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Reform and Practice of the Teaching Mode for the Course C Language Programming in the Context of New Engineering

Dong Wu

Department of Mechanical and Control Engineering, Guilin University of Technology, Guilin, China
Email: 274573302@qq.com

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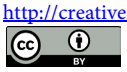

Abstract

The new engineering concept is integrated deeply across the entire student cultivation process, revising professional talent development plans, curriculum teaching plans, curriculum teaching syllabuses, and practical teaching reforms: Take on the role of active curriculum reformer, keep refining the curriculum as you teach it, and accomplish excellent student training development. The traditional teaching mode of "C Language Programming" lacks innovation. This article takes the "Digital Electronic Technology" course of Guilin University of Technology as a reform pilot, continuously improving the teaching design of "C Language Programming" course, changing the traditional teaching methods of "C Language Programming", enriching the teaching assessment and evaluation methods of "C Language Programming", and promoting the improvement of students' learning ability.

Subject Areas

Curriculum Development

Keywords

New Engineering, C Language Programming Course, Teaching Mode, Evaluation Method

1. Introduction

Based on the concept of engineering certification education, we have the courage to practice the reform of new engineering education and promote the efficient development of higher education, taking students as the center, adhering to the principle of output orientation, targeting the needs of students, and relying on

enterprise platforms to jointly cultivate students in the course practice process, promoting the improvement of student quality cultivation. In the construction of new engineering courses, it is necessary to fully leverage the advantages of professional basic courses and play a pioneering and exemplary role in the process of education and teaching reform [1] [2] [3]. The new engineering concept is fully integrated across the entire student development process, including professional talent development plans, curriculum teaching plans, syllabus revisions, and practical teaching reforms: Take up the task of actively reforming the curriculum, keep improving the curriculum while teaching it, and accomplish excellent student training development.

This article takes the course "C Language Programming" at Guilin University of Technology as a reform pilot, breaking through conventional teaching methods, completing the course teaching design, constructing online and offline mixed teaching resources, improving the assessment mechanism for the practical part of the course, forming a student-centered approach, improving students' learning pain points, and enhancing their sense of learning happiness.

2. The Teaching Status of the Course "C Language Programming"

C Language Programming is a professional basic course with strong practicality, design, and innovation. It is an important basic course for comprehensive quality education of college students. This course is a prerequisite course for students to further study "Microcontroller Control Technology" and "Intelligent Control Algorithms", helping them lay a solid foundation for future work production and debugging. And through basic programming training, cultivate college students' computer application ability, practical ability, and innovation ability.

The course "C Language Programming" focuses more on practice and provides effective tools for students to program and solve practical problems. However, students may experience a phenomenon of learning aversion during the learning process. In the later part of the course teaching, especially when teaching pointer chapters, students may not have enough mastery and understanding of the knowledge points, and gradually lose their active learning awareness. At the same time, students lack good self-awareness and time spent on computer programming [4] [5] [6] [7]. Due to the heavy workload of other professional courses, including higher mathematics, college physics, and other courses, there are many assignments and experiments, students do not have enough time for themselves to fully utilize their spare time to complete the practical content of the course on the computer. Finally, teachers mainly focus on classroom teaching and allocate less time for students' training. Students lack a thorough understanding of knowledge points and have a weak learning foundation. At present, the evaluation method of the course still mainly relies on the final exam, lacking course process assessment. In the future teaching process, it should combine online and offline teaching methods, rely on high-quality resources of MOOC

teaching videos, and emphasize the process of cultivating students' abilities.

In summary, in the context of the New Engineering University, we will change the traditional teaching methods for the course "C Language Programming", continuously improve online course teaching resources, allocate students' computer time reasonably, rely on the school enterprise cooperation platform and the college practice platform, combine practical problems, exercise students' programming skills, enrich course assessment methods, and truly reflect students' learning level and effectiveness. Therefore, it is of great significance to carry out the reform of the teaching mode of the course "C Language Curriculum Design".

