

Exploration and Construction of Ideological and Political Education in the Course "Advanced Language Programming"

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Abstract: In the new era, in order to implement the task of educating people through three aspects, in addition to imparting professional knowledge and cultivating abilities, university education should also play a role in cultivating correct values. Taking advanced language programming as an example, this article introduces how to integrate ideological and political elements into the teaching of professional courses from several aspects, such as course objectives, exploration of ideological and political thinking in courses, case construction of ideological and political courses, and design of teaching plans for ideological and political courses. Through the design of the program, the collaborative development function of knowledge, ability, and education in the teaching process can be realized, and the goal of cultivating promising young people with both moral and physical abilities can be achieved.

Keywords: Advanced Language Programming; Ideological and Political Education; Teaching Reform.

1. Course Introduction and Objectives

Advanced Language Programming is a basic course for computer majors and the first professional course for students who have just entered university. Through the teaching of this course, students not only master the knowledge, programming techniques, and basic algorithms of advanced programming languages, but also master process oriented ideas and methods, have the basic ability to use computers to solve practical problems, and can flexibly apply advanced languages to program design, Lay a foundation for learning about software courses. See Figure 1 and 2 for basic course information and course system.

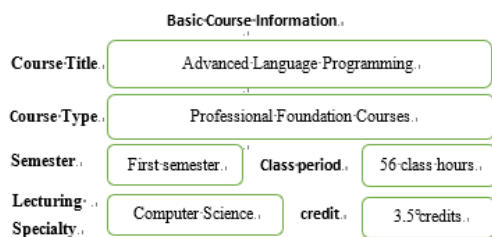


Figure 1. Basic Course Information

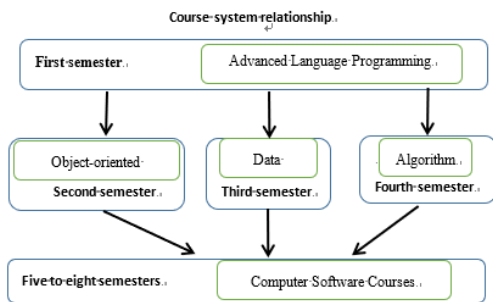


Figure 2. Course system relationship

In addition, in the process of imparting knowledge and skills, this course also deeply explores the ideological and political elements in professional knowledge through the course team's teachers, and combines case studies to integrate ideological and political content such as exploration

awareness, scientific spirit, craftsmanship spirit, and team collaboration into the entire teaching process, so that ideological and political education can be integrated into professional courses in a subtle and silent manner.

This course practices the OBE concept, and the course objectives are set with progressive three-level goals, which are set from the perspective of knowledge, ability, and nutrition. The course objectives are shown in Table 1.

Table 1. Advanced Language Programming course objectives

Objective 1	Knowledge	Students can accurately write programs using data types, operators, and control statements.
	Ability	Analyze and decompose practical problems, establish models, write programs to solve them, and have the basic ability to solve professional engineering problems.
	Accomplishment	From the case analysis, students can feel the importance of abiding by laws and professional norms.
Objective 2	Knowledge	Students can apply complex data types, complex loop control structures, and functions to complete functional complex programs.
	Ability	Students can design program units for specific needs of complex engineering problems, and have the ability to solve complex professional engineering problems.
	Accomplishment	From the case analysis, students can experience technological power, national pride, and the spirit of a great craftsman.
Objective 3	Knowledge	Students can apply the C++ program development platform to write, debug, and test programs based on established models and designed program units.
	Ability	Students are able to solve practical engineering problems in their professional field.
	Accomplishment	Through case analysis, enhance the sense of patriotism and national pride of loving the party, and practice the "craftsmanship spirit" and professional norms in the use of homework and examination platforms.

2. Exploration of Ideological and Political Ideas in Course

2.1. Explore the characteristics of the course and establish the overall goal of ideological and political education of the course

In fact, it undertakes the task of shaping students' scientific and rigorous learning attitude and establishing the ideal and belief of becoming a powerful country in science and technology.

With the rapid development of China's information industry, most of the technology industry is based on computers to complete work, which also provides a good way for advanced language programming courses to introduce cases related to advanced science and technology into the classroom. In the course of knowledge explanation and ability cultivation, educational elements such as the spirit of exploration, craftsmanship, and family and national sentiment are integrated into the entire course.

2.2. With the goal of improving students' interest in learning, optimize teaching content, and integrate ideological and political education driven by practical cases

Teachers conduct in-depth research and apply course resources to design a scientific external environment for students, helping them reconstruct new cognitive structures based on their existing cognition, thereby completing the process of learning new knowledge. In the design of teaching content, students should be motivated and have the initiative. The learning process needs learners to believe that knowledge is built by themselves, not instilled. Learning requires not only input but also output, which can better stimulate learners to think and help them build knowledge. The output takes many forms: repetition, analysis, application, and so on. The

only motivation for students to learn is a sense of achievement and satisfaction, and students are willing to persevere only when they feel that they have learned something.

Therefore, in the setting of course teaching content, it is necessary to consider starting from real cases, while strengthening the ideological and political elements of cases, guiding students to think about solving case problems and what methods are needed, so as to introduce teaching content, guide students step by step to solve such problems, through the construction of knowledge, and finally complete case solutions for knowledge output, while allowing students to feel a sense of achievement, Gain motivation for learning.

