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Application of the Task-Driven Approach in the Teaching of Construction Engineering Courses in Secondary Vocational Schools

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Abstract: *With the continuous development and enhancement of China's economic strength, various industries have experienced unprecedented growth. At the same time, the shortage of skilled talent has become increasingly prominent. How to effectively cultivate the professional quality and comprehensive abilities of construction engineering students has become one of the most critical teaching challenges faced by secondary vocational schools. The application of the task-driven approach in the teaching of construction engineering courses in secondary vocational education offers an effective solution to this issue. This paper first provides an overview of the task-driven approach, then discusses its application principles in construction engineering course teaching. Furthermore, it analyzes the implementation paths of this method in classroom practice, and finally examines key issues that should be considered when applying the task-driven approach in this context. It is hoped that this study can offer useful insights and references for vocational educators.*

Keywords: *Task-Driven Approach; Secondary Vocational Education; Construction Engineering; Teaching*

1. Introduction

With the gradual strengthening of China's economic power, various sectors of society have experienced rapid development. The construction industry has also entered a period of prosperity, leading to widespread growth of construction-related enterprises. Consequently, the shortage of skilled construction personnel has become increasingly severe. There is a growing demand from society and enterprises for construction professionals with high-level technical skills and comprehensive competencies. In this context, secondary vocational schools, as the main training base for skilled talents in China, bear the important responsibility of cultivating and developing construction professionals. The introduction and application of the task-driven approach have brought about a wave of innovation in vocational construction education. Compared with traditional teaching methods, this approach demonstrates significant advantages. It allows the creation of concrete learning scenarios, stimulates students' enthusiasm, strengthens their experiential learning in real-world teaching contexts, encourages their full engagement in construction-related studies, and ultimately enhances the effectiveness of vocational education.

2. Overview of the Task-Driven Approach

With the advancement of the new curriculum reform, the task-driven approach has been introduced and applied to the teaching of construction engineering courses in secondary vocational schools. This method transforms the originally monotonous classroom atmosphere into an engaging one and shifts the teacher-centered model to a student-centered approach. Through the tasks assigned by teachers, students engage in discussion and exploration, actively participating in the learning process, thereby improving teaching effectiveness [1].

In traditional teaching, teachers often rely on knowledge transmission, resulting in a lack of classroom engagement for students. The task-driven approach, however, promotes students' understanding of theoretical knowledge through hands-on activities. It enhances their participation and learning outcomes by encouraging them to discover, discuss, and solve problems.

This method places a strong emphasis on the student's central role in the learning process. It not

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only helps students master basic knowledge and skills but also cultivates their awareness of teamwork. Teachers provide vivid explanations and timely guidance, assisting students in finding solutions to problems. As a shift from traditional pedagogy, the task-driven approach is especially suitable for cultivating talents in vocational construction education.

By assigning learning tasks, students learn and explore within realistic construction scenarios, improving their practical abilities and hands-on skills, while also strengthening their sense of collaboration.

Long-term use of the task-driven method can significantly enhance students' overall abilities and provide the construction industry with high-quality, skilled professionals who possess both integrity and talent. With well-organized teaching content, practical teaching methods, and a fair evaluation system, the task-driven approach can effectively improve students' learning efficiency and support industry development.

In summary, the core characteristics of the task-driven approach are "task-oriented, teacher-guided, student-centered." Its basic components include scenario creation, task assignment, autonomous and cooperative learning, and outcome evaluation. Task design is the key to effective teaching. It is not only a targeted instructional method but also a distinctive educational philosophy.

3. Principles for Applying the Task-Driven Approach

3.1 Principle of Foresight

Classroom teaching is an interactive process between teachers and students within limited time and space. To ensure its effectiveness, teachers must be fully prepared before class. This includes analyzing teaching materials and student learning conditions, planning classroom activities and scenarios, anticipating possible situations during the learning process, and establishing contingency mechanisms. For unit-based learning, teachers should thoroughly understand the content and goals of each lesson, review the knowledge from the previous lesson, and anticipate the requirements of the next lesson. Meanwhile, they should assess students' overall cognitive development, particularly their "zone of proximal development," and identify the strengths and weaknesses in individual knowledge structures. By preparing well-structured and clearly defined task sheets, teachers can ensure targeted and effective instruction [2].

3.2 Principle of Orientation

In teaching construction engineering courses, teachers should apply the task-driven approach appropriately, utilizing available resources and considering students' learning conditions to build a course system that matches the discipline's characteristics. Teachers need to understand the specific circumstances of each student and design tailored learning tasks based on their learning abilities and traits. Through guidance and supplementation, students can achieve holistic development. The implementation of instructional tasks should align with real-world contexts, ensuring students can quickly apply what they have learned to actual job scenarios. Learning by doing and doing while learning can enhance students' job adaptability.

