

Research on the Civics Teaching of Programming Courses in Colleges and Universities

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Abstract: At present, the programming courses in colleges and universities focus on theoretical and practical teaching, and the integration of curriculum thinking and politics with teaching content is low, which cannot shape students' values and cultural outlook in the process of teaching professional courses. In response to this problem, this paper proposes a systematic framing method of curriculum thinking and politics cases under mixed teaching mode based on project-based teaching of college programming courses, which can effectively improve the teaching effect and promote students' all-round development by tapping the thinking and politics elements.

1. Introduction

The programming course in higher education focuses on cultivating students' computational thinking and the ability to use computers to deal with problems, the course content is profound, difficult to understand, mathematical and rational, as students' logical thinking, the method and ability to split problems are not cultivated, students are prone to fear and aversion to learning, the teaching effectiveness of the course is poor, and students are not motivated to learn. In order to improve the teaching quality of the programming course and develop students' problem-solving ability, project-based teaching is carried out, and the corresponding course content is dynamically adjusted according to students' learning status, and a number of projects are integrated into the teaching content, so that students can practice on the computer and write code to understand and master the course knowledge [1-3]. Combined with the "Internet +", "online + offline" hybrid project-based teaching is adopted to realise the transformation from a "teaching" based teaching mode to a "learning" based teaching mode. The "teaching"-based teaching mode is transformed into a "learning"-based teaching mode, allowing students to actively participate in the teaching and learning process, making up for the shortcomings of traditional classroom teaching [4-8]. Students will learn the course content independently online, and the teacher will explain the application of knowledge points in conjunction with the project, and deepen students' understanding and application of knowledge through a series of comprehensive projects, so as to achieve gradual improvement from basic ability to application ability, analysis ability and comprehensive ability. Through the course learning, students should not only master professional knowledge and provide important knowledge and ability support for their future career in big data, cloud computing, artificial intelligence and system operation and maintenance and other related positions, but also

include good professional ethics and family sentiment. Therefore, it is necessary to integrate elements of thinking and politics in the course teaching, and it is necessary to explore a project-based teaching mode of programming course that integrates elements of thinking and politics in this paper.

2. Hybrid curriculum design based on project-based teaching

With the course input and outcome output as the guide, a third-party intelligent teaching platform is used to provide cases based on actual development projects as teaching cases in accordance with the characteristics of the professional courses in programming class design. Through diversified integration, a set of teaching platforms and professional series of courses suitable for programming class design courses are gradually explored, as well as the development of corresponding practical projects. The specific construction ideas are shown in Figure 1.

