

Curriculum Reform of “Woven Fabric Structure Design and Application” in Higher Vocational College Based on Industry-College Partnerships

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The curriculum “Woven Fabric Structure Design and Application” is the core curriculum of textile majors in higher vocational colleges, which plays a very important role in the cultivation of students’ vocational ability and professional quality. The curriculum reform of “Woven Fabric Structure Design and Application” through the deep cooperation of industry-college partnerships, the comprehensive analysis of the major training objectives and graduation requirements, the redesign of the curriculum teaching content, the improvement of the teaching method and the examination method, has achieved good results.

Keywords: woven fabric structure design and application, curriculum reform, higher vocational education, industry-college partnerships

Introduction

Industry-college partnerships refer to a school-enterprise mode in which both parties, according to the needs of industrial structure, technological structure, enterprise development, and market demand, jointly study the arrangement of major setting, training objectives, talent specifications, teaching plans, curriculums and teaching contents, and jointly undertake the corresponding educational management work. In fact, industry-college partnerships are evolved from “Cooperative Education”, the internationally accepted educational model of cooperative cultivation of students between schools and employers. The cooperation refers to the cooperation between schools and enterprises (Wu, 2016; Mayer & Solga, 2008).

Since 1980, China’s vocational education has developed rapidly. In the process of exploring the cooperation between vocational education and enterprises, the state has issued a series of policies, in which the industry-college partnerships in vocational education are described in detail. Key policies and statements are shown in Table 1.

In the process of implementing industry-college partnerships, curriculum reform is a key link. Curriculum teaching is not only the starting point of industry-college partnerships, but also the destination. Curriculum reform is related to the success of industry-college partnerships (Ye, 2017). The curriculum “Woven Fabric

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Structure Design and Application” is the core curriculum of textile majors in higher vocational colleges. It is playing an increasingly important role in the expansion of students’ professional knowledge, ability and employment. However, in the process of teaching implementation, there are still some problems, such as insufficient curriculum reform, lacking systematic training of professional skills, and insufficient motivation for students to learn independently. In order to solve these problems, based on the actual development of the textile industry, the paper makes a comprehensive analysis of the professional training objectives and graduation requirements, based on the in-depth cooperation between colleges and enterprises. By re-designing the curriculum teaching content, reshaping the project chapters, improving teaching methods and examination methods, the curriculum reform and practice of “Woven Fabric Structure Design and Application” are carried out, and good results are achieved.

Table 1

Main State Policy on Industry-College Partnerships in Vocational Education in China

Time	The file name	The expression about industry-college partnerships
28 October, 2005	《The State Council issued a document entitled on Vigorous Development Decision on Developing Vocational Education》	Vigorously promote the combination of work and study, industry-college partnerships training mode.
20 October, 2010	《Opinions of the State Council on Strengthening Vocational Training and Promoting Employment》	We will comprehensively implement industry-college partnerships, reform training courses and innovate training methods, and guide vocational colleges, enterprises and vocational training institutions to vigorously carry out order-based training, targeted training and job-specific training.
12 November, 2013	《Decision of the Central Committee of Chinese Communist Party on Some Major Issues Concerning Comprehensively Deepening the Reform》	We will accelerate the development of a modern vocational education system, deepen industry-college partnerships, and train high-quality workers and skilled talents.
5 February, 2018	《Measures for Promoting Collaboration between Vocational Schools and Enterprises》	The integration of industry and education and industry-college partnerships are the basic modes of running schools and the key to run vocational education well. Industry-college partnership is implemented under the collaboration mechanism of industry-college leading, government promotion, industry guidance and industry-college implementation.
1 May, 2022	《Vocational Education Law》	Vocational education should be coordinated by the government, managed at different levels, given priority to local governments, guided by industries, cooperated between schools and enterprises, and participated by social forces.

