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Electronic Information Technology Curriculum Reform Exploration and Practice

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Abstract

Whether the curriculum of higher vocational education is reasonable and scientific not only affects the quality of teaching, but also affects the employment of graduates. Curriculum reform has become one of the urgent tasks in the education and teaching reform of higher vocational schools. The article elaborates on the practice and exploration of curriculum reform in the field of electronic information technology. Analyzed the many drawbacks of the current curriculum system, aiming to find some experience and practices for the curriculum reform of electronic information technology majors.

Keywords

Course design, Major in Electronic Information Technology, Personnel training.

1. Introduction

The electronic information industry is one of the important pillar industries of the national economy. With the development of technology, contemporary electronic enterprises are vigorously developing. Modern employers require talents of all levels, levels, and types, with a greater demand for technical personnel on the production line. The educational goal of the electronic information technology major in higher vocational education is to cultivate high-quality, skilled, and morally capable applied technical talents for contemporary electronic information enterprises. Now, the teaching reform of higher vocational education is deepening. To implement the curriculum construction reform, it is necessary to find the correct direction of the reform, clarify the reform ideas, and streamline the reform route. We should determine talent cultivation goals based on the needs of enterprises and society, that is, the employment situation of students after graduation, formulate talent cultivation plans, plan curriculum settings, research teaching models and methods, and conduct teaching evaluations. How to carry out curriculum design is an important content of curriculum reform. In the teaching reform of electronic information technology majors in vocational colleges, curriculum design is also a key issue. It is necessary to deeply study the problems in the existing curriculum design system, clarify the reform ideas, carry out teaching practice, and continuously discover problems in practice, explore and improve, and modify and improve.

2. The current curriculum system is not reasonable

Nowadays, most vocational colleges are formed by the merger of vocational schools and vocational schools, and the curriculum system of vocational colleges is generally derived from the deepening of vocational schools or the simplification of undergraduate courses. Generally, it can be divided into three levels: platform courses, professional courses, and extended courses; The course arrangement adopts a subject based curriculum system. This type of curriculum generally focuses on theoretical teaching, and there are also many integrated courses of theory and practice. However, the practical class hours are too few, which is not suitable for vocational education. It is not suitable for the vocational education curriculum view of skill based and

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learning by doing, and cannot be combined with the needs of enterprises and society. The current curriculum of the Electronic Information Technology major also has the aforementioned issues, which can be summarized as follows.

2.1. Arrange courses according to the disciplinary system

Such a curriculum system often emphasizes the completeness of theoretical knowledge, arranges course content according to the interrelationships of knowledge, and emphasizes the teaching of theoretical knowledge. This arrangement may not be a problem for highly educated students, but it is not suitable for higher vocational education. While it is good for students to master these theories, for vocational students, their basic knowledge is weak, difficult to master, and there is no need to master. They need to learn and master basic knowledge and vocational skills related to employment and job positions. Such arrangements often have a large proportion of theoretical courses, and the experimental, internship, and practical training stages are off track with the skills required by the enterprise.

2.2. Emphasizing principle teaching, neglecting installation, debugging, and maintenance, and neglecting installation techniques

The curriculum of our electronic information major in higher vocational colleges is often simplified from undergraduate courses, and the curriculum system generally emphasizes principle teaching, while neglecting installation, debugging, and maintenance. Most courses are offered to serve principle design, with a lot of theoretical knowledge taught. However, these principles are not necessary for vocational college students. They will mostly be engaged in production line installation, assembly, debugging, testing, maintenance, and repair work in the future. Even if they graduate from a design unit, they will still be engaged in some electronic design auxiliary work. In enterprises, Graduates majoring in electronic information technology are often required to understand process documents and be able to operate and assemble according to them. Graduates are also required to be able to write and modify process documents, design, modify and improve process processes, improve process methods, and so on. Therefore, mastering the skills required for installation, assembly, debugging, testing, maintenance, and repair, as well as mastering various operating processes and writing process documents, is quite important for students majoring in electronic information technology in vocational colleges. However, these contents are often overlooked in the existing curriculum system.

