

Employment-oriented “Post Courses and Certificates” Integrated Curriculum Reform and Practice: Take the Course of Urban Rail Transit Operation Regulations as an Example

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Abstract:

Under the background of the Greater Bay Area on the construction track, the problem of how to cultivate high-quality technical talents in line with the needs of local social and economic development is in front of us, so we should actively explore the curriculum reform. This paper takes the urban rail transit operation rules course as an example, through the “post-class card” financing, realize the teaching content and post standard, national vocational skills competition, 1 + X certificate assessment standard, make the teaching content and post standards, teaching process and work process, in the teaching process into skills contest, 1 + X certificate assessment content and assessment standards. After the implementation of the curriculum reform, students’ knowledge, ability and quality of three-dimensional goals have been greatly improved.

Keywords:

Post-course certification
Course implementation
Urban rail transit
Work and study

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1. Introduction

The course of Urban Rail Transit Operation Regulations belongs to the core course of each major in the urban rail transit major group. The purpose of the course is to make students system learning urban rail transit professional group of main tasks, should know should be rules and regulations and safety management, enable students to more understanding of urban rail transit professional

jobs, to make the students master the urban rail transit operation management, the main equipment operation, maintenance, safety management, further enhance students’ professional quality, after graduation for urban rail transit production, service, management, and other line work to lay a solid foundation.

2. Employment-oriented “post-class competition certificate” integrated teaching design

The major of Urban Rail Transit Operation and Management of the university was launched in 1996 and began to recruit students independently in 2003. It is the earliest university in Guangdong Province to train professional talents for subway companies. Students are mainly local students in Guangdong Province, and their graduates are mainly for rail transit enterprises in the Greater Bay Area, such as Guangzhou Metro, Foshan Metro and Dongguan Metro. General Secretary Xi pointed out: “Urban rail transit is the development direction of modern big city transportation. We should continue to vigorously develop rail transit and build a comprehensive, green, safe, and intelligent three-dimensional and modern urban transportation system.” With the rapid development of urban rail transit, the demand for talent of subway enterprises not only increases in quantity but also puts forward higher requirements in quality. With the increasing application of new technologies and new equipment in urban rail transit enterprises, the post-capacity of the subway industry tends to be more integrated. For example, station operators not only need to have basic passenger serviceability but also need to be familiar with the knowledge of driving safety, emergency response and other aspects, as well as service awareness and communication ability. As a model of high-quality development, the Greater Bay Area should take the lead in making its contribution to the training of high-quality technical and skilled personnel. Taking Guangzhou Metro as an example, Guangzhou Metro, as the leader of urban rail transit enterprises, takes the lead in vigorously developing the construction of smart urban rail, reduces the pre-job training time for new employees, reduces costs and increases efficiency, and recruits students majoring in urban rail transit operation and management in our school mainly engaged in station posts and driver posts. To enable students to adapt to the changes in the needs of enterprises as soon as possible, we are required to develop talent training programs and curriculum standards to seamlessly dock with the needs of enterprises, so that students can meet the requirements of “graduation is the post, the post is competent”^[1].

2.1. Docking with the “post-competition certificate” and reconstructing the teaching content

With the increasing application of new technologies and new equipment in urban rail transit enterprises, enterprises have also put forward higher requirements for the quantity and requirements of high-quality compound talents. This course connects with the needs of enterprises, According to the higher vocational school urban rail transit operation management professional teaching standard, the urban rail transit attendant national vocational skills standard (2020 edition), the urban rail transit train driver national vocational skills standard (2019 edition) and the urban rail transit operation management regulations (2018-8), the urban rail transit operation emergency plan preparation specification (JT / T1051-2016) and other industry norms and standards, docking with 1 + X certificate standard, National Vocational Skills Competition, to revise the talent training plan for Urban Rail Transit Operation and Management majors and the curriculum standards of Urban Rail Transit Operation Regulations, employment-oriented approach, based on the post ability and working process of students after employment, refactoring of the teaching content of the modular course. The reconstructed teaching tasks are shown in **Table 1**. The teaching content of “post-class competition and certificate” is divided into four modules, 12 teaching tasks, 12 vocational skill points of 1 + X certificate-related modules and 10 skill points of vocational college skills competition^[2].

