

Research on the Application of Constructivism Learning Theory in Higher Vocational Math Teaching

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Abstract: Constructivist learning theory emphasizes the transformation of traditional teaching thinking, with students as the main body of cognition, and teachers are mainly responsible for guiding students to actively construct knowledge awareness. In this teaching process, the learning process of students is not only simple information reception, extraction, processing, etc., but also the interaction of new and old learning experiences to form a corresponding knowledge system. As a compulsory basic subject in higher vocational teaching, mathematics is centered on the requirements of higher vocational professional reform to meet the needs of higher vocational career development under the current situation. Therefore, the application of constructivist learning theory in higher vocational mathematics teaching should clarify the constructivist learning theory and teaching characteristics, explore the constructivist learning theory in higher vocational mathematics teaching design plans, and analyze its teaching considerations in combination with teaching effects to further improve higher vocational Mathematics teaching classroom effect.

1. Introduction

The “National Medium and Long-term Educational Reform and Development Plan (2010-2020)” clearly stated that we should actively promote the innovation and reform of the education system, deepen the school-enterprise cooperation model, promote the integration of work and study, and promote higher vocational schools to embark on a path of characteristic development. Improve the quality of higher vocational education and enhance its ability to serve economic and social development. Mathematics is a compulsory basic subject in higher vocational education and an important tool course in higher vocational education. Mathematics is a subject about the relationship between spatial form and quantity. It is the basis of science and technology knowledge, and it is also human culture. One of the important contents shows the importance of mathematics in higher vocational teaching. Mathematics is a way of thinking. Students can exercise their thinking through the study of mathematics subjects, especially with the continuous deepening of Internet applications, making mathematical thinking more and more closely related to people's life and learning. In the process of higher vocational teaching, the goal of mathematics subject teaching is to cultivate students' training generalization and summary skills through the study of mathematics subjects, and at the same time improve students' logical thinking ability, so that they can apply the mathematical knowledge they have learned. Solving problems in real life. Therefore, in the context of the continuous deepening of higher vocational teaching reform, new requirements have been put forward for the construction and teaching of higher vocational mathematics. It should follow “application as the purpose, necessity and sufficiency as the degree” and adhere to the employment-oriented. Paying attention to cultivating students' skills, so that the reform of mathematics teaching in many aspects is the key to promoting students' knowledge and skills growth.

2. Constructivist Learning Theory and Teaching Characteristics

Constructivist learning theory puts forward a clear teaching point of view, centering on “learning in problem solving”, designing teaching links based on the knowledge of textbooks, especially simulation teaching around a certain professional real work scene, which is out of the traditional

teaching mode Shackles, stimulate students' interest in learning. Constructivist learning theory includes many elements, such as context, meaning construction, innovation, communication, writing, selection, search, etc. Therefore, teachers should pay attention to the following matters in applied engineering.

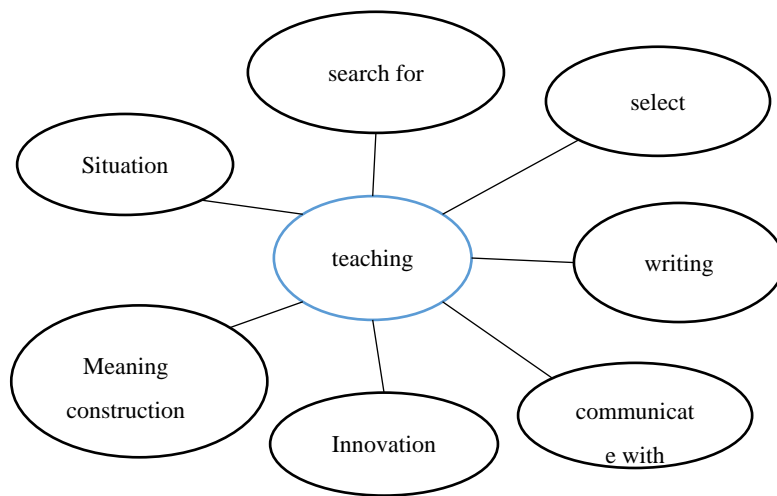


Fig.1 Constructivist Learning Theory

The first is to design scenarios based on real scenes. Teachers fully understand the needs of students for future career development in the pre-investigation work, carry out classroom teaching design, and reasonably connect real life with students' classroom learning, and teachers guide students through detailed explanations. Seek independent solutions to problems. In this process, teachers can fully mobilize students' interest in learning through scenario design, cultivate students' innovative and exploratory spirit, and improve classroom teaching effects.

