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Exploration and Practice of Connecting the Curriculum System of Vocational Education in Electrical Automation Major

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Abstract: Based on the actual situation analysis, this paper points out the problems in the curriculum system of vocational education in the field of electrical automation. Afterwards, practical exploration is carried out from the aspects of curriculum system reconstruction, planning teaching objectives, and teacher training sharing mechanism, hoping to help vocational education overcome the current difficulties.

Keywords: Electrical automation; Secondary and vocational education; Curriculum system

Introduction

Nowadays, influenced by the trend of China's economic development and the increasing degree of globalization, many enterprises have made changes in their employment. In the new era, the recruitment focus is shifting from labor-intensive to technological innovative, which has led to a sharp increase in the demand for technical talents among enterprises. Nevertheless, vocational education in middle and high schools, which focuses on cultivating technical talents, still faces problems such as inconsistent professional training objectives and teaching plans, and repetitive course content, which prevent the field from fully demonstrating its comprehensive potential.

1. Current situation of vocational and secondary schools

For vocational colleges, there are two main channels for obtaining students, namely ordinary high school institutions and vocational colleges, with the former accounting for a relatively heavy proportion of enrollment. Therefore, in the vocational education system, most professional courses are set from the level of ordinary high school graduates, and the learning period for each major is three years. If students from different sources insist on using the same professional teaching plan, the following problems will inevitably arise: firstly, there may be some overlap between the curriculum standards and arrangements of secondary vocational education and higher vocational education, especially in terms of professional basic courses and practical courses, which may lead to unreasonable waste of teaching hours, teacher and student energy, and resources. Secondly, many students from secondary vocational colleges do not have sufficient knowledge reserves in basic subjects such as mathematics, Chinese, physics, and English. Therefore, there are many problems when studying basic subjects in higher vocational education. This situation will hinder their learning progress in professional basic courses and professional courses, and may even hinder them from pursuing further education[1].

2. Exploration and Practice of Curriculum System in Secondary and Vocational Education

2.1 Reshaping the Curriculum System and Improving the Innovation of Middle and Higher Vocational Education

2.1.1 Principles of Course System Construction

Firstly, cultivating students' vocational skills is regarded as the core of the curriculum system construction, and emphasis is placed

on improving their professional qualities. Secondly, in the process of reshaping the curriculum structure, various training objectives must be achieved in the curriculum arrangement according to market demand, in order to optimize resource allocation and improve teaching effectiveness. Furthermore, the construction of the curriculum system in vocational and secondary schools also varies due to differences in the specific educational scale and enrollment methods of each school. Overall, when reshaping the curriculum architecture system, it is necessary to adhere to the principle of integrating flexibility and operability[2].

2.1.2 Setting up modular courses

In the field of secondary vocational education, modular courses are mainly divided into three parts, namely public courses, professional basic courses, and professional courses. The training objectives and content of the three module courses are also different. Public courses aim to cultivate students' basic qualities, enabling them to possess good ideological and moral qualities, physical and mental qualities, and cultural literacy. During the course, students are required to complete the study of Marxist philosophy, Introduction to Mao Zedong Thought, Fundamentals of Law, Deng Xiaoping Theory, Fundamentals of Computer Science, English, Advanced Mathematics, Physical Education, etc. In the enrollment stage of new students in secondary vocational education institutions, they can be divided into different professional groups for teaching. Then, based on the specific needs of each student, these professional groups can be further refined to achieve classified teaching. The professional basic courses meet the needs of all majors in the professional group. For example, in electrical majors in secondary vocational education, courses such as electrical basic courses and mechanical drawing courses are offered. Professional courses are courses offered based on the teaching needs of each major after subdividing the professional group. For example, for students majoring in automation, the professional courses they need to learn mainly involve courses on automatic control principles, microcontroller courses, PLC courses, etc.

In the process of professional matching, it is necessary to clarify the curriculum design methods for higher and secondary vocational education. Firstly, the proportion of basic courses should be reduced as much as possible in the vocational education stage to prevent excessive repetition of teaching content, such as higher mathematics and college physics. Secondly, in the teaching process of professional core courses, internship training, and on-the-job internships in higher vocational education, it is necessary to distinguish from the content of secondary vocational education. This is not just about simple content coherence, but also needs to achieve a deepening effect layer by layer, and it is necessary to highlight the foundational and dominant principles of secondary vocational education. Both higher vocational schools and secondary vocational schools have clear career orientations, with the former mainly focusing on cultivating talents with professional labor abilities, while the latter focuses on cultivating talents with advanced technology. In both training processes, on-the-job internships play an important role. In the contemporary vocational education system, the integration of practice and theory, as well as school enterprise cooperation, have become key components of the training process. Through on-the-job internships, not only can we strengthen cooperation between schools and enterprises, but we can also achieve the integration of practice and theory in the teaching process. It should be emphasized that both job internships should have their own focus and clear levels.

2.2 Teaching Objectives of Higher Vocational Education in Scientific Planning

When planning teaching objectives, it is necessary to pay attention to the following key points: firstly, the principle of comprehensive development must be followed, and teaching objectives must be set in various aspects such as morality, intelligence, physical fitness, aesthetics, and labor. By organizing various types of skill competitions and career planning training, students' practical skills and innovative thinking can be further enhanced, enabling them to become outstanding talents who meet social needs. Furthermore, it is necessary to prioritize application in basic theory teaching and minimize its difficulty as much as possible. The design of the entire course needs to adhere to the principle of "necessary and sufficient", with mastering concepts and learning how to apply them as the core goal of education, simplifying tedious steps such as deduction and proof. Teaching professional courses needs to be targeted, focusing on the completion of knowledge and ability goals, and emphasizing practical applications. Taking the automation major of a certain vocational college as an example for analysis, we will strengthen the practical teaching process and expand the time for practical training and practical courses. In this process, the teaching cycle for each semester is set to 20 weeks, with no more than 26 class hours per week. Practical teaching time usually accounts for more than 50% of the entire teaching time. At least one semester is required for on-the-job internships[4].

2.3 Establish a sharing mechanism for training vocational and secondary school teachers

According to the "one-on-one" approach, teachers from secondary and higher vocational schools can engage in course interaction. Teachers from higher vocational colleges can teach a course at pilot secondary vocational colleges, while teachers from secondary vocational colleges engage in follow-up learning. Each semester, thematic discussion activities will be held on the curriculum

system of secondary and higher vocational education. Backbone teachers participate in a company project every year to enhance their practical operational abilities. At the same time, part-time teachers in the company also need to participate in teaching training once a year to improve their abilities in teaching design and course development.

In addition, it is necessary to pay attention to the following contents:

(1) Create project-based and modular textbooks based on the main content of the curriculum system, which are concise and clear to prevent content duplication[5];

(2) Utilize appropriate teaching strategies based on students' age characteristics, course themes, and training objectives.

3. Summary

Secondary vocational education and higher vocational education are two different stages of education, and a scientific and appropriate approach must be found. This is not only related to the curriculum system, but also includes research in other related fields. Only in this way can we meet the development needs of vocational education and better adapt to the changing trends of the social and economic environment.

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