

Study on Case Optimization of Automatic Control Theory Course Task Driven Teaching

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Abstract

This paper discusses task driven method using optimization of the task case in the Automation Control Theory course teaching. Discusses the optimization strategy in the task of setting up a reasonable use of multimedia resources, so that students feel the characteristics of the classification method in the classroom, thus triggering the student's thinking and learning interest. Pay attention to the teaching effect evaluation of task driven teaching, promote mutual evaluation between groups, practice is better than the one hundred times good explanation, the greatest degree to play the advantage of the task driven teaching mode.

Keywords

Automatic Control Theory; task driven teaching; optimization strategy;simulation.

1. Introduction

The automatic control theory is a field full of novelty and challenge. In essence, this discipline is an interdisciplinary integrated engineering discipline. On the one hand, the subject needs a solid mathematical foundation; on the other hand, automatic control theory is the most important for the control of the actual system, so the course from the very focus on practical ability. Students in learning when there will be difficulties, resulting in slack mood. In the teaching, the introduction of multimedia, teaching assistant software optimization task driven method, will greatly mobilize the enthusiasm of the students to cultivate students' ability to solve practical problems.

In this paper, we discuss the application of the case optimization task driven approach to the teaching of Automatic Control Theory. In order to help students to build up the concept of system engineering, improve students' ability of applying control theory to design practical control system.

2. The implementation steps of task driven teaching mode

The "task driven" is a teaching method of inquiry teaching mode, It always respect the students' active learning status, give students' freedom of study", let the students think independently in the inquiry, The students learn from each other in cooperation, so that different levels of students can experience the joy of success, to stimulate students' learning motivation. The task driven teaching, emphasizing the positive interaction between teachers and students, the task of the three, the specific implementation steps are as follows:

First, teachers design teaching tasks, demonstrating the task situation in the classroom, let the students clear learning tasks;

The second step to understand and standardize procedures and methods;

The third step, step by step were operating study, execution of project tasks, the total task is decomposed into a number of small tasks, let the students try to complete, the first independent

analysis, there are difficulties, to join the team, during this period, teachers should timely to be guided, can round tip, individual guidance;

Fourth step, evaluation results. Basically completed the task, teachers should take the lead on completion of the task of evaluation of, let the students from the thinking process and the method to complete tasks to rethink, deepening. Its teaching process is shown in Figure 1.

