Research for the Development and Implementation of the Course System Based on Mechanical Design and Practice

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Abstract. The mold and electromechanical integration technology professional of Jingzhou Institute of Technology is the national model of key construction projects, this paper to electromechanical integration technology and die design and manufacture of professional students in the class of 2014 as the research object, in order to "mechanical design and practice and mold design and manufacture" curriculum in the learning field, for example, explore the working process systematization curriculum development and implementation.

Introduction

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The main research direction: stamping die design and manufacturing, mechanical design theory and methods.

Mechanical design and die design technology and people's daily life is closely related to the engineering students must have the basic ability of the post, is the necessary basis for the follow-up study of students. "Mechanical design and practice" is a combination of theory and practice closely, for example: the use of mechanical equipment and instruments, mold manufacturing processes are essential skills for students. For a long time, Jingzhou vocational and Technical College of mechanical design foundation course is divided into theory course of "mechanical design and practice" and "metal technological practice skill training" two course, two courses taught by different teachers, independent of each other, unrelated to one another, and the theory and practice of strict weight out of touch, resulting in students of mechanical design and theory of learning, students' practical ability is very poor. According to student feedback and reflection, understanding to the problem in teaching content and teaching method, the theory of teaching content too, and practice combined closely enough, practice course and out of the theoretical basis; teaching methods are dull, blindly to the teacher, students listen to, students feel dry and boring, cannot arouses student's enthusiasm, resulting in students learn not, be disgusted with the situation. The developed curriculum based on working process, and to Jingzhou vocational and Technical College of electromechanical integration technology and die design and manufacture of professional students in the class of 2014 as the object of study of curriculum implementation, and achieved certain effect.

The Working Process of Systematic Curriculum Development

The working process systematization curriculum to enterprises, the introduction of the classroom, the teaching in the field, students' learning is the task completed series curriculum system, is not a simple subject system in series, the emphasis is the students in middle school, teachers do in teaching. So from the first comprehensive occupation ability of students major in mechanical and electrical integration technology in the future must have, in accordance with the "occupation ability as the core, to work as the main line, with specific tasks and products for the carrier, to complete the work process for the overall design requirements of action system", in order to cultivate the
application skills of mechanical design and manufacturing and the related occupation ability as the basic goal, the "self learning students' practical ability, ability and good occupation moral, emphasize doing and do in teaching" principle, focus on the tasks of selecting and organizing teaching content, highlighting the relevance of task and knowledge, and the original the "machine design foundation" curriculum system of deconstruction and reconstruction, the theoretical mechanics, material mechanics, mechanical principle, mechanical design and Mechanical design skills training through the specific work of the task of integration, re integration into the "mechanical design and practice" of the field of learning courses. And then with the enterprise experts to design and develop a specific work tasks and real products as the carrier of the learning project.

Learning projects in development, give full consideration to the learning project practicality, typicality, covers, incentive and development and other factors, and work closely with professional ability and professional qualifications in related assessment requirements, involved in the teaching contents focus on applicability and the introduction of enterprise class, put the teaching in the field. Each item of study is tightly around the complete specific learning task arrangement, to break the original knowledge system, finally determined the nine learning projects are planar mechanism design, cam mechanism design, intermittent mechanism design, mechanical connection design, gear and gear train design, flexible transmission design, shaft, bearings and other parts design content. Nine projects were the [learning goal], [import], [task analysis], [mechanical knowledge], [design knowledge], [Task Force], [expand], [review extension] and [mode expansion], have very strong practicability.

According to the results of curriculum development, a unique textbooks published by Nanjing University Press, the textbooks of different in the past teaching, students' ability, knowledge goal oriented and the content of the teaching material is in accordance with the learning tasks are completed to connect the knowledge system, teaching materials with a large number of physical and practical operating picture and add some enterprise's practical work experience and tips, the textbook is by the import task, task analysis, mechanical knowledge, design knowledge, task implementation and related development and review the extension organization of the teaching material.

