



The Application of Practice-Learn-Think-Expand Model of Competence Training in Secondary Vocational Schools

Lu Wang¹ and Tian Zhang²(✉)

¹ School of Information Science and Engineering, Shandong Normal University, Jinan, China

² School of Information Science and Engineering, Shandong Management University, Jinan,

China

tianzhang@sdmu.edu.cn

Abstract. Traditional teaching methods no longer meet the learning needs of students in secondary vocational schools, which can lead to poor interest and ineffective teaching. In order to explore new teaching methods to effectively improve students' interest in learning and the quality of teaching, a semester of teaching reform was carried out in a secondary vocational school. Through teaching practice, we can found that the new model can help improve students' interest in learning and vocational skills. This paper discusses how to apply the new model of competency training to teaching practice and the effects of applying this model to teaching practice.

Keywords: secondary schools · educational practice · model innovation

1 Introduction

Since entering the 21 century, the rapid development of information technology has led to the upgrading of industries and the rapid adjustment of economic development, which also means that all walks of life need to train a number of new types of technical personnel. Due to the late start and slow development of vocational and technical education in China, and the fact that it has been in a state of imbalance during its long history of development, the talents currently trained in secondary vocational and technical schools can hardly meet the expected goals [1]. Aware of the real impact of this problem, China has begun to pay attention to and develop a series of policies to help promote the standardisation and modernisation of vocational education [2]. In 2014 the Ministry of Education issued the Opinions on the Fundamental Issue of Comprehensively Deepening Curriculum Reform and Implementing Moral Education, clearly stating that following the educational philosophy of ability-oriented and all-round development and high quality skilled talents are the training objectives of secondary vocational schools [3]. In 2019 the State Council issued the National Vocational Education Reform Implementation Plan which also called VET 20, which pointed out that vocational education and general

education are two different types of education with equal importance [4], in 2020 the Ministry of Education and other nine departments in jointly issued the Action Plan on how to improve the quality of vocational education and value-added empowerment [5], this initiative means that China's vocational education reform has made the transition from how to think to how to do it. Since the 1980s, secondary vocational schools have played the role of the foundation and starting point of the vocational education system, training a large number of junior professional and skilled personnel for the country [6], and now with the support of national policies vocational education reform will usher in a new development peak as a major component of the education system reform.

However, most secondary vocational schools still adopt the traditional lecture method in classroom teaching, where teachers are the transmitters of knowledge and students are the passive recipients of knowledge, and students cannot practise what they have learnt in a timely and effective manner. In addition, students in secondary vocational schools have a weak knowledge base and low interest in learning, making it difficult for them to devote themselves to classroom learning, resulting in difficulty in mastering classroom knowledge and poor learning outcomes. In order to further enhance the effectiveness of teaching in secondary vocational and technical schools, the existing teaching methods need to be reformed in order to develop a new teaching model suitable for secondary vocational school students.

2 Practice-Learn-Think-Expand Model of Competence Training

The Practice-Learn-Think-Expand model of competency training is a set of student-centred, career-centred, teaching-learning-based competency training model proposed by the Sichuan Institute of Chemical Technology. The meaning of each part of the model is: practice refers to students operate and practice repeatedly under the guidance of the teacher to master knowledge in practice; learning refers to students learn independently and master the key points of knowledge under the guidance of the teacher. Thinking means to use the brain to think, students make associations and think through practical activities and teaching examples provided by the teacher; expanding means to expand after thinking, it is the transfer and application of knowledge, and it helps students to be able to apply what they have learned in future learning and life [7]. A brief overview of the modules is shown in Fig. 1.

3 Implementation of the Practice-Learn-Think-Expand Model of Competence Training

3.1 Follow the Standards of the Post Course and Competition Certificate to Help Students Master the Professional Knowledge

In the teaching implementation process, the points of knowledge in the post, skills competition and 1 + x certificate are analysed, and the course content is split, integrated and optimised through teachers' collective lesson preparation and teaching research, and a combination of online and offline teaching modes is used to mobilise students' enthusiasm and participation in learning and to promote students' ability to think and solve problems.

