

Teaching Reform and Practice of Embedded ARM Course Driven by Competition Project

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Abstract

Embedded system is a course with strong practicality and application. The traditional teaching mode cultivate students cannot meet the needs of practical application, need to reform the teaching mode, put forward "a core + a board + multiple application" of "1+1+X" teaching mode, and introduce the competition project practice teaching, then forms to race to promote teaching and teaching combined with the practice teaching reform train of thought, and analyzes on actual competition projects, The interaction between competition and teaching is emphasized. Practice has proved that embedded ARM teaching method based on competition-driven project can effectively improve students' innovation ability and team cooperation consciousness, and improve the quality of talent cultivation.

Keywords

Embedded system; teaching reform; project driven.

1. Introduction

Embedded system has strong technical, practical and comprehensive characteristics, students generally feel it is difficult to learn, and the learning process theory and practice are not closely connected, the engineering practicality of the course is very poor, it is difficult to meet the needs of relevant industries in society after graduation, the reasons are mainly reflected in:

- ① The allocation of class hours in embedded system courses is unreasonable, with too many theoretical hours and too few practical hours, which ignores the cultivation of students' innovative practical ability and fails to mobilize students' interest, initiative and enthusiasm in learning.
 - ② The arrangement of experimental content is unreasonable and too simple. There are more confirmatory experiments and less design experiments by students themselves. There are more basic experiments and less comprehensive development experiments. Students' design and development ability is difficult to cultivate, and they cannot flexibly apply the knowledge they have learned after class.
 - ③ Practice teaching lack of practice environment and discipline competition platform support, lack of project penetration into teaching, improve students' practical ability.
 - ④ The traditional examination method ignores the importance of practice in this course.
- Therefore, the teaching reform of embedded system curriculum has become an urgent problem to be solved.

2. The Significance of Teaching Reform

Speciality of embedded systems teaching should be to practice innovation ability training as the core, the curriculum system for embedded system in too much theory teaching, practice

teaching, practice teaching and the lack of practice environment and platform support, as well as a lack of interest in the learning process, enthusiasm is not high, the problems such as unreasonable appraisal standards, combined with the project and discipline competition platform, To promote the reform of embedded system practice teaching driven by project and carried by subject competition can not only exercise students' practical skills, help students consolidate their knowledge structure system, but also meet the social demand for embedded system talents and expand students' employment scope. The project-driven teaching mode adopted by universities in curriculum reform is also of great significance to the cultivation and development of students' vocational innovation ability.

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3. Measures for Teaching Reform

3.1. Raise students' interest in learning and cultivate students' innovation consciousness driven by competition items

The project-driven practical teaching focuses on "learning by doing", and the whole teaching process is carried out in the form of project teaching, so as to achieve the goal of integrating theory and practice, imparting knowledge and cultivating ability, and cultivating engineering talents through the integration of "teaching, learning and doing". The whole practical teaching process is carried out in the form of projects. The selection of projects is closely related to the major and course content. The projects should not only make use of the theoretical knowledge learned, but also keep up with the relevant needs of the industry and inject the cutting-edge technologies in the field. To select projects for specific task decomposition, in the whole process, take the student as the main body, the development and design, project finished, really to do learning guidance, project driven, so as to arouse students' interest in learning and motivation, enable students to independent found the problem in the process of the project development and utilization of curriculum knowledge to analyze and to solve the problem, It can not only achieve the purpose of learning curriculum knowledge but also cultivate students' engineering practice ability and innovation consciousness.

3.2. Build a "1+1+X" discipline learning platform for embedded systems

The teaching method of "promoting teaching with competition, promoting learning with competition, combining teaching with competition, and integrating learning with competition" has laid a solid foundation for training a batch of high-quality IT talents with "thick foundation, heavy hands-on, good innovation". Taking "a board card" + "a control core" + "multiple application scenarios" as a practical course learning platform, students can skillfully use the board card and control core, and then expand and apply it to competition projects or other scientific research projects. The combination of competition and teaching enables students to learn relevant knowledge in the process of competition, which is accurate and efficient, and effectively promotes the cultivation of innovative and practical students.

3.3. Reasonable planning and design of teaching content, build embedded system practice teaching system

To construct a hierarchical practical teaching system with "project as the guide, competition as the carrier, demand theory and practice as the leading".The practice teaching carries on the stratification cultivation.Validation experiment, according to the students to master the course theoretical knowledge and practical operation methods, all students must complete.Design experiment is an experiment that requires students to construct an embedded application system with practical significance by integrating the knowledge of the whole course and using laboratory resources. The experiment is carried out in the form of comprehensive design.Comprehensive innovative experiment is an open and innovative experiment. Based on the actual project, students form a team to complete the project independently in the form of course design. Students are the main body of project implementation, master the project development skills, make project plans, allocate resources and control the project implementation process.Make students improve the ability of inquiry learning, enhance the ability of teamwork and engineering practice.

3.4. Reform the course assessment method and highlight the results of practice process

The smooth progress of practice teaching needs the perfect practice management system as the guarantee, therefore, we should establish a new evaluation system and assessment method.We should change the situation that the theoretical examination takes up a large proportion while the practical experiment operation takes up a small proportion, and increase the credit proportion of the experimental course operation.

4. Conclusion

The teaching practice mode of promoting teaching and combining teaching with competition realizes the organic combination of theory and practice, optimizes students' knowledge structure, and cultivates students' ability of independent thinking, problem solving and innovation research and development. Taking discipline competition as the carrier can stimulate students' sense of competition, promote learning through competition, learn and grow in competition, and greatly improve students' interest and enthusiasm. So as to achieve the training of practical, skilled, innovative, engineering applied talents goal.

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