The Organic Integration of Innovation and Entrepreneurship Education with Ideological and Political Education — A Case Study of the C Programming Course

Yun Gan

Haikou University of Economics, Haikou 571132, China.

Abstract: *Innovation and entrepreneurship are important driving forces for contemporary social development and are also a focal point of higher education. The C programming course, as a compulsory subject in the field of computer science and technology, holds significant practical significance and finds widespread application. Integrating innovation and entrepreneurship into the C programming course presents a challenging task as it not only enhances students' professional abilities but also cultivates their awareness and skills in innovation and entrepreneurship. This paper takes the C programming course as an example to explore how ideological and political education can be incorporated into the curriculum to foster students' consciousness and capabilities in innovation and entrepreneurship.*

Keywords: *Innovation and entrepreneurship; Ideological and political education; C programming course*

With the rapid development of society and the swift progress of technology, nurturing talents with innovative abilities and an entrepreneurial spirit has become a crucial mission of higher education. However, traditional ideological and political education often lacks a close integration with disciplinary knowledge, resulting in certain limitations in students' understanding of ethics, morality, innovation, and entrepreneurship. The C programming course, as a compulsory subject in the field of computer science and technology, has wide-ranging educational applications and practical significance. The research presented in this paper holds certain reference value for exploring educational models that integrate innovation and entrepreneurship, thereby promoting reforms in ideological and political education within higher education institutions.

1. The Concept of Innovation and Entrepreneurship Education

Innovation and entrepreneurship education is a new type of educational model aimed at cultivating students' awareness and capabilities in innovation and entrepreneurship. It is not merely an educational approach but also a philosophy and culture. Innovation and entrepreneurship education emphasize openness, inquiry, and practicality, intending to stimulate students' creativity and innovative abilities, enhance their self-directed learning and self-development capabilities, and enable them to rapidly adapt to and address various changes and challenges in their future careers.

The core of innovation and entrepreneurship education lies in fostering students' innovative thinking and entrepreneurial consciousness. Innovative thinking refers to the ability of students to adopt new ways of thinking and methods while solving problems and conducting work, continuously exploring and attempting new possibilities to achieve innovation. Entrepreneurial consciousness, on the other hand, refers to students having entrepreneurial thoughts and spirit, being keen in identifying market opportunities and social needs, possessing the determination and courage to embark on entrepreneurial ventures, and being willing to undertake the risks and challenges of entrepreneurship, ultimately realizing their self-value and contributing to society.

The practical models of innovation and entrepreneurship education are diverse. One common approach is integrating innovation and entrepreneurship education into specialized courses. Through curriculum design and teaching methods, students' enthusiasm for innovation and entrepreneurship is sparked, and their practical abilities are improved. By adjusting coursework assignments and

assessment methods, students' cooperative spirit and self-directed learning abilities are promoted, fostering their innovative thinking and entrepreneurial consciousness. Lastly, through engaging in innovation and entrepreneurship activities and project practices, students apply their acquired knowledge to real-world situations, enhancing their capabilities and overall qualities in innovation and entrepreneurship. Additionally, various other models of innovation and entrepreneurship education exist, such as innovation and entrepreneurship laboratories, lectures, and competitions [1].

2. Teaching Objectives of the C Programming Course

2.1 Mastering the fundamental syntax and programming skills of C language

One of the teaching objectives of the C programming course is to enable students to grasp the basic syntax and programming skills of the C language. Through course study, students will learn key concepts of C language, such as variables, data types, and operators, and become proficient in using the fundamental syntax and programming techniques of C language. They will learn to write simple C programs, understand the basic structure and syntax rules of programs, as well as how to use control structures and functions to implement program logic. During their learning process, students will practice writing various simple programs, such as calculators and student grade management systems, to solidify and apply their learned syntax and skills. They will learn to use variables to store data, perform calculations using operators, and control the program's execution flow using conditional statements and loop structures. Through continuous practice and implementation, students will gradually master the basic syntax and programming skills of the C language and be able to create simple functional programs.