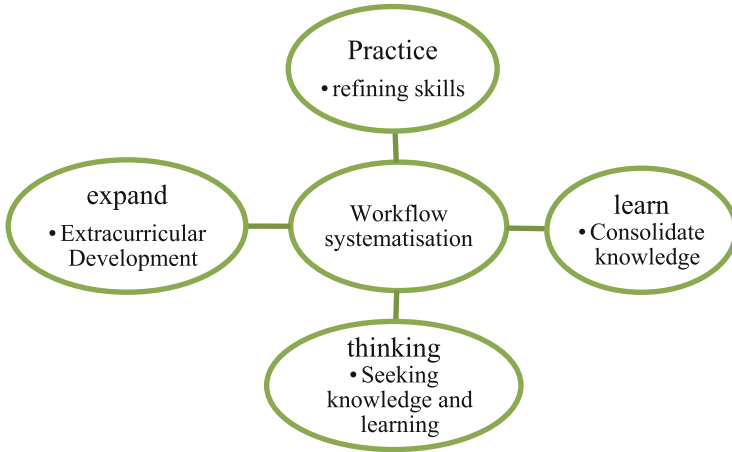


Fig. 1. Diagrammatic representation of Practice-Learn-Think-Expand training model of competence training

3.2 The Curriculum is Reconstructed Based on the Concept of Workflow Systematisation

Combined with the training mode of practicing and learning, the teaching projects used in the teaching process are open practical training projects designed to take into account the integration of industry and education and follow the work pattern of the industry. In the teaching and learning implementation process, emphasis is placed on the perfect connection between knowledge and ability to promote the comprehensive ability of students. The classroom participation mode in which students can learn while doing and direct themselves mobilises learning enthusiasm, opens up students’ horizons, improves their overall ability and ultimately enables students to form their own creative thoughts and ideas, make works with soul and truly feel happy learning like I am in charge of my own learning.

3.3 Use Information Technology to Solve Important and Difficult Problems

The way in which technical difficulties are dealt with by means of information technology is shown in Fig. 2. We can understand this as: Before class, students receive tasks from the Smart Campus platform and upload them after completion. During class, the electronic classroom system, practical training software and videos are used to solve key points and break through difficult points through independent inquiry, group cooperation and teacher-student interaction, so as to promote students’ mastery of knowledge. After class, knowledge quizzes and task collection are completed through the Smart Campus platform and web application platform to consolidate what they have learnt, and teachers check students’ learning. Teachers can view students’ tasks through the Smart Campus platform, generate activity reports and analyse students’ learning engagement and knowledge mastery.

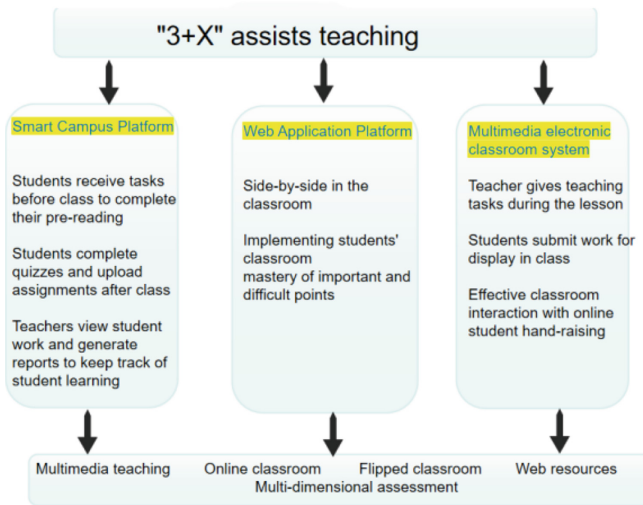


Fig. 2. Teaching process with the help of IT tools.

4 Course Design of the Practice-Learn-Think-Expand Model of Competence Training

5 Advantages of the Practice-Learn-Think-Expand Model of Competence Training

5.1 The Process of Teaching Focuses on Matching Jobs and Reflecting Professionalism

The secondary development of the teaching materials was carried out through visits to enterprises and research of graduates by the team of teachers. Based on the systematization of the work process, the teaching materials have been reconstructed, from the progression of basic operations to the production of several parallel projects, so that students' simple step by step operations are transformed into comprehensive technical applications, which improves students' job matching ability and also meets the requirements of the training objectives of secondary vocational school students.

