Analysis of "Four-Step Cognitive Teaching Method" Application and Practice in Equipment Construction Course

Qilin Zhu

Department of Vehicle Application, ArmyAcademy of ArmoredForces, Changchun City 130117, Jilin Province, P.R. China

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Abstract: The equipment construction course as an important course with professional theory that promotes the generation of students' core task abilities. In accordance with the teaching concept of "taking students as the core", the application and practice of the "four-step cognitive teaching method" are promoted, which is more in line with the actual teaching of equipment construction courses and improves the efficiency of its teaching quality. This teaching method provides certain enlightenment and reference for the units or individuals who undertake the teaching tasks of equipment construction courses.

1. Introduction

The armored equipment construction course is the most important professional theory course in the field of professional courses. The generation of the core task ability of the students depends on a solid and solid knowledge of equipment construction. Continue to deepen and promote the reform of the equipment structure course, effectively improve the teaching efficiency of the equipment structure course, improve the teaching quality and teaching effect of the structure course, and cultivate the "use of dual energy" and "use of dual energy" in the new era The goal of cultivating non-commissioned combatants is very important to promote and promote.

2. The Concept and Thought of Curriculum Reform

Student-centered is the basic concept of modern education. It is characterized by emphasizing and embodying the main role of students, while not ignoring the leading role of teachers. It is usually combined with teaching situations such as collaborative, individualized, and group discussions. Correspondingly, the most obvious feature of teacher-centered teaching is that it ignores the role of students as the mainstay of learning, and usually adopts collective, full-fledged lecture teaching. In the past, the teaching methods of equipment construction courses were mostly instructor-centered, and the teaching process was relatively simple, that is, theoretical explanation and practical verification. This traditional teaching mode has led to the teaching and guidance of the practice, whether it is theoretical or practical classes. The main position of the students is ignored and deprived. The whole process is only the participants and the mentee, and it cannot reflect its autonomy. The positive attribute of innovation, the teaching efficiency is relatively low, and the teaching effect cannot be guaranteed. To promote the teaching reform of the equipment structure course, we should actively implement the student-centered teaching concept, promote the update of teaching content, the improvement of teaching methods, and the innovation of teaching models, focus on optimizing the knowledge and ability structure of students, inspiring students' cognitive conflicts and scientific exploration spirit Students innovate thinking and enhance students' ability to discover, analyze and solve problems.

- Focus on Quality Education for all Students. It is the central task of the new curriculum reform to comprehensively improve the basic qualities and skills of students. The earnest implementation of the spirit of the new curriculum reform can truly embody the essence of quality education unprecedentedly.
- Constructivism as a Guide. According to the students' intellectual structure, knowledge

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structure and teacher's business ability structure, the optimal combination method is used to impart the structural knowledge of the basic principles and concepts of the discipline and the internal relationship between them to the students to cultivate their innovative consciousness and inquiry ability To truly give play to the initiative of students in their learning activities. The theory embodies the characteristics of true teaching: high-level thinking, depth of knowledge, connection with reality, a lot of communication, and social support for student progress.

- Inquiry Learning. It is "the study that is most effective, active and able to stimulate students' imagination and creativity". Based on the development of human potential, based on strengthening the interest of students. It is an important and effective measure to solve the current problem of "test-oriented education".
- Open Mode. The openness of the curriculum, teachers should be unique, come out of the monotonous classroom, see the outside world through the media; construct students' knowledge and emotion through the open educational resource environment.
- Creative Courses. Under the criterion of curriculum standards, the curriculum is created and constructed by the two subjects of teachers and students. Education must go beyond textbooks, and in this regard, the generalized media teaching resource environment should assume an irreplaceable position. Teachers cannot be slaves to the textbook, but developers and researchers of the curriculum.

3. Organizational Process of "Four-Step Cognitive Teaching Method"

In order to practice the student-centered teaching concept, further enhance the student's dominant position in the learning process, and improve the student's ability to learn actively, we optimized the teaching link and innovatively proposed the application of the "four-step cognitive teaching method" in the equipment construction course. ", That is, the two-step teaching process of the traditional curriculum first theory and then practice is changed to a four-step process, followed by image perception, discriminating cognition, practice solidification and assessment strengthening.