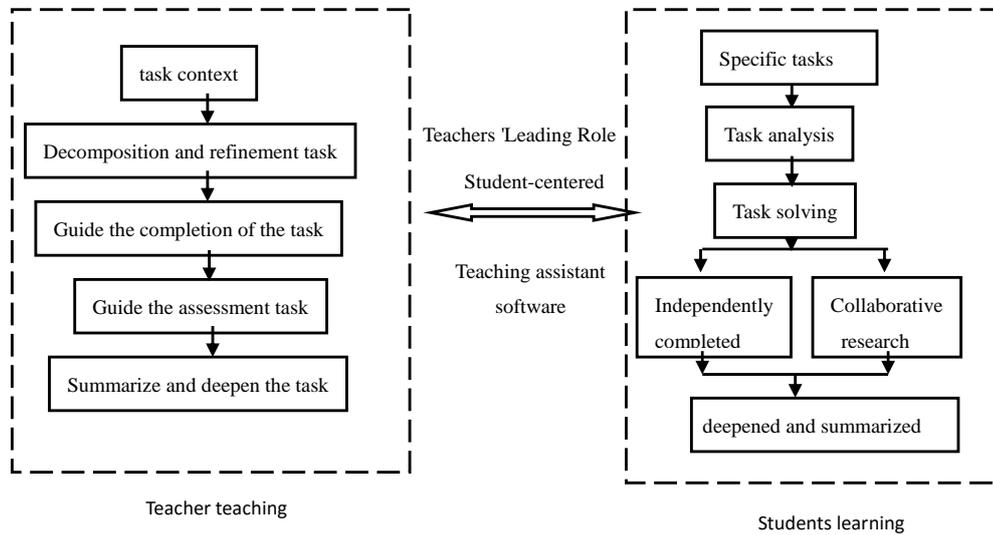


Fig.1. Teaching process

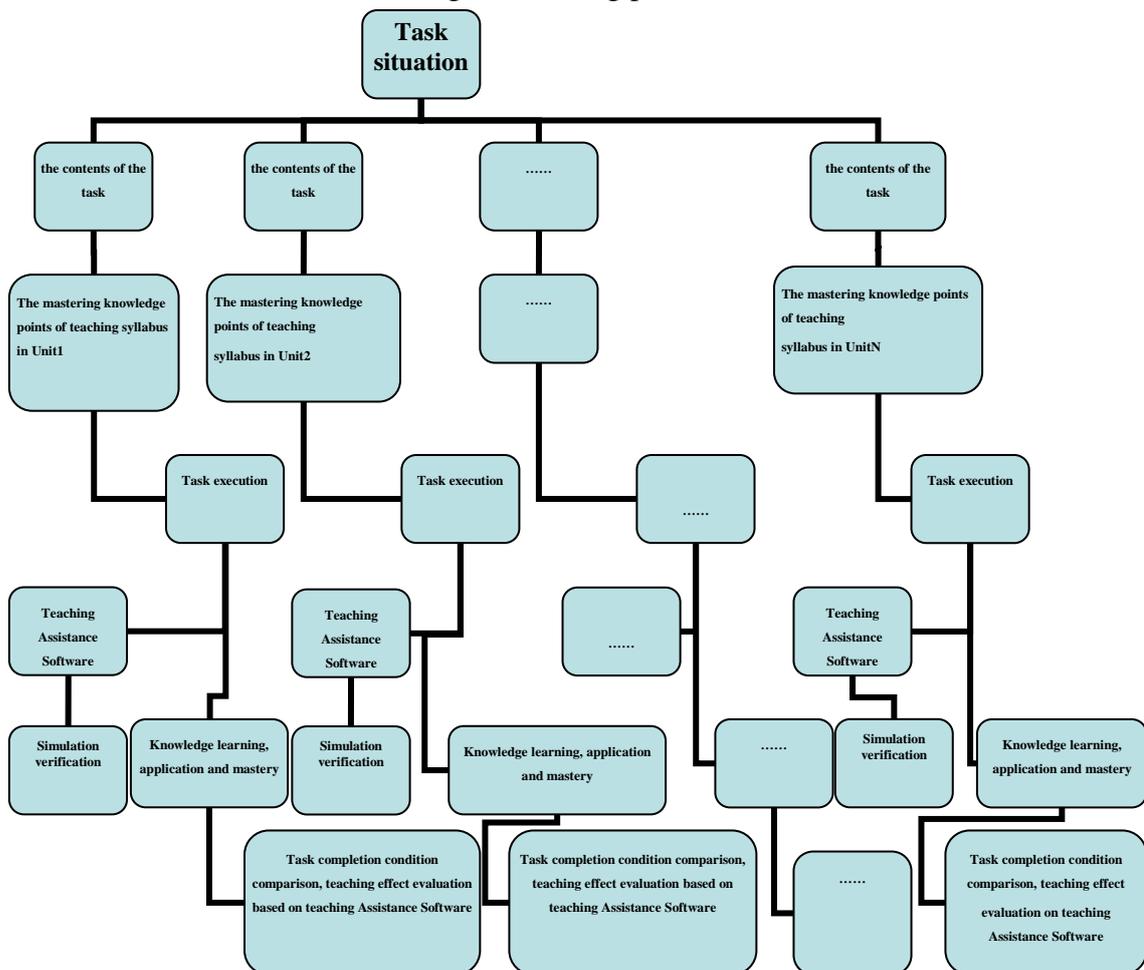


Fig.2. The structre of case optimization task driven teaching method

3. Task driven optimization teaching case structure

Task driven teaching method is a well founded in the constructivist learning theory based on the teaching method, it will be in the past mainly to impart knowledge of traditional teaching idea into to solve problems, to complete the task of multi-dimensional interactive teaching philosophy; to reproduce the transformation of the teaching mode for the inquiry learning, to enable students to study in the active state, every student can according to their understanding of current problems, the use is some knowledge and their own unique experience to put forward a proposal, to solve the problem.

We put teaching aided software joined the traditional task driven teaching method, to task for the open wire, using simulation software, and other ways to strengthen the cultivation of students knowledge and skills of the dark line. CAI effect can be reflected in many. The simulation is mainly reflected in the execution of the task and the task when the in-depth study and effect evaluation.

4. Optimization of task driven teaching with software platform

