

Construction of Higher Vocational Civil Engineering Curriculum System under the Background of Full Credit System

Min Ji*, Bolin Jiang

Chongqing Vocational Institute of Engineering, Chongqing, China

**Corresponding Author.*

Abstract: Under the background of the full credit system, this paper discusses the significance of the implementation of the full credit system, analyzes the promotion path and training mechanism of students' autonomy and enthusiasm under the full credit system model, and further explains and summarizes the direction and advantages of the implementation of the full credit system. This paper puts forward the construction idea of higher vocational civil engineering course system, takes the prescribed minimum total graduation credits as a measure of students' learning quantity and graduation standard, details the specific objectives of the construction of the full credit system course system, and analyzes the practical teaching problems that the new course system can solve under the background of the full credit system.

Keywords: Full Credit System; Civil Engineering; Curriculum System; Learning Objectives

1. Introduction

Credit system is also known as credit accumulation system, is a teaching management system based on the course selection system, taking credit as the unit of measurement to measure students' learning status, and conducting teaching arrangements and student status management according to credit. This system was initiated by Harvard University at the end of the 19th century, and has been adopted by universities in most countries and has become a main mode of teaching management in many universities. The credit system is a teaching management system with students as the center, course selection system as the basic form, credit management as the management hub, advocating the full development of students' personality, respecting the interests and special

talents of individual learners to maximize, and cultivating high-standard talents to meet the needs of multi-level and diversified social development^[1].

Through literature research, it is found that the current domestic research on the operation mechanism of the credit system in higher vocational colleges still stays in the stage of problem discovery, idea proposal and countermeasure discussion. Most of the literature starts from a certain Angle (major categories, course system^[2], credit recognition, student management, teaching management, information system, etc.), or takes a certain professional college or professional group as the pilot. There is a lack of top-level strategy research and path exploration for the implementation of credit system reform from the height of the whole school. In addition, there are few researches on integrating vocational core competence training into credit system reform^[3]. The research on the credit system under the newly issued 1+X certificate system is still basically blank. This paper attempts to explore the reform of the characteristic credit system based on the actual situation of vocational colleges with small and medium-sized and industry characteristics as the main service, combined with the framework of the 1+X system, taking advantage of the first-mover advantage of schools in vigorously carrying out social training, and combining the recognition of learning results of continuing education of communication majors with credit banks.

2. The Significance of Implementing Full Credit System

In order to implement the spirit of the document on promoting the gradual implementation of the full credit system in higher vocational colleges in the Action Plan for Innovation and Development of Higher Vocational Education and the 13th Five-Year

Plan for the Development of National Education, practice the relevant requirements of "deepening teaching reform, promoting and improving the credit system, implementing the flexible academic system", and adapt to the diversification of student types. It is of great significance to improve the adaptability and pertinence of talent training^[4], and gradually realize the personalized talent training path such as module selection, flexible learning, on-demand training and credit mutual recognition. At present, some vocational colleges in China have carried out beneficial exploration to implement the credit system, but most of them focus on the construction of teaching system, and lack of attention to the needs of students and professional characteristics. Secondly, the summary of the implementation experience of the credit system mostly stays in the introduction of experience, lack of in-depth and systematic refining; Moreover, from a practical point of view, most of the higher vocational colleges that implement the credit system still adopt the traditional vocational education curriculum system, which is essentially the "academic year credit system" derived from the conversion of credits in the traditional academic year curriculum system. In order to further improve the quality of personnel training, it is necessary to construct an effective and convenient curriculum system of full credit system according to the spirit of the relevant documents such as "Several Opinions of Chongqing Education Commission on the Implementation of Full Credit System in colleges and universities" and "Implementation Plan of Full Credit System Reform"^[5].

3. The Construction of Civil Engineering Curriculum System in Higher Vocational Colleges

Promote vocational colleges to gradually implement the document spirit of the full credit system, practice the relevant requirements of "deepening teaching reform, promoting and improving the credit system, and implementing the flexible academic system"^[6], realize the personalized talent training goals such as module selection, flexible learning, on-demand training, and mutual recognition of credits, and take the "two yuan five total" school-enterprise collaborative education as an opportunity. Based on the requirements of civil engineering

professional job groups on students' knowledge, skills and professional quality, combined with professional group positioning and professional characteristics, fully consider students' cognitive law, course coherence, homework sequence requirements, knowledge sequencing requirements, skill control requirements, etc.^[7], adjust course proportion, reconstruct modular courses, and optimize talent training objectives and specifications. Achieve a breakthrough in course type, elective course proportion, major course selection and credit mutual recognition, and form a seamless docking with the enterprise "professional basic course + professional direction course + post core course" of "four breakthroughs and three progressive" full credit system of higher vocational civil engineering courses. Subsequently, the full credit system curriculum system will be applied in practice among students from 2024 to 2025, and the experience will be summarized for promotion.

To break the fixed mode and improve the learning quality, the full credit system is different from the academic credit system in teaching plan, course task setting, class management and so on. The academic credit system is more fixed in the way of teaching plan and course task setting, while the full credit system is more autonomous. Guided only by professional teaching plans, the full credit system covers a wide range of course tasks, breaking the fixed pattern of classes, and students can study for a long time or a short time, and can also choose their own learning courses.

Under the full credit system, on the one hand, teachers can stimulate a sense of competition, and they will be more careful in their teaching design and take into account the effectiveness of teaching. Schools can take the number of teachers to choose courses as one of the means to evaluate the teaching effect of teachers, which will help teachers to improve their teaching level^[8].