3. Reform ideas for the curriculum system

The reform of the curriculum system is an important link in teaching reform, which should be conducive to cultivating high-quality and skilled talents. The goal of setting up courses should be to improve students' professional quality and cultivate their professional skills. When designing courses based on this approach, the following points should be noted.

3.1. Using the comprehensive abilities that enterprises (industries) should possess as the basis for configuring and defining courses, breaking away from the "subject based" curriculum ideology, and streamlining course content according to ability needs

The goal of the reform of the curriculum system for electronic information technology majors in higher vocational colleges is to cultivate high-level applied talents who are needed in production, management, service, and other frontline areas. They are skilled talents who can directly enter their positions. When setting up courses, it is necessary to grasp the basic knowledge and adhere to the principle of "necessary and sufficient", and professional knowledge should be targeted and practical.

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3.2. In the design of professional courses, the main focus should be on the technical application abilities that students should possess, and the course content should be reorganized

Professional skill cultivation should be the center, breaking the original course system, deleting traditional course content that is too far from the professional training goals, adding new knowledge, integrating teaching content around students' employment direction, and setting up several professional core courses in a way that combines theoretical teaching with experiments, practical training, and internships, Enable students to master professional knowledge and skills through the learning and training of core courses.

3.3. Project led and task driven teaching is adopted within the curriculum, with project-based reform of teaching content.

The teaching method of learning by doing and doing while learning is applied, aiming to enable students to exercise their abilities and skills while learning theoretical knowledge. When designing tasks, attention should be paid to moving from shallow to deep. Tasks should be designed for learning objectives and can carry theoretical teaching and skill training tasks. Only in this way can teaching objectives be achieved.

3.4. Based on the actual production and characteristics of enterprises (industries), establish a talent cultivation model that is based on quality and centered on ability, and integrates theoretical and practical teaching systems.

Establish a practical training course system centered on professional skill cultivation. Based on the integration of theory and practice teaching within the school, combined with visiting and learning, and enterprise on-the-job internships, we aim to cultivate students' professional qualities and skills.

4. Practice of Curriculum Reform

Four years ago, our department's Electronic Information Technology major implemented a major curriculum reform. On the basis of sufficient enterprise research, a talent cultivation plan that is more in line with modern vocational education concepts has been developed, and the goal of talent cultivation has been determined. Based on the analysis of job tasks, a new curriculum has been established, which has been used in the class of Grade 11 freshmen. The new job competency analysis table is attached in the attached table. Here is an explanation of the curriculum for the new plan.

4.1. Courses are offered at three levels: public basic courses, professional core courses, practical training programs, and elective courses.

Public basic courses are mainly used to improve students' basic qualities; The professional core courses and practical training projects are the main courses for learning professional knowledge and skills; Professional elective courses are a part of professional expansion aimed at expanding students' professional knowledge and skills.

4.2. Professional core teaching and practical training projects and elective courses are carried out in the form of courses.

The courses here are not within the original disciplinary system, but rather an integration of multiple existing courses, organically integrated rather than mechanically superimposed. For example, digital electronics and PLD technology are the integration of existing courses such as digital electronics technology, PLD, MUTISIM, etc. The analysis of job abilities and the arrangement of professional core courses are shown in Table 1.

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Table 1. Job Capability Analysis and Professional Core Curriculum Schedule

