

An Exploration of Teaching Models in the Teaching Process of University Courses

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Abstract: *Course instruction represents a central component of student development in higher education. The selection and implementation of instructional models play a decisive role in shaping instructional effectiveness and learning outcomes. As higher education shifts from expansion-oriented development to quality-oriented improvement, traditional teacher-centered lecturing alone has proven insufficient to address students' increasingly diverse learning needs. Against this background, this study examines instructional models in the teaching process of university courses. By clarifying the relationship between curriculum design and classroom instruction, it systematically analyzes the conceptual foundations and implementation principles of heuristic instruction, lecture-based instruction, self-directed learning, and cooperative learning. Furthermore, the study explores the alignment between different instructional models and corresponding teaching methods. The findings indicate that the flexible integration and dynamic adjustment of multiple instructional models constitute an effective approach to enhancing instructional quality, promoting learner engagement, and fostering the development of higher-order competencies.*

Keywords: *University Courses, Classroom Teaching, Instructional Models, Teaching Methods*

1. Introduction

Universities, organized around academic disciplines and majors, undertake the important mission of cultivating both research-oriented and application-oriented talents. Based on clearly defined educational objectives, higher education institutions formulate systematic training plans and translate these objectives into concrete and operational forms through curriculum systems. As the basic unit of teaching activities in universities, courses serve as the core carrier of curriculum development and talent cultivation, as well as an essential pathway through which students acquire systematic knowledge and develop professional competencies ^[1]. To a large extent, the quality of courses determines the level of program development, while the quality of classroom teaching directly affects the achievement of course objectives.

In higher education practice, course teaching not only fulfills the function of knowledge transmission but also encompasses competence development, value formation, and guidance of learning methods ^[2]. On the one hand, course content should respond to disciplinary frontiers and social needs to ensure the scientific rigor and contemporary relevance of the knowledge system. On the other hand, the teaching process itself requires continuous optimization. Through scientific, effective, and distinctive instructional models, instructors can stimulate students' interest in learning and guide them toward active thinking and in-depth exploration. As a comprehensive embodiment of teaching philosophy, teaching content, and teaching methods, instructional models function as a critical link connecting teachers' teaching and students' learning ^[3].

For a long time, lecture-based teaching has remained the dominant mode in many university classrooms, with instructors occupying a leading position while students play a relatively passive role. This model has irreplaceable advantages in systematically explaining foundational knowledge and constructing coherent knowledge frameworks. However, it also exhibits limitations in stimulating learner engagement and cultivating problem awareness and innovative capacity. With the development of information technology and changes in learning styles, instructional models such as heuristic instruction, self-directed learning, and cooperative learning have gradually been introduced into classroom practice, leading to increasing diversification of instructional approaches. Therefore, systematically reviewing and analyzing the application of different instructional models in university classrooms is of significant theoretical and practical value for improving teaching quality and promoting instructional improvement.

2. Teaching Models in Classroom Teaching

2.1. Heuristic Teaching Model

The heuristic teaching model emphasizes a student-centered approach in which knowledge is actively constructed through guided inquiry and problem-based thinking. Rather than transmitting conclusions directly, instructors design learning situations that encourage students to explore underlying concepts through questioning, reasoning, and reflection. The effectiveness of this instructional model largely depends on the quality of instructional questions and the appropriateness of instructional guidance. Well-designed questions should be closely aligned with the core content and key learning objectives of the course, while also maintaining a certain degree of openness that allows for multiple perspectives and solution pathways. Such questions enable students to engage in analytical thinking based on their prior knowledge and learning experiences.

In heuristic instruction, questions may originate from disciplinary frontiers, real-world engineering practices, or authentic problem scenarios encountered in professional contexts. Some questions are intended to introduce new learning challenges and stimulate students' curiosity and motivation for exploration^[4]. Others are designed to allow multiple solution strategies or differing viewpoints, encouraging students to compare approaches, evaluate assumptions, and reflect critically on their reasoning processes. In addition, certain questions deliberately incorporate ambiguity or incomplete information, requiring students to analyze problems from multiple perspectives. This process helps students move beyond surface-level understanding and deepen their comprehension of essential theoretical principles.