"Teaching, Learning and Doing" Integration of the Construction of the Training Room

To the school enterprise cooperation as a breakthrough point, the construction of the class "teaching, learning, doing" integrated practice teaching environment, mechanical design and practice of "learning field has a" teaching, learning, integration of mechanical design training room and industrial processing center as the basis, exercise student's practical ability and practical ability, and can give full play to students' creativity. The training equipment of the mold product assembly training room gives the student in the production line simulation enterprise production process, the student in the production line may realize the product design, the manufacture and the assembly debugging entire process.

Flexible and Varied Teaching Methods

Each training room has data area, teaching area, work area, feeding area and display area, the training room a projector and mobile blackboard, and truly realize the "teaching, learning and doing" integration training room culture construction is tightly close to corporate culture, training room hanging professional, inspirational, enterprise management and security with electrical panels and slogans.

Diversified Evaluation System

The complete evaluation system mainly uses the process evaluation, the appraisal runs through the
entire work process, both the appraisal to the group, also has the appraisal to the individual. Evaluation in a variety of ways, for example: personal evaluation, peer assessment, evaluation group evaluation, teacher evaluation, evaluation of the examination paper and so on, and each learning evaluation method and contents of the project are different. Through the evaluation of various to stimulate students' learning enthusiasm, the evaluation results can reflect the students a full range. For example: the evaluation of design and installation of bearings by individual evaluation and group peer assessment, teacher evaluation, information, plan single, decision-making, implementation, examination, etc. the formulation of evaluation, grades for the life calculation, rational layout and installation precision evaluation, basic theory knowledge test and performance of outstanding students of bonus, a number of evaluation content, a thorough reform of the before a final exam set for life assessment methods.

New Teaching Characteristics of the Teaching Materials

(1) the project teaching, task driven, based on the working process and teaching integration mode and machinery, mold, numerical control, electromechanical and vehicle maintenance curriculum content closely, rather than simply to the textbook combination, the chapter read program, the day for the task. This book opens up a new way for the professional foundation courses using the task driven teaching method.

(2) the book of traditional subject textbooks were integrated to ensure machinery, mold, numerical control, electromechanical and automotive professional required the most basic, the main basis of mechanical design of the classic content in selecting the teaching content, try to avoid content between unnecessary crossing and overlapping, dilute the discipline system, reduce the teaching hours, improve the efficiency of classroom teaching.

(3) basic knowledge of point selection to "practical, applicable and advanced" compilation principles and popular, refining, operation "writing style, to student employment required professional knowledge and operation skills for the sake of focus, and strive to improve the students' practical ability, to enable students to better adapt to the needs of the society. Not too much theory is derived; in order to reflect the characteristics of higher vocational education, this book chose many examples in engineering to cultivate students' ability to analyze problems and solve practical problems.

(4) the book on the narrative and strive to straightaway, a simple and exposition of all the basic concepts and basic principles of strive to be concise and to the point. Each project using learning goal], [import], [task analysis], [mechanical knowledge], [design knowledge], [Task Force], [expand] and [review extension] mode expansion, have very strong practicability. Less hours of professional knowledge of mechanics can not speak, left to the students. Opened the "Engineering Mechanics" professional can skip this part.

(5) in order to facilitate the teaching of teachers and students, each project has a learning goal, so that students (students) know that the project should reach the goal of knowledge and ability. Materials the chosen cases were fit project reality, in order to meet the needs of the majority of enterprises in the application type talents of the specialty of actual operation ability, enhance the competitiveness of students in the course of employment.

(6) through "to students as the main body, take the teacher as the leadership, training students" learn how to study, learn how to think, learn how to create "ability, is not only learn knowledge, but also to skill training and thinking training method”. The basic terms, materials, equipment, models and other standards in line with the latest international standards and national standards.

Reference


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