2.2. Docking with the “post-competition certificate” and formulating the “three-dimensional” teaching objectives of “class”

As rail transit enterprises new technology, new equipment upgrades, the post setting, and post ability also changed, gradually to a post pluripotent, for the change update course of theory and practice training content, into the counterpart industry of new technology, new technology, new knowledge, new methods, determine the “post” knowledge, ability, quality goals. “Competition” is the students on special skills, the content of the “game” and comparison, generally is the “post” special skills strengthening, to a certain extent is a special skills level lead, and student’s skill level, course teaching achievements, such as the world skills contest, the national

Table 1. Modular structure of the course of Urban Rail Transit Operation Regulations

Course	Teaching module	Teaching task	Lesson hours
Urban Rail Transit Operation Regulations	Module 1: Operation and Management Foundation of Urban Rail Transit (8 hours)	Task 1: Be familiar with the main driving equipment	4
		Task 2: Understand the main operation positions	4
	Module 2: Crew organization management	Task 1: Operation Specification for Train Drivers	4
		Task 2: Train driving under special circumstances	4
		Task 3: Train troubleshooting	4
		Task 4: cabin crew management	4
	Module 3: Station organization and management	Task 1: Station operator operation	4
		Task 2: Driving duty officer operation	4
		Task 3: Passenger duty officer operation	4
		Task 4: Station master on duty	4
	Module 4: Operation and maintenance of the main equipment	Task 1: Vehicle operation and maintenance	4
		Task 2: Station main equipment operation	4

vocational college's skills contest, the recognized high level of competition standard, skills, literacy, "class" into determine for "game" knowledge, ability, quality goals. 1 + X certificate system is led by industry enterprises combined with relevant positions, and X certificate mainly connects with the actual needs of enterprises and standard professional skill level certificates. According to the skills needed to be mastered in the 1 + X certificate, the knowledge, ability and quality objectives of the "certificate" are integrated into the "class." Docking with the "post-competition certificate," the three-dimensional goals of the course, realize the "post" as the guidance, "competition" as the guide, "certificate" as the test, and truly achieve multi-dimensional training of high-quality technical and technical talents. Determine the teaching focus according to the core skill points required by the "post-competition certificate."

2.3. Docking with "post-competition certificate" and determine the teaching difficulties in "class" based on learning situation analysis

Based on system research analysis, integrating "leading follow-up" analysis multidimensional learning, based on the research report, to the student's knowledge and skills, cognitive and practical ability, learning characteristics, and the urban rail transit station management, the urban rail transit station facilities leading course learning comprehensive analysis through teachers interview, baseline test, the urban rail transit driving organization, the urban rail transit safety management and other follow-

up course baseline comprehensive analysis, determine the overall situation of students, individual characteristics. Combined with the course teaching content determined for the "post-competition certificate," the teaching difficulties in the "class" are determined with the students as the main body and the results of the learning situation analysis^[3].

2.4. Docking with a "post-competition certificate" and deeply excavating the ideological and political elements of "class"

Urban rail transit operation rules course corresponding to the basic jobs for the station attendant and the driver, the future development post for the attendant, duty webmaster, post requirements such as Wuxi, safety first, passengers first, obey command, overall situation consciousness of professional quality in the course knowledge or skills training to dig deeper, cultivate students labor spirit, the spirit of labor model. In the process of students participating in various high-level professional competitions, to achieve excellent results, need students have a competitive spirit, and innovative spirit, in the course by setting hierarchical progressive skills training, setting open topics and group PK, and other forms to cultivate students' competitive consciousness, innovative spirit, 1 + X certificate connects with the actual needs of the enterprise and closely fits the standard work process of the enterprise, which requires students to have a strictly prohibited work style, meticulous work attitude, and work strictly according to the standards. To cultivate students' above qualities in the routine

teaching should strictly require students, to not be late or leave early, use the practical hours in the course to carry out standardized training of typical tasks, and cultivate students to develop a good habit of acting according to the rules. Through docking “postcard,” dig deeper into the “class” ideological elements, the ideological elements in the course design run silently penetration, the students into technical double high-quality technical skills, skilled, craftsmen, for rail transit enterprise high-quality leapfrog development to provide strong talent and skills support.

3. Implementation process

Docking with the “post-competition certificate,” the implementation process takes students as the main body, teachers as the leading, the modular teaching mode based on the work process, taking task two in the organization and management of three rail transit stations as an example, introduces the specific course implementation process.

The knowledge points and skill points of the “post-course competition certificate” will be integrated into the course teaching content as shown in **Figure 1**. Before class, the knowledge points and skill points of the “post-course competition certificate” will be released to students through the learning pass for the pre-class learning test. Students post messages to feedback on the questions, and teachers collect and sort out the feedback questions ^[4].

