

Research on the Teaching Methods of English Course "DCS and Fieldbus Technology"

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Abstract. This paper analyzes the "DCS and Fieldbus Technology" course's teaching objectives and teaching methods based on the emergence of industrial 4.0. The Research-based teaching methods, Heuristic teaching method, Multimedia teaching method, Model teaching method, Flip-flop the classroom teaching method are described in detail. This paper also talked about the course's curriculum assessment and teaching quality assessment methods and other aspects. The main purpose is to train high-level and high-quality talents for the industry.

Introduction

Interactive encyclopedia points out that DCS and Fieldbus technology is current widely used technology in the field of automatic control area, it has many advantages [1]. Therefore, the course has always been an important course for automation undergraduate teaching. The course focuses on improving students' ability to design control systems with automatic control theory, computer control technology, network technology and communication technology, and how to solve problems in practical industrial applications according to the production characteristics and requirements of industrial processes. This course is characterized by a focus on students with the ability to link theory with practice. The corresponding experimental teaching, curriculum design and other parts to develop students' engineering awareness, practical ability and innovation ability, and lay the foundation for students to become technology application talents.

In order to deepen the reform of the training mode of applied talents, it is of great significance to carry out the construction of the whole English curriculum, which is to adapt to the new trend of international development, to strengthen the professional connotation construction, to improve the teachers' international vision and to cultivate students' ability of communication, competition and cooperation under cross-cultural environment. It will have great meaning on improving the professional curriculum system, expanding the teaching mode, reforming assessment methods and improving the quality of teaching. Therefore, "DCS and Fieldbus technology" English course construction is top priority of the automation undergraduate education.

Teaching Objectives

"DCS and Fieldbus technology" English course construction is supported by modern education technology, it is based on the existing "DCS and Fieldbus technology" curriculum into a set of features and versatility curriculum, its purpose is to achieve the sharing of educational resources and improve the overall teaching quality. The specific objectives are as follows:

Expand the knowledge of control-related disciplines. The purpose of this course is to help students understand and master the basic principles of Fieldbus control system, expand and enhance the knowledge of students.

Cultivating the ability of students to build control system. With the development of international, the control system solutions need to be more international. This course aims to cultivate the talents with international background so that students can get to know the various control system problems

and solutions at home and abroad, so as to train them to analyze and solve the control system problems in the international background.

English thinking is rooted in learning and working. Improve the communication skills in English, All the lectures of DCS and Fieldbus technology course will given in English, through English teaching, to exercise the students' English communication skills. At the same time, students can improve the ability of reading and writing operating manual and technical documentation in English. English teaching goal is to enable students to use English thinking to learn knowledge and application of knowledge. This course is taught in English, which can help students develop the habit of thinking in English and lay a good foundation of language and thinking for future employment and further education.

Teaching Methods

Research-Based Teaching Methods

Learn from foreign university teaching methods, improve the level of student participation in classroom teaching, the mode of self-exploration after class. In the limited classroom time, pay attention to class and extracurricular. Focusing on ideas, methods, cited questions and discussion, Many of the content can be left to the students themselves to think through their own grasp. Pre-class layout read Outline, adding Keywords in the Outline, students can take the problems to participate in classroom teaching, and classroom teaching effects also consider the premise of student income, pay attention to classroom teaching process implementation.

Heuristic Teaching Method

Heuristic teaching method is to give full play to the leading role of teachers and mobilize the enthusiasm of students to learn an effective way to heuristic teaching to students as the basic starting point to teach [2]. It is based on teaching purpose, content, the level of knowledge and knowledge of students, using a variety of teaching methods, the use of inspiration to induce knowledge to teach, develop the ability to enable students to take the initiative to learn to promote physical and mental development of students [3].

The first thing is to master the students learning psychology. The second thing is to be good at using the knowledge and things, which the students are familiar with. During the lecture, to inspire students to think, we must pay attention to follow the laws of students thinking, which is important to try to have students on the basis of cognitive new knowledge. The third thing is to be good at mobilizing the enthusiasm of students to learn. You can use the course interesting background knowledge, vivid language to attract students' interest, but the most important thing is to enable students to have a strong sense of participation in teaching activities. Only when the students involved, thinking, and problems will be anxious, then inspired to have effect. Students often have a lot of good ideas in learning, but often not clear statement, argumentation is not strict, as teachers, should be sure that the positive side of their ideas, on this basis to discuss their own ways to improve their views, do not easily Similar to the concept of error and other utterances simply negative.

Organization of students to arrange speech activities [4]. According to the teaching content and the characteristics of students, let the students form a small team of three people, combined with their own spoken English level and content of interest, for less than 5 minutes in English speech. In order to improve the students' ability to read the literature, independent thinking, writing and language skills and teamwork.