2.2 Understanding the basic principles and concepts of program design

In addition to mastering the basic syntax and programming skills of the C language, the C programming course also focuses on cultivating students' understanding of the fundamental principles and concepts of program design. Students will learn basic concepts and principles of program design, such as modular design, abstraction, and algorithm design. In modular design, students will learn how to decompose programs into smaller modules, each responsible for completing specific tasks, thereby improving program readability, maintainability, and reusability. They will learn how to design functions and modules, breaking down complex problems into smaller sub-problems, and achieving overall functionality through module calls. Moreover, students will learn the concept of abstraction, that is, abstracting specific problems into more general problems and designing corresponding algorithms for solutions. They will learn to analyze the characteristics and requirements of problems, select appropriate data structures and algorithms to solve them, thus improving program efficiency and performance. Through understanding the basic principles and concepts of program design, students will be better equipped to organize and design programs, enhancing program readability, maintainability, and problem-solving abilities for complex issues [2].

2.3 Ability to independently complete C programming tasks

One of the objectives of the C programming course is to cultivate students' abilities to think independently and solve problems, enabling them to complete C programming tasks on their own. Through course study and practical experiences, students will gradually master the steps of problem analysis, solution design, code writing, and program debugging, enabling them to independently design and implement C language programs. Students will learn to analyze the requirements and constraints of problems, determine input and output, design corresponding algorithms and program logic, and use C language to write code to implement the designed solutions. They will learn to use debugging tools and techniques to troubleshoot and fix errors in programs, perform testing and validation to ensure program correctness and stability. By independently completing C programming tasks, students will cultivate their abilities for self-directed learning and problem-solving, improving their programming skills and problem-solving capabilities.

2.4 Cultivate problem-solving abilities and innovative spirit

The C programming course encourages students to develop problem-solving abilities and an innovative spirit. Through facing various problems and programming challenges, students will develop

problem-solving skills and creative thinking. In the course, students will encounter practical problems, such as designing a student grade management system or developing a simple game. They need to apply their acquired knowledge and skills to analyze the problems, design solutions, and implement corresponding programs. Through this process, students will cultivate problem-solving abilities and innovative thinking, learning to approach problems from different perspectives and propose innovative solutions. Additionally, the course can encourage students to participate in programming competitions and creative design activities, providing platforms and opportunities for students to showcase and share their innovative achievements. By engaging in such activities, students will continuously challenge themselves, broaden their horizons, and cultivate their innovative spirit and creativity.

2.5 Enhance teamwork and communication skills

In the real world, software development often requires collaborative efforts, making teamwork and communication skills crucial for successful software projects. In the course, students will have opportunities to participate in group projects and collaborative programming activities. They will learn to work with team members, coordinate task assignments, and collectively address programming challenges. During teamwork, students will learn to listen to others' opinions, respect different viewpoints, and effectively communicate and negotiate. This will contribute to fostering students' interpersonal skills, cooperative spirit, and teamwork consciousness. Through the cultivation of teamwork and communication skills, students will gain a better understanding of the significance and value of teamwork, enabling them to work effectively with others and jointly accomplish software development projects [3].

3. The necessity of ideological and political education in the C language programming course of innovation and entrepreneurship integration

3.1 Enhancing students' practical abilities

The integration of ideological and political education in the innovative and entrepreneurial-focused C language programming course is a valuable educational approach that can enhance students' practical abilities. Through practical exercises and programming tasks, students can consolidate their knowledge, gain a deeper understanding of the concepts, and improve their practical skills. This enhanced practical ability is crucial for their future career development, as employers in modern society highly value candidates with practical skills, and this integrated course can give students a competitive edge in the job market.

3.2 Igniting students' passion for innovation and entrepreneurship

The combination of innovation and entrepreneurship with C language programming can help students better comprehend and apply the knowledge they acquire. Through continuous exploration and innovation during practical programming projects, students' passion for innovation and entrepreneurship can be ignited. This kindles their confidence and enthusiasm to face future career challenges. In today's society, innovation and entrepreneurship are essential, and this integrated course can lay the foundation for students, fostering their innovative thinking and entrepreneurial awareness[4].

3.3 Cultivating students' teamwork and collaboration spirit

The C language programming course, enriched with the integration of ideological and political education related to innovation and entrepreneurship, helps students understand the importance of teamwork and collaboration. Collaborating on complex projects as a team, students gain a profound appreciation for the significance of teamwork and develop their team collaboration and leadership skills. Such teamwork spirit is essential for their future career growth, as modern society highly values individuals who can work effectively in teams. This integrated course fosters students' teamwork skills and establishes a solid foundation for their professional development.