During classroom implementation, instructors play a guiding and facilitating role by providing timely and adaptive support based on question difficulty and students' responses. When students encounter misconceptions or cognitive obstacles, instructors may offer prompts, follow-up questions, or supplementary explanations to help redirect thinking toward the core issues. Through articulating viewpoints, engaging in discussion, and responding to peers, students gradually refine their understanding while developing logical reasoning, communication skills, and confidence in academic expression. At the conclusion of heuristic activities, instructors synthesize discussion outcomes, integrate diverse ideas into a coherent knowledge structure, and guide students in transitioning from concrete problem situations to abstract theoretical understanding.

2.2. Lecture-Based Teaching Model

The lecture-based teaching model is the most commonly adopted and foundational instructional approach in university classrooms. Its defining feature lies in the systematic and structured explanation of course content by instructors, making it particularly suitable for disciplines with well-established theoretical systems. High-quality lecture-based teaching depends on instructors' solid disciplinary expertise, comprehensive understanding of the overall curriculum structure, and familiarity with students' cognitive characteristics and learning needs. These factors enable instructors to organize content logically and present complex ideas in an accessible manner.

During the lecture process, instructors primarily focus on explaining fundamental concepts, core principles, and essential methods, thereby helping students establish a complete and coherent knowledge framework. Effective lecturing goes beyond one-way information transmission; instead, it emphasizes purposeful interaction between instructors and students. By incorporating questioning, short discussions, and real-time feedback, instructors can assess students' comprehension and adjust instructional pacing, depth, and emphasis accordingly. A progressive instructional approach, which moves from basic concepts to more complex and abstract ideas, supports students in gradually mastering the core content and developing deeper conceptual understanding.

Moreover, lecture-based instruction should be continuously refined in response to disciplinary development and technological progress. While maintaining the stability and integrity of core knowledge, instructors are encouraged to introduce emerging theories, innovative methods, and advanced technologies relevant to the discipline. Integrating recent research findings into teaching not only enriches course content but also helps students understand the dynamic nature of knowledge development. In particular, instructors' own research outcomes can serve as valuable teaching resources, providing authentic cases, empirical evidence, and research-based perspectives that enhance the academic rigor and contemporary relevance of lecture-based instruction.

2.3. Self-Directed Learning Teaching Model

The self-directed learning teaching model emphasizes students' active participation in learning under instructors' guidance and serves as an important supplement to traditional classroom teaching. In this model, instructors specify learning content for independent study based on course objectives and teaching schedules and clearly define expectations regarding learning outcomes, depth, and performance.

During implementation, students engage in independent learning activities such as information retrieval, literature review, and critical reflection. They subsequently present or explain their learning outcomes in class. The role of the instructor shifts from knowledge transmitter to learning facilitator and evaluator, providing feedback, summarizing key points, and offering focused explanations of common issues. As a result, the classroom becomes a platform for students to demonstrate learning achievements and exchange learning experiences.

The self-directed learning model enhances students' sense of autonomy and achievement while fostering essential competencies such as information literacy, self-regulation, and lifelong learning awareness. Through sustained independent exploration, students gradually develop learning strategies suited to their individual characteristics, thereby improving overall learning effectiveness.

2.4. Cooperative Learning Teaching Model

The cooperative learning teaching model is organized around small groups and emphasizes meaningful interaction and collaboration among students. This model is grounded in the belief that learning is a social process and that knowledge is constructed through communication, negotiation, and shared experience^[5]. Based on clearly defined instructional objectives and the characteristics of course content, instructors design collaborative learning tasks that require active participation from all group members. To ensure effective implementation, instructors explicitly communicate task requirements, implementation procedures, role assignments, and evaluation criteria in advance, thereby providing students with clear guidance and expectations.

During cooperative learning activities, group members work toward shared learning goals through discussion, task allocation, and mutual support. Students are encouraged to exchange ideas, question assumptions, and collaboratively solve problems, which helps deepen their understanding of course concepts. Exposure to diverse perspectives within the group enables students to approach problems from multiple angles, fostering cognitive flexibility and creativity. At the same time, cooperative learning creates opportunities for students to practice essential interpersonal skills, such as effective communication, conflict resolution, and collaborative decision-making. These experiences contribute to the development of teamwork awareness and a sense of collective responsibility for learning outcomes.

In this instructional model, the role of the instructor shifts from knowledge transmitter to organizer, facilitator, and evaluator. Instructors monitor group dynamics and learning processes, provide timely feedback and scaffolding when necessary, and intervene to address challenges that may hinder collaboration. Through formative and summative assessment of both individual contributions and group outcomes, instructors ensure that cooperative learning activities achieve their intended instructional objectives and maintain a high level of effectiveness.

