professionalism and moral character, enhancing their personal self-confidence, and increasing their love for their country and people. Ideological and Political education It also promotes knowledge education and makes pupils more enthusiastic about studying professional knowledge. From the perspective of tutoring and studying, the effectiveness of nurturing people has been greatly improved. The main problem is that the course is not innovative enough, especially in terms of tutoring methods and integration, and needs a breakthrough in both theory and practice. We also need to work hard to make our pupils accept Ideological and Political. In the future, we will try to make the integration of Ideological and Political more cordial and friendly. Then we should be bold and innovative in tutoring design and break the traditional concept. We will use more and better forms of Ideological and

Political Theories tutoring in all courses.

Keywords: Engineering, Programming, Course for ideological and political, Construction

I. INTRODUCTION

Course for ideological and political, that is, the elements of ideological and political education, including theoretical knowledge, values, and spiritual pursuit of ideological and political education, are integrated into each course to complement the major courses and influence students' ideology and behavior implicitly [1]. Positive Psychology is a science dedicated to the study of human developmental potential and virtues [2]. The essence and goal of Positive Psychology are to seek humanistic and terminal care for human beings [3]. Positive Psychology believes that if an individual has a positive emotional experience during an activity, it will motivate him to produce and obtain positive results [4]. Therefore, while diversifying the evaluation subjects, the status of each teaching subject should be respected. Only in this way can we give full play to the enthusiasm of each teaching subject and guide them to participate in it actively through the evaluation index in order to achieve the teaching purpose [5]. Positive Psychology is dedicated to the survival and development of human beings with the goal of good mental qualities and behavioral patterns. Its related theories and techniques have opened a new horizon and provided new concepts and methods for universities to carry out psychological education [6].

Positive Psychology and Ideological and Political education both have the same humanistic concern. A new type of Ideological and Political education with positive theoretical elements is feasible, and an Ideological and Political education with positive elements will be a new type of education that is encouraging, mindful, and active inquiring [7]. Throughout the higher-level Ideological and Political class, Positive Psychology focuses on exploring students' inner potential in Ideological and Political class, stimulating students' desire for active learning, and to make help them establish a correct world view of life and values. This has an important and far-reaching significance in promoting the cultivation of high-quality skilled talents [8].

II. THE COURSE IDEOLOGICAL AND POLITICAL CONSTRUCTION IDEAS OF ENGINEERING PROGRAMMING CLASS

The course "Business Data Analysis and Management" is a professional extension course for senior computer application technology majors. The objective of the course is to train students to have the ability of data acquisition, processing, and analysis in various environments, so as to lay the foundation for their future work. The course consists of 3 projects. Project 1 is the basics of Python language programming. Project 2 is to write a crawler in Python to crawl online data. Project 3 is a Python-based approach to big data processing and analysis.

There are difficulties in building Ideological and Political for such engineering programming courses: First, the integration point of Ideological and Political is not easy to find. The knowledge system of

engineering courses is generally professional terms and technology and rarely involves history, politics, and humanities. Its knowledge and Ideological and Political knowledge are in different dimensions, and there are few points of intersection. Second, even though the integration point is found, there is a big gap between engineering knowledge and Ideological and Political elements. The interface between the two is difficult to integrate, making it more difficult for students to accept when teaching. Thirdly, engineering students, who have been studying mathematics and chemistry for years, have formed fixed study habits and thinking stereotypes and may have poor perception and absorption of Ideological and Political cultivation. This paper explores and researches two aspects of curriculum construction ideas and practical methods, striving to break through these difficulties and improve the Ideological and Political cultivation effect of engineering programming courses.

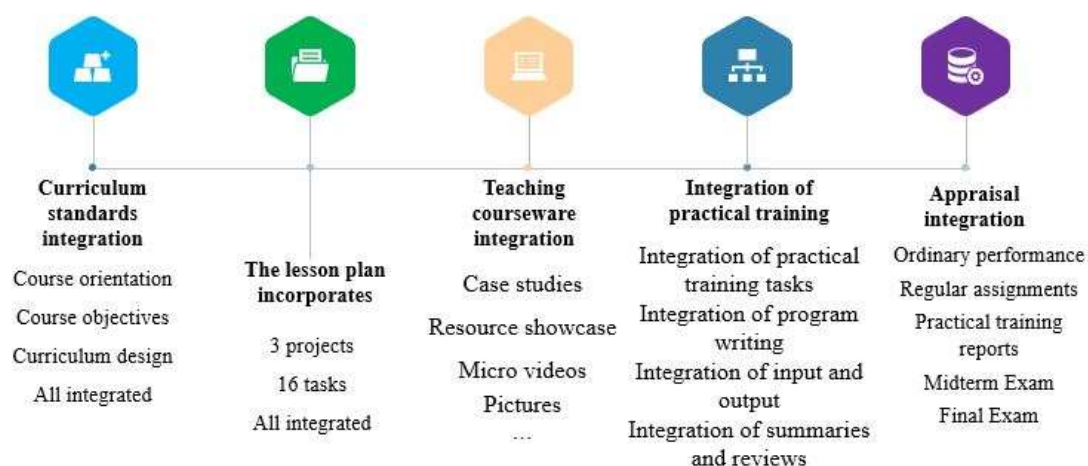## 2.1 Multi-Dimensional Design, Ideological and Political Elements are Fully Integrated into the Curriculum