3.4 Promoting students' entrepreneurial mindset

The integration of innovation and entrepreneurship in the C language programming course facilitates the promotion of students' entrepreneurial mindset through engaging in entrepreneurial

activities and project practices. By constantly exploring and taking risks, students gain a deeper understanding of entrepreneurship's essence and significance. Simultaneously, it enhances their entrepreneurial awareness and capabilities, laying a solid foundation for their future entrepreneurial endeavors. In contemporary society, entrepreneurship is of great importance, and this integrated approach aids in fostering students' entrepreneurial mindset, providing a solid basis for their career advancement[5].

4. Strategies for Integrating Ideological and Political Education into C Language Programming Course with Innovation and Entrepreneurship

4.1 Introducing Real-life Case Studies

Incorporating real-life case studies related to innovation and entrepreneurship into the C language programming course is an effective strategy for ideological and political education. By showcasing successful innovation and entrepreneurship cases, students can grasp the importance of innovation and entrepreneurship for society and individuals, igniting their potential for innovation and entrepreneurial awareness. To help students better understand the practical applications of innovation and entrepreneurship, one can present examples of entrepreneurs who achieved success in the C language programming field[6].For instance, sharing a case where a software or application developed in C language attained success in the market can emphasize how the entrepreneur combined innovative thinking and entrepreneurial spirit to align technology with market demands, leading to commercial success. By sharing these examples, students can comprehend that innovation and entrepreneurship are achievable through practical actions.

4.2 Designing Project Practices

To enhance students' understanding and practical skills in innovation and entrepreneurship, project practices can be integrated into the C language programming course. Allowing students to independently design, develop, and implement innovative projects will enable them to better comprehend the process of innovation and the challenges in entrepreneurship, fostering their problem-solving and teamwork abilities. In project practices, students can choose themes related to innovation and entrepreneurship, such as developing a software application that addresses specific issues. They can follow steps like market research, requirement analysis, and technical implementation to progressively complete the project. Throughout this process, students will encounter various challenges, requiring them to apply innovative thinking to resolve issues and collaborate with team members to accomplish the project.

4.3 Emphasizing Cultivation of Innovative

Thinking Cultivating students' innovative thinking involves nurturing their ability to identify and solve problems, encouraging them to think and approach issues from different angles, and stimulating their creative inspiration. To foster innovative thinking, creative design and programming competitions can be organized, encouraging students to propose innovative ideas and solutions. Inviting successful entrepreneurs and industry experts to deliver innovation and entrepreneurship lectures and workshops can also broaden students' horizons, exposing them to innovative methodologies and techniques, and providing a practical platform for students to showcase and exchange their innovative achievements. Through these activities, students will be motivated and guided to contemplate problems, unearth demands, and propose innovative solutions, promoting critical thinking and an innovative mindset.

4.4 Cultivating Team Collaboration Spirit

Since innovation and entrepreneurship often require teamwork, cultivating students' team collaboration spirit is crucial in the C language programming course. To achieve this, the course can incorporate group project practices and activities involving group discussions. Collaborating with peers to solve problems and complete tasks will teach students to listen and respect others' opinions, practice effective communication, and enhance their cooperative abilities. Additionally, encouraging collaborative programming within groups can foster teamwork and mutual assistance among students when tackling coding challenges. These activities will help students recognize the significance and value of teamwork, developing their teamwork, collaboration, and leadership abilities, and preparing

them for future innovation and entrepreneurship endeavors.

4.5 Encouraging Interdisciplinary Fusion of Innovative and Entrepreneurial Thinking

To better integrate ideological and political education into the C language programming course, encouraging interdisciplinary fusion is beneficial. Innovation and entrepreneurship extend beyond the technical domain and require integration with knowledge from other fields. In the C language programming course, some interdisciplinary knowledge related to innovation and entrepreneurship, such as marketing and business model design, can be introduced. By understanding this knowledge, students will be able to amalgamate technical and business thinking, comprehending the comprehensive and complex nature of innovation and entrepreneurship. Through interdisciplinary fusion, students will develop a more comprehensive skill set and knowledge structure, better understanding the overall landscape of innovation and entrepreneurship, and transforming technology into tangible business value.

4.6 Inspiring Students' Interest in Innovation and Entrepreneurship

For example, designing an intelligent home control system where students can implement intelligent control of household devices like lighting and temperature through programming. Additionally, guiding students to design personalized social media applications, such as location-based social apps or music-sharing platforms. These projects encompass various technological and design challenges, sparking students' curiosity and creativity, and nurturing their problem-solving and innovative abilities. Furthermore, inviting successful innovators and entrepreneurs as guest speakers to share their experiences and stories will provide students with a deeper understanding of real-world innovation and entrepreneurship, motivating them to engage in entrepreneurial practices.