3.1 Image perception eliminates cognitive abstraction

As the first link, image perception has changed the inherent model of the traditional course process theory course, and turned it into a practice guide. This move is more in line with the construction class teaching practice. The characteristics of construction courses determine that students cannot directly understand and master what they have learned through textbooks or courseware. Only the practical perception and decomposition of physical objects can more directly and effectively understand the structural characteristics, connection relationships and working processes of machine parts. In the image perception section, the instructor guides the students to carry out targeted machine cognitive training on the content to be taught before the course starts, outlines its function and working principle, points out its position in the actual vehicle, and gives the intern direction and internship issues. Then provide physical or teaching aid models for students to observe or decompose. Through image perception, students can form an intuitive understanding of the content learned in the next lesson, eliminate abstractions in cognition, and better understand classroom language and courseware display in theoretical teaching. Compared with the teaching method of theory before practice, practice perception before classroom teaching can greatly improve students' understanding and acceptance of what they have learned, and improve the conversion rate of classroom learning, so it is more targeted and effective in teaching.

Teachers' effective classroom instruction is very important. With the continuous popularization of diversified learning methods, independent learning, cooperative learning, and inquiry learning are increasingly recognized by teachers. The formation of students' independent learning ability and the development of learning activities cannot leave the guidance of teachers. The guidance of autonomous learning is that teachers help students to improve their learning motivation and strategies to achieve the goals of learning self-learning, self-management, and self-regulation, and ensure the smooth conduct of teaching [4]. Self-directed learning is generally reflected in the

completion of reading or homework. The guidance of cooperative learning is that teachers guide students to divide the labor reasonably, learn to express, learn to support each other and learn to evaluate. Cooperative learning is mostly used in classroom discussions and teaching activities. In the process of instructional learning, teachers should always pay attention to several issues such as the nature of the subject, the type of problem, the knowledge level and thinking ability of students. Inquiry learning is often an extension of classroom teaching and is often reflected in the completion of extracurricular homework. Effective classroom instruction is mainly reflected in these three learning methods.

3.2 Differentiate and Cognize to Boost Active Learning

Discrimination and recognition is the main part of classroom teaching in the "four-step cognitive teaching method". This link is not a theoretical lesson in the traditional sense, but a brand-new attribute of flipping class and group discussion in class. The limits of its links are also open and compatible, rather than independent and exclusive. Specifically, after instructing the trainees to carry out the practice perception link, the trainees should carry out irregular groupings, in the form of learning groups, combined with teaching materials and physical, model and other teaching tools for self-study. During this period, students should learn to understand the content of the course, summarize and refine knowledge points, form an outline of speech, and prepare for class discussion and analysis. This is equivalent to the students using the practical class hours to carry out a flipped class before the theoretical class, and this flipped class is in line with the teaching conditions of our military academies and the practical management of the spare time of the student team. The students in the subsequent classroom teaching are also the protagonists. The students report the learning results in groups, and other members or groups make supplements and evaluations. Through discussion and analysis, guide students through active learning and thinking to summarize and refine the knowledge points of the course teaching. Of course, when the structure of the machine parts is very complicated and the working principle is very abstract, beyond the students ’understanding and grasp, the instructors must also undertake the main teaching tasks, but they must always test the students’ acceptance of the understanding and encourage them to understand through active thinking. And master the content of the lecture, and actually stimulate the learning initiative.

Efforts to improve students' comprehensive quality and ability, to help students establish a correct outlook on life and life confidence. The teaching goal of higher vocational colleges is not only to impart professional knowledge and learn professional skills, but more importantly, to teach students to have the learning ability and innovative development ability under the development requirements of the new era. This ability is often reflected in non-intelligent factors such as learning motivation, learning consciousness, learning responsibility, learning creativity, and learning sustainability. Based on the characteristics of this kind of student development, in the classroom teaching of higher vocational colleges, we should establish the concept of cultivating students as adults first, and then cultivating students as talents. After the freshmen enter the school, they must first carry out education on learning ideals and careers, so that students can find their own learning goals and motivation, and cultivate good internal learning motivation. It is necessary to carry out education on mental health for students, to help them become mature, learn to control their emotions, learn the skills of social interaction, and be able to face various challenges and difficulties in life with a good mental state, positive and optimistic attitude.

