Discussion on Teaching Strategies of Urban Rail Transit Traffic Organization in Vocational Colleges

Yingrong DONG
Shandong Transportation Vocational College

Abstract: Based on the analysis of vocational college students characteristics and urban rail transit traffic organization course feature, this paper discussed the Optimized teaching strategies. Through the form of concluding remarks, it summarizes the positive impact of the application of several different teaching strategies on vocational college urban rail transit traffic organization education teaching, hoping that through this study, effective reference can be provided for the teaching work of urban rail transit traffic organization education teachers.

Keywords: Urban Rail Transit Traffic Organization; Vocational colleges; Teaching study; Teaching methods; Optimization strategy

DOI: 10.47297/wspiedWSP2516-250012.20200409

1. Characteristics of Vocational College Students

Vocational college is an important part of higher education. Students in vocational colleges have their special characteristics comparing to university students. According to the author’s teaching experience for years and the investigation of students on campus, the following characteristics were found.

(1) Limited Self-control

In recent years, campus network is commonly applied and cellphone is one of the great tyrannies of modern life. Due to limited self-control, the attention of vocational college students is readily distracted from class.

(2) Fear of Difficulties

When the students come across difficulties, such as abstract knowledge and complex logical theory, they want to hold back for lack of the courage to overcome difficulties.

About the author: Yingrong DONG (1986-08), female, born in Weifang Shandong province, master degree candidate, lectureship, has been a professional teacher major in urban rail transit operation and management since 2016, primarily responsible for teaching professional courses and training courses.
(3) Great Individual Differences

In vocational college, some of the students actively participate in skills competition and get first prize. But still, some of the students have difficulties in the process of learning.

(4) Enjoy Hands-on Participation

The students are interested in activities and games that they can take part in or act the character.

2. Course Feature

The course of urban rail transit traffic organization is a professional core course of urban rail transit operation and management professional. The goal of the course is to organize train operation safely and efficiently. Comparing to other courses, the course of urban rail transit traffic organization is different from the following aspects.

(1) Emphasize on Safety

Mistakes in the work of train operation organization can lead to late of train, train crash, train derailment or equipment damage. Therefore, safety first is the main principle of train operation organization. So it is necessary to integrate the concept of safety to teaching process in class.

(2) More Abstract Theory

Most of the theory in the course is abstract, such as train block system, train diagram, train control mode, train route and train operation adjustment etc. The point is to make the abstract knowledge discrete and interesting.

(3) Task Needs Cooperation

Most of the tasks in urban rail transit operation need cooperation. So teaching content is broken down into multiple tasks. Each task needs cooperation of different positions.

(4) Practical Training Needed

Only theoretical study is not enough. Theory must be combined with practice. Theory is the foundation of practice and practice is the application of theory. Therefore adequate practical training is necessary.

3. Optimized Teaching Strategies

In the process of teaching, we should innovate the traditional teaching methods, integrate the development concept of the current era into the teaching
process, and effectively improve the practical operation ability and innovation ability of students\[1\]. There are many teaching methods that the teacher can choose from. In order to solve the problems existing in college urban rail transit traffic organization course education teaching and realize the comprehensive cultivation of College Students, this paper puts forward a series of effective optimization strategies. Modern teaching methods include lecture method, audio-visual object teaching method, discussion method, exercise method, independence study method, case analysis, on-the-spot teaching etc. In the current teaching process of urban rail transit traffic organization major, a large part of schools are lack of practical courses, such as the lack of dual teacher professional teachers, the lack of practice base\[2\].