The second is to attach importance to the learning experience of students. The learning of mathematics subjects is not just about tools. It also pays attention to the learning experience of students. Only when students have a unique learning experience, can they truly feel the joy of learning and truly like mathematics subjects. Learn. In the process of constructivist teaching, teachers should share unique feelings with students, pay attention to individual differences and learning experience, so that students can form unique insights.

The third is to emphasize meaning construction. In the teaching process, teachers should pay attention to guiding students to use the existing knowledge, solve the problems they face, apply the knowledge they have learned in practice, construct new knowledge in the process, and carry out learning and practice, and pass professional knowledge through "Internalization-externalization-practicalization-application", and finally complete the construction of knowledge. In the teaching process of mathematics, students form background experience, feel the characteristics of mathematics knowledge, and construct a knowledge system that they can use proficiently.

3. The Application of Constructivist Learning Theory in Higher Vocational Mathematics Teaching

3.1 Creation of Teaching Situation

The main purpose of creating a teaching situation is to enhance the effect of classroom teaching. Teachers can use multimedia teaching tools to create some specific situations purposefully, so as to make the classroom more vivid and image, and guide students to introduce the teaching situation to experience personally. Expand students' learning thinking and deepen students' learning cognition. As shown in Table 2, create a teaching situation, "Line and Circle":

Table 2 Cases of Creating Teaching Situations-Straight Lines and Circles

Situational design	plan for design
Play related videos through multimedia, such as the circular hole under the square opening on the plank road in the special CCTV program “The Difficulty of Shu Road”, what purpose is it, and what meaning it expresses	Guide students to focus through videos and arouse interest in the content of this course
After the broadcast, students are allowed to discuss freely on the video content, express their opinions and ask questions	Ask questions, stimulate students to think, explore thinking
Teachers guide students to find answers	Connect students with professional knowledge
Use teaching PPT to show common lines and circles in life	Lead to the teaching focus of this section of the classroom
Discuss with students the application stories of straight lines and circular graphics, incorporate professional knowledge, and let students feel that knowledge is around	Create a context for the construction of professional knowledge

Through the creation of the above teaching scenarios, students can fully understand professional knowledge to solve practical problems in the application stories of straight lines and circular graphics, conduct mutual discussions and analysis with students, guide students to summarize knowledge and classify, pay attention to life, so that students can learn The feelings have a deeper sense of reality and grasp the autonomy of learning.

3.2 Group Cooperative Learning

In the process of mathematics teaching in higher vocational colleges, teachers can group reasonably according to classroom needs, carry out group cooperative learning, and fully apply the knowledge of social psychology to the teaching of mathematics, so that students can realize the importance of interpersonal communication for the improvement of learning. At the same time, teachers can also learn about students' personalities, their own learning strengths and deficiencies through group cooperative learning, allowing students to actively seek knowledge through experiential learning, and to make up for deficiencies and enhance students' learning through exchanges and discussions with other students effectiveness.

3.3 Life Experience

In the process of mathematics teaching in higher vocational colleges, students should be guided to pay attention to life experience, through the problem-solving of daily life, extend to the professional knowledge of mathematics, which forms knowledge and skills, thus completes the construction of professional knowledge, and enhances students' independent learning ability . In the students' life experience, the understanding of life situations should be strengthened. Through actual cases in daily life and production, students' learning experience should be enlightened and the social value of mathematics should be truly recognized.

3.4 Self-Built

In higher vocational mathematics teaching, self-construction is emphasized, students are the center of classroom learning, and students are regarded as the whole of cognition and become active constructors of knowledge meaning. In this process, teachers mainly play the role of guidance and promotion, strengthen students' meaning construction, conduct independent learning, and enhance their own learning effects. In the teaching of higher vocational mathematics subjects, teachers can rationally design one or several specific tasks according to the knowledge content of the textbooks, so that students can improve their practical ability in the completion of continuous learning tasks, strengthen their action decision thinking, and train students The ability of summarizing and summarizing, really familiar with the professional knowledge of mathematics.

