

# Application research of project teaching method in the course of safety management of urban rail transit operation

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**Abstract:** *At present, China's vocational education curriculum is in the stage of profound change, project curriculum is an important leading concept of this change. This paper uses the methods of literature, interview and questionnaire survey, based on the investigation and analysis of the current teaching situation of "urban rail transit operation safety management" course, as well as the analysis of the enterprise professional post ability jointly cultivated with it outside the school, and then designs the four teaching objectives, concluding professional quality ability, professional core ability, professional post ability and professional development ability. Based on the specific project, the teaching content and process are reorganized. Finally, the teaching evaluation is optimized to be based on teaching objectives, multi-agent and multi-faceted evaluation, in order to achieve the optimal application of project teaching method in this course.*

**Keywords:** *Project teaching method; Safety management of urban rail transit operation; Teaching process design; Teaching evaluation*

## 1. Introduction

At present, vocational education curriculum in China is in the stage of profound transformation. In June 2014, The State Council issued the Decision on Accelerating the Development of Modern Vocational Education, proposing to optimize the structure of secondary vocational education by integrating school-running resources, in order to improve the development level of secondary vocational education. In July 2015, the Ministry of Education issued by the "on deepening the reform of vocational education teaching comprehensive several opinions on improving the quality of personnel training in explicitly pointed out:" in order to stimulate students' interest in learning, the teacher should be in daily popularization project teaching method in the teaching, make students actively involved in the project to discuss, explore, offers a new way for the current secondary vocational school curriculum reform".<sup>[1]</sup> It can be seen that the curriculum reform of secondary vocational education in the form of project-based teaching method has received a certain degree of attention.

The purpose of this paper is to introduce enterprise real tasks in classroom teaching, through the investigation and analysis of the urban rail transit operation safety management of the current teaching situation and existing problems, combining with job requirements and tasks, course development and the course of the corresponding project, after practice test effectively, so as to provide reference for the related school, In order to cultivate the market with professional ability of skilled personnel.

## 2. The research overview

### 2.1. The research object

The research objects of this paper are the students majoring in urban rail transit vehicle operation and Maintenance, the teachers of the course "Safety management of urban rail transit operation" and the enterprises jointly trained by them outside the school.

### 2.2. The research content

First, the current teaching status of "Safety management of urban rail transit operation" ; Secondly, the analysis of the position of professional talents required by the enterprise jointly trained with the

outside school; Third, according to the job requirements, design project courses and introduce them into the course teaching.

### **2.3. The research methods**

Document analysis method; In-depth interview method; Questionnaire survey method.

## **3. The research process**

### **3.1. Investigation of current situation of curriculum teaching**

#### **3.1.1. Current situation survey based on teacher level**

The survey purpose: From the perspective of teachers, the teaching status of "Safety management of urban rail transit operation" is understood.

The survey method: Interview method.

The respondents: Three teachers (including the author) taught "Safety management of urban rail transit operation" in the application and maintenance of urban rail transit vehicles.

The interview outline: According to the purpose of the investigation, the "Teacher interview Outline of the investigation on the teaching status of the Course Of 'Safety management of urban rail transit operation'" was compiled to understand the teaching status of the course development, teaching materials, teaching mode, teaching objectives and teaching content.

The interview results: Through the analysis of the interview information, the following conclusions are drawn: first, the development of the curriculum system is not rigorous enough, remaining at the level of data formation; Second, the textbooks are from the publishing house cooperating with the school, and the enterprises jointly trained outside the school are not involved, so the textbooks are not strictly project textbooks. Thirdly, the teaching mode of the course is mainly lecturing, without any attempt to reform; fourthly, teaching objectives and contents are based on teaching materials, and the organization and design of teaching contents are not combined with the professional ability of the post.

#### **3.1.2. Current situation survey based on students**

The survey purpose: From the perspective of students, this paper understands the teaching status of the course "Safety management of urban rail transit operation" and finds the problems existing in the current teaching mode.