5.2 Optimize the Teacher Team to Reflect the Advanced, the Teacher Structure Is Scientific and Reasonable

The teaching team is not only limited to lecturers with strong theoretical knowledge, but also a large number of practical and innovative talents, both front line talents with many years of working experience and technically competent people who have been deeply involved in the relevant professional fields for many years, building a number of dual-teacher teaching teams with excellent professional knowledge and educational skills and strong practical operation guidance ability.

Table 1. Lesson plans in the Practice-Learn-Think-Expand model of competence training, taking scriptwriting as an example

Teaching Objectives	Knowledge Objectives	a. Learn the elements of scriptwriting b. Learn the criteria for a good script
	Competence Objectives	a. Apply their knowledge of the elements of scriptwriting to produce a thematic script b. Apply the knowledge gained to revise and improve the quality of the script
	Quality Objectives	a. Raise awareness of the norms of scriptwriting and develop students craftsmanship for excellence b. Develop students' h sense of collaborative inquiry and enhance their ability to learn collaboratively c. Cultivate students' habit of paying attention to social hot news and enhance their comprehensive literacy
Teaching focus	Learning the elements of scriptwriting and completing a thematic script	
Teaching difficulties	revising and improving the script, designing the climax of the script and improving the quality of the script	
Teaching methods	Task-driven method, brainstorming method	
Teaching environment	Classrooms equipped with smart blackboards and touchable screens for both classroom text playback and online test result display Tablet for online interaction and voting	
Teaching resources	Questionnaire stars, PSA videos, case study videos, tablets, teaching platforms	
Teaching process		

5.3 Teaching Innovation, Reflecting the Scientific Nature

The project builds a learning path of workflow systematization and integration of practice, learning, thinking and development, combines school-enterprise cooperation enterprises, carries out integration of industry and education, conducts productive practical training, aims to cultivate comprehensive quality talents with a skill and meet the needs of enterprise positions, and uses customer demand to expand teaching resources and provide students with as many opportunities for practical exercise as possible.

6 Effects of the Practice-Learn-Think-Expand Training Model of Competence Training

At present, a secondary vocational school in Jinan has applied this mode of competency training in the practice of education. The school actively explored the multi-faceted teaching reform method of Practice-Learn-Think-Expand, and has received good feedback in practice. Students' attitudes towards this teaching model are shown in Fig. 3 and students' examination results are shown in Fig. 4. Through the application of this competency training model, not only the students' learning enthusiasm and classroom participation are mobilized, but also the students' ability to think and solve problems is improved. Along with the integrated learning path of Practice-Learn-Think-Expand, it has exercised the students' job abilities and made them shift from the operation of reading books to the enhancement of knowledge and action. Relying on open-ended projects, students' professionalism has been effectively enhanced, teachers and students have worked together to complete several projects with realistic significance. Students actively participate in various skill competitions and win awards. Up to now, more than 200 students have been awarded skills certificates related to their field of study, as shown in Fig. 5.