4.7 Focusing on the Social Responsibility of Innovation and Entrepreneurship

In the C language programming course, emphasis can be placed on the relationship between innovation and entrepreneurship and social responsibility. By discussing the role of innovation and entrepreneurship in social development and improvement, students are encouraged to contemplate the social responsibility that should accompany innovation and entrepreneurship. For instance, exploring how C language programming can be used to address social issues such as environmental protection and healthcare. Through these discussions, students will realize that innovation and entrepreneurship should not solely serve individual interests but also consider societal development and needs. Moreover, introducing students to cases of innovative and entrepreneurial ventures with a strong sense of social responsibility, such as sustainable enterprises, will deepen their understanding of the amalgamation of innovation, entrepreneurship, and social responsibility, further cultivating their sense of social responsibility.

4.8 Cultivating Students' Lifelong Learning and Adaptability

Institutions can guide students to stay informed about emerging technologies and innovative trends, encouraging them to actively learn and explore new knowledge, and cultivating their abilities for self-directed learning and self-improvement. For example, introducing students to emerging technologies like artificial intelligence, blockchain, etc., so they can grasp the fundamental principles and applications of these technologies. Additionally, keeping students informed about the latest developments and trends in the field of innovation and entrepreneurship, such as emerging industries, market demands, and policy changes, will make them aware of how evolving technologies impact innovation and entrepreneurship. Through such cultivation, students will acquire the ability to adapt to new technologies and demands, preparing them for future entrepreneurial activities. Furthermore, guiding students to be aware of the latest trends and developments in the international innovation and entrepreneurship landscape, such as the innovation ecosystem in Silicon Valley, will provide insights into global innovation and entrepreneurship trends and equip students for future entrepreneurial endeavors.

4.9 Encouraging Interdisciplinary Fusion of Innovative and Entrepreneurial Thinking

Innovation and entrepreneurship require transcending various disciplines and fields. Therefore, in the C language programming course, encouraging interdisciplinary fusion of innovative and

entrepreneurial thinking is vital. Introducing interdisciplinary knowledge related to innovation and entrepreneurship, such as marketing and business model design, allows students to combine technical and business thinking, better understanding the complexity and integrative nature of innovation and entrepreneurship. For example, guiding students to design a business model and implement it through programming will help them comprehend the practical application of business models. Moreover, encouraging students to contemplate how to integrate technical and business thinking, how to achieve the fusion of technical and business innovations, will cultivate their interdisciplinary thinking ability.

5. Conclusion

Through the integration of innovation and entrepreneurship into the C language programming course, ideological and political education aims to cultivate students' awareness of innovation and entrepreneurship, their practical skills, and a sense of social responsibility, laying a solid foundation for their future development. This will have a positive impact on individuals' career growth and contribute to the sustainable development of society. With the continuous deepening and improvement of innovation and entrepreneurship education, we believe that students will be better equipped to face future challenges and contribute their wisdom and strength to the advancement of society.

References

[1] Zhang Fan, Su Yu.（2021）Ideological and Political Education in C Language Programming Course Integrated with Innovation and Entrepreneurship. Computer Knowledge and Technology, 17(31), 239-240.
[2] Zhang Cuiping, Zhao Hui.(2020) Ideological and Political Education in C Language Programming Course Integrated with Innovation and Entrepreneurship. Computer Education, 8, 50-53.
[3] Li Mengxue.(2021) Research on the Teaching Reform of "C Language Programming" Course Based on Innovation and Entrepreneurship Training Projects. Scientific Consulting (Science & Management), 5,158-159.
[4] Ding Fengjuan, Hong Tengjiao, Chen Feng, et al. (2023)Exploration and Practice of Ideological and Political Education in C Language Programming Course. Modern Commerce and Industry, 44(14),256-258.
[5] Yue Dianzuo, Hou Yushuang.(2023) Exploration of Ideological and Political Construction in C Language Programming Course. Modern Commerce and Industry, 44(7),223-225.
[6] Shen Junhui, Zhu Qixiang, Zhang Yongzhi.(2022) Ideological and Political Education Objectives and Implementation Points in C Language Programming Course. Fujian Education, 35,17-18.