3. Teaching Methods under Different Instructional Models

The effective implementation of instructional models relies not only on sound theoretical design but also on the appropriate selection and integration of corresponding teaching methods. Instructional models vary significantly in their educational objectives, epistemological assumptions, and implementation strategies. Therefore, teaching methods should be carefully aligned with specific instructional contexts to ensure coherence between teaching intentions and learning outcomes. A mismatch between instructional models and teaching methods may weaken instructional effectiveness and reduce student engagement.

In heuristic instruction, problem-oriented teaching methods are particularly effective and widely adopted. This instructional model emphasizes the cultivation of students' inquiry abilities and independent thinking skills. By constructing meaningful and contextually relevant problem scenarios, instructors encourage students to explore underlying concepts through analysis, reasoning, and problem solving. Rather than passively receiving information, students actively participate in the learning process, gradually constructing knowledge through exploration and reflection. This shift from teacher-centered

knowledge transmission to learner-centered knowledge construction not only enhances cognitive engagement but also fosters critical thinking and problem-solving competence, which are essential goals of contemporary higher education.

Lecture-based instruction, which remains a fundamental instructional model in many disciplines, commonly employs direct explanation and case-based teaching methods. Direct explanation allows instructors to systematically present core concepts, theoretical frameworks, and disciplinary knowledge in a structured and efficient manner. This method is particularly suitable for introducing foundational theories and complex conceptual systems. However, to address the limitations of purely didactic instruction, case-based teaching is often integrated into lecture-based instruction. By presenting real-world or discipline-specific cases, instructors help students connect abstract theories with practical applications, thereby enhancing conceptual understanding and relevance. The complementary use of direct explanation and case-based teaching contributes to improved instructional effectiveness by balancing knowledge transmission with contextualized learning.

Self-directed learning models are frequently combined with flipped classroom and blended learning approaches, especially in technology-enhanced educational environments^[6, 7]. In these models, students are required to complete foundational learning tasks—such as watching instructional videos, reading materials, or engaging with online resources—prior to class. Classroom time is then reserved for discussion, clarification of difficult concepts, collaborative problem solving, and deeper exploration of course content. This reorganization of instructional time shifts the focus from information delivery to higher-order learning activities. As a result, students are encouraged to take greater responsibility for their own learning, while instructors assume the role of facilitators and learning guides. Such an approach not only enhances instructional efficiency but also supports the development of autonomous learning skills.

In cooperative learning contexts, discussion-based instruction and role-playing methods are particularly effective in promoting student engagement and collaborative learning. Discussion-based instruction encourages students to exchange ideas, articulate viewpoints, and negotiate meaning through interaction with peers. Role-playing methods, which involve situational simulation and experiential learning, enable students to apply theoretical knowledge in simulated real-world contexts. Through active participation and collaboration, students deepen their understanding of course content while simultaneously developing communication skills, teamwork abilities, and problem-solving competence. These methods align well with the goals of cooperative learning, which emphasize shared responsibility, mutual support, and comprehensive competency development.

The alignment between instructional models and teaching methods is a critical factor in achieving effective teaching and meaningful learning. By selecting teaching methods that correspond to specific instructional models and learning contexts, instructors can enhance student engagement, optimize instructional efficiency, and promote the development of higher-order competencies.

4. Conclusions

Instructional models play a critical role in instructional improvement and course quality enhancement in higher education. They serve as an essential mechanism for translating educational objectives into effective teaching practices. Different instructional models embody distinct pedagogical philosophies, implementation pathways, and educational functions, enabling them to address diverse instructional needs at multiple levels of university teaching.

Analysis of heuristic instruction, lecture-based instruction, self-directed learning, and cooperative learning demonstrates that no single instructional model can fully achieve the comprehensive objectives of university courses. The coordinated and flexible application of multiple instructional models has therefore become an inevitable trend in contemporary higher education instruction.

In instructional practice, instructors should make evidence-informed decisions when selecting and integrating instructional models, taking into account course characteristics, content structure, and students' prior knowledge. Lecture-based instruction is particularly suitable for foundational and systematic content, whereas heuristic, self-directed, and cooperative instructional models are more effective in learning contexts that emphasize critical thinking, problem-solving ability, and practical application.

University instruction should remain firmly student-centered while building upon the effective elements of traditional instructional approaches. Through continuous reflection and iterative

improvement, educators can enhance instructional effectiveness and provide sustained support for curriculum development and pedagogical innovation in higher education.

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