Figure 1 Schematic diagram of the integration of Ideological and Political elements into the curriculum

Integrating Ideological and Political in the curriculum of engineering programming is a difficult point. It should closely focus on the establishment of moral education, adhere to the unity of education of heart and morality, and deeply explore the Ideological and Political elements of the curriculum, so as to guide students to form a positive attitude towards life, a practical working style and a persevering striving spirit, and help the cultivation of craftsmanship [9]. In order to solve this challenge, we have gone through a multi-faceted design to integrate Ideological and Political not only in the course standard, in the lesson plan, in the PPT courseware, and in the assessment, but also in the practical training projects, in the mini-programs coding, and even though the input and output data or text, to integrate Ideological and Political elements, as shown in Figure 1.

2.1.1 Integrating Ideological and Political in the Curriculum Standards

We refine the objectives of Ideological and Political Theories teaching in All Courses according to the professional training objectives, take the core values as the behavior guidance, and cultivate students' good ideology and morality and law-abiding professionalism by sorting out the teaching contents of the courses, digging deeper into the elements of Ideological and Political, looking for the fitting point between professional skill cultivation and Ideological and Political education, and forming the course standard.

The curriculum objectives of the curriculum standards should specify quality objectives in addition to knowledge objectives and competence objectives. The quality objectives are divided into three parts: political literacy objectives, humanities literacy objectives, and vocational literacy objectives. Political literacy aims to cultivate students' correct political attitudes, firm ideals and beliefs, and solid road confidence. The humanistic literacy goal is to cultivate students' good sense of national citizenship and establish the concept of democracy and the rule of law, freedom and equality, fairness and justice. The goal of professionalism is to cultivate the "craftsmanship" of students in the new era, i.e., the professionalism of love and dedication to work [10]. In the acquisition and processing of Internet data, practitioners must have the professionalism of being rigorous, meticulous, and responsible, as well as the scientific spirit of respecting intellectual property rights and the sense of responsibility, to strictly protect data security and national security.

In addition to the knowledge and skills objectives, each module in the curriculum is designed to include explicit Ideological and Political objectives. For example, in Project 2 Task 2.1 Crawler Principles and Applications, the Ideological and Political objectives are "Science and Technology, Road Confidence, Professional Ethics, Craftsmanship."

2.1.2 Integrating Ideological and Political in the lesson plan

The course has three projects with a total of 16 tasks, each of which is integrated into Ideological and Political Theories teaching in All Courses. In the lesson plan, the teaching content and Ideological and Political education objectives are shown in Table I.

Table I. Teaching content and Ideological and Political education objectives

Teaching content	Ideological and Political objective	Teaching content	Ideological and Political objective
Project 1 Python Installation and Syntax 1.1 Python installation method	Science and Technology to Prosper the Nation	2.3 Lxml library and Xpath syntax	Awareness of responsibility
1.2 Python3 syntax basics	Love the motherland Love the hometown	2.4 Crawl Pexel images and save them	Sense of discipline
1.3 Python complex data types	Learning the history of our country	2.5 Regular expressions and crawlers	Fairness and justice Promote righteousness

1.4 Python process control	Love the motherland	Project 3 Python Data Analysis 3.1 Pandas data structure and usage	The country is rich and strong Freedom of the people
1.5 Python3 functions	Love the motherland	3.2 Python data processing	Discipline and law-abiding Professional ethics
1.6 Python modules and packages	Commemorating traditional holidays	3.3 Matplotlib data visualization	Rapid development The country is rich and strong
Project 2 Python Web Crawler 2.1 Crawler principles and applications	Chinese dream, prosperity and strength, road confidence	3.4 Drawing complex graphs with matplotlib	Good industrial structure Good economic prospect
2.2 Using crawlers to obtain multiple messages	Professional ethics Discipline and law-abiding	3.5 Python integrated plotting	Positive Positive energy

2.1.3 Integrating Ideological and Political in practical training

Each mini-program written in the practical training can be used to incorporate Ideological and Political, such as inserting traditional Chinese festivals into the mini-program to arouse students' love for Chinese culture. For the multiple input and output data used in the practical training, find ways to incorporate "hometown data" and insert ideas such as "love for the country and hometown."