Job	Work tasks	Capability requirements	Core curriculum
Electronic product assembly, debugging and maintenance	1. Electronic product assembly, debugging, and maintenance; 2. Prepare debugging process documents; 3. Conduct statistical analysis of product issues and guide production and process improvement.	1. Able to use commonly used electronic instruments; 2. Capable of assembling, debugging, and repairing electronic products; 3. Possess the execution ability of electronic product production process debugging and the ability to diagnose, analyze, and troubleshoot faults.	Electronic product assembly debugging and maintenance
Electronic product Quality inspection	1.Raw material testing (IQC),outgoing inspection (OQC); 2.Process control, supplier quality control, and product certification; 3. Maintenance of quality system and handling of quality incidents.	1. Able to detect (IQC) product raw materials; 2. Capable of quality control, process control, outgoing inspection (OQC), and product certification; 3. Able to maintain the quality system.	Electronic Product Quality Control
Electronic product testing	1.Identification, acceptance, and inspection control of inspected products; 2.Appearance inspection; 3.Performance inspection; 4. Data organization and error analysis; 5.Determination of inspection results.	1. Able to identify whether the identification and packaging of the inspected product meet the requirements; 2. Able to inspect and test the performance of the tested product according to standards; 3. Able to conduct environmental adaptation, electromagnetic compatibility, safety, reliability tests, etc. on the inspected product according to standards.	electronic product Inspection test
EMC testing technology	1. Use EMI testing software platform; 2. Proficient in using the EMS testing software platform; 3.Able to use EMS related instruments and equipment;	1. Proficient in using EMI testing software platform; 2. Able to use EMS related instruments and equipment	EMC testing technology

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	4.Determination of inspection results.		
Electronic product aided design	1. Select the components and substitutes required for product development; 2. Draw a schematic diagram, layout and wiring of the PCB board; 3. Write general application programs; 4. Design process flow, tooling, and testing fixtures; 5. Quality assurance of design.	1.Able to select devices, draw schematic diagrams and PCB boards; 2.Able to develop general application programs and write process documents; 3.Able to conduct product testing and quality management.	Electronic Product Aided Design and Development

4.3. The main courses of the major are carried out in a combination of design, assembly, debugging, and maintenance.

Under the condition of ensuring sufficient auxiliary design, courses such as assembly debugging and maintenance have been strengthened, and comprehensive courses such as welding process of electronic components, electronic product installation, debugging and maintenance have been offered.

4.4. Integration of job testing, competency certification, and teaching. Arrange students' level work assessment and pre exam training in the teaching plan, and introduce the ability certification of the Taiwan Monolithic Association, so that students can obtain both graduation certificates and level work certificates and ability certification certificates upon graduation.

Incorporate pre exam training into the practical training plan, including the intermediate radio debugging worker in the fourth semester, the ability certification certificate in the fifth semester, and the advanced radio debugging worker certificate.

4.5. Implement learning by doing and learning by doing teaching.

Although the curriculum in the new teaching plan is still set according to class hours, the integration of theory and practice teaching has been considered in the arrangement of courses. Therefore, the curriculum has been integrated to facilitate the implementation of project courses, such as weekly and monthly classes, which allows for project teaching in all professional courses. During class, teachers arrange teaching content according to various projects, implement integrated teaching of theory and practice, and enable students to actively participate in learning in the form of completing work tasks, greatly improving students' enthusiasm for learning.

5. Summary

Curriculum reform is a systematic project that involves many aspects, and the issue of curriculum design is one of them, which is also a very important aspect. We have some reflections and attempts in curriculum design, gained some experience, and also reflected on it; There is still a long way to go for curriculum reform, and there is still much to be done. We should constantly strive to do a good job in curriculum reform; Establish the work and learning attitudes that industry practitioners should possess, and transform the concepts of teaching

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and learning. The responsibility of a teacher is to preach, impart knowledge, and dispel doubts. Teachers should create a learning environment, follow the special teaching laws of vocational and technical colleges, and enable students to learn through vocational training, conduct vocational training during learning, and stimulate students' enthusiasm for learning. Of course, there are many paths and methods for curriculum reform. We can learn from the successful experiences of others and make the curriculum reform of electronic information technology majors better.

References

[1] Zhang Chun. My Opinion on the Curriculum Reform of Higher Education Institutions - The Inspiration of the Curriculum Design of the English Department at California State University Fullerton on the Curriculum Design of Higher Education Institutions in China [J] Science and Technology Information, 2010, (19).

[2] Shi Weiping. Comparative Vocational and Technical Education [M], East China Normal University Press, 2001.

[3] Liu Hailan. On the Problems and Countermeasures of Curriculum Design in Higher Education [J], Journal of Lingling University, 2004, (10).

[4] Zhang Yaoxue. Proceedings of the National Experience Exchange Conference on the Integration of Industry, Education, and Research in Higher Vocational and Technical Education (C), Higher Education Press, 2003.