Curriculum Reform Ideas

The curriculum setting of higher vocational education should adhere to the orientation of employment and pay attention to the matching degree of curriculum content and vocational work. The higher the matching degree and the stronger the connection between them, the more scientific and reasonable the selection of curriculum content will be, and the more in line with the reform direction of “career-oriented” and “process-oriented” of higher vocational curriculum reform, which is conducive to improving the practical proportion of curriculums and realizing students’ future employment (Xu, 2007). To achieve this goal, we need to do the following. Firstly, we should optimize and tailor curriculum content according to the needs of professional work. The method of reverse thinking should be used to analyze the job requirements of the enterprise, refine the vocational ability, and design the teaching content, so that the selection and setting of the curriculum content are closely related to the vocational practice, and can be directly applied and useful in the

production, service and management. Secondly, we should match the curriculum content with employment needs. To serve the employment of students, can effectively complete the task of work as the guiding ideology, determine the curriculum content. It should be based on procedural knowledge and supplemented by declarative knowledge, that is, it should be based on the acquisition of practical application experience and strategic knowledge, and supplemented by necessary and sufficient concepts, principles and other theoretical knowledge. Thirdly, the curriculum content should be linked to the certificate curriculums. Certificate curriculums refer to curriculums set according to national vocational qualification standards and developed based on position working ability. Most of the contents are directly related to vocational work, which can fully reflect the degree of matching between curriculum content and vocational work (Xu, 2016; Lv, 2010; Zuo, 2012).

Design and Reconstruction of Curriculum Content

The curriculum “Woven Fabric Structure Design and Application” focuses on the analysis and design of the organizational structure of various fabrics, selects the teaching content according to the requirements of vocational position groups in the textile industry on the vocational quality and vocational ability of textile majors in higher vocational colleges, and integrates the ability requirements of skill competition. The content of the curriculum highlights the training of students’ vocational ability. The selection of theoretical knowledge is carried out closely around the needs of the completion of work tasks (Wang, 2016). With the concept of “sufficient and practical” and the focus of “understanding concepts, induction and application, and training skills”, the curriculum starts from the simple to the deep, from the easy to the difficult, step by step. The process of skill training is carried out completely in accordance with the steps and quality control requirements of the production enterprise. It fully embodies the curriculum guiding ideology of “project leading, task driven, content progressive and practice oriented”.

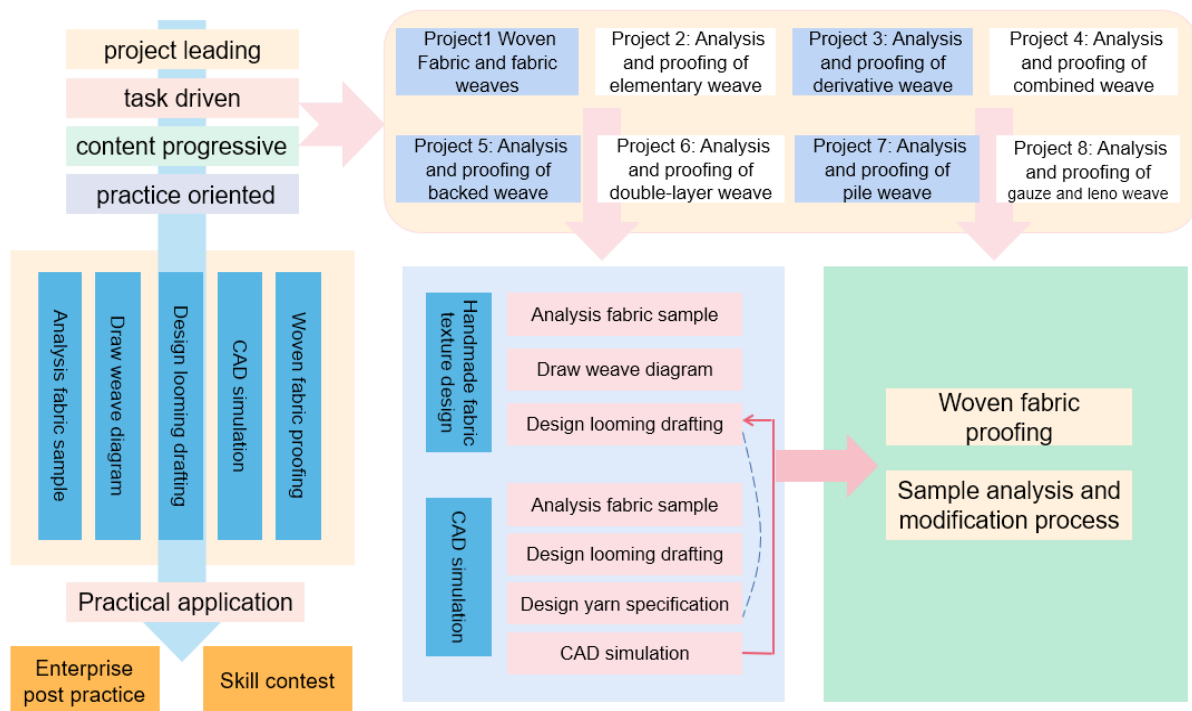


Figure 1. Teaching content and process of “Woven Fabric Structure Design and Application”.

