Dual-Drive Integration and Three-Dimensional Empowerment: A Study on the Construction and Practice of a Blended Teaching Model for Cultivating Applied Talents

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Abstract: *To address the challenges in cultivating applied talents, this paper innovatively constructs a blended teaching model termed "Dual-Drive Integration and Three-Dimensional Empowerment." Centered on the deep integration of "technology-driven and demand-driven" dual drives, this model breaks through the limitations of fragmented resources and simplistic evaluation in traditional blended teaching, enabling holistic empowerment across the three dimensions of knowledge, skills, and values. Through innovative practices such as the dynamic integration of online and offline components and the restructuring of a diversified evaluation system, it provides a systematic reform solution for the cultivation of applied talents, demonstrating significant potential for broader application.*

Keywords: *project-based; blended teaching; model construction*

Introduction

Higher education in China has entered a new stage of connotative development, where the cultivation of applied talents has become the core direction and significant mission for the transformation of local universities. This type of cultivation is demand-oriented in alignment with job requirements, focusing on enhancing students' practical abilities, innovative thinking, and comprehensive competencies, thereby overcoming the limitations of traditional didactic teaching focused solely on theoretical instruction. Against the backdrop of deep integration of digital technology into education, the online-offline blended teaching model, with its advantages of flexibility in time and space, abundant resources, and enhanced interactivity, is gradually replacing singular teaching approaches. It has emerged as a mainstream trend for universities to advance teaching reform and improve the quality of talent development.

The deep integration of project-based teaching and the flipped classroom model, utilizing authentic work tasks as the carrier, emphasizes the central role of students. Through "learning by doing," it guides students in inquiry and collaboration, precisely aligning with the practical competency development needs of applied talents. Working in synergy with the blended teaching model, they construct a three-dimensional support system characterized by "technology empowerment, methodological innovation, and goal orientation." This effectively addresses issues such as the disconnection between theory and practice, insufficient student learning initiative, and the lack of targeted competency cultivation. Based on the demand for cultivating applied talents in universities and using the integrated practice of these two approaches as the entry point, this paper outlines the implementation pathways and core measures of the blended teaching model. It aims to provide references for universities to optimize their teaching systems and enhance the quality of applied talent cultivation.

1. Analysis of Current Situation

Currently, supported by both the national strategy for educational digitalization and the iterative upgrading of information technology, the online-offline blended teaching model has achieved widespread adoption in Chinese universities. However, in terms of the actual effectiveness in cultivating applied talents, the implementation of this model in most institutions remains superficial

and formulaic. It has yet to fully realize its educational value and shows a significant gap from the core requirements of applied talent development. The key issues are primarily manifested in three aspects:

1.1 Disconnection Between Teaching Content and Model Integration

The blended teaching approach adopted by most universities merely satisfies a superficial combination of "online resource accumulation plus offline traditional lecturing." Online content often consists of digitized reproductions of textbook knowledge points and uploaded courseware, lacking systematic design and deep integration with offline instruction. This fails to establish the synergistic effect of "leveraging online components to address weaknesses and strengthening core competencies offline." The integration of project-based teaching and the flipped classroom model remains superficial. Project task designs are disconnected from the actual demands of industry positions, often involving simulated or verification-based tasks that lack the support of authentic work scenarios. Furthermore, they are not effectively aligned with the core process of the flipped classroom-"online preparation and offline internalization." This results in a disconnection between online learning and offline teaching, as well as a disconnect between project implementation and knowledge application. Under such a model, student enthusiasm for project participation remains low. It becomes difficult for students to translate theoretical knowledge acquired online into practical offline skills, thereby failing to achieve the cultivation goal of "applying knowledge to practice" for applied talents.

1.2 Misalignment Between Teaching Implementation and Student Needs

Some instructors continue to employ traditional teaching methodologies when conducting blended teaching, simplistically treating online components as mere "preview task assignments." This approach lacks effective guidance and supervision mechanisms, causing students' independent learning to often become superficial. Phenomena such as registering for courses without active participation or copying answers to complete assignments are prevalent, making it difficult to guarantee the effectiveness of preview activities. Offline flipped classroom interactions remain singular and rigid, predominantly consisting of basic group discussions and final presentations. There is a noticeable lack of targeted practical training and personalized instruction, making it challenging to accommodate the diverse needs of students with varying learning foundations, competency levels, and career aspirations. For students with weaker foundations, the inability to keep pace with the collective teaching rhythm gradually erodes their learning confidence. For more capable students, the existing teaching content fails to meet their needs for advancement, thereby stifling their inquiry drive and innovative potential. This situation ultimately hinders the synergistic development of all students' capabilities.

1.3 Inadequate Support Systems and Evaluation Mechanisms

The core functionalities of information-based teaching platforms have not been fully utilized. Most platforms only offer basic features such as resource distribution, assignment submission, and grade statistics, lacking essential modules for project management, collaborative work, data analysis, and peer assessment of outcomes. This makes it difficult to support the in-depth implementation of blended teaching. The evaluation system remains centered on traditional theoretical examinations, which account for over 60% of the total assessment weight. It is characterized by an emphasis on outcomes over process and theory over practice. The assessment of students' practical abilities, teamwork skills, and innovative thinking lacks scientific rigor and systematic design. It often relies on submitted reports and classroom performance as indicators for practical assessment, which are highly subjective and lack clear criteria. Consequently, the system fails to accurately reflect students' competency levels or meet the evaluation needs for applied talents' abilities.

Furthermore, there is a deficiency in teachers' information-based teaching competencies and awareness of model innovation. Most instructors are only proficient in using the basic functions of teaching platforms and lack the ability to design blended teaching schemes, develop project tasks, and apply digital tools effectively. Meanwhile, universities lack targeted training and guidance mechanisms and have not established a comprehensive incentive system for teaching innovation. These shortcomings further constrain the in-depth implementation and iterative enhancement of the blended teaching model.

