

Original Research Article

Research on the construction of "dual-teacher" team for mathematics in vocational colleges under the context of "course, practice, competition, certificate" integration

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Abstract: In China, vocational colleges annually produce a large number of technical talents for the society. However, due to the rapid development of society and the changes in various industries, the requirements for talents have become increasingly higher. Under such circumstances, the educational concept of "job, course, competition, certificate" has attracted people's attention, achieving the integration of job requirements, curriculum system, skills competition and vocational certificates, ensuring the cultivation of talents suitable for the development of the industry. This article explores the construction of "dual-qualified" teachers in vocational colleges under the context of the integration of "job, course, competition, certificate".

Keywords: "job-lesson-skill competition-credential"; vocational colleges; "dual-qualified"; teacher team

1. Introduction

Mathematics is an important course in vocational colleges. Besides cultivating students' thinking ability and calculation ability, it also lays a solid foundation for future careers in related fields. Under the background of integrating "job, course, competition, certificate", vocational colleges should accelerate the construction of "dual-qualified" teaching teams, effectively enhance teachers' comprehensive qualities, and ensure they meet the requirements of educational reform. By building "dual-qualified" teaching teams, not only can the quality of mathematics teaching be guaranteed, but the level of talent cultivation can also be improved.

2. "Job, course, competition, certificate" concept

"The Position-Work-Competence-Certification" is a new concept that has emerged relatively recently and has gradually become a hot topic in higher vocational schools. When interpreting this concept, "Position" refers to a job position. It requires students to study based on the needs of the position and gain an understanding of the corresponding job positions in their major. However, due to the differences among various occupations, there are different requirements for the knowledge and skills of talents. Under such circumstances, starting from the concept of "Position-Work-Competence-Certification" can ensure the accuracy of the curriculum setting in vocational education. "Course" refers to the curriculum system, including public basic courses and professional courses, which impart knowledge and skills to students. When establishing the curriculum system, it is necessary to consider the job requirements, integrate the knowledge and skills needed by the positions, and form a complete curriculum structure. "Competition" refers to skill competitions, which play a certain role in course teaching, including various types of vocational skills competitions, which point out the direction for teaching reform. Skill competitions can not only test students' learning outcomes but also broaden their horizons, allowing them to come into contact with the cutting-edge technologies and concepts in the industry. "Certificate" refers to vocational certificates, including vocational qualification certificates and vocational skill level certificates, which are very important for entering the position. When students obtain vocational certificates, it indicates that they have certain vocational abilities and can enhance their employment competitiveness. The integrated development of "Job, Course, Competition, Certificate" integrates the relevant standards and contents of these four aspects, achieving the establishment of courses based on positions, promoting courses through competitions, integrating certificates with courses, and educating through courses, cultivating high-quality technical and skilled talents

suitable for modern society.

3. The significance of building a "dual-teacher" team for mathematics education in vocational colleges under the context of "position-subject-competence-certificate" integration

3.1. Enhancing mathematics teaching quality

Under the concept of integrating "position, course, competition and certificate", we cannot adhere to the previous teaching philosophy of "dual-qualified teachers" in vocational schools. Instead, we should integrate the entire position, course, competition and certificate together. On this basis, we should be bold enough to break through the constraints of current textbook content and teaching methods, and strive to improve the quality of mathematics teaching. In traditional mathematics teaching, most of the teacher's time is spent explaining theoretical knowledge from textbooks to students on the podium, without allowing students to apply the knowledge they have learned. This easily makes students feel boring and uninteresting. The "Dual-Teacher" team has rich industry experience and will understand the requirements of various job positions for mathematics knowledge and skills, thus ensuring the rationality of teaching content and teaching methods. For example, teachers will introduce job-related cases into the classroom, combine abstract mathematical knowledge with professional scenarios, making the teaching content more vivid and practical. In terms of teaching methods, the "Dual-Teacher" team can also adopt various teaching methods based on students' characteristics, thereby improving teaching effectiveness. Teachers will use project-based teaching, case-based teaching, and other teaching methods to guide students to actively learn and cultivate their autonomous learning ability, teamwork ability, etc. For example, in project-based teaching, students are required to independently collect materials, analyze problems, etc. Through such teaching methods, students can not only effectively master mathematical knowledge and skills but also improve their comprehensive application ability^[1].

3.2. Promoting students' all-round development

The mathematics course holds a significant position in vocational schools. After studying, students not only acquire mathematical knowledge and skills but also lay a foundation for their future careers. "Dual-qualified" teachers will change traditional concepts, enabling students to apply their knowledge of mathematics to solve practical problems, thereby enhancing their mathematical application abilities. In mathematics classes, teachers will introduce some real-life cases for students to analyze and solve, allowing students to gradually master the skills of applying mathematical knowledge to handle practical problems. This teaching method enables students to apply mathematical knowledge in practice, not only deepening their understanding of the knowledge but also stimulating their interest in learning and making them realize the practicality of mathematics. In addition to improving students' mathematical application ability, "dual-qualified" teachers also focus on cultivating students' professional qualities. During teaching, teachers will integrate industry professional norms, professional ethics, etc. into the teaching content, guiding students to establish correct professional concepts and attitudes. Through the analysis of actual cases and simulation of working scenarios, students can understand the working process of the industry and cultivate their professional awareness. By adopting this teaching method, students can acquire good professional qualities while learning mathematical knowledge, preparing them for future job positions.