3.3 Principle of Diversity

Construction engineering courses are highly technical, with many abstract concepts. Teachers should avoid relying solely on lectures. Instead, they should incorporate physical models, photos, videos, and other practical demonstrations to design a diversified instructional system. According to different courses, chapters, and content types, appropriate teaching methods should be chosen to stimulate students' interest and improve learning efficiency. In this way, students can find joy in learning through continuous trial and practice [3].

3.4 Principle of Multiple Evaluations

The task-driven approach motivates students by assigning planned learning tasks that stimulate their intrinsic motivation. By completing tasks in different stages, students become more willing and capable learners. At the same time, this method respects individual differences, emphasizes personalized learning experiences, and promotes a multidimensional evaluation system. Teachers should clarify

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evaluation methods, set scientific criteria, and comprehensively assess students' ability to apply knowledge. Special emphasis should be placed on communication and teamwork. Students are encouraged to brainstorm and collaborate when encountering difficulties, allowing them to achieve learning goals, unlock their potential, and implement the principle of teaching according to individual aptitude.

4. Application Paths of the Task-Driven Approach in Vocational Secondary Education for Construction Engineering Courses

In actual professional teaching practice, the task-driven approach can be implemented through four key steps: creating specific contexts, designing learning tasks, forming reasonable groupings, supervising the implementation process, and evaluating outcomes.

4.1 Creating Learning Contexts

Construction engineering is a discipline that covers a wide range of content and involves a large amount of basic theoretical knowledge, which can be difficult for students to fully understand and memorize. Therefore, teachers can apply the task-driven approach in their instruction to enhance learning efficiency and improve teaching effectiveness. Based on students' different characteristics and the course content, teachers can assign appropriate learning tasks to actively engage students in the construction engineering learning process. Students use their existing knowledge to imagine and apply what they have learned in hands-on activities, integrating theory with practice to complete the assigned tasks.

The creation of learning contexts in vocational construction courses can be approached from multiple angles. Professional teachers are encouraged to integrate information technology during this process.

For example, when teaching the topic "Foundation and Substructure Construction," in order to better explain the concept of bearing capacity, teachers can download pictures or videos of building collapses from the internet before class and use them as teaching materials. These materials can be integrated into courseware aligned with the lesson content. During the lecture, teachers can play this multimedia content to stimulate students' visual and auditory senses, creating a realistic learning environment that guides and inspires students. This helps them understand how much bearing capacity is needed to prevent collapse. Using information technology to create immersive learning contexts significantly boosts students' engagement and motivation, laying a solid foundation for the effective implementation of the task-driven approach [4].

4.2 Task Design

In practical teaching, the design of learning tasks has a direct impact on the implementation of the task-driven approach. First, teachers should design tasks based on the lesson content and students' specific conditions, considering the differences in their living environments, backgrounds, and personalities. Vocational teachers should respect these individual differences and assign tasks that match students' ability levels, with gradually increasing difficulty to help build their confidence. Second, task design should avoid excessive constraints. The focus should be on the outcome rather than the specific process, allowing students the freedom to choose their preferred methods based on their strengths and interests. This encourages divergent thinking and fosters the development of a structured knowledge system. Lastly, tasks should be interesting and engaging to prevent monotony and maintain students' enthusiasm and motivation.

4.3 Reasonable Grouping

As the saying goes, "many hands make light work." Each student's individual capacity is limited, but when students work together, the collective intelligence can generate limitless possibilities. After tasks are designed and assigned, teachers can divide students into groups to better accomplish the learning tasks through cooperation. This also helps students learn to support, learn from, and collaborate with each other, promoting mutual growth [5].

When forming groups, teachers should consider students' interests, prior knowledge, and personality traits to create multiple balanced groups of 4–6 members. Each group should include

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high-performing students with strong construction knowledge, as well as average and lower-performing students. This mix allows for internal peer tutoring and mutual encouragement, ultimately enhancing the group's overall learning and development. By doing so, the full potential of group learning is realized, enabling the class as a whole to improve in both ability and professional literacy.

4.4 Implementation Process

The implementation process is a critical component of the task-driven approach. At this stage, the teacher must carefully manage details and provide timely guidance. Specifically, teachers should step back and take on a supporting role, empowering each group with autonomy and initiative for independent thinking and innovative practice. Teachers should guide group members to contribute according to their roles and collaborate to complete the project.

During this period, teachers should actively engage with the groups, ensuring classroom discipline and preventing disruptive behaviors. At the same time, they should provide timely advice to ensure students can efficiently complete their tasks. For example, if a group encounters a problem during project execution, the teacher should promptly offer guidance and, when necessary, demonstrate how to solve the issue. This hands-on support helps students complete their tasks effectively and ensures that every group benefits from the experience [6].

4.5 Task Evaluation

In the task-driven teaching model, an essential component is the "presentation and evaluation" stage, which ensures a complete teaching cycle. Once all groups have completed their projects, the teacher can invite each group to present their results. The teacher should then provide feedback based on the quality of the task completed, highlighting both strengths and areas for improvement.

