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Research on the Ideological and Political Excavation and Implementation Path of "Python Programming" Course under the Background of New Liberal Arts

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Abstract: Programme Civics is an important part of cultivating morality in colleges and universities. Organic integration of courses' intellectual politics within the liberal arts major "Python Programming" curriculum is of great significance for the synergistic cultivation of professional courses and intellectual politics courses. This course researches and practices from the mining of ideological and political content, implementation path, educational objectives, introduction of practical problems, application demonstration, and integration methods. It provides a reference path for the integration of information technology into new liberal arts majors, improving students' learning opportunities, and developing students' professional skills, computational thinking, and innovation ability. It provides reference for deepening the execution of curriculum philosophy and government work of colleges and universities.

1. Introduction

National Conference on Ideological and Political Work in Colleges and Universities that colleges and universities should insist on cultivating people with moral integrity, and carry out educational work on ideology and politics throughout the whole process of education and teaching, so as to achieve all-round cultivation of people.[1] In 2020, the Ministry of Education issued the "Guideline for the Construction of Ideological and Political Courses in Colleges and Universities," which called for comprehensively advancing intellectual and political education of the curricula, perfecting the ideological and political education in the system of cultivating professionals, and digging out the intellectual and political elements in the professional curricula ideological and political elements in the professional courses and integrate them into the professional teaching gene. [2] This integration should be in line with the educational ideological and political courses to form a synergistic effect and ensure the direction and with quality of personnel training. To integrate education on ideology and politics into a system of specialised curricula has become an important issue for higher education. [3]

Under the background of the new global scientific and technological innovation, the progress of the new economy, and as socialism with Chinese features enters a new era, the New Liberal Arts breaks through the traditional liberal arts mindset and promotes disciplinary intersections and

in-depth fusion through inheritance and innovation, crossover and fusion, and collaboration and sharing. [4] This integration aims to enhance traditional liberal arts disciplines. By integrating contemporary and modern information systems into the philosophy, literature and language programmes, it provides students with comprehensive interdisciplinary learning and fosters their knowledge expansion and innovative thinking.

Python programming language is known for its easy-to-learn, efficient, and powerful computational ecology, and has been widely adopted in the teaching practice of universities in China. At the advent to big digital and artificial intelligence, how to meet the expectation of liberal arts students on programming applications, improve their learning interest, and cultivate their logical analysis ability, computational thinking ability and hands-on practical ability is of vital importance. In this article, we aim to take classroom teaching as the main channel to explore the effective integration of professionalism and ideology. [5]

2. Excavation and Implementation Paths of Multi-Dimensional Ideological and Political Content in "Python Programming" Course

The mining of multiple-dimensional intellectual and political content and the implementation path are established in the teaching process of Python Programming, which follows the structure of "Learning Objectives -> Introduction of Practical Problems -> Knowledge Point Learning -> Application Demonstration -> Student Practice -> Classroom Review".

This approach aims to introduce intellectual and political education to specialist programmes on a multi-faceted basis. By introducing real-world problems, students are encouraged at applying learned content and techniques within real-world scenarios and developing an understanding of the social and ethical significance of computing. Application demonstrations show practical applications of Python programming, reinforcing the importance of calculative thought and creative solutions to problems.

In addition, students' practical sessions provide opportunities for hands-on experience, which allows them in applying the knowledge and skills they have learnt to solving real-world issues. As well as improving their technical skills, this process develops a sense of responsibility and ethics in the use of technology. The classroom reviews serve as a means to reflect on the learning process, encouraging students to consider the broader implications of their work and how it aligns with societal values and norms.

Overall, this multi-dimensional approach aims to foster a comprehensive understanding of the role and responsibilities of computer science professionals in society, while also promoting critical thinking and ethical decision-making.

2.1 Establishing the Educational Goals of the Course

The fundamental questions of education are: Who are we educating? How are we educating them? And for whom are we educating them? In the process of imparting knowledge and developing abilities, to help students develop a right perspective on the world, life and culture is of paramount importance. Based on the positioning of the "Python Programming" course, the educational goals of this course are determined from the following three aspects, aiming to comprehensively enhance the quality of classroom teaching.

(1)Cultivating Technical Expertise and Computational Thinking: The course aims to impart fundamental programming knowledge and skills in Python, enabling students to think computationally and solve problems effectively using programming. This technical expertise is crucial for students to succeed in their future professional careers.

(2)Promoting Critical Thinking and Problem-Solving Abilities: Beyond the technical aspects,

the course encourages students to develop critical thinking skills. Through problem-solving exercises and challenges, students learn to analyze, evaluate, and innovate, applying their knowledge to real-world scenarios.

(3)Instilling Ethical Values and Social Responsibilities: The course integrates ethical and social considerations into programming practices. Students are encouraged to think about the ethical implications of their code, considering how their work impacts society, individuals, and the environment. This fosters a sense of social responsibility among students, preparing them to become responsible technology professionals.