The survey method: Questionnaire survey method.

The respondents: Students majoring in urban rail transit vehicle application and Maintenance.

The questionnaire design: According to the purpose of the survey, a student questionnaire survey on the teaching status of the course "Safety management of urban rail transit operation" was prepared to understand the students' learning interest, comprehensive ability, course content, course teaching methods and teaching evaluation.

The survey Results: There are 50 valid questionnaires in this survey. After statistical analysis of the questionnaire results, the following conclusions are drawn: First, students generally have low interest in learning; Secondly, many students think that the learning of courses has no significant effect on improving their comprehensive ability; third, the teaching content of the course is single and has little correlation with the actual work task. Fourth, the teaching method of the course is more traditional, mainly lecture-based teaching; fifthly, the evaluation method is based on the final score, and the assessment of the learning process takes a low proportion, and the evaluation subject is relatively single.

### **3.2. Analysis of job occupation ability**

The survey purpose: The purpose of this survey is to fully understand the demand of the enterprises jointly trained by this College for the vocational ability of the graduates majoring in urban rail vehicle operation and maintenance.

The survey method: Interview method.

The respondents: This College urban rail vehicle operation and maintenance professional joint

training enterprise.

The interview outline: According to the purpose of the survey, the "Interview Outline of professional job ability of Urban Rail Vehicle Operation and Maintenance" was compiled to understand the professional job ability required by this major, so as to explore the gap between it and the course teaching content, and further arrange the course teaching reasonably.

The interview results: Through the analysis of the interview information, it is concluded that the graduates should have the following job vocational ability: first, professional quality ability; Second, professional core competence; thirdly, professional post ability; Fourth, career development ability. In short, that is, the ability to solve practical work and business, and the corresponding professional quality.

### 3.3. Analysis of curriculum reform of project teaching method

#### 3.3.1. The necessity analysis

First of all, "Safety management of urban rail transit operation" is a professional basic course, which involves many knowledge points with strong operability and is closely related to actual work tasks. If traditional lecture-based teaching is simply used, it is difficult for students to flexibly combine what they have learned with practice. Secondly, according to the characteristics of the secondary vocational student's body and mind development, project teaching method has strong pertinence and adaptability, applied to the teaching this course, can let the students in the process of the project targeted to collect data, form the habit of autonomous learning, cultivate the students' team spirit, stimulate students' interest in learning, in order to better realize the value of the teaching of this course. Therefore, it is necessary to adopt project teaching method.<sup>[2]</sup>

#### 3.3.2. The feasibility analysis

First, from the perspective of the course, the teaching content of the course can be arranged as a project; Second, from the point of view of students, secondary vocational students have the ability of independent learning, can adopt project teaching; Thirdly, from the perspective of practice, project-based teaching can integrate real work tasks into classroom teaching and effectively connect students' practical work in the future, which not only meets the needs of students' career development, but also meets the requirements of enterprises for professional talents. Therefore, adopting project teaching method has great feasibility.

#### 3.3.3. The course teaching design

The teaching objectives: Based on the interview results of enterprises jointly trained outside the school, the positioning analysis of vocational ability of the post is obtained, and the following teaching objectives are designed:

Table 1: The teaching objective design

Professional quality and Ability	Have good ideological cultivation and professional quality
	Have the right values, outlook on life, world view and sense of professional mission
	Have the consciousness of code of conduct for safe operation according to law and regulations
	Have information service ability, self - improvement consciousness
Professional core Competence	Understand the basic means and common methods of safe operation of urban rail transit
	Professional cognitive ability of urban rail transit safety management
	Flexible application of urban rail transit safety management principles and means in practice
	Master the methods and skills to deal with common accidents
Professional Post Ability	Have different abilities for different positions
Professional Development ability	Have certain entrepreneurial or higher education ability
	Have the ability to adapt to the change of position, have the consciousness and ability of innovation

