

Research on Teaching Methods of Building Materials Classroom

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ABSTRACT

Classroom teaching is an important part of teaching building materials. It generally follows the teaching tasks and objectives specified in the syllabus to deliver knowledge to students. The quality of classroom teaching directly affects teaching effectiveness. Therefore, it is particularly important to emphasize classroom teaching during the teaching process. This paper mainly discusses the effectiveness of building materials classroom teaching and relevant teaching methods to improve teaching quality.

KEYWORDS

Building materials; Classroom teaching; Course content; Teaching methods

1 Introduction

Building materials are the foundation of the construction industry and an important factor in ensuring the quality of construction projects. With the continuous development of science, technology, and the construction industry, the teaching of building materials has become increasingly important.

Ren Qifang et al ^[1] explored the teaching design of the building materials course from four aspects: student analysis, resource recommendation, interactive classrooms, and diversified evaluation. They developed a smart classroom teaching model that enhances students' learning interest and teaching effectiveness.

Yu Junbao et al ^[2] analyzed the current teaching situation of the "Building Materials and Testing" course in higher vocational colleges from the perspectives of teaching content, implementation process, and evaluation under the dual-innovation background. They proposed a blended "online + offline" approach and a "three-classroom" teaching model to innovate the evaluation process during the pandemic.

Wang Pingxia et al ^[3] reformed the building materials course based on job requirements, constructing a project-oriented curriculum system using typical work tasks as carriers.

Lin Na ^[4] explored various teaching methods such as video lectures, class-hour allocation, professional practice, classroom teaching, course assessment, and project competitions.

Tan Junhua et al ^[5] applied the flipped classroom teaching method, using the four elements of material science as the main framework, optimizing teaching content, and updating product standards and new technologies promptly. Real cases and comprehensive experimental projects were used to enhance students' initiative and improve teaching results.

Song Fengxuan et al ^[6] constructed a flipped classroom model for international students based on the integration of theory and practice. The course included pre-class learning and in-class consolidation, emphasizing student-centered interaction.

Sun Yu et al ^[7] analyzed the teaching status of the "Road Building Materials" course and proposed four modules: interactive theoretical teaching, flipped classroom experiment module, immersive engineering case teaching, and ideological education module.

Lu Bo ^[8] introduced the smart classroom model into road building materials teaching. Through literature review and practice, he identified the problems in traditional classrooms and applied a new classroom model to solve them.

Classroom teaching is the basic form of teaching, the main channel for students to acquire information, develop abilities, and form values. The effectiveness of classroom teaching directly determines teaching quality and talent cultivation outcomes. Teachers should strive to build efficient classrooms to achieve the best educational results.

A classroom is the main battlefield of teaching. Constructing an efficient classroom and realizing effective teaching is the ultimate goal. "Effectiveness" refers to the actual improvement in students' learning after teaching, not merely whether teachers complete the syllabus. The key lies in how much students truly learn.

Teachers should enhance the purposefulness, consistency, and scientific approach of teaching, reduce inefficiency, and establish efficient classroom models. Improving teaching effectiveness is a systematic issue involving teachers and school management, but teachers play the leading role.

A good teacher must possess a strong sense of responsibility, solid professional knowledge, and excellent classroom management skills. Only competent teachers can gain students' trust and willingness to learn. Continuous learning and professional development are essential for teachers to adapt to new educational requirements.

2 Current Situation of Building Materials Teaching

The purpose of building materials teaching is not only to enable students to understand the relationship between material properties, structure, and performance but also to apply this knowledge in design, reflecting the qualities of architectural literacy. However, many architecture departments still follow traditional civil engineering teaching frameworks, overlooking the application-oriented and innovative aspects of architecture.

2.1 Unclear Positioning of the Building Materials Course

Currently, some colleges treat the building materials course as a basic civil engineering subject. The teaching content is mainly theoretical and focuses too much on mechanical properties, while the connection with architectural design and practical application is weak.

2.2 Outdated Teaching Methods

Traditional lecture-based methods still dominate. Teachers play the leading role, and students passively receive knowledge. Such teaching lacks interaction and fails to stimulate students' creativity and interest.

2.3 Lack of Practice and Innovation

Although some courses include experimental classes, their content is limited, lacking real-world case studies and hands-on opportunities. Students seldom apply their knowledge in practice, leading to weak problem-solving and innovative abilities.

3 Reform and Innovation of Building Materials Classroom Teaching

3.1 Clarify the Course Objectives

The course should focus on cultivating students' ability to analyze and apply materials scientifically, combining theory with practical engineering. It should also strengthen students' understanding of material selection, environmental impact, and sustainability.

3.2 Enrich Teaching Methods

To improve classroom interaction and engagement, various teaching methods can be combined:
Multimedia and video-assisted teaching, allowing students to visualize complex material structures;
Case-based learning, connecting classroom theory with real engineering examples;
Flipped classroom, encouraging students to study before class and participate in discussions during class;
Project-based teaching, integrating knowledge application, design, and teamwork.

3.3 Strengthen Practice and Experimentation

Practical teaching should be enhanced by establishing material laboratories, simulation experiments, and field visits. By combining in-class learning with real engineering scenarios, students can understand the relationship between material properties and construction performance.

3.4 Integrate Ideological and Political Education

The course should incorporate ideological and political elements by emphasizing professional ethics, safety awareness, and sustainable development, guiding students to connect personal goals with national needs.

3.5 Build a Multi-dimensional Evaluation System

Traditional exams should be complemented by diversified assessment methods such as reports, projects, presentations, and peer evaluation. This helps evaluate not only students' theoretical understanding but also their innovation and application abilities.

4 Conclusion

The teaching of building materials is a foundational yet highly practical component of architectural education. Through continuous reform—clarifying objectives, enriching teaching methods, strengthening practice, integrating ideological education, and improving evaluation systems—teachers can enhance students' learning enthusiasm and professional competence.

Improving classroom teaching effectiveness requires the joint efforts of teachers, students, and schools. Teachers must continue to explore innovative methods, apply new technologies, and cultivate high-quality architectural talents that meet the needs of modern construction.

About the Author

Meifang Huang, doctoral degree, mainly engages in the research of pavement materials and polymer materials.

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