In class, the teachers focused on the pre-class test results and students’ feedback, found that the students did not properly grasp the contents of the telephone blocking method and the operation and troubleshooting of the ATS signal system in the driving organization under abnormal conditions, Based on the working process of driving duty officer, targeted explanation of the disposal process through the group training on the operation and troubleshooting of telephone occlusion method and ATS signal system in the urban rail comprehensive training room, Group PK after skilled training. Student groups evaluate their group members, and mutual evaluation between the group members, the three-part weighted calculation forms the final evaluation results of this learning task. In the learning process, students can carefully check the spare parts required by the post, develop a rigorous and meticulous working attitude, and operate in strict accordance with the assessment standards

of the 1 + X certificate, to see the eyes, hands, and mouth and use standard language. Group members carry out training by position (role-playing) to cultivate students’ teamwork ability and hard-working quality. The task is set by the teacher, and the group is willing to handle the ATS equipment fault according to the disposal process of the urban rail intelligent transportation skills competition, to cultivate the students’ strain ability and innovative spirit, and also train the players for the following participants.

After class, students can use the training room open all day for proficiency training, and they can also conduct independent training according to the scoring standards of the competition to prepare for the competition. However, students are required to use it according to the rules of the training room and develop good habits. Due to the individual differences of students, the problems reported by individual students before class may not be solved one by one in class, so we set up an after-class help group, which is responsible for answering the questions of individual students. In this form, it solves the problem of individual differentiation of students’ learning, increases the learning communication between students after class, and increases the cohesion between students. At the same time, it also exercises the explanation ability to help students, which helps to deepen the understanding of the learning content of the students.

Through “post-class card” depth fusion, improve the students’ knowledge skills, give full play to the students in the teaching process, truly with the student as the main body, the teacher leading teaching idea, through learning before class, in-class, after-class task test, timely tracking of the learning content, before class, after class, class closed-loop management ^[5].

4. Effectiveness of curriculum teaching reform

4.1. Course pass rate

After curriculum reform students’ knowledge more solid, skills more solid, quality targets generally improved, and course assessment pass rate from 90% before the curriculum reform, up to 100%, this improvement also reflects the effectiveness of teaching methods and evaluation system, as well as the improvement of students’ learning attitude and ability, 3d target

achievement is high.

4.2. Certificate pass rate

1 + X certificate assessment knowledge points are integrated into the course, and targeted skills training is carried out through the practical teaching part of the course. The pass rate of 1 + X urban rail attendant is 100%. This shows that when the course design and practical teaching are closely combined with the 1 + X certificate assessment knowledge points, students can better master the required skills required to achieve excellent results in the certificate.

4.3. Results of skills competition and teaching ability competition

Integrating the knowledge points and skill points of the national vocational skills competition into the course, and using the assessment standards of the competition, the students' competition ability has been greatly improved. Students have won two provincial first prizes, 8 second prizes and 6 third prizes in the professional skills competitions. Teaching and learning, through the depth of the course mining, teachers participate in the teaching ability competition and win the provincial second prize and a third prize.

4.4. Patent application results for teaching, research and educational reform

Teachers and students participated in the application of 5 national invention patents, and 3 authorized, one of which was 100,000 yuan and was awarded the top 20 most practical invention patents in Guangdong Province. Ten utility model patents have been authorized, and one silver award in the innovation and entrepreneurship competition has been won. Students' awareness of innovation has been significantly enhanced, and the level of teachers' teaching research and reform has been steadily improved.

5. Teaching reflection and improvement

(1) Explore value-added evaluation

Although the multi-multi-subject evaluation system is adopted in the course evaluation, the index system of value-added evaluation is not perfect and perfect. In future course evaluations, a feasible and operable value-added evaluation index system should be formulated according to the individual differences of students to make the course evaluation system perfect.

(2) Practical teaching ability needs to be further improved

The rail transit industry has developed rapidly, and new technologies and equipment are updated rapidly, but the update of school teaching hardware and software resources is relatively slow. Teachers under the enterprise exercise time, the enterprise new equipment practice teaching ability is insufficient, and also cannot keep pace with the development of enterprises. Cooperation with organic integration urged professional teachers to enterprise field practice, participate in enterprise technology research and development, and improve the enterprise part-time teachers to participate in practice teaching.

6. Conclusion

Further promoting "post-class card" financing course teaching reform, adhering to technology and repair, insisting on teaching integration, enterprise cooperation, work-integrated study, market and promote employment, oriented practice, strengthening ability, has quality training as the lead, to the ability to cultivate the standard, improve high-quality technical personnel training quality, for the construction of the large bay area of useful orbit.

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Disclosure statement

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