The practical training of crawling pictures and book information on the Internet incorporates the Ideological and Political elements of professional ethics and protection of national data security. Through the practical training of crawling Qiushibaike comments, students are taught that online comments should be fair and just and promote righteousness.

The practical training of drawing a comparative chart of national development highlights China's rapid development and prosperity, and strength in the world. Through the practical training of drawing a pie chart of national economic development, the structure of China's economy is reasonable and has a bright future.

Through the practical training of "World Cup Soccer," students were informed that there are various professional sports leagues and a huge number of fans in China, and they can also go abroad to watch soccer matches, which reflects the richness of the country, social justice, democracy, freedom, and happiness of the people.

2.1.4 Integrating Ideological and Political in developing languages

For the Python language used in the course, it was emphasized that this is open-source and free software and that we should use this software, which is not restricted by foreign countries, to develop our own high-quality applications, develop modern science and technology, improve the country's "soft power," and realize the "overtaking" of China's science and technology. "to build a modern and powerful country as soon as possible.

2.1.5 Integrating Ideological and Political in lecture resources

Through the data on the Internet sites to be crawled shown in the class, such as the pictures of the wide variety of rental houses on xiaozhu.com, the prosperous market economy of the motherland is shown, and the road confidence is enhanced.

2.2 Innovative Assessment and Evaluation Methods, Incorporating Ideological and Political Assessment Content

As shown in Figure 2, based on the original assessment evaluation, the assessment of Ideological and Political is added to various forms such as usual performance, practical training report, practical training process, midterm, and final exams. It also sets up the Ideological and Political topic assessment, which combines students' Ideological and Political levels and professionalism with their professional knowledge and skill level for a comprehensive assessment.
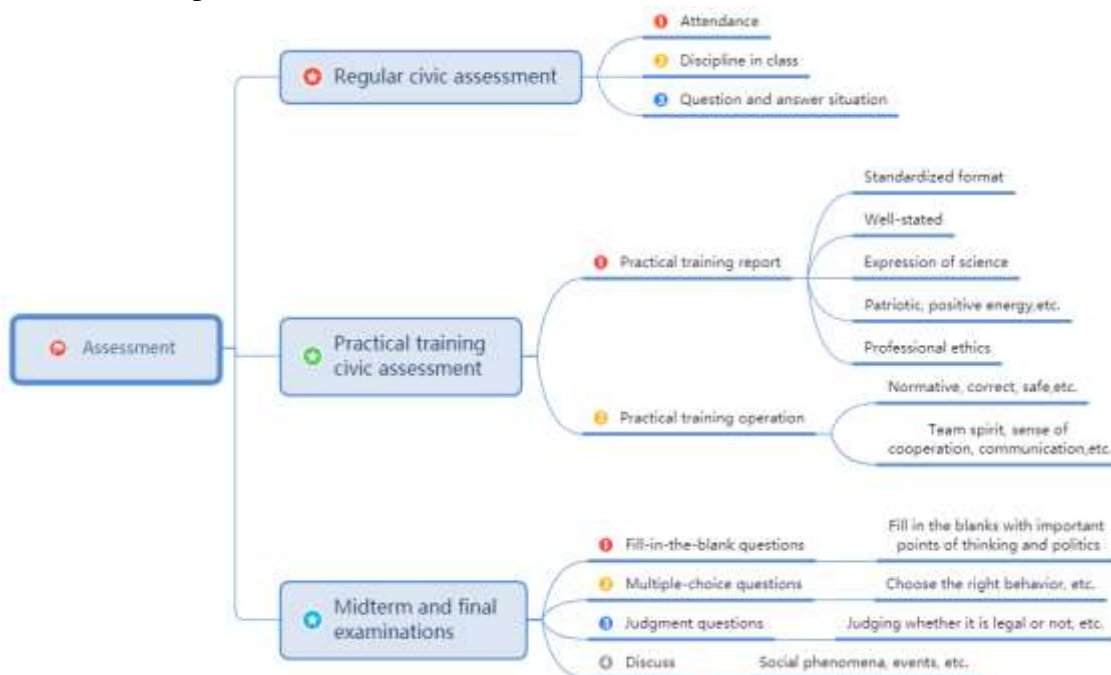

Figure 2 Schematic diagram of Ideological and Political Theories teaching in All Courses integration assessment

2.2.1 Increase the regular assessment of professionalism

We cultivate good qualities such as motivation, diligence, and discipline from the beginning of the course. Attendance, classroom discipline, answering questions, etc., are scored on a per-performance basis and then proportionally added to the overall course grade.