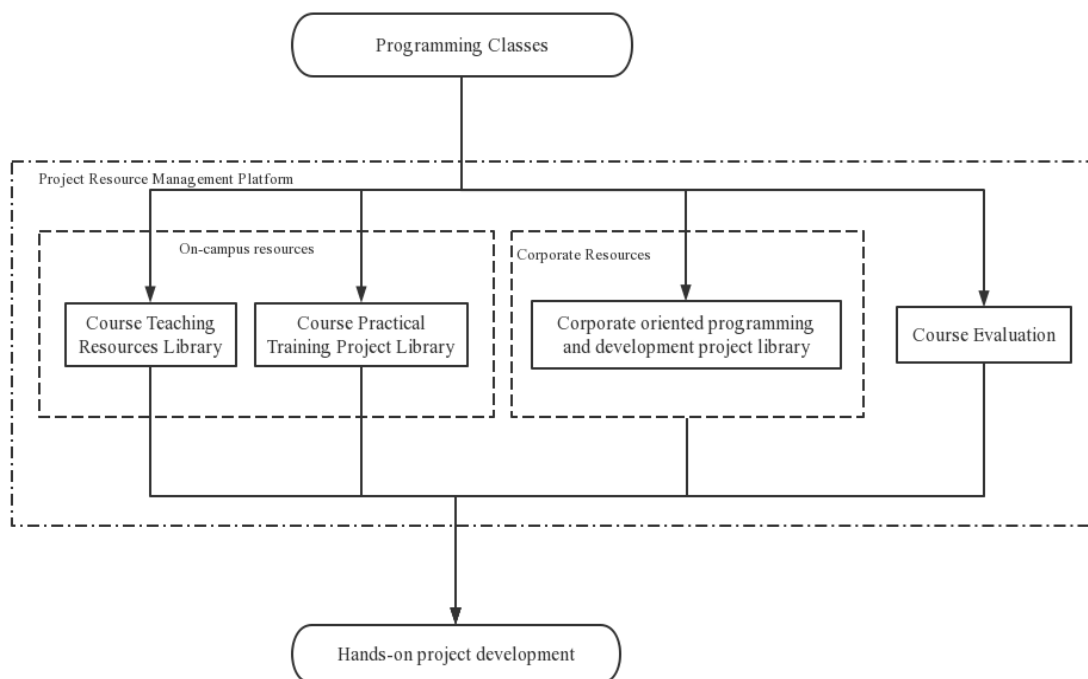


Figure 1: Hybrid course design

3. Example of a systematic framework design of case study integrated into the curriculum

In the process of learning new knowledge, students are promptly guided to discover the inherent nurturing elements of the knowledge points and to provide timely thought and political education, which not only allows students to feel the unique harmony of the engineering course and thus generate a strong interest in learning, but also precisely cultivates the moral qualities that students should have in specific application scenarios. Take the content of the UML Object Design and Programming course chapter as an example.

3.1 Course content

The use of the UML object design and programming use case diagram model for software system development requirements is a good solution to the problems of not having a uniform format for the system, being highly arbitrary and prone to ambiguities and inaccuracies in understanding.

This session will use the basics of use case diagrams to create a use case diagram model based on the functional requirements of a specific software system development project, "A remote online collaboration cloud platform for meetings in the context of the new pneumonia epidemic", using staruml software. The key points of the use case modelling of the system, with examples and case studies, are as follows.

- (1) Identify the roles and use cases in the system
- (2) Prioritise the use cases
- (3) Build a use case diagram model

3.2 Civics mapping and integration points

In the course of the lecture, the main method of teaching the course Civics case was used. Adopt the case of remote online meeting collaboration cloud platform development under the new crown pneumonia epidemic, complete the software system use case diagram modelling operation, through the case of this process, let students understand in the operation of online meeting to provide a communication platform between leaders and employees, improve the work efficiency of home office, maintain the orderly and stable development of society, let students feel the work ethics, work responsibility and comprehensive quality of software developers, and Help students to build a sound personality. In the actual teaching process, different elements of Civics can be incorporated according to different teaching scenarios and different teaching modules. The Table 1 shows the design of the curriculum.

Table 1: Curriculum Civics elements of the use case diagram

Teaching content	Thinking Mapping and Integration Points
Identify the roles and use cases in the system	As a real-time communication platform, the remote online meeting and collaboration cloud platform is a full-service platform that combines end-user subscriptions to customer service operations and maintenance billing, so learn to communicate with users, customers and operations and maintenance personnel, master the communication method of asking questions and obtaining system functional requirements, and obtain functional use case requirements for various roles
Prioritising use cases	Incorporate a sense of prioritisation and prioritisation of the platform's functional development process and prioritise the execution of use cases
Building a use case diagram model	Enhancing students' sense of innovation and developing their problem-solving skills. To develop good habits of teamwork, meticulous patience and mutual help through drawing use case diagrams for the remote online meeting collaboration cloud platform, and to develop students' sense of work responsibility and discipline in the classroom

4. Conclusion

This paper explores and practices a new model of online and offline mixed whole process and comprehensive education in programming courses, starting from the urgent problems existing in the

teaching of traditional university programming courses, with learning as the centre and teaching as the leader. Through the practice of this teaching mode, students' learning initiative and job competence are obviously improved, moral quality is enhanced and the quality of professional training of talents is improved.

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