In the mobilization of good students at the same time, we must play a good teacher's leading role, the first is to have an overall grasp of the curriculum. Followed by each class must be carefully designed.

Multimedia Teaching Method

To combine the multimedia teaching and traditional teaching, multimedia teaching, supplemented by traditional teaching. This can give full play to the multimedia content of information, illustrated and animated good features, enhance the teaching of appeal, enrich the teaching content. At the same time, teachers should play an important role in the traditional classroom teaching, and teachers and students should keep interaction. In this way, the classroom has both the content and atmosphere, retractable, so as to achieve better teaching results. Making electronic teaching plans in English, summed up the main content of each chapter, key and difficult to facilitate self-learning and better grasp of the curriculum.

Model Teaching Method

The model teaching method has the characteristics of image, immediacy, concreteness and authenticity. It has a special effect on imparting knowledge, technology and skills to students. While explaining and setting up and using Profibus and CAN bus of Siemens S7 series PLC and B & R x20 series PCC, some conclusions are validated, and the complicated design process is applied to reduce the difficulty of learning.

Flip-Flop the Classroom

The flip-flop classroom is a teaching method used in China since 2011. This method requires students to watch teaching videos at home and finish homework during class hours. Teachers will explain the difficulties encountered in learning. This approach has enabled teachers to transfer knowledge from traditional classroom lectures into facilitators and advocates of learning. This means that teachers are no longer the center of knowledge interaction and application, but they are still the main promoters of student learning. When students need guidance, the teacher will provide them with the necessary support. Deduce the teachers teaching time in the classroom, leaving more time for students to learn activities. These learning activities should be based on real-life situations, and allow students to complete the task of learning in interactive collaboration. The core of the flip-flop classroom is excellent teaching video resources, this course is taught in English, so that students can watch the video in advance and repeated views of its language across the language is more helpful.

Course Assessment and Teaching Quality Assessment Methods

The basic idea of this course assessment is the full range of multiple assessment, the specific assessment methods are: "classroom participation + practical ability + theoretical analysis of the + final examination" approach. The assessment of the practical ability is based on six experimental situations; the theoretical analysis is based on the classroom work and group discussions; the final examination is based on the final written examination results. The final assessment is based on the students' attendance and classroom participation. Among them, the course participation in the assessment accounted for 10%, 35% of practical ability assessment, theoretical analysis of the ability to assess 25%, 40% is final exam results.

The evaluation of teaching quality should not only pay attention to the effect of teaching, but also pay attention to the motivation and mode of teaching. It is difficult to measure and evaluate by the traditional summative assessment or the traditional formative assessment, and it is necessary to understand and evaluate the information that reflects the learning quality of students in the course of teaching, that is, process evaluation [6]. The sources of assessment are no longer limited to the classroom, but extended to the development of students of various development space, including classroom teaching, experimental practice and the overall quality and so on. For the evaluation of the theoretical course learning, the main assessment of knowledge and use, learning to learn, focusing on assessment of student learning status and effectiveness. The evaluation of the experimental part of the study, the main assessment is experimental capacity. Emphasis is placed on assessing the ability and effectiveness of student experimentation. Require students to understand the experimental project

principles and methods, based on the master operating procedures, standardize the use of equipment; observation and measurement data is reliable, the conclusions of scientific analysis.

Table 1. "DCS and Fieldbus technology" in English teaching evaluation indicators.

First-level indicators	Secondary indicators	Percentage (%)	Emphasis
Knowledge	Classroom questions	5	Real-time feedback of the knowledge
	Homework	10	Review the knowledge
	Lab report	5	Examined the experimental report accurate specification, the authenticity, the unique opinion
	Quiz	10	Evaluation of the master of knowledge points
Ability	Detail of the experiment	5	Experimental principles, methods of control, the use of laboratory equipment
	Detail of the report	5	Establish a communication channel between students and teachers, and understand the students' understanding of the experiment
	Final exam	40	Comprehensive application of curriculum knowledge
Quality	Attendance	5	Discipline
	Learning attitude	5	Pre - lesson preparation
	Questions and Discussions	5	Involve the lecture with brain
	Industry specification	5	Master the operating norms, security and so on
Total		100	

Conclusion

In view of the current international background, with the development of industry 4.0 and the actual situation of English teaching in Shanghai Dianji University, the paper has actively explored and researched teaching objectives, teaching methods, curriculum assessment and teaching quality evaluation methods and analysis. The whole English teaching is a brand-new teaching way for the course of "DCS and Fieldbus technology". There are many aspects worthy of our further study, exploration and perfection, so as to train high-level and high-quality talents of Shanghai Dianji University, to improve the level of English teaching in Shanghai Dianji University.

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