Practical Exploration of Craftsman Spirit into Mathematics Teaching in Vocational Colleges

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Abstract: craftsman spirit is not only an important part of Chinese excellent traditional culture, but also a model of modern professional ethics. Mathematics teachers in higher vocational colleges should actively infiltrate the spirit of craftsman, promote the deep integration of mathematics education and vocational education, cultivate students' meticulous and excellence learning attitude, and lay a good foundation for students' employment. Higher vocational mathematics teachers should be based on the employment orientation, excavate the craftsman spirit elements contained in the teaching materials, and stimulate students' interest in learning; Explore the relationship between professional courses, mathematics and craftsman spirit, and deepen students' understanding of craftsman spirit; Carry out teaching evaluation according to the craftsman spirit standard, and cultivate students' innovative spirit; Integrate relevant contents of mathematical modeling contest to cultivate students' craftsman spirit.

Key words: craftsman spirit; Higher vocational mathematics; Current teaching situation; Practice strategy

Introduction

Craftsman spirit refers to the professional attitude of craftsmen who carefully carve and improve each work, pursue the perfection of the work, and actively promote the integration of tradition and innovation. Mathematics is a rigorous discipline. It pursues the rigorous and accurate reasoning and calculation process, and the mathematical spirit of scientific rigor and seeking truth from facts. This is highly consistent with the craftsman spirit, which is conducive to cultivating the craftsman spirit of higher vocational students. Higher vocational mathematics teachers should give full play to the advantages of the course, excavate the material of craftsman spirit contained in different majors, integrate craftsman spirit into mathematics teaching, and improve the quality of mathematics education.

1. The dilemma of integrating craftsman spirit into higher vocational mathematics course

1. higher vocational mathematics teachers' understanding of craftsmanship is relatively shallow

With the proposal of the ideological and political concept of the curriculum, more and more mathematics teachers in higher vocational colleges began to infiltrate the craftsman spirit education, but they did not grasp the relationship between craftsman spirit and mathematics knowledge accurately, which affected the penetration of craftsman spirit in mathematics classroom. Some mathematics teachers only infiltrate the craftsman spirit into calculus, function and other problem-solving teaching, focusing on standardizing students' calculation process and checking students' recitation of mathematical formulas, ignoring the deeper cultural connotation of craftsman spirit, which affects students' understanding of craftsman spirit.

2. less integration of craftsman spirit and mathematical knowledge

Mathematics teachers in higher vocational colleges do not integrate craftsman spirit and knowledge, which leads to "two skins" between craftsman spirit and mathematics teaching, and affects the integration of craftsman spirit and mathematics teaching. For example, in the teaching of mathematical modeling, teachers pay more attention to the final modeling results of students, ignoring the standardization of students' modeling process and the cultivation of students' innovative thinking, resulting in students' lack of innovation, exploration and perseverance, which is not conducive to the cultivation of students' good mathematical habits.

3. students lack the learning attitude of keeping improving

Mathematics is a public course in higher vocational colleges, but the knowledge points are abstract and complex, and the learning is difficult, which leads to the serious polarization of students' mathematics performance and hits the students' mathematics learning confidence. Some students are busy copying advanced math notes and brushing math problems, and rarely take the initiative to read math books and understand mathematical modeling competitions, lacking the spirit of challenge and excellence. Some students' mathematical foundation is relatively weak and their mathematical thinking is relatively weak. They only pursue to get the pass score and lack the spirit of hard work and challenge.

2. The importance of craftsman spirit in mathematics teaching in Higher Vocational Colleges

1. it is conducive to improving the quality of talent training in Higher Vocational Colleges

Under the background of the new era, all walks of life are more in favor of craftsman talents, requiring employees to have the professionalism of being rigorous, down-to-earth, meticulous, unremitting and keeping improving. Higher vocational colleges should cultivate application-oriented talents, actively infiltrate the craftsman spirit, give full play to the advantages of mathematics, cultivate students' rigorous, serious and scientific learning attitude, urge them to carefully consider mathematical problem-solving methods, rigorously build mathematical models, cultivate students' craftsman spirit, help them grow into big country artisans in the professional field, and improve the quality of talent training in higher vocational colleges.

2. it is conducive to cultivating students' good mathematics learning habits

First of all, higher vocational mathematics teachers can collect the mathematical knowledge contained in professional courses, use micro courses to show the application of mathematical knowledge in mechanical design, auto repair entrepreneurship and economic management, and cultivate students' meticulous, persistent and rigorous learning habits. Secondly, teachers can standardize students' mathematical modeling process, guide students to use mathematical knowledge to build automobile models and mechanical parts models, urge students to standardize the calculation process, ensure the accuracy of modeling data, cultivate their learning attitude of excellence, and improve their craftsmanship.