3. Reform Plan for the Teaching Mode of the Course "C Language Programming"

3.1. Practice the Construction of New Engineering Disciplines and Improve the Teaching Design of the Course "C Language Programming"

In the context of the construction of new engineering disciplines, the construction of professional basic courses is indispensable. As a professional basic course, the course "C Language Programming" is crucial in practical reform. Based on project-based teaching methods, the course "C Language Programming" is divided into 7 projects to increase students' computer operation time, and at the same time, model stories are integrated into the course teaching, forming a course ideological and political lesson plan. Before class, preview videos and assignments are pushed through Rain Classroom to help students understand the knowledge points taught in class in advance. Through answering questions and feedback, students can help teachers clarify the focus of class, break through key and difficult learning problems, and carry out organized teaching. In class, by using methods such as rain classroom barrage, rain classroom roll call, and rain classroom test questions, the classroom atmosphere is enlivened, students' learning attention is increased, and difficult to understand knowledge points and content are deeply explored. Animation is used to help students understand. After class, by assigning project-based assignments, students are encouraged to complete them in a collaborative manner and cultivate their sense of teamwork. At the same time, through group mutual evaluation and teacher feedback, complete the project defense, improve students' language expression ability and hands-on programming ability. In the practical process of the computer room, after class, let students complete the task of keeping desks clean and tidy, and arranging desks and chairs neatly, to cultivate students' awareness of rules.

3.2. Establish a Rich Teaching Case Library and Change the Traditional Teaching Method of "C Language Programming"

A typical teaching case library can help students understand comprehensive knowledge points and enable them to empathize with project design. By chang-

ing the "C Language Programming" hands-on guide book, we aim to increase the course's challenge level and add rich project-based cases, allowing students to simulate first and then design, thereby enhancing their programming confidence. At the same time, relying on high-quality online teaching resources, students can absorb content through online teaching resources when they do not understand the knowledge points of the course. Set online assessment and testing questions, allowing students to continuously deepen their understanding of the content of knowledge points through continuous practice; Set online game design questions that combine production practice, allowing students to complete a small portion of program design through open source code, enhancing their learning motivation and interest. Outside of class, establish interest groups and competition teams for the course "C Language Programming", provide subject competition platforms, encourage students to actively participate in competitions, and enhance their hands-on practical abilities. Relying on the collaborative education platform between industry and education, students can have early access to the robot comprehensive control system, enabling them to intuitively understand the significance and purpose of learning the course "C Language Programming". By visiting the laboratory and explaining project cases in detail, students can deeply appreciate the charm of programming. They are arranged to complete extracurricular small productions, set open topics, and allow students to freely choose their own interesting content for programming and design. Finally, their works are evaluated through defense.

3.3. Establish a Mixed Online and Offline Teaching Mechanism to Enrich the Evaluation Methods of the Course "C Language Programming"

The traditional "C Language Programming" mainly relies on final exams, and lacks assessment of students' process learning, which cannot truly reflect their learning effectiveness. Change to a mixed online and offline assessment strategy, set up online test questions and video watching, and increase students' participation in classroom teaching time. At the same time, in response to the requirement of "gender equality" in the course, the proportion of multiple-choice and fill in the blank questions in the final exam papers will be reduced offline, while the proportion of programming questions will be increased, allowing students to continuously understand the content of knowledge points through programming design. The assessment of online content includes online reports, classroom test questions, and on-site debugging and operation, so that students do not make any mistakes during the teacher's lecture and improve their classroom attention. The completion of the report on the computer is not just about completing homework submission. During the homework submission process, it is necessary to discuss in groups, set a project-based defense theme, and use flipped classroom methods to help students deeply understand the key points of programming. Teachers understand the easily overlooked content of this course through various channels such as supervisory evaluation, student evaluation,

and leadership evaluation, improve the teaching design of subsequent courses, and continuously enhance students' programming abilities. At the same time, by writing an annual course analysis report and comparing the achievement values of the same goals in different years, students' learning situation is analyzed, and specific problems are analyzed to propose corresponding improvement measures and methods.

4. Conclusions

1) This article practices the construction of new engineering disciplines, continuously improves the teaching design of the course "C Language Programming", and forms a student-centered training mechanism through modern information technology means.

2) Establish a rich teaching case library, change the traditional teaching method of "C Language Programming", rely on the school enterprise cooperation platform and college practice platform, and enhance students' learning motivation and interest through real scenario simulation.

3) Establish a blended online and offline teaching mechanism, enrich the evaluation methods of the "C Language Programming" course, change the proportion of final grades, optimize process assessment, and truly assess students' learning ability and effectiveness.

Conflicts of Interest

The author declares no conflicts of interest.

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