3.5 Behavior Orientation

In the context of higher vocational teaching reform, teachers should establish a mathematics teaching model that is conducive to independent learning of students based on the characteristics of

mathematics subjects, and guide students' learning process through behavior orientation. Normally, teachers can design learning tasks around a certain topic, and guide students to conduct independent learning, thinking and exploration, etc., to cultivate students' comprehensive ability. And through behavior orientation, the entire teaching activities and student learning results are evaluated. In this process, teachers should pay attention to encouraging evaluation of students, fully affirm student learning, and promote students to build confidence in mathematics learning.

4. Precautions for Constructivist Learning Theory in Higher Vocational Mathematics Teaching

4.1 The Application of Constructivist Learning Theory Should Be Critically Inherited

Constructivist learning theory is applied in higher vocational mathematics teaching. It cannot simply copy foreign teaching experience, but uses a critical inheritance attitude to rationally use mathematics teaching methods. In higher vocational mathematics teaching, teachers should give full consideration to the teaching characteristics and learning interests of the school and students. They should not copy the thinking of constructivist learning theory, should not emphasize problem solving, and ignore the learning of basic knowledge and skills. The subjectivity denies the leading role of teachers. Therefore, in the process of higher vocational teaching, teachers use constructivist learning theory to guide teaching, and they should grasp the relationship between criticism and inheritance, and reasonably control teaching design.

4.2 The Guiding Role of Teachers Cannot Be Ignored

The application of constructivist learning theory in higher vocational mathematics teaching should not blindly ignore the guiding role of teachers, but should guide students to actively construct the meaning of knowledge through the use of various teaching tools and methods. In this process, teachers should pay attention to the autonomy of students' learning, but it does not mean that the teacher's guiding role is invalid. On the contrary, it emphasizes the scientific and reasonable guidance of teachers. Therefore, in the process of higher vocational teaching, teachers should give full play to their guiding role, rationally guide students to conduct autonomous learning, stimulate students' interest in learning, and enhance students' autonomous learning ability.

4.3 Innovation and Introduction of Diversified Teaching Models

In higher vocational mathematics teaching, diversified teaching models should be innovatively introduced, and constructivist learning theory should be fully used. According to the actual learning needs of students and the knowledge points of classroom learning, multiple teaching methods should be used in a coordinated and reasonable manner. The teacher method can also be used in teaching in a reasonable combination of two or more teaching methods to further enhance the teaching effect and efficiency of math classrooms.

4.4 Incorporate Mathematical Modeling Ideas into the Teaching Process

In the process of applying constructivist learning theory in higher vocational mathematics teaching, attention should be paid to integrating mathematical modeling ideas into the teaching process, so that students can make full use of their own professional mathematical knowledge, solve practical problems they face, and train students' mathematics Application ability and innovation ability. The integration of mathematical modeling ideas into the teaching process enables students not only to feel the meaning of mathematical learning, but also through participation in mathematical modeling and self-practice, students can truly feel the benefits of mathematical knowledge to solve problems, and enable students to truly understand the importance of mathematical subjects. At the same time, mathematical modeling is also a manifestation of the application of constructivist learning theory, emphasizing the subjectivity of students in learning and connecting with actual life situations. Through group cooperative learning, students can cultivate their sense of unity and cooperation.

5. Conclusion

To sum up, under the background of teaching reform, the introduction of new teaching concepts in higher vocational mathematics teaching has become the general trend. Choosing appropriate teaching theories should be combined with higher vocational teaching characteristics to promote students to develop higher education Math knowledge and skills. Therefore, the application of constructivist learning theory in higher vocational mathematics teaching should follow the principles and goals of teaching design, create suitable mathematics teaching situations, design independent learning activities, guide students to experience life, and construct mathematics teaching consciousness independently. Behavior-oriented, evaluating the actual teaching effect of mathematical constructivism. However, it is worth noting that constructivist learning theory should pay attention to critical inheritance in higher vocational mathematics teaching, and should not blindly ignore the guiding role of teachers. Innovatively introduce diversified teaching models, integrate mathematical modeling ideas into the teaching process, and further improve students' mathematics Use ability.

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