On the other hand, students' study time is more flexible, and students can get their graduation certificate as long as they have completed all the credits. At the same time, it is also conducive to the integration of school resources and avoid the waste of educational resources. Students can not choose repeated courses and have greater autonomy in learning.

In addition, the full credit system not only promotes the personalized and diversified development of students, but also enhances the competition among the educational subjects within colleges and universities^[9], and drives the systematic reform of the internal management system and mechanism of colleges and universities.

Credit system and academic year are different teaching management systems. "Academic year" is a teaching management system that measures students' academic completion in the academic year. Credit system is a kind of teaching management system which takes the minimum total credits of graduation as a measure of students' learning quantity and graduation standard.

The flexible academic system is a major feature of the "full credit system". Students can shorten or extend their study period or complete their studies in stages according to their own specific conditions. Most junior college students have a flexible study period of 2 to 5 years^[10].

Under the flexible academic system, students can choose courses and majors freely. Each semester, under the condition of meeting the lower limit of credits and not exceeding the upper limit of credits, you can freely "customize" the class schedule according to your own interest. After reaching the graduation credits, you can realize early graduation, and you can also freely choose to delay graduation if you have needs such as entrepreneurship. This system gives students full freedom of choice.

Under the flexible school system, many excellent students who graduate in 2 years have emerged, and the "flexible" learning time has honed the "resilience" of students' growth, giving unlimited possibilities to the cultivation of diverse talents.

Experts said that for the training of students, if colleges and universities can truly guarantee the teaching quality of each course and effectively cultivate research ability and practical ability in the teaching process, there will be no need to check the training quality of professional talents by degree papers in the future.

4. The Goal of Constructing the Full Credit System Curriculum System

The full credit system of higher vocational

colleges is a teaching management system that takes the total credits that must be obtained as the graduation standard. It should fully consider the cognitive law of students, the coherence of courses, the requirements of homework sequence, knowledge sequencing and skill control, and also consider the teaching conditions and teachers. Among them, the construction of reasonable curriculum system is the core. It requires that educational resources such as compulsory courses, elective courses and practical courses should be set up according to the professional training plan, while the proportion of various courses should be specified, the proportion of elective courses should be expanded, the credits of each course should be determined, and the conversion of credits by means of credit recognition of qualification certificates, educational background and off-campus practice activities can improve learning efficiency. Students who have attained the minimum total number of credits allowed to graduate are eligible for graduation.

4.1 Optimize Talent Training Objectives and Specifications

Based on the concept of OBE (results-oriented), taking civil and architectural major as the unit, disassembling the core competence requirements of posts in combination with the needs of enterprises, then determining typical work tasks and working processes, restructuring modular courses, and optimizing the objectives and specifications of talent training.

By emphasizing the precision of classroom teaching and the teaching method of students' independent learning, it is clear that the teaching time of teachers and students of each course is independent, the original relationship between "teaching" and "learning" is changed, the breadth of the curriculum system is expanded in "teaching", the cutting-edge of knowledge and the advanced of the teaching system are highlighted, and unlimited knowledge resources are introduced into independent learning in "learning". Gain artistic and personal experience.

According to their own abilities and interests, students can choose various courses in the curriculum pool, such as humanities, discipline, specialty, specialty direction, project-based research, etc. They can also participate in

teachers' teaching assistance, teaching research, and scientific research projects, so as to obtain credits in the form of expanding education. The academic tutor system breaks the inertia of input learning. Under the guidance of the academic tutor, students arrange their personal learning progress through prudent and free reasonable course selection, and replace rigid teaching plans with personalized flexible teaching plans, so that students can obtain a "tailored" knowledge system and stand out more easily in various competitions^[11].

4.2 Construct Credit Matrix Structure

Based on the academic qualification framework (DQP), the curriculum construction was adjusted, the modular curriculum was reconstructed, the credit matrix structure was built, and a full credit system course system and talent training program for civil engineering were constructed, considering the cognitive law, course continuity, assignment sequence requirements, knowledge sequencing requirements, and skill control requirements.

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4.3 Practical Application and Promotion

Applying the current construction of the civil engineering full credit system course system, students in the second semester of college, based on personal learning interests and the actual situation of each major, to carry out professional diversion. In the fourth semester of college, students can apply for a change of major twice according to their actual situation. Establish and improve the "professional access to the standard" and "personnel training diversion mechanism" two mechanisms. Among them, through the "professional admission standard", the minimum prerequisite course requirements for students to be transferred to a major and the minimum professional course requirements for students to graduate from the major are standardized^[12]. According to the "talent training diversion mechanism", students are guided in different directions according to their characteristics, and the optimal development of students is achieved through professional circulation, supplemented by credit recognition and conversion, scientific evaluation, compensation and assistance systems.

5. Peroration

The reform of "complete credit system" is an important starting point to respond to the requirements of the new era, which helps to break the "rigid" time and content of the academic year and academic credit system, fully embodies the "student-centered" education concept, and provides guarantee for the cultivation of innovative talents; The "full credit system" helps to enhance the "flexibility" and "resilience" of talent training, and students can set their own learning time, content and goals, which is conducive to the play of individual initiative and the stimulation of learning interest, and the realization of

individualized teaching.

The "full credit system" helps to enhance the "cross-compound" of talent training, and guarantees the students' right to freely choose courses across disciplines, disciplines, categories and even subsequent cross-schools in addition to core courses. Combined with subsequent enterprise practice, professional certificates and other credit mutual recognition mechanisms, it breaks through the barriers to training composite talents.

Acknowledgements

The paper was supported by Chongqing Vocational Education Teaching Reform Research Project (Z233071), Chongqing Polytechnic Institute of Engineering Teaching Reform Project (JG231012).

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