By a comparison between the traditional teaching method and the optimized one, different methods were applied to different classes for different items. One class was chosen as the control group while the other the experimental group. Traditional methods were applied to the control group and optimized methods were applied to the experimental group. Afterwards, an examination of theory and operation was designed to test the learning effect. The results are as follows.

| Tasks               | control group | score | experimental group                              | score |
|---------------------|---------------|-------|------------------------------------------------|-------|
| Train Block System  | lecture method| 73    | lecture method audio-visual object teaching method | 92    |
| Train Diagram       | lecture method| 65    | lecture method audio-visual object teaching method discussion method exercise method | 86    |
| Train Control Mode  | lecture method| 78    | lecture method on-the-spot teaching             | 90    |
| Train Route         | lecture method| 72    | lecture method audio-visual object teaching method exercise method | 88    |
| Train Operation Adjustment | lecture method| 68    | lecture method case analysis                    | 89    |
| Fault Handling      | lecture method| 70    | lecture method on-the-spot teaching situational teaching | 94    |

Optimized teaching methods are a series of effective training between teachers and students, and the monitoring of students’ performance\[3\]. From the results, we
can draw conclusions that optimized methods are obvious. Lecture method is a traditional teaching method and it is necessary in teaching process. But it is not effective enough as for its lack of direct experience.

Audio-visual object teaching method is an effective auxiliary teaching method because of its strong visuality which can make complicated things simple and make abstract things concrete. Multimedia techniques make this teaching method friendly, more vivid and vigorous. Therefore, audio-visual object teaching method is available to most of the tasks in urban rail transit traffic organization course.

Train diagram is difficult point in the course of urban rail transit traffic organization. Train diagram is abstract to read. However, one of the instructional objectives of the course is to make the students be proficient in reading and drawing train diagram. The audio-visual object teaching method was applied to make the abstract knowledge interesting and give a visual representation. In order to give more chance to the students to participate in the lessons, discussion method and exercise method were applied. More time was especially allocated to drawing exercises, from simple drawing tasks to more difficult drawing tasks, from hand drawing to computer drawing. The average score of experimental group students is 86 which is ideal.

Train control mode is important in the course of urban rail transit traffic organization. However, it is difficult to imagine except for seeing the real scene. So on-the-spot teaching method was applied besides the lecture method. By means of demonstration to the students the scenes of train operation during three train control modes, the knowledge became understandability.

Train route arrangement is the key capacity point which is also difficult to imagine. The audio-visual object teaching method was used to demonstrate the meaning and phenomenon of train route. Exercise method was applied since the students had a preliminary understood. Simple and complicated tasks were arranged to make the students master the rule and matters need attention.

Late of train is common and train operation adjustment is often required. There are many train operation adjustment strategies. The key point is how to choose the appropriate strategy. Firstly, lecture method was used to explain each train operation adjustment method. Secondly, teaching method of case analysis was applied to give the students more chance to think and exercise.

Safety is emphasized in urban rail transit. So fault handling is the core competence what the employer regard as important. Lecture method was used to explain the theoretical knowledge. On-the-spot teaching method was applied to practice the basic operation of equipment failure. At last, situational tasks
of different kinds of faults were made for the group to practice, i.e. situational teaching. The average score of experimental group students is 87, which is a great improvement of the control group.

4. Concluding Remarks

To sum up, there is not only very professional subject knowledge, but also teacher-student interaction from subject content\[^4\]. Based on the characteristics of vocational college students and course feature of urban rail transit traffic organization, optimized teaching strategies such as audio-visual object teaching method, discussion method, exercise method, on-the-spot teaching and situational teaching were applied to different tasks. Compared to traditional lecture method, there was a definite improvement and the test score changes from 70 to 90. That is to say, adaptable teaching method plays an important role in teaching. This paper gives advice or example for teaching of urban rail transit traffic organization. The mastery of those modern teaching methods is indispensable for professional teachers and it can definitely help improve students’ comprehensive quality.

Works Cited

[1] Zhao Baiyun. Talking about the Teaching Reform and Breakthrough of Environmental Art Design Major: Taking Graduation Design as an Example. Intelligence, 2019 (24): 19.
[2] Linlin Lun. Discussion on Teaching Key Points of Architectural Indoor and Outdoor Environment Art Design. International Journal of Social Sciences in Universities, 2019,2(3):51-53.
[3] Zhang Shan, “Problem analysis and optimization strategy of stratified teaching mode of college physical education”, Tomorrow Fashion, 2017 (9).
[4] Wenyu Chen. Discussion on Optimizing Strategies of College Physical Education Classroom Teaching and Training. International Journal of Social Sciences in Universities, 2019,2(3):62-64.