2.3. Diversified teaching methods to promote a "student centered" teaching model

Based on the OBE concept, establish a "student centered" education concept, adopt a scientific platform management model, construct a reasonable question bank, and provide online resources to facilitate students' autonomous learning and practice; Improve the communication mode, establish online and offline course guidance and answer questions channels, strengthen communication with students, understand students' ideological trends through communication, correctly guide students' values, provide emotional support for students, and integrate ideological and political education into the entire teaching process; Construct corresponding learning contexts based on different knowledge topics, make reasonable design and arrangement of teaching content, and flexibly apply various teaching methods such as blackboard writing, dictation, PPT, classroom quizzes or assignments, competitive answering, multimedia, and online push demonstrations to create contexts conducive to knowledge construction.

3. Course Ideological and Political Case Construction

Table 2. The corresponding relationships among course cases, knowledge points, and ideological and political elements

chapters	Knowledge	case	Ideological and political elements
Chapter 1 Overview of C++Language	The Thinking of Computer Programming	Case of telephone epidemic prevention of iFLYTEK	Serving the country through science and technology, learning majors well and fighting for the Chinese Dream
	Cultivating Computational Thinking Ability in Programming	The case of Liu Jiaxing, a staff member of Beidou satellite research and development	Cultivate the spirit of craftsmanship and professionalism in large countries
	Morphology and Rules of C++Language	Traffic Accident Case Analysis	"no square without rules, no circle without rules", and to abide by laws and professional norms.
Chapter 2 Data Types and Expressions	Basic Data Type	Analysis of global confirmed epidemic data	Strengthen the sense of responsibility of loving the party, patriotism, and starting from me
	Arithmetic Operators and Expressions	beidou satellite navigation and positioning system	Encourage independent innovation and national pride
Chapter3 control structure	Select Structure	Health code and travel code discoloration issues	Informatization and intelligent development, eulogizing the progressiveness of the Party
	Cyclic structure	Satellite pre launch inspection	Inspired by courage and dedication, taking small steps can lead to thousands of miles
Chapter 4 Complex data types	Indicator	Accurate positioning of manned spacecraft docking with the core module	Teamwork, "Lose nothing, make a mistake."
	Structure	Take the storage of all vaccinated population information, nucleic acid testing personnel information entry, etc. as examples	Educate students to have a sense of personal obedience to the collective and national, family and national sentiments, personal responsibility, resource sharing, and teamwork

This course tracks the development of the information industry in a timely manner, introduces and updates the latest

scientific and technological cases in real time, and combines current events and news to organically integrate classroom

knowledge with actual cases. This not only improves learning enthusiasm, but also enables students to feel the rapid development of science and technology in their country at school, enhancing their faith in serving the country through science and technology and national self-confidence.

Table 2 shows the corresponding relationships among course cases, knowledge points, and ideological and political elements.

4. Closed-loop course ideological and political teaching plan

This course adopts a before class, during class, and after class closed-loop scheme to design relevant teaching links.

Assign case analysis tasks before class, and students will complete the cognition of knowledge points through consulting materials, online learning, etc. to cultivate their autonomous learning ability.

The teaching process is guided by arranging a case before class [1], introducing knowledge points from the course, solving case problems through the learning of knowledge points, continuing to deepen the case content, introducing the next step of knowledge needs through group discussions, and gradually improving the knowledge points needed to solve the problem. Step by step, knowledge learning is integrated into the case analysis process, allowing students to feel that knowledge is not instilled but constructed by themselves. In the process of solving problems, experience a sense of achievement and identity, thereby gaining motivation for learning. At the same time, positive cases are selected for case design, incorporating ideological and political elements, and professional knowledge is synchronized with ideological and political education.

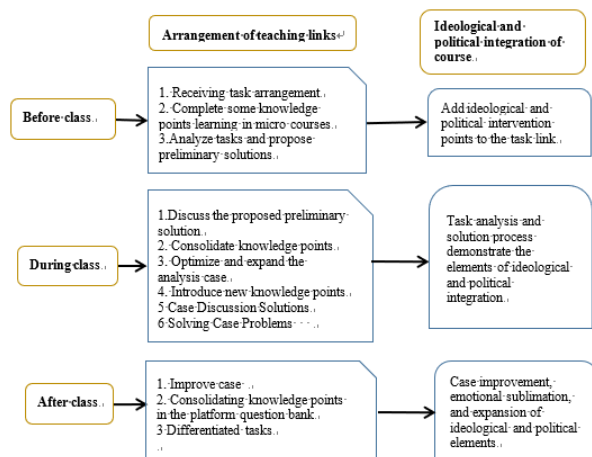


Figure 3. Design of Ideological and Political Teaching Scheme for Courses

After class, improve classroom cases and sublimate ideological and political elements in case improvement. In addition, through the online homework platform for students, they can complete after-school homework, hands-on exercises, and stage ability tests. The platform can achieve the submission of homework and automatic judgment of grades. Students can repeatedly debug the program and submit it within the specified time, practicing the "craftsman spirit" and professional norms.

The closed loop course ideological and political teaching scheme design is shown in Figure 3.

5. Conclusion

In student centered teaching, all aspects of the teaching process, such as how to stimulate students' learning enthusiasm in classroom teaching, how to achieve learning results, the state of students' learning in class, interaction, and methods and means of mutual assistance, need to be summarized through continuous exploration and practice. The exploration of teaching design incorporating ideological and political elements also needs to be constantly summarized and improved in teaching under the guidance of theory. The entire process requires mutual communication, learning, and summary among teachers, students, and teaching teams, it is a process of gradual enrichment and improvement.

Acknowledgments

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