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Abstract

In order to make students' vocational skills improved seamlessly between what they have learned in school and after they enter the job, it could rely on the school enterprise cooperation relationship between the college and enterprises. Selecting students' core employment posts, connecting with national vocational standards, job training norms and skill appraisal standards, improving the assessment contents and requirements of posts to obtain the recognition of railway enterprises and industries. Designing training projects and teaching contents based on post responsibilities and typical work tasks, embedding enterprise skill identification and industry skill competition on the basis of integration of production and education to improve students' skills and increase their employment opportunities. Through the research and implementation of this work, we could improve teachers' teaching research and teaching ability, promote curriculum teaching reform, and further improve the teaching quality of the college. At the same time, the recognition and integration of certificates by enterprises and the promotion of certificates in other similar colleges would be realized.

Keywords

Vocational college; Railway traffic operation management; "1 + X" certificate system

1 Introduction

Through solving the structural employment contradiction, it could realize that vocational education could better serve the development of modern economy. Through connecting with the development trend of science and technology and market demand, it could promote the goal of high-quality employment and entrepreneurship. The state requires to start the pilot work of "academic certificate + vocational skill level certificate" i.e., 1 + X certificate system [1-3] in Vocational Colleges and applied undergraduate universities. It also points out the way to deepen the integration of industry and education, school enterprise cooperation, education and training, and improve the diversified school running pattern. At the same time, it also puts forward requirements for enterprises to deeply participate in collaborative education, promote the construction of qualification framework, and explore the interconnection of academic certificates and vocational skill level certificates.

Since 2016, the Institute has signed a strategic agreement on long-term cooperation with enterprises. The teachers keep close contact and exchange learning with leaders, cadres and employees at all levels of the enterprise. Under the opportunity of school enterprise cooperation [4-
6], the teachers of the professional group go to the enterprise to practice every winter and summer vacation, and get the careful guidance of enterprise experts in business. At the same time, our teachers have also collected relevant training specifications, rules, standards and other materials of the railway industry. After years of school enterprise cooperation, our teachers have become familiar with the skill appraisal of enterprises, and their teaching and research ability has been greatly improved.

In the high-quality school construction project, the major has the construction task of two industry education integration courses. Both courses have carried out teaching reform in connection with the enterprise's skill identification question bank and skill competition scoring standards. These laid a theoretical foundation for the research and development of the relevant skills for the relevant positions of railway train operation system, and revised the skill identification question bank [7, 8] of some train operation posts and passenger transport posts. At present, the professional certificate of railway traffic operation management is single, but the employment positions of professional students are diverse. The certificate cannot meet the existing employment needs of students. In the choice of employment direction [9, 10], it failed to promote the employment of students.

The discipline should develop a certificate system instead of a single certificate. Certificate development needs to rely on the top-level design of the national qualification framework. Under the current situation that the national qualification framework [11] has not been established, higher vocational colleges have the responsibility and obligation to strengthen cooperation with enterprises, boldly try to develop certificates and establish relevant standards. The existing research on which certificates should be developed in this major, how to establish the basis for certificate development, and how to establish the form and carrier of certificate evaluation is not in-depth.

2 Research contents for “1+X” certificate system

(1) Determination of certificate name and quantity.

The corresponding jobs in the railway industry are mainly related to passenger transport, freight transport and driving in the train service system. These posts include railway passenger transport officer, conductor, passenger transport attendant, freight forwarder, freight attendant, connection officer, shunter, train number officer, assistant attendant, signalman and station attendant. In similar industries, the jobs in the urban rail transit industry mainly include stationmaster, attendant and dispatcher. This study intends to study the posts and grades suitable for skill appraisal and certificate issuance in vocational colleges through field research and other means.

(2) Basis of certificate development.

The railway industry has specific content and requirements for post grades, and has formed a unified training standard. The urban rail transit industry is still a relatively new industry. The equipment of each enterprise is different, so the national level has not formulated a unified training specification for relevant jobs. This study intends to develop training standards for urban rail transit station related posts in combination with the actual situation of rail transit group. After the demonstration of enterprise experts, the training standard is taken as the basis for certificate development.

(3) Determination of certificate assessment form and carrier.

The existing assessment and evaluation of railway specific types of work mainly includes two parts, theoretical assessment and practical assessment. The theoretical assessment takes the written examination paper as the carrier. Actual operation at the station site or simulated actual operation at the training base can be selected for the practical assessment according to the specific conditions, and the examination questions are used as the carrier for the assessment. The railway corporation
has also published a series of skill appraisal books of various types of work and levels, all of which are question banks. However, with the change of technology and the revision of regulations, some question banks have become obsolete and even have some mistakes. This study intends to revise the skill appraisal question bank on the basis of scientifically formulating the certificate development basis and in combination with the latest technologies and regulations. The research results form a set of theoretical question bank and a set of practical question bank for the examination of relevant certificates in the railway industry.

The job skill assessment of urban rail transit enterprises is basically similar to the railway, which is divided into two parts, theoretical assessment and practical assessment. Unlike the railway, there is no unified skill assessment question bank in the urban rail transit industry. For this reason, this study plans to combine the specific conditions of Chongqing Rail Transit Co., Ltd. and Guiyang urban rail transit Group Co., Ltd., sort out and integrate their common parts, and build a set of theoretical question bank and a set of practical question bank for relevant certificates in the urban rail transit industry.

3 Research ideas and methods for "1 + X" certificate system

Research ideas

Research ideas for "1 + X" certificate system is shown in Figure 1.

![Figure 1](image)

**Figure 1** Research steps of development and pilot for "1 + X" certificate system.

Research ideas and methods

(1) Expert consultation method.

In order to determine relevant vocational skill standards, training norms and examination modes, we should consult, communicate and discuss with experts from enterprises and similar institutions.

(2) Field investigation method.
We should go to the railway passenger transport station to investigate and understand the work process, operation standards and scope of work of railway passenger transport personnel. At the same time, it is also necessary to understand the mastery and degree of the passenger transport staff on the professional knowledge module, so as to provide on-site basis for the key direction of the question bank construction.

(3) Statistical analysis method.

The test data are statistically analyzed by using EXCEL, CHISS, SPSS and other analysis software to determine the test standards for vocational skill level certificates of relevant posts.

(4) Empirical research method.

In the process of teaching students, we should integrate the contents of the test question bank for the vocational skill level certificates of the posts related to railway vehicle affairs and urban rail station affairs. We should track and investigate the job performance, professional skill level and passing rate of students who have obtained relevant skill level certificates in enterprises after employment. Finally, we would observe, record and analyze the scientificity and effectiveness of the test.

4 Conclusions

By vigorously promoting the "1+x" certificate system, we will develop core skill level certificates for our major and similar majors according to the employment characteristics of students majoring in railway traffic operation management. Through the work of obtaining certificates, improve students' skills, achieve the goal of cultivating high-quality compound skilled talents, and finally solve the structural employment contradiction. We would improve the skill appraisal standards for railway specific types of work to make the skill appraisal more scientific and standardized. In view of the lack of unified training standards in the urban rail transit industry, the training standards and identification question bank could be developed for the common parts of enterprises. It would help to promote and standardize the training standards and skill appraisal standards of urban rail transit industry.

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