3. it is conducive to improving the quality of mathematics teaching in Higher Vocational Colleges

Higher vocational mathematics teachers can use the craftsman spirit to activate the classroom, make the mathematics classroom more "human", create an immersive learning atmosphere, and stimulate students' interest in mathematics learning. For example, teachers can use the micro lecture to broadcast the clip of "great country craftsman", to show the craftsman spirit of great country artisans in the fields of machinery manufacturing, welding and new energy vehicles, such as keeping improving, loving and dedicated, and persisting, enrich mathematics teaching content, establish a new connection between craftsman spirit and mathematics teaching, encourage students to tap mathematical knowledge contained in professional courses, and stimulate their enthusiasm for autonomous learning, Improve the teaching quality of Higher Vocational Mathematics.

4. it is conducive to the implementation of the education concept of morality and talent cultivation

Craftsman spirit is an important part of Chinese excellent traditional culture, which provides rich materials for the ideological and political education of mathematics in higher vocational colleges, is conducive to the implementation of the education concept of moral education, and improves the moral sentiment of college students. Mathematics teachers in higher vocational colleges can take the craftsman spirit as a breakthrough, excavate the craftsman spirit materials contained in various majors, guide students to use mathematics knowledge to solve professional problems, require them to ensure the accuracy of data and models, and further cultivate students' mathematics learning habits of bold questioning, autonomous reasoning, scientific argumentation and meticulous.

3. Practical strategies of integrating craftsman spirit into mathematics teaching in Higher Vocational Colleges

1. Excavate the spirit of craftsman in teaching materials and penetrate the spirit of craftsman

When explaining the relevant knowledge of derivative calculation, teachers can collect the application cases of derivative in mechanical manufacturing, electrical engineering and economic management, so that students can experience the preciseness and wide application value of mathematics. First of all, mathematics teachers can excavate the craftsman spirit materials contained in the teaching materials, such as excavating classic examples in the teaching materials, so as to promote the deep integration of craftsman spirit and mathematics teaching. For example, teachers can collect the application cases of calculus in the calculation of spacecraft launch speed, carry out teaching in combination with the relevant data of China's Shenzhou 15, introduce the craftsman spirit of Chinese astronauts' perseverance, pursuit of perfection and excellence, encourage students to learn from aerospace heroes, and let them inherit and carry forward the craftsman spirit. Secondly, teachers can explain the application of derivative calculation in economic principles and SWOT analysis, connect mathematical knowledge with economic knowledge, infiltrate craftsman spirit, guide students to explore the mathematical knowledge and craftsman spirit contained in professional courses, and cultivate their spirit of scientific inquiry. For example, teachers can use the introduction of micro lecture presentation in the application of SWOT analysis of economics, list common calculation formulas and mathematical models, encourage students to independently infer the calculation and mathematical modeling process, standardize their formula writing, calculation process and modeling steps, encourage them to explore multiple solutions to a problem, and cultivate students' meticulous, rigorous, serious and thoughtful craftsman spirit.

2. organize mathematical practice activities according to the spirit standard of craftsman

Mathematics teachers in higher vocational colleges should organize comprehensive practical activities, strictly require students according to the craftsman spirit standard, standardize students' mathematics learning habits, and cultivate students' craftsman spirit. First, mathematics teachers in higher vocational colleges can organize a variety of mathematical practice activities, such as SAS software, LINGO software operation challenge competition, mathematics competition, etc., to encourage more students to participate in comprehensive mathematical practice activities, so that they can feel the craftsman spirit. For example, teachers can introduce the operation process of LINGO software, demonstrate the process of solving nonlinear programming problems with the software, and show relevant typical examples to encourage students to use lingo software to solve these problems. Teachers should comment on students according to the craftsman spirit of excellence, innovation, hard work and scientific inquiry, strictly regulate students' software operation process and calculation steps, and cultivate students' craftsman spirit of down-to-earth, dedicated research and excellence through practical activities. Second, teachers can incorporate the spirit of craftsmanship into the teaching evaluation system, encourage students to actively participate in the National Undergraduate Mathematical modeling competition, campus mathematical competition and other activities, give award-winning students certain credit awards, and create a strong atmosphere of mathematical research. Award winning students can first participate in the student cadre election and the selection of three good students, so as to cultivate students to be hard-working, dare to challengeThe spirit of perseverance and meticulous care makes the craftsman spirit take root in higher vocational mathematics classroom.

3. cultivate students' craftsman spirit based on Mathematical Modeling Contest

First of all, teachers can collect the topics of the National Undergraduate Mathematical Modeling Competition in recent years, lead students to analyze these topics, spread their problem-solving thinking, encourage them to explore multiple solutions to one problem, and cultivate students' spirit of diligent thinking and active innovation. For example, teachers can take the National Undergraduate Mathematical Modeling Contest as a mathematical assignment, encourage students to explore in groups, let them use computer software to build mathematical models, ensure the accuracy of mathematical calculations, and further temper students' craftsman awareness. Some teams first analyzed the competition topics, analyzed the key information and "trap information", listed the relevant mathematical formulas, and then imported these data into the modeling software to draw an accurate mathematical model, so as to further improve their enterprising, team cooperation and meticulous craftsman spirit. Secondly, higher vocational colleges can organize campus mathematical modeling competition, which can not only select excellent mathematical talents of the school, cultivate talents for the next year's national undergraduate mathematical modeling competition, but also create a good mathematical teaching atmosphere. For example, the school can organize mathematics teachers to write the topics of the campus mathematical modeling contest, test the students' abilities of mathematical model hypothesis, model establishment, reasoning and calculation and model verification, strictly regulate the behavior of the participating students, and cultivate their rigorous, serious and refined craftsman spirit.