Teaching content: Combined with the representative tasks of the post, the teaching content of this course is arranged as follows:

Table 2: The teaching content design

Representative task	Course project Breakdown (Learning tasks)	Schedules
Operation of safety equipment	Train safety equipment application	3
	Station safety equipment application	3
	Fire control system operation	3
	Environmental control system application	2
Passenger transport safety Management	Passenger transport employee safety management	3
	Passenger safety Management	3
	Passenger ticket security management	3
	Emergency handling of passenger transport emergencies	3
Traffic safety management	Train operation safety management	3
	Traffic scheduling safety management	3
	Station operation safety management	3
	Safety management of shunting operation	3
	Traffic accident rescue	3
Construction safety management	Construction organization safety management	2
	Safety code for construction operations	2
Safety system management	Work safety prevention system	3
	Operation of the insurance incident management system	2
	Emergency response management system	3

Teaching process: The formation of professional ability depends on the specific work situation and mission requirement, the curriculum based on the operation safety management of urban rail transit project teaching mode guided by the concept of curriculum teaching, emphasizing on projects as the carrier, in the project learning, highlight the "action" this purpose, to complete the project in the learning, knowledge and working process of contact theory, It's a response to the demands of the real working world. Therefore, the actual teaching process design should follow the following table:

Table 3: The teaching process design

Stage	Project teaching process	
1	Project introduction	Project description
		Knowledge Preparation
		Task oriented
2	Project implementation	Project implementation: Step 1
		Project implementation: Step 2
		Project implementation:.....
		Project implementation: Step N
3	Project summary	Project presentation and overall evaluation
		Project learning summary

Table 4: The teaching evaluation design

Evaluation method	Professional quality ability, professional development ability and professional post ability assessment (project evaluation) accounted for 60%			The evaluation of major core objectives accounted for 40%
Evaluation content	Completion of work plan	Project operation	Professional quality	Key theoretical knowledge
Evaluation of the main body	The students themselves, the students' groups and the course teachers			Course teachers, teaching management personnel
Evaluation standard	Whether the work plan is complete; Whether the operation process is clearly described; Is the task list filled in well?	Whether the tool is used correctly; Whether the operation process is correct; Is the task well completed?	Safe operation; Observe discipline; Love and dedication; Innovation consciousness.	The school organizes the final examination uniformly, which involves the key theoretical knowledge and sets subjective and objective questions.

Teaching evaluation: Teaching evaluation should be carried out around teaching objectives. Teaching objectives can be specifically divided into professional quality ability, professional core ability, professional post ability and professional development ability, so teaching evaluation should also be carried out from these four aspects. In order to ensure that teaching evaluation is fair and more realistic, and combined with the actual will of students in the questionnaire, multi-subject participation should also be adopted. The specific evaluation indicators are shown in the following table:

#### 4. Conclusions

With the development of secondary vocational education, the curriculum model is paid more and more attention. For the subjects with strong operability, we should carry out curriculum reform instead of simply adopting lecturing teaching. Based on the investigation of the current teaching situation of teachers and students and the analysis of the professional post ability of the joint training enterprise outside the school, this study indicates the necessity and feasibility of introducing project-based teaching method, designs the project-based teaching method based on this course, and forms the process of project curriculum development: Analysis of current situation of course teaching -- survey of post ability demand -- Analysis of representative tasks and vocational ability -- project teaching design.

#### References

- [1] Ministry of Education.(2015). *Several Opinions of the Ministry of Education on Deepening vocational Education and Teaching Reform to Comprehensively Improve the quality of talent training. Bulletin of the Ministry of Education of the People's Republic of China (09),39-43.*
- [2] Guo Ziyu.(2020). *Discussion on teaching reform of urban rail transit passenger transportation organization course based on project Teaching Method. Guangxi Education (11),63-65.*