Importantly, teachers should adopt an appreciative approach in their evaluations, focusing on positive reinforcement. Rather than merely pointing out weaknesses, they should recognize and praise the students' achievements during the practical tasks. This boosts their confidence in learning professional knowledge and fosters constructive thinking habits. Furthermore, teachers should evaluate both the final outcomes and the entire process, taking into account the students' efforts and perseverance. A dual focus on process and results will ignite students' passion for learning and practicing construction skills, stimulate their motivation for self-learning and self-improvement, and encourage them to strive forward and continually surpass themselves in future learning [7].

5. Key Issues to Consider When Applying the Task-Driven Approach in the Teaching of Construction Engineering Courses in Secondary Vocational Schools

5.1 Focus on Extracurricular Learning: Guide Students to Engage in Autonomous Study During Spare Time to Ensure Task Completion

To ensure the effectiveness of classroom teaching, teachers must make thorough preparations before class. Only by preparing teaching materials, analyzing student learning conditions, anticipating classroom activities and teaching scenarios, and developing contingency strategies for unexpected situations can classroom teaching proceed in an orderly and effective manner. Teachers should also provide students with a wealth of learning resources—such as extracurricular reading materials, current construction codes and standards, practical textbooks, and instructional videos—to enhance their knowledge base and spatial imagination skills. Creating a platform for autonomous learning can guide students in self-directed learning. For unit-based instruction, teachers should have a clear understanding of the content and objectives of the current lesson, the tasks and knowledge completed in the previous lesson, and the learning requirements of the next lesson. Adequate preparation in both content and materials, along with well-structured and clearly defined lesson plans, can ensure targeted and effective classroom instruction [8].

5.2 Emphasize "Dual Roles," Create Layered Scenarios, Implement Stage-Based Tasks, and Address Specific Problems

The fundamental characteristic of the task-driven approach is "task-oriented, teacher-guided, and student-centered." In classroom teaching, it is essential to retain the concise and effective strategies of

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traditional teaching—such as combining lectures with practice, providing demonstrations and corrections, and offering evaluations and summaries—while emphasizing several key points:

Firstly, the dual roles of the teacher as the guide and the student as the main participant must be highlighted. The formulation of tasks and the creation of scenarios should always serve the achievement of teaching objectives. Throughout each stage of the learning process, teachers guide the flow and pace, while all students participate in thinking, discussion, communication, and summarization. The teacher's guidance ensures classroom order, and student-centered learning ensures comprehensive teaching engagement.

Secondly, scenario creation must be engaging, layered, and timely, with the aim of solving specific problems through the completion of phased tasks. Teachers should fully utilize students' prior experiences to design vivid, intuitive, and interesting scenarios that quickly capture attention. Student activities should follow clear instructions and be driven by sequential tasks. Group discussions should include both internal group brainstorming and teacher-student Q&A sessions. Through multi-directional communication, ideas are exchanged, and consensus is reached. Consolidation and improvement activities allow students to apply their knowledge. Through challenging tasks of varying difficulty, teachers can guide and supervise students during their inquiry-based learning process, helping them become familiar with and master new methods, complete staged tasks, and solve targeted issues [9].

5.3 Apply Diverse Evaluation Methods to Ensure Comprehensive and Objective Assessments and Effectively Improve Students' Learning Abilities

Task evaluation includes comparison, analysis, summarization, and feedback on both the task process and outcomes. Teachers should affirm students' strengths, identify shortcomings, and provide constructive guidance. This helps students recognize their own strengths and weaknesses, and also boosts their interest and confidence in learning. The task-driven approach motivates students' intrinsic drive by offering structured learning tasks, encouraging their willingness and ability to learn. It also respects individual differences, emphasizes personalized learning experiences, and promotes diverse evaluation methods.

Evaluations should be comprehensive, objective, and fair, ensuring that all students feel acknowledged and encouraged. If only group performance is assessed while individual contributions are ignored, some students may feel overlooked or undervalued. Students with minimal participation may become increasingly disengaged, while high-performing students may misinterpret the situation as teacher favoritism. Therefore, teachers should combine formative evaluation with task completion assessments to ensure objectivity and comprehensiveness. Through a progressive series of tasks, the task-driven method cultivates students' independent thinking, innovative abilities, and collaborative skills. It not only helps them complete staged tasks, but also builds learning confidence and enhances their overall learning capabilities [10].

6. Conclusion

In conclusion, applying the task-driven method in the teaching of construction engineering courses in secondary vocational schools enables students to complete practice-oriented and hands-on tasks assigned by instructors, thereby improving the overall effectiveness of construction course instruction. This approach makes professional courses more dynamic and engaging, transforming students from passive recipients of knowledge into active participants in the learning process. It fully mobilizes their enthusiasm and initiative, allowing them to leverage their strengths, promote individual development, and enhance their comprehensive abilities. This is the ultimate goal of the task-driven approach.

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