4. Strategies for the construction of "dual-teacher" team in vocational colleges based on the integration of "position, course, competition, and certificate"

4.1. Establish a complete training system

To build a team of "dual-teacher" in mathematics, vocational colleges need to establish a complete training system to provide strong support for teachers' professional development. Under the arrangement of the college, teachers are regularly sent to enterprises for practical training, which helps to enhance their practical abilities. In the enterprise environment, teachers can directly participate in actual projects, understand the latest technologies and work processes of the industry, and understand the demands of the position for mathematical knowledge and skills. At the same time, the college should also encourage teachers to participate in various industry training,

academic seminars, etc., which will be helpful for the improvement of teachers' professional capabilities. Among them, industry training enables teachers to gain an understanding of the latest developments and trends in the industry, as well as learn the latest technologies and concepts. Academic seminars provide teachers with opportunities to communicate and learn with their peers. Teachers can share their teaching experiences and insights with each other. For example, a mathematics teacher participates in a training course on the application of mathematical modeling in the industry, learning how to use mathematical models to solve practical problems; and attends a mathematics education academic seminar, where they discuss the innovation of teaching methods in mathematics and enhance their teaching skills^[2].

4.2. Emphasize school-enterprise cooperation

Through school-enterprise cooperation, it is an important way to achieve the integration of "job, course, competition, and certificate", and to cultivate "dual-qualified" mathematics teachers. Vocational colleges should establish cooperative relationships with enterprises, providing practical platforms for teachers, and effectively utilizing enterprise resources to achieve the organic combination of teaching and practice. Schools can sign cooperation agreements with enterprises and establish long-term and stable cooperative relationships. Through cooperation, schools can allow teachers to go to enterprises for training, participate in actual projects and production processes. Enterprises will provide practical positions for teachers and help them enhance practical abilities. For example, a vocational college established a cooperative relationship with a software development enterprise and sent a mathematics teacher to participate in the development of software projects. During the project implementation, the teacher used mathematical algorithms to solve data processing and optimization problems in the software. Through cooperation with enterprise personnel, the teacher not only mastered the application of mathematical knowledge in software development but also understood the project management process of the enterprise. In addition, schools can also have technical experts and senior personnel from enterprises come to the school as part-time teachers to teach students. These enterprise personnel have rich practical experience and can introduce case studies from their work into the classroom, making the teaching content more closely related to reality. At the same time, enterprise personnel can also provide guidance to college mathematics teachers, guiding them to understand industry demands and improve practical teaching abilities.

4.3. Optimizing the teacher evaluation system

The traditional teacher evaluation only focuses on teaching and research achievements. However, in the context of the integration of "position, course, competition, certificate", it is no longer sufficient to meet the new requirements. In order to adapt to the current demand of the integrated "position, course, competition, certificate" background, we should promote the innovation of the teacher evaluation mechanism, change the previous single teaching evaluation method, and adopt a new way that integrates teaching, practice, competition, and certificates organically, to promote teachers to comprehensively enhance their overall abilities. In terms of teaching evaluation, in addition to observing the classroom teaching effect of teachers, attention should also be paid to the innovation of teaching methods and the achievement of teaching effects. Practical ability is one of the important abilities of "dual-qualified" mathematics teachers, and it should occupy an important position in the evaluation system. The evaluation of teachers' practical ability can be conducted by examining their enterprise practice experience, participation in enterprise projects, etc. The ability to guide competitions is also an important indicator for evaluating "dual-qualified" mathematics teachers. Teachers guiding students to participate in various skills competitions can not only enhance students' practical ability, innovation ability, etc., but also demonstrate the teacher's professional level. Therefore, the results of teachers guiding students in competitions and the quality of competition projects should be included in the evaluation system. Professional certificates can reflect teachers' professional capabilities. Obtaining relevant professional certificates indicates that teachers possess industry knowledge and skills. In the evaluation system, teachers can obtain professional certificates related to mathematical applications, such as registered data analysts, mathematical modeling engineers, etc., and these can be used as important indicators for evaluating teachers^[3].

4.4. Strengthening the construction of the teaching team

Carrying out team-based work is beneficial for enabling every teacher to participate in it, fully leveraging

their own strengths, and better promoting the integrated teaching practice of "position, course, competition, certificate", thus creating a team of "dual-qualified" mathematics teachers. When forming the team, the school can make combinations based on different factors such as teachers' specialties, experience and abilities, allowing each teacher to achieve the best results through complementary approaches. If teachers with rich knowledge of mathematical theories and those with practical experience in enterprises are combined and work together to develop courses. At the same time, enterprise technical personnel can also be invited to join the teaching team to provide industry practice guidance. The teaching team can jointly carry out the course construction work, and further optimize the course system and teaching content in accordance with the requirements of "job, course, competition, certificate" integration. For example, team members can jointly study job requirements, professional standards, etc., and integrate relevant mathematical knowledge and skills into the courses, and write practical textbooks. During teaching, team members can work collaboratively and everyone can complete the teaching tasks.

5. Conclusion

In conclusion, after the integration of "job training, courses, competitions, and certificates", vocational colleges must strengthen the construction of "dual-qualified" teaching staff. This is of great significance for improving teaching quality and the all-round development of students. In the process of further reform of vocational education in the future, new requirements will be imposed on teachers. Therefore, in order to achieve the sustainable development of vocational education, a high-quality "dual-qualified" teaching staff must be established.

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