By focusing on these three aspects, the "Python Programming" course aims to equip students with not only technical skills but also the critical thinking and ethical values necessary for responsible and impactful technology use.

2.2 Introduction of Practical Problems or Stories

Incorporating real-world problems or stories that align with the learning objectives of programming is a straightforward and effective method for engaging students. The "Python Programming" course can be roughly divided into six modules, and Table 1 presents representative practical problems or stories corresponding to each module, along with their ideological and political elements.

In the overview of Python language, students are introduced to the story of the father of Python, encouraging them to explore and practice based on their professional knowledge and driven by their interests. This introduces the characteristics and application areas of Python language while fostering a mindset of continuous learning and exploration.

In the section on basic data types, the classic quote "Study well and make progress every day" by Mao Zedong is used. Through different algorithmic exercises, students learn that making small progress every day, when sustained, can lead to significant improvements over time. This case cultivates students' focus and perseverance, embodying the craftsmanship spirit.

In program control structures, the story of "Yu Gong Moves the Mountains" is introduced to illustrate the concept of loop structures in programming. By analyzing the spiritual implications of "generations upon generations, with no end in sight, yet the mountains do not increase; why worry that they cannot be leveled," students are encouraged to pursue their life goals with perseverance, embodying the spirit of Yu Gong.

In functions and code reuse, the case of China's Tiangong space station is presented to demonstrate the importance of functions and code reuse. This allows students to gain a deep understanding of national cutting-edge technological achievements, fostering a sense of national pride and the aerospace spirit of hard work, perseverance, and overcoming difficulties.

By obtaining government work reports and generating word clouds, students can quickly understand the content of the reports while learning professional knowledge. This enhances their political identification with the Chinese government and its policies benefiting the people, while also emphasis the importance of adhering to professional ethics and norms in the application of computer technology.

By integrating practical problems or stories into the curriculum, students are not only learning programming skills but also developing critical thinking, ethical values, and a sense of social responsibility. This approach fosters a comprehensive.

2.3 Application Demonstration

The application demonstration phase involves integrating multi-dimensional ideological and political elements explicitly or implicitly through the context of practical problems or stories. The

following cases can serve as examples:

Case 1: Individual Income Tax Calculation

Background: According to national tax laws, different income brackets are taxed at different rates.

Objective: Through the study of multiple branching structure knowledge points, students exercise the capacity of applying programming for solving real-world issues. Additionally, this case aims to educate students on the basic obligation of every citizen to pay taxes according to the law and foster their awareness of the importance of rule of law in tax compliance.

Case 2: Tribute to Healthcare Heroes

Background: The 2020 pandemic caused widespread unease and anxiety among the general population, with healthcare workers bravely moving against the flow to provide care.

Objective: By using turtle graphics to create visualizations, students demonstrate their ability to integrate knowledge and skills. This case cultivates students' social responsibility and innovative thinking, encouraging them to pay tribute to the brave healthcare workers.

Case 3: Fibonacci Sequence

Background: Solving the Fibonacci sequence using mathematical methods can be error-prone. However, using recursive functions allows for rapid and accurate calculations.

Objective: By exploring the Fibonacci sequence and its extensions, students are challenged to solve problems using programming. This case aims to stimulate students' interest in learning, boost their confidence, and foster their ability to apply knowledge to practical situations.

Through these application demonstrations, students not only learn programming skills but also develop a deeper understanding of societal issues, ethical responsibilities, and the application of knowledge in real-world contexts. This approach fosters a comprehensive learning environment where students are prepared to contribute to society as responsible and knowledgeable technology professionals.

Case 4:Methods of Integrating Ideological and Political Education into the Curriculum

Doing good mental and political affairs is like eating salt, but you can't simply eat table salt; it's much better to naturally absorb the salt by dissolving it in a variety of foods.

For instance, in the process of introducing problems, students can be educated explicitly through specific intellectual and political cases. Under the guidance of the subjective value of the intellectual and political engineering of the curriculum, various teaching methods such as lecture method, case study method and practical guidance method can be used to present the teaching content implicitly, so that students can absorb it in a subtle way.

As the saying goes, "Teachers are lazy when they do not enforce strict discipline." Teachers should set high standards for themselves and possess correct life values and moral principles. Only then can they exert an invisible influence on students through words and actions, providing them with ideological and political education.

3. Conclusion

The integration of intellectual and political engineering is an important tool for colleges and universities to realise the goal of cultivating morality and nurturing people. Integrating intellectual and political education organically into the course "Python Programming" of liberal arts majors is of great significance in bringing into play the synergistic nurturing effect of the professional courses and the intellectual and political courses.

Through this course, we have carried out studies and exercises, focusing upon the mining of intellectual and political content and the path of its implementation. We explored various aspects of the course such as teaching objectives, introduction of practical problems, application

demonstration and integration methods. This provides a reference path for the integration of information technology into new liberal arts majors, improving students' academic interests, and cultivating students' professional skills, computational thinking and innovative and creative abilities. At the same time, it also provides insights for deepening of the execution of intellectual and political educative programmes in colleges and universities.

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