4. collect artisan spirit news and expand mathematics teaching content

Higher vocational mathematics teachers can use new media and the Internet to collect the spiritual materials of craftsmen, lead students into the struggle stories of craftsmen in all walks of life, and set a good professional example for them. First of all, teachers can lead students into the career struggle story of gaofenglin, a senior welder. Although he graduated from a technical college, he continued to study the welding process, and has been sticking to the spacecraft welding post for many years, making outstanding contributions to the aerospace industry. He can accurately control the welding gun to stay on the fuel pipe in 0.01 seconds. Tens of thousands of operations are accurate. He can accurately control the welding position and welding area, showing the craftsman spirit of excellence. Teachers can introduce relevant knowledge of automobile specialty, introduce the measurement and design process of automobile precision parts, guide students to use calculus to calculate the dimensions of automobile parts, build a three-dimensional automobile model, and further improve the craftsman spirit of students majoring in automobile. Secondly, teachers can encourage students to explore the mathematical knowledge and craftsman spirit contained in professional courses, guide them to carry out extended learning, and encourage them to elaborate their understanding of craftsman spirit in combination with professional knowledge. For example, students majoring in electronic automation can share the application of calculus in the design of automation control programs and the application of mathematical models in the testing of electronic instruments, Improve students' professional ethics and lay a good foundation for students' future employment.

5. establish the school enterprise industry education integration strategy and carry forward the craftsman spirit

First, mathematics teachers in higher vocational colleges should actively cooperate with business masters, invite technical personnel from various fields to participate in teaching according to their class specialties, let them introduce the connotation of craftsman spirit and the application of mathematical knowledge in professional fields to students, and enhance students' emphasis on craftsman spirit. For example, the R & D personnel of new energy vehicles can introduce driverless technology and Internet of things technology, demonstrate the application of mathematical knowledge such as calculus calculation and linear programming in vehicle navigation and electronic control systems for students, guide students to calculate the horsepower of new energy vehicles, the best driving route and other related data, and further enhance their spirit of scientific inquiry and excellence, Let them know the job skills in advance, so as to improve their job competency. Second, teachers can lead students to visit enterprises, let them follow the masters of enterprises to learn, let them experience automotive maintenance, new energy vehicle design, electronic automation control and other positions, and let them realize the importance of craftsmanship. For example, students can follow the auto repairman to disassemble and assemble the engine, accurately remember the size of each component, use professional instruments to detect the automotive electronic control system, and analyze the fault location according to the relevant component images, so as to further improve their data analysis ability, hard-working spirit and craftsman spirit, and enhance their professional identity.

4. Conclusion

Craftsman spirit can reverse the attitude of "Post-00" college students towards mathematics courses, make them aware of the importance of craftsman spirit for professional course learning and future employment, improve their mathematics learning ability, and give play to the unique educational value of mathematics. Mathematics teachers in higher vocational colleges should face up to the relationship among mathematics, professional courses and craftsman spirit, infiltrate craftsman spirit education in combination with their class majors, stimulate students' interest in mathematics learning, establish the teaching concept of "promoting teaching through competition and integrating competition and teaching", combine mathematics teaching with the National Undergraduate mathematical modeling competition, expand mathematics teaching content, and cultivate students' courage to challengeThe craftsman spirit of teamwork and excellence.

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Application and practice of project teaching method in electrical control teaching

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Abstract: electrical control highlights the characteristics of practicality and precision. Under the background of vigorously promoting teaching reform, teachers are gradually exploring diversified teaching methods of electrical control, so as to continuously adapt to the needs of enterprise talents and promote the long-term development of undergraduate education. Project teaching method is a new type of comprehensive teaching activity in the form of teacher-student team cooperation to complete the overall project. In the whole teaching activity, it can not only highlight the subjectivity of students, but also give full play to the guidance and auxiliary role of teachers, which is conducive to the comprehensive improvement of students' comprehensive ability. Based on the brief description of the differences between project teaching method and traditional teaching method, this paper focuses on the implementation steps of project teaching method and its specific application in electrical control teaching, in order to enhance the application effect of project teaching method and provide beneficial inspiration and reference for front-line education workers.

Key words: project teaching method; Electrical control; application

Introduction

At present, many schools still use the traditional cramming teaching method in the process of electrical control teaching. Not only the teaching effect is not satisfactory, but also the learning quality and efficiency of students are relatively low, which seriously restricts the development of students' practical ability and the improvement of professional quality. From this point of view, in order to obtain satisfactory teaching effect, electrical control must be integrated and innovated in teaching methods. The research shows that the project teaching method is very suitable for the characteristics of electrical control teaching and undergraduate students. If teachers can flexibly and reasonably apply it, it will not only help to strengthen students' theoretical basis, improve their practical skills, but also promote the development of their comprehensive professional quality, which is convenient for students to grow into high-quality skilled talents more needed by the society.

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