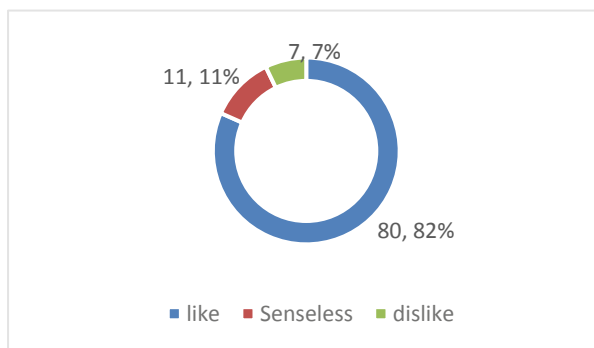


Fig. 3. Students' attitude towards new model of competence training

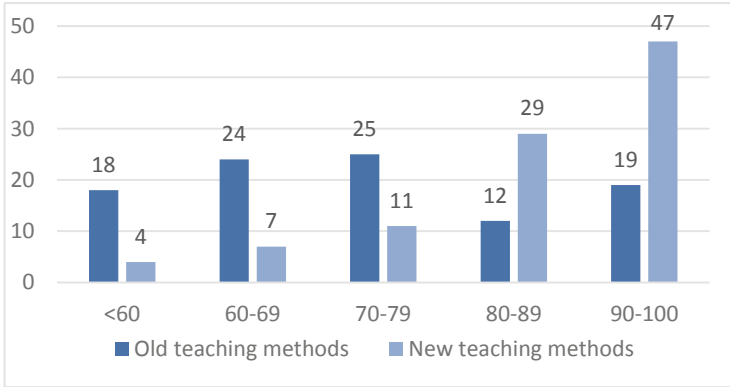


Fig. 4. Comparison of students' final exam results

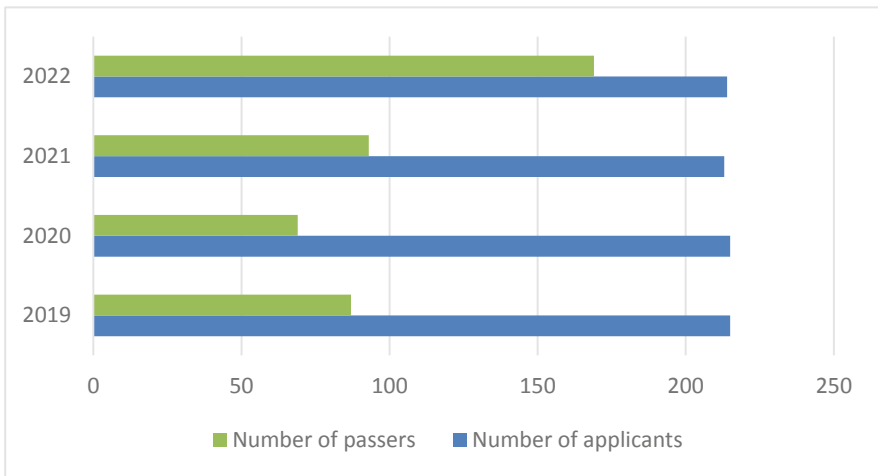


Fig. 5. Acquisition of skills certificates

7 Conclusions

This paper discusses matters related to the application of the new teaching model in teaching. Through the data from practice we can see that the model not only enhances students' enthusiasm for learning, but also develops their vocational skills, which is in line with the aims of teaching in vocational schools.

The limitations of this paper are that: the model has not yet been applied in practice on a large scale and there are relatively few sources to refer to when making adjustments to the model. In addition, some representative courses have been selected for teaching practice, but not all of them, which is a direction that needs to be further improved in future research.

References

1. Zhang Chengtao, Zhang Qiufeng. Opportunities, challenges and responses of agricultural vocational education in the context of rural revitalization[J]. *China Vocational and Technical Education*, 2019(03): 79-85.
2. Meng Yajie. Exploring the teaching reform practice of secondary schools based on the integration of industry and education [J] *Adult education*,2017,37(09):81-83.
3. Ministry of Education. Opinions of the Ministry of Education on Comprehensively Deepening Curriculum Reform and Implementing the Fundamental Task of Establishing Moral Education [EB/OL]. 2014-03-30.
4. Ministry of Education and other nine departments. Ministry of Education and other nine departments on the issuance of the Action Plan for the Improvement of Quality and Excellence of Vocational Education (2020–2023) [EB/OL].
5. Feng Hua. Forty years of development of secondary vocational education: moving forward through repetition[J]. *China Vocational and Technical Education*, 2018(07):47-54. 2020-09-29
6. State Council. Notice of the State Council on the Issuance of the National Implementation Plan for Vocational Education Reform [EB/OL]. http://www.gov.cn/zhengcecontent/2019-02/13/content_5365341.htm. 2019-02-13.
7. Liu Wen, Xie Shuanghua, Zhao Weiyi. Exploration and promotion of the innovative “practice-learn-think-expand” ability training model[J]. *Educational Teaching Forum*, 2017, (19):161-162.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

