

Research on the Construction of "Course Supermarket" for Specialty of Machinery Manufacturing and Automation

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Abstract: "Course supermarket" takes the operation principle of "commodity supermarket" as the prototype, and its standardization, selectivity, standardization, convenience and other characteristics are highly enlightening in the course setting, which also has high reference value for the setting of modular course system of specialty of machinery manufacturing and automation. The establishment of "curriculum supermarket" can better serve the transformation and development of ordinary undergraduate colleges to application-oriented colleges. This paper takes the mechanical design and manufacturing and automation major of the Application-oriented Undergraduate Colleges in the transition period as an example, through the analysis and comparison of the traditional curriculum system and the "curriculum supermarket" curriculum system, to explore the construction of the curriculum system more suitable for the application-oriented mechanical design and manufacturing and automation major, and also to provide reference for the training program setting and personnel training of the application-oriented mechanical major Test.

1. Introduction

Compared with other universities, application-oriented universities have more distinct characteristics of skill application. Its training goal is mainly to adapt to the needs of social development skills application talents, need to be able to learn professional knowledge, professional skills applied to the professional social practice, to adapt to social needs. Therefore, for the application-oriented undergraduate colleges, more emphasis is placed on the comprehensive application of knowledge and skills in personnel training, which puts forward newer, higher and more specific requirements for the personnel training mode, training specifications and implementation process of the general colleges and universities which are transforming to the application-oriented ones. At the same time, along with the cross integration of electronic, information, computer technology and other high-tech and mechanical disciplines, the proposal of industry 4.0, intelligent manufacturing, and made in China 2025 has brought profound impact and change to mechanical design and manufacturing and its automation technology. As a mechanical major in local colleges and universities, we need to position the new goal of talent cultivation based on our own advantages and local economy, and devote ourselves to the teaching reform of the new model of applied talent cultivation. The curriculum system is the sum of the specific teaching content and process. The establishment of a perfect curriculum system is the most critical link in talent training, the planning scheme to achieve the training objectives, the concretization and support of talent training, and the key to ensure and improve the quality of education and teaching. Therefore, in the process of transformation to application-oriented undergraduate colleges, the reform of curriculum system and the establishment of new curriculum system are essential links, as well as the core of the reform of talent training mode, which are more important and difficult.

2. Problems in Traditional Curriculum System of Application-oriented Undergraduate Colleges

The traditional courses of mechanical design and manufacturing and automation are mainly machine-based, light machine, electricity and liquid. The courses are arranged in a tower structure,

from basic to professional level, and are carried out step by step. However, this kind of curriculum has many limitations and shortcomings for the Local Application-oriented Undergraduate Colleges and universities which mainly cultivate the application-oriented engineering technology. First of all, there are strong barriers between courses and insufficient cohesion between courses, which makes students feel very decentralized and unsystematic in learning. The main reason is that the number of courses and hours required for mechanical major is much more than other majors, and there are many basic knowledge needed to master. Under such a curriculum system, it is difficult for students to make systematic analysis and planning for their professional learning. Second, there is a lack of flexibility in the curriculum, which limits the cultivation of complex and diversified knowledge. Because of the fixed curriculum, different students' knowledge needs in different fields are also limited, and they can not adapt to the needs of local economic development. Third, in order to adapt to the needs of enterprise employment and the integration of the knowledge system of talent training with the practical application, many local colleges and universities will revise the talent training program once a year, and the main direction of the revision is the adjustment of the curriculum, which results in the use of four different versions of the talent training program for four students of a major, which is not convenient for teaching management and is in use. In the process, there are often a lot of variables. Based on this, we take the mechanical design and manufacturing and automation major of Jilin University of business and industry as an example to explore the curriculum reform, establish a curriculum system with "curriculum supermarket" as the core, let students choose courses independently according to the knowledge demand, guide the vocational ability training, and cultivate the application skill talents with craftsmanship spirit and meet the social demand.

3. Construction Goal of "Curriculum Supermarket" in Applied Technology Universities

3.1 Meet the social demand for application-oriented talents

The application-oriented colleges and universities focus on training application-oriented talents, serve local economic development, and focus on training students' professional development ability. Students are required to have higher knowledge application and transformation ability and higher comprehensive quality while systematically mastering necessary theoretical knowledge. In terms of professional development and continuous learning, they are required to cultivate talents' employment model in the application-oriented colleges and universities. It has a wide range, strong professional adaptability and potential for further study. In terms of curriculum setting, while ensuring the level of undergraduate education, it is necessary to highlight technology application and engineering technology education, appropriately increase the categories and hours of courses, and emphasize the principle of "practical, sufficient and effective"; increase the proportion of practical courses to reflect the education mode of technology application and Engineering practice ability standard of University of applied technology. In terms of teaching form, the theory teaching should show wide and practical characteristics, emphasize the combination of theory and practice, emphasize the application of technology and engineering practice, emphasize the combination of production, learning and research, and promote the action oriented teaching mode. The teaching content reflects the needs of regional industries and industrial enterprises.

3.2 Meet the needs of students' personalized development

Strong self-awareness, rational and pragmatic are the remarkable characteristics of contemporary college students. The contradiction between the traditional teaching system and the students' pursuit of individuality and effectiveness is becoming increasingly prominent. Adhering to the educational principle of "teaching students in accordance with their aptitude", the concept of supermarket is introduced into the education system of colleges and universities, and a "course supermarket" is established to provide students with a hierarchical, diversified and optional course system. Students can choose "limited, relatively loose and free" courses, according to their own interests, hobbies and other personal development wishes, combined with social needs, under the guidance of teachers,

facing a professional development direction in the professional field, forming their own curriculum system.