Choose the Teaching Content Based on the Actual Production Needs of the Enterprise

In terms of the design of the learning content of the curriculum “Woven Fabric Structure Design and Application”, various kinds of common organizational structures, sample analysis of different raw materials and actual work tasks of fabric proofing in the actual production of textile enterprises are selected as teaching carriers, and the main content of the curriculum is integrated and reorganized. The teaching content is reorganized into eight teaching items, including the core technologies of elementary weave, derivative weave, combined weave, composed weave and sample production technology, so as to turn the teaching process into a real process basically in line with the actual work of the enterprise, so as to ensure the zero distance connection between “learning now” and “using in the future” and realize the “zero distance” between teaching activities and vocational positions (see Figure 1).

Design Typical Tasks in the Project Based on the Characteristics of the Working Process

In the curriculum reform of “Woven Fabric Structure Design and Application”, a typical task is extracted in the teaching process based on the real working process of enterprises. Each task is supported by the corresponding theoretical knowledge and assigned to students. According to the requirements of the task, students complete the learning process of organization design, sample analysis, operation proofing, result reporting, communication and summary, evaluation and scoring within the specified time.

Teaching Mode and Teaching Method

“Task-Driven” Teaching Model

In classroom teaching, teachers and students jointly decide to achieve the “goal” and guide the teaching process (Knoll, 1997). The teacher adopts the teaching method of demonstration, explanation, questioning and guidance, and the students learn and do at the same time, realizing learning in doing. Teachers guide students to think positively and take the initiative to participate in teaching. Teachers and students complete teaching tasks in an interactive teaching atmosphere.



Figure 2. The teaching process of fabric proofing for derivative weave.

For example, in the teaching of fabric proofing of derivative weave, as shown in Figure 2, the teacher first assigns tasks, and then students make plans, implement plans and complete fabric proofing tasks in groups.

During the completion of tasks, the teacher guides students when they encounter difficulties and questions. Finally, teachers and students jointly evaluate and score the students’ fabric proofing works.

The whole teaching process is a complete behavior model including access to information, making plans, design scheme, organizing and implementation, quality control, assessment and evaluation, and so on (see Figure 3). “Task-driven” teaching mode actively strengthens the cultivation of learners’ inquiry ability and cooperation ability. This teaching mode enables students to complete relevant learning tasks in independent inquiry, so that they can master theoretical knowledge and enhance practical ability (Yun & Bai, 2021).

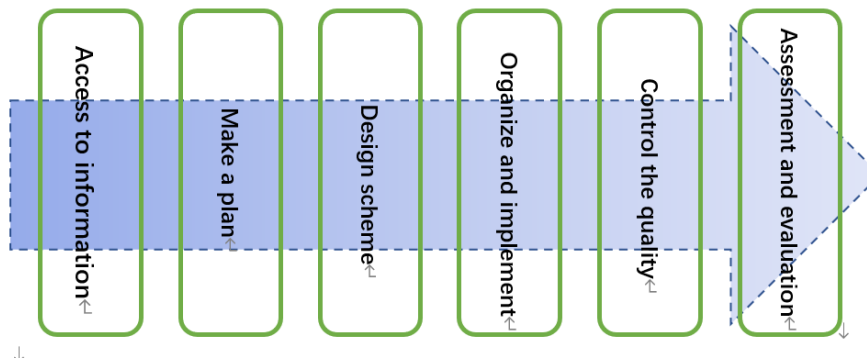


Figure 3. Task-driven teaching model based on real work process.

Teaching Methods and Means

Application of multiple teaching methods. Reform traditional teaching methods, adopt flexible teaching methods. Its specific teaching methods involve case teaching, question leading, debate, simulation teaching, self-study inquiry, inter-group competition and other teaching methods. Either method can be used independently or mixed flexibly. The most important thing is to reflect competency-based, that is, in action-oriented teaching, all learning activities of students are aimed at improving their ability (Chang, 2019).

Use “Internet +” technology for network teaching. By integrating “Internet +” technology with professional classes, the college and enterprise cooperate to establish a development team, and build the curriculum website and network resource library of “Woven Fabric Structure Design and Application”, which include courseware, teaching plans, videos, cases, exercises, sample library, excellent works display, etc. Through the curriculum platform, students can browse or download teaching resources directly, as well as conduct tests and discussions. The curriculum platform can record students’ online learning situation in real time. Teachers can check each student’s learning situation through the platform and conduct online tutoring.

