

Research on Teaching Reform of Online Course Resources Construction Based on 'Modern Control Theory'

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Abstract: In order to improve the teaching quality of applied undergraduate education, around the teaching reform, explore the mode and method of digital teaching, from the purpose and significance of modern control theory online course resources construction, puts forward the construction of online course resources. This paper discusses the main contents of the teaching reform: purpose and significance, construction ideas, reform content and so on. The online course resource construction is a good auxiliary means of the traditional teaching mode, which can solve a series of problems, and has carried on the beneficial research and exploration to the training of applied talents.

1. Introduction

Under the new situation of the development and reform of education in the 21 st century, the continuous penetration of information technology into higher education, digital education, multimedia technology and network digital resources have brought great impact on the traditional teaching mode, which is the new voice of education reform in the information age[1]. It is also a new requirement for the teaching of 'modern control theory'.

Because the course of 'Modern Control Theory' has the characteristics of abstract concept, strong theory, strong comprehensiveness and low degree of integration with the actual system, the traditional teaching mode leads to low active participation of students in the course and difficulty in mastering the course knowledge[2]. At the same time, the emergence of the new coronavirus epidemic has brought about tremendous changes in the teaching model. Students can no longer communicate and learn face to face, and the construction of online curriculum resources is imminent.

2. The Purpose and Significance of Modern Control Theory Teaching Reform

The online course resource construction of 'Modern Control Theory' has its unique advantages and significance:

First advantage: Online curriculum resources construction is an important trend of education

development.

Online teaching has the advantages of not being limited by time and place, sharing resources, repeatable viewing, and the ability to choose difficult content (or problems) for learning according to personalized learning needs [3]. It has always been considered one of the important trends in education development.

Second advantage: online course resources construction is student-centered' the best embodiment.

Through the construction of online curriculum resources, we design rich classroom activities such as online check-in, questionnaire, question-answering and discussion, apply the "student-oriented" teaching concept to classroom teaching, adopt the combination of traditional teaching mode and emerging "Internet + teaching" mode, emphasize students' classroom participation, stimulate students' interest in learning, and cultivate students' practical and innovative ability.

3. The Construction Idea of Modern Control Theory Teaching Reform

3.1. The Main Problems in Traditional Classroom

(1) The traditional teaching mode is teacher-centered, students passively acquire knowledge. For some key points and difficulties in the teaching process, due to the one-way teaching mode between teachers and students, teachers can not fully understand the students' mastery of the situation, only rely on years of teaching experience to make subjective judgments, and because of the limited course hours, students' learning potential can not be fully tapped[4].

(2) Modern Control Theory is a theoretical and comprehensive course. In the course of teaching, the explanation of basic knowledge and basic principles accounts for 85% of the total class hours. There are two experiments in the course, which require students to use Matlab simulation, accounting for 15% of the total class hours. Such a course leads to the knowledge that students have learned is not strong. If there is no video course that allows students to review in time, students' mastery will be reduced [5].

3.2. Reform Measures to Be Taken

(1) Establish online course resources.

The key link of implementing modern education concept and giving full play to the advantage of network teaching is the construction of network course. Through the construction of network courses, the comprehensive use of network teaching platform to assist teaching, promote the co-construction and sharing of high-quality teaching resources, strengthen teaching interaction, explore the mode and method of digital teaching, achieve the purpose of improving teaching quality, and also effectively promote the construction and innovation of disciplines.

(2) The use of traditional teaching + online resources combined teaching methods.

The complementarity and integration of online and offline teaching will become the mainstream paradigm of future teaching. All aspects of teaching activities, such as the arrangement of teaching content and the organization of teaching process, can be extended from offline to online, from classroom to extracurricular, from classroom (school) to a broad Internet world. Today's teaching resources form changes, teaching field changes, adjust the teaching design mode, improve teaching methods, from the design of teaching methods and the organization of learning content to the homework and evaluation methods need to be optimized.

4. Contents of Teaching Reform of Modern Control Theory

4.1. Online Course Resource Construction

At present, the main force of college students is the post-00 s. They have lived in the digital world since childhood. They prefer dynamic and situational thinking and learning. Enthusiastic in mobile learning, online learning, accustomed to mobile phones, networks and other digital life.

(1) Using existing online resources

There are many online resources and resource platforms for the course of modern control theory, such as Bilibili, I want to self-study network, Chinese University MOOC, etc. The video resources on the platform are very rich, but these resources can not be copied and used : the course content does not match the teaching objectives ; the resource name does not exactly match the course name. For these reasons, it is necessary to screen and reorganize resources that meet the teaching objectives and teaching content and make effective use of them.

(2) Rerecording online course resources

The construction of video resources can learn from the video resources of the existing platform and use some excellent videos that meet the teaching objectives. Combined with self-recorded knowledge points to explain micro-course videos and actual case demonstration videos, video resources covering all knowledge points of the course are established.

4.2. Online and Offline Deep Integration Teaching

The deep integration of online and offline can effectively integrate the advantages of ' double-line ' teaching, improve the quality of teaching, and promote students ' deep learning, autonomous learning and cooperative learning.

(1) Curriculum design reform

Carefully design online resources. Complete the construction of network teaching resources such as teaching courseware and video recording. In the construction of network teaching resources, the key and difficult points of knowledge are embodied in the corresponding teaching courseware and recording video, and strive to make exquisite and interesting. Ensure that students learn knowledge points in interesting learning.

The construction of online network teaching resources can be continuously updated and modified to maintain new vitality. Offline teaching is reflected in classroom learning. In classroom teaching, it combines flipped classroom, group discussion and online learning. Cultivate students ' learning ability, and integrate students into the ideological and political content of the course in the process of teaching and training.

(2) Teaching practice reform

According to the course design, the teaching practice process adopts online + offline. Flipped classroom, project driven and other teaching methods. Online preview, classroom teaching, offline review. From the beginning of the class, a class is divided into several learning groups according to 5~6 people. Before class, in the school network course platform corresponding class learning tasks. Students watch online course platform micro video and other teaching resources, in the form of groups to complete the corresponding task assignments. And upload the task assignment to the network platform, if necessary, let them introduce everyone 's work and problems in a micro-video way.

Through the network course platform to timely view the completion of student tasks. In class, teach knowledge points, and timely consolidate and solve problems encountered by students in online learning. According to each

5. Conclusions

According to the construction goal of quality engineering and modern education idea, the network course construction of modern control theory is carried out by means of network multimedia and information technology. The aim is to make useful exploration and attempt, so as to obtain good teaching effect and better stimulate students' enthusiasm and creativity. The reform of course content and the construction of online resources are intended to solve the following problems:

- (1) Break through the limitation of time and space, teachers and students can upload, download or update teaching resources, improve the students' learning initiative and participation ;
- (2) Teaching resources can be extended to enable students to fully understand the subject frontier and dynamic opportunities;
- (3) Provide a platform for the accumulation of teachers' teaching experience and students' common problems;
- (4) To provide students with the opportunity to express their views and deep thinking, broaden the channels of feedback, the formation of continuous tracking mechanism of teaching reform;
- (5) The benign interaction and communication between teachers and students, deepen the students' understanding of theoretical knowledge and understanding.

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