3.3 Practice Curing Forms System Cognition

The cognitive process of the equipment construction course is a process in which theory and practice are continuously superimposed and mutually reinforce each other. Therefore, practice solidification links are arranged after the first two links. In this session, the students have obtained a more comprehensive and systematic understanding of what they have learned through the first two sessions. The questions and blind spots in the learning process have also been answered through discussion and analysis, and they are urgently needed to be further strengthened through practice. Understanding the memory of what you have learned and verifying difficult problems in the

classroom. Through practice and solidification, students can thoroughly absorb the learned content from the theoretical and practical levels to form a comprehensive and comprehensive knowledge, thereby laying a solid knowledge base and providing beneficial intellectual support for subsequent professional courses. At the same time, in the arrangement of school hours, after the practice is solidified, the image perception of the content of the next course can be arranged, which realizes the first connection and circulation promotion of the first three links of the "four-step" cognitive teaching method, and makes the practice course tense Substantial, full and efficient use of school hours.

3.4 Examination, Strengthening, Condensing and Consolidating Memory

The main goal of the construction class teaching is to train the students' ability to recognize machine parts and analyze and judge the chassis working conditions. The difficulty lies in that one is that the abstraction of the principle is difficult to describe, and the other is that the huge number of professional terminology and machine names are difficult to remember. In order for trainees to have these two abilities, it is necessary to break through these two difficulties and integrate these professional knowledge and vocabulary into the trainees' cognitive system. This process is similar to learning English memorizing words, which cannot be bypassed or tricked. Therefore, in order to lay a good foundation on the basic skills of the construction class, students must rely on memorizing hard. How to help or urge students to complete the memorization better? The means we use is assessment. That is to create appropriate pressure on the students through the assessment, so that the students can complete this relatively difficult process under the pressure of the pressure. The assessment time is flexible. Before each class, the content of the study will be taken with the class. After the assembly parts are completed, a stage test will be taken. After all the courses are completed, the final test will be taken. There are many ways to assess, there are questions in the classroom, closed paper written test, and practical operation. In short, with the progress of the course, it always creates pressure on students to consolidate their cognitive foundation and enhance their abstract memory.

4. Curriculum Reform Implementation Effect

The achievements of this teaching reform have been piloted and applied in the course "Structure and Principle of Wheeled Armored Vehicle Chassis" of a teaching class, and have achieved good results. The participation of students in the classroom has greatly increased, and active learning and active thinking have become the new normal in classroom teaching. Judging from the results of the end-of-class examinations, the excellent rate of assessment increased by 5% compared with 2017 students, and the proportion of medium grades increased by 32%. Fully reflects the learner's enthusiasm for learning and the improvement of overall learning. Feedback from follow-up professional courses such as "Wheeled Armored Vehicle Technology Use" and "Wheeled Armored Vehicle-level Driving", students' basic construction skills are solid, with the ability to identify vehicle components and chassis system operating conditions, which can provide professional learning Strong support.

5. Challenges Facing Teaching

From the teacher-centered two-step teaching process followed by theory to practice, to the student-centered "four-step cognitive teaching method", the main responsibility of the students has increased, and the active time in the classroom has increased. Do more things. But the demands on the teachers have not weakened, but have increased. Because the students are not familiar with the method of discussion and analysis of autonomous learning, the skills of using multimedia and other modern teaching methods are unskilled, and the use of their own language to express professional theories is not accurate. This requires the instructors to accurately control and guide the classroom environment, how to set guiding questions, how to guide students to discuss and analyze the teaching content, how to help students refine and summarize the knowledge points of the course,

how to create a positive and enthusiastic classroom environment, these Both need to be considered and designed. Therefore, the role and tasks of teachers have changed to a great extent, from the past theory transmitter to knowledge guide, classroom atmosphere regulator, teaching content supplement and teaching effect evaluator. If teachers used to focus on how to teach a good class, then teachers need to devote more energy to classroom design. In a sense, the teaching tasks of teachers are not only lessened, but more than before.

6. Conclusion

Curriculum teaching reform is an important promoter of the profound reform of teaching ideas, teaching concepts, teaching methods and teaching behaviours, which can further stimulate the teaching vitality of the school and improve the teaching level of the school. Exploring practical teaching methods of equipment construction courses serves to give inspiration and reference to teaching units and individuals who undertake the same type of teaching tasks. The author hopes that the course teaching can be further optimized and perfected by joint efforts to provide a strong guarantee for cultivation of new "war-fighting" non-commissioned personnel of the times.

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