2.2.2 Ideological and Political content is added to the practical training assessment

Add corresponding Ideological and Political assessment items to the practical training reports submitted by students. For example, whether the format is standardized, whether the statements are strict, whether the expression is scientific, whether it can reflect patriotic and positive energy; Assess whether the operation of practical training is standardized, correct, and safe and whether there is team spirit and a sense of cooperation in the process of practical training.

2.2.3 Adding Ideological and Political to the midterm and final exams

Add Ideological and Political content to the midterm and final exam questions to strengthen the assessment of Ideological and Political. For example, fill in the blanks with Ideological and Political points. List a variety of behaviors in the workplace and ask students to choose which are correct and which are not. Students will be given a variety of options to determine what is legal and what is not. In addition, some Ideological and Political topics can be held, which discuss current social phenomena, explore the feelings of a certain event, etc. Ideological and Political assessments are given based on students' responses, and the scores are recorded in the exam results.

2.3 Deep Analysis to Explore the Correlation Factors and Harmoniously and Smoothly Integrate the Ideological and Political Elements

Through deep analysis and exploration, we search for factors that link the course content to the elements of Ideological and Political. Then, we will make a harmonious and smooth connection so that students will be "well educated" and gradually receive Ideological and Political formation.

For example, through the open-source free programming software used by the students in their practical training, the teaching of Ideological and Political Theories in All Courses is integrated with the current "pain point" of China's technology being restricted by others. The Ideological and Political concept of "scientific and technological innovation" is organically integrated to enhance the "soft power" of the country.

When displaying the Internet resources to be crawled by the crawlers, the colorful web pages will show our prosperous market economy and enhance the road confidence, by the way.

During the hands-on training of crawling data on the Internet, we introduced the education of intellectual property rights and laws and regulations based on the two sides of crawlers. Students are required to comply with professional ethics, cultivate legal awareness of compliance with the law and the "craftsmanship" of the new era.

When students are doing practical training on data processing and analysis, they have to deal with big data. At this time, we should introduce education on data security and responsibility awareness to give students a feeling of "necessary" and "logical."

III. THE PRACTICAL METHOD TO IMPROVE THE IDEOLOGICAL AND POLITICAL CULTIVATION EFFECT OF ENGINEERING STUDENTS

3.1 Based on Teaching Materials, Thesis, Projects, and Issues, the Teaching and Research Department and the Counselors of Ideological and Political Work Together with the Internal and External Training Bases to Improve the Level of Education of Ideological and Political

We use our own textbooks and support materials as an important tool for Ideological and Political education and use Positive Psychology techniques to fully integrate Ideological and Political elements as the main material for students' learning. The teaching team actively writes Ideological and Political papers and course papers and actively declares and participates in Ideological and Political topics and innovative projects. This will not only improve the teaching team's own Ideological and Political level but also enhance the level of Ideological and Political cultivation for students.

We have adopted the approach of building the curriculum by combining the faculty with the Ideological and Political counselors to create an Ideological and Political team. Teachers with different roles in different positions help students in many ways. In the third-year internship and graduation internship, they are responsible for contacting the on-campus and off-campus training bases to jointly train students, and work out the training plan with the company and integrate Ideological and Political elements, such as patriotism and professional ethics, which are also used as the assessment content of the company for the interns.

3.2 Integrating a Variety of Teaching Methods to Enhance the Ideological and Political Formation of Engineering Students

3.2.1 Heuristic method

Activity-based and heuristic teaching methods should be used to focus on and promote student-student interactions to create positive group dynamics, as relevant studies have found that peer interactions have a significantly higher impact on student growth than interactions with teachers and counselors [11]. Students are inspired to gradually introduce theoretical elements of Positive Psychology and Ideological and Political elements in the lectures. For example, after the introduction of open-source free software, inspire

students the significance of such software for China's technological development. This will lead to the Ideological and Political content of breaking through the limitations of Western technology, enhancing China's "soft power," and achieving the "overtaking" of technology.