3.3 Supporting training objectives and training specifications

The curriculum system is the carrier to achieve the professional training objectives and training specifications, and the embodiment of the training objectives and training specifications. The establishment of the curriculum system is a reverse design thinking process. First, the graduation requirements and learning achievements should be determined, and then the content and structure of the curriculum system should be determined. Therefore, the course content and organization form in the course system should serve the training objectives and have a corresponding relationship with the knowledge requirements, ability requirements and quality requirements in the training specifications.

3.4 Build a perfect curriculum structure system and organizational form

With the development of society and economy, the division of labor in the industry is continuously refined, and the demand for all kinds of professional talents with strong comprehensive quality is increasing. The design of curriculum system should meet the needs of multi-level and multi specification talents, and establish a modular curriculum system with progressive knowledge and technology and balanced development of knowledge, ability and quality. In the form of curriculum organization, we should establish a curriculum system based on major courses, which combines compulsory courses with elective courses, basic courses with professional courses, theoretical courses with practical courses, and various courses complement each other and complement each other. In terms of curriculum structure, we should pay special attention to the strict logical relationship and sequence between courses, follow the natural law of students' acquisition of knowledge and technology, from easy to difficult, from simple to complex, from theory to practice, from basic application to comprehensive innovation.

4. Analysis on the Reform Strategy of Professional Curriculum System

The establishment of talent training program is the basic basis of school talent training, is the concrete form of realizing training objectives and training specifications, and embodies the professional training mode. Training mode is the sum of objectives, curriculum system, training process and implementation mode. The establishment of curriculum system is the core of talent training, which is the specific education content and process selected to achieve the training objectives and specifications, and also the basic guarantee to achieve the goal of talent training. The reform of curriculum system is the key to promote the transformation of ordinary colleges and universities to application-oriented ones. The provincial local undergraduate colleges should take the application-oriented as the leading and the new engineering construction as the background when carrying out the curriculum reform, and at the same time, fully consider the local industry situation and serve the local industry. The equipment manufacturing industry is one of the important pillar industries in Jilin Province, and it's advantage. Although the equipment manufacturing industry in Jilin Province is currently in the transition period, its R & D and manufacturing capacity is still at the leading level in China, especially the development and manufacturing of heavy equipment products, which has an irreplaceable position in China, and the emerging high-end equipment industry also has a strong competitive advantage. With the development of equipment manufacturing industry cluster in Jilin Province, the demand for application skilled talents is increasing. Therefore, the establishment of curriculum supermarket should not only consider practicability, intersection and comprehensiveness, but also consider locality and flexibility. The training objectives and specifications should be in line with the curriculum. Moreover, it should be oriented by vocational ability training, and pay attention to the specific requirements and concerns of social vocational needs for application skilled talents. Supermarket is a very mature business model in the development of modern society. People can choose according to their needs in the supermarket. Even the same kind of goods have different brands, specifications and models for

reference, which can meet people's needs to the greatest extent. In the process of talent training, we should also take students' needs as the premise, promote the development of students' professional ability as the core, and take students as the main body for both diversified and personalized training. Here we draw lessons from the law of market operation and management, introduce advanced education concepts, and introduce "curriculum supermarket" into the construction of talent training curriculum system. Provide students with more professional and diversified course products. As a "course supermarket" in the medium level, we analyze the nature of the courses of mechanical design and manufacturing and automation, re integrate the course resources, establish an open "course supermarket" platform, let students choose suitable "course commodities" independently, realize wide caliber shunt training while meeting the diversified needs of students, and realize the application of skilled talents Training objectives.

5. Independent Selection of Course Module Through "Course Supermarket"

The curriculum is the core of the teaching plan and the basic unit of the curriculum system, which is highly professional. The construction of the curriculum system is directly related to the quality of personnel training, and plays a decisive role in whether the training objectives can be achieved. With the transformation of ordinary colleges and universities to application-oriented undergraduate colleges and universities, the curriculum system is also undergoing gradual reform and exploration. This kind of reform should not be "administrative instruction", but should be realized through various channels and ways on the premise of fully respecting the independent running of the school. As a form of "market", supermarket has the characteristics of market. Consumers can choose commodities according to their needs, and the quality of commodities can also be fed back through this platform. We run education, just like the supermarket, so that students and parents have the right to choose independently and provide them with flexible and diverse education services. The establishment of "curriculum supermarket" provides flexible and diverse course modules that can be selected independently. With fine and high-quality education services, it can meet the diversified needs of students to the greatest extent, and also meet the diversified and personalized needs of the education market. After many times of communication and experience sharing with local school enterprise cooperative enterprises, students majoring in mechanical design and manufacturing and automation of Jilin University of Commerce and industry select courses as required in the course supermarket to study. On the premise of ensuring the integrity of the course system, students select different courses according to their own love and employment development direction, and they have "key abilities" in relevant professions and "professional ability" have a higher and deeper understanding. It truly reflects the diversified development of students, and also realizes the cultivation of flexible application skills, so as to meet the requirements of social vocational market for talents. With the popularization of higher education and the rapid development of science and technology in China, with the increasing demand of local economy for applied skilled talents, and with the requirements of new engineering construction for professional talents training, we take the major of mechanical design and manufacturing and automation as an example to carry out the preliminary exploration of curriculum reform, and the establishment of "curriculum supermarket" to a certain extent reflects the student-centered approach. The concept of the center embodies the diversification of education, as well as the intersection, penetration and integration of various disciplines, laying the foundation for the seamless connection between the training of Vocational and technical talents, the needs of enterprises and the training of talents.

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