In the process of teaching, there are many examples can be set for task driven optimization case content, such as UAV attitude control, a turntable control, disk drive read control system etc.. Take the machine speed control as an example, the optimization show that the establishment of task driven teaching cases. In the concluding chapters throughout, or total review time, more suitable for using such examples to deepen students the knowledge of understanding and flexible application. As shown in Figure 3, the principle of automatic control by machine tool speed regulation in a task context, the classic control theory, almost all of the context of knowledge integration together. Such an arrangement is advantageous in the student chapters and curriculum all knowledge, and flexibly applied to solve practical problems is the sublimation of the theory of knowledge.

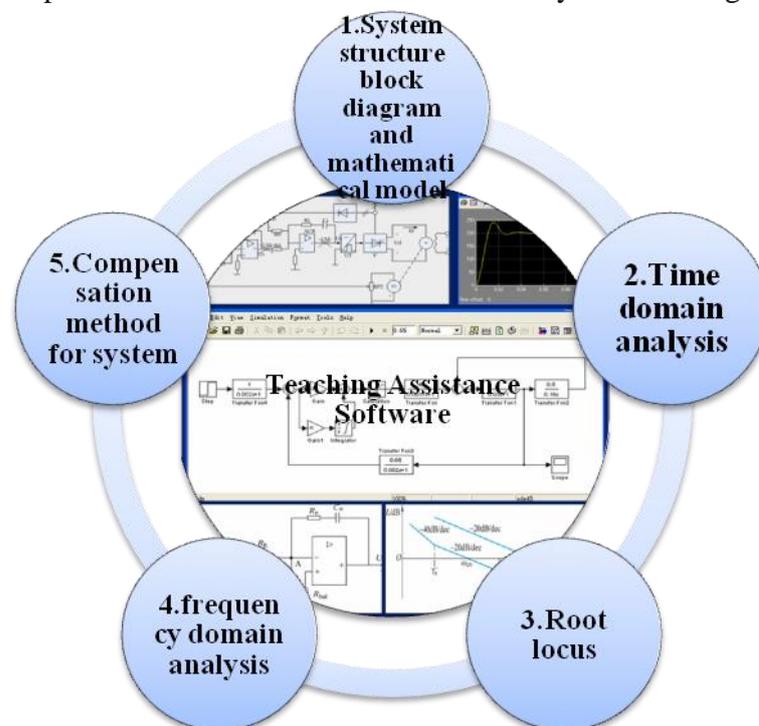


Fig.3. Teaching assistanse software platform based on Matlab

5. Conclutions

This paper emphasis on setting up based on multimedia and simulation software of task driven optimization case, greater play task driven teaching mode of advantage. Focus on task driven teaching effect evaluation, take class, students mutual evaluation scheme, group discussion, the teaching effect is obtained and sublimation. Case optimization task driven teaching method is beneficial to the

students' knowledge system of Automation Technology and Application. Facts have proved that the task driven teaching method can get better teaching effect.

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