3.2.2 Group discussion method

Through group discussions, students were able to discover the Ideological and Political elements independently. For example, if you open xiaozhu.com on the Internet and display a large number of rental properties in different styles, ask the question, "What does this phenomenon reflect?" Let the students discuss and speak in groups. They can come up with similar answers, such as a prosperous market economy, and then come up with the right path of development, thus cultivating students' confidence in the path.

3.2.3 Introductory method

The students were guided step by step into the Ideological and Political learning content by using a guided approach. For example, after talking about crawlers, students want to try it out, and they are eager to try crawling online resources with crawlers. At this point, the teacher asks the students, "Is it okay to crawl online resources?" Then guide students to abide by laws, regulations, and professional ethics and to use crawlers legally and reasonably.

3.2.4 Task-driven method

When setting assignments, students are first actively encouraged by giving tasks that ask them to look for other Ideological and Political elements to drive them to get more answers. The teacher screens and guides them in subsequent comments, thus deepening their impressions and reinforcing the Ideological and Political effects.

IV. CONCLUSIONS

Teachers should pay attention to the localization of Positive Psychology theories, analyze students' learning conditions, and tailor their teaching to their students' needs. Teachers must have positive psychological qualities and adhere to positive teaching concepts in order to impart love, warmth, and strength to students and to stimulate their inner motivation in every possible way in the teaching process [12].

After the implementation of this course on Ideological and Political Theories teaching in All Courses, students feel benefited by improving their professionalism and moral character, enhancing their personal self-confidence, and increasing their love for their country and people. Ideological and Political education. It also promotes knowledge education and makes students more enthusiastic about learning professional

knowledge. From the perspective of teaching and learning, the effectiveness of nurturing people has been greatly improved.

The main problem is that the course is not innovative enough, especially in terms of teaching methods and integration, and needs a breakthrough in both theory and practice. We also need to work hard to make our students accept Ideological and Political. In the future, we will try to make the integration of Ideological and Political more cordial and friendly. Then we should be bold and innovative in teaching design and break the traditional concept. We will use more and better forms of Ideological and Political Theories teaching in All Courses.

ACKNOWLEDGEMENTS

REFERENCES

[1] Wang Xuejian, Shi Yan. On the Ideological and Political Education of College Courses in the New Era. Journal of Xinjiang Normal University (Edition of Philosophy and Social Sciences), 2020, 41(2): 50-58.

[2] Sheldon M. King L. Why Positive Psychology Is Necessary. American Psychologist, 2001(03): 216-217.

[3] Miao Yuanjiang, Yu Jiayuan. Positive Psychology: Ideas and Actions. Journal of Nanjing Normal University (Social Science Edition), 2003(2): 81-87.

[4] Bian Yufang, Wu Hongjian, Zhang Lingling. The construction of school mental health education system from the perspective of Positive Psychology. Journal of Jiangxi Normal University (Philosophy and Social Sciences Edition), 2018, 51(06): 115-118.

[5] Zhang Bo. Research on the evaluation system of college students' mental health education courses--based on the perspective of Positive Psychology. Journal of Shandong Radio and TV University, 2021(01): 56-59.

[6] Huang Mingfang. Exploring the enhancement of psychological education function in colleges and universities from the perspective of Positive Psychology. Journal of Dali University, 2021, 6(09): 92-97.

[7] He Te. Innovative research on the ideological and political education of non-public enterprises under the vision of Positive Psychology. Chengdu: Southwest Petroleum University, 2015.

[8] Chen Ting, Ma Qianfeng. Exploration on the Promoting Effect of Positive Psychology on Teaching Ideological and Political Classes in Higher Education. Art and Literature for the Masses, 2019(4): 234-235.

[9] He Quanli. Reflections on the integration of "Ideological and Political Theories teaching in All Courses" into the teaching reform of higher vocational mental health education. Guangxi Education, 2020(27): 74-75, 86.

[10] Zheng Dafa. What is the "craftsmanship" in the new era. People's Political Consultative Conference Daily, 2018-08-30(3).

[11] Wang Aijing, Teng Chunyu. Between teaching and learning: a study on students' classroom learning experience in higher education institutions. Chinese Vocational and Technical Education, 2020(2): 15-23.

[12] Wang Xiuping. The construction path of psychological education model in colleges and universities from the perspective of Positive Psychology. Education and Cultivation (Higher Education Forum), 2020(33): 26-27.