“Integration of doing and learning” through enterprise post practice. Relying on campus and off-campus production and practice bases, to achieve in-depth cooperation between industry-college partnerships. The college employs technical backbone of the enterprise to guide the students to do enterprise post practice, so that the students can be familiar with the enterprise environment, learn the enterprise culture, and master the operation skills, operation methods and management system of the production management, equipment maintenance, process design and implementation, raw materials and product inspection and other related jobs in each workshop of the textile factory. Through enterprise post practice, students can exercise their adaptability to the position, improve their operational ability and professional quality, realize “integration of doing and learning”, and master the position skills (Jin, 2011).

Reform of Assessment Methods

In order to reflect the teaching mode of industry-college partnerships, the assessment objectives should be “skill-based”. The traditional evaluation of students’ learning is generally based on the written and theoretical examination, which ignores the examination of students’ practical ability. In the examination process, students will form the wrong idea that theoretical knowledge is important and practical ability is not. Therefore, students in higher vocational colleges should be assessed in two ways, and process assessment accounts for more than 50%. Only in this way can students’ learning situation be measured correctly (Wu, 2019; He, 2015). The teaching process of “Woven Fabric Structure Design and Application” takes students as the main body, and the examination method should be reformed accordingly. The emphasis of the examination should be placed on the evaluation of students’ ability and quality in the work tasks. The curriculum adopts the assessment method combining process assessment and comprehensive assessment.

Process Assessment

Process assessment covers the whole process of project tasks, including professional knowledge, skills and attitude. Assessment results are jointly assessed by the teacher and students, and process assessment accounts for 70% of the total score.

The process assessment consists of the following four parts:

(1) Self-evaluation: Students evaluate themselves according to their performance in the whole process of completing the work, so as to cultivate the objectivity of students’ self-evaluation and urge students to keep improving, accounting for 20%.

(2) Group mutual evaluation: The evaluation is made according to the works, explanations and mutual assistance of the study group, accounting for 20%.

(3) Group leader evaluation: The group leader evaluates the members according to their independent learning results, problem-solving ability, participation in learning and organizational implementation, accounting for 30%.

(4) Teacher evaluation: Teachers evaluate students according to the learning of the study group, the performance of the implementation process, the quality of the completed works, the effect of the report and the problem handling, accounting for 30%.

The process assessment takes the project as the unit and evaluates according to the teaching process. For the project composed of multiple tasks, each task should be evaluated and averaged. For particularly strong practical learning tasks, it is necessary to combine the analysis of results, the application of knowledge, the ability to deal with problems and so on (Liu, 2005; Xie, 2012). Table 2 shows the assessment criteria of the fabric proofing project of the curriculum “Woven Fabric Structure Design and Application”.

Table 2

Assessment Criteria for Curriculum Items

Test point	Assessment content	Score	Grade and score			
			A	B	C	D
Knowledge	Fabric analysis	10	10	8	6	4
	Fabric design	10	10	8	6	4
	The rationality of project scheme design	10	10	8	6	4

Table 2 to be continued

Skills	Reasonable process setting	10	10	8	6	4
	Fabric proofing operation in line with the code	10	10	8	6	4
	Process modification	10	10	8	6	4
	Fabric proofing quality	10	10	8	6	4
Attitude	Be proactive and disciplined	10	10	8	6	4
	Communication, mutual assistance, solidarity and cooperation	10	10	8	6	4
	Dare to try, pioneering and innovative	10	10	8	6	4
Total						

Comprehensive Assessment

The integrated examination is carried out by standardized papers, which adopt the closed-book way and are assessed according to the results of the answer papers, with the score accounting for 30% of the total score. In order to comprehensively assess the students' learning situation of this curriculum, improve the learning effect and professional ability.

Conclusions

The curriculum reform of “Woven Fabric Structure Design and Application” adheres to the practice orientation, introduces the real working situation of enterprises, adopts the “task-driven” teaching mode, changes the traditional teaching mode and method, takes students as the main body in the teaching process, combines online and offline, and transforms students from simple learners into participants. So as to stimulate students' learning motivation and enthusiasm, cultivate students' practical ability, improve students' employment competitiveness.

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