2. Measures for the Integrated Innovation of the Online-Offline Blended Teaching Model

Addressing the core issues identified in the current implementation of blended teaching and aligned with the fundamental requirements for cultivating applied talents-namely, an emphasis on practice, enhancement of competencies, and alignment with job requirements-this study proposes a trinity framework for the blended teaching model centered on the dual-drive integration of project-based teaching and the flipped classroom. This framework integrates the "content system, implementation process, and support system" to synergistically leverage technological empowerment, methodological innovation, and goal orientation, thereby facilitating the transformation of blended teaching from a "superficial formality" to a "deeply integrated practice."

2.1 Constructing a "Project-Led, Flipped Classroom Empowered" Teaching Content System

Guided by the demands of applied professions and aligned with specialized talent cultivation programs, this system deconstructs core competency modules for target positions through research involving industries, frontline job roles, and graduate feedback. It designs a tiered project task system comprising foundational, advanced, and innovative levels, thereby achieving deep integration of teaching content, project implementation, and job requirements. Foundational projects focus on applying core knowledge points to solidify the professional foundation for lower-grade students. Advanced projects integrate multidisciplinary knowledge to enhance comprehensive application and problem-solving abilities for mid-grade students. Innovative projects incorporate emerging industry technologies to cultivate innovative thinking and frontier adaptation capabilities for senior students, forming a progressive chain of competency development.

Teaching implementation adopts a closed-loop structure of "online preparation-offline practice-online review." Online, leveraging intelligent teaching platforms, a fragmented and precise learning resource system is built. This includes distributing tiered resources such as 5-10 minute knowledge point videos, industry case studies, and project guidelines, along with setting gamified tasks. Students are required to complete self-directed learning before class and submit their outcomes along with a list of questions. Instructors utilize platform data analysis to understand student learning status and optimize offline teaching content, realizing "teaching informed by learning."

Offline, the flipped classroom is conducted with project advancement at its core. Activities such as group discussions and hands-on exercises facilitate knowledge internalization and practical application. Furthermore, the balance between online and offline components is dynamically adjusted according to the project cycle. In the initial phase, online activities account for 40%, focusing on theoretical input and background research. In the mid-phase, offline activities account for 50%, concentrating on practical implementation and solution optimization. In the final phase, online activities account for 10%, emphasizing outcome review and knowledge extension.

2.2 Optimizing the Teaching Implementation Process through "Stratified Guidance and Multifaceted Interaction"

Adhering to the "student-centered" philosophy, this process implements stratified teaching by considering students' entrance test scores, learning foundations, competency levels, interests, and career plans. Through a combination of self-reporting and comprehensive teacher assessment, students are categorized into foundational, advanced, and innovative groups. Differentiated project tasks, learning objectives, and guidance plans are designed accordingly. The foundational group focuses on consolidating basic knowledge and mastering fundamental skills, primarily through imitative and basic tasks, with the goal of "being able to perform tasks correctly and well." The advanced group emphasizes enhancing comprehensive abilities and applying knowledge flexibly, mainly through integrative and applied tasks, aiming for "being able to optimize and adeptly improve." The innovative group prioritizes cultivating innovative thinking and frontier professional competencies, chiefly through innovative and exploratory tasks, targeting "daring to make breakthroughs and being capable of innovation." This ensures the participation of all students and that each gains according to their needs.

During the online phase, leveraging the data analysis capabilities of the teaching platform, it monitors in real-time student learning progress, resource completion rates, assignment quality, and other data, automatically generating individual learning profiles. Based on these profiles, instructors push personalized resources: supplementing foundational groups with basic knowledge point videos

and practical breakdown manuals, and arranging one-on-one online Q&A sessions; providing advanced groups with extended case studies and advanced skill tutorials, guiding cross-group exchanges; and offering innovative groups industry frontier trends and innovative design methodologies, along with inviting experts for online guidance. Simultaneously, online group collaboration spaces are established, with each group assigned a supervising instructor and a postgraduate teaching assistant to support material sharing and task division. Instructors track progress in real-time to resolve disagreements and ensure project advancement.

The offline flipped classroom constructs a multifaceted interaction system comprising "group collaboration, scenario simulation, outcome presentation, peer review and discussion, and instructor guidance." Practical training is conducted within project groups, with clearly defined roles such as team leader and planner that rotate regularly, allowing students to master skills from various aspects. During staged outcome presentations, each group presents their progress through formats like PPT or role-playing scenarios. Other groups provide comments and raise questions from multiple dimensions, with the instructor guiding the discussion to focus on core issues. Common problems are addressed through centralized explanations, while individual issues receive targeted guidance, ensuring students resolve their confusions.

2.3 Strengthening the Teaching Support System with "Technological Support, Resource Integration, and Evaluation Safeguards"

2.3.1 Optimizing the Technological Support Platform

Leveraging the development of the smart campus, this initiative integrates existing teaching platform resources to upgrade and build a unified, intelligent teaching platform. The platform achieves comprehensive coverage across the entire process, including resource management, project progression, interactive communication, assessment and evaluation, and data analysis. Its core functionalities encompass five key areas: Resource Management supports video-on-demand, targeted distribution, and dynamic updates to meet the needs of stratified teaching; Project Management enables task assignment, progress tracking, and collaborative task division, facilitating real-time instructor oversight and guidance; Interactive Communication supports various forms of real-time interaction such as online Q&A and outcome reviews, enhancing efficiency in teacher-student and student-student engagement; Data Analysis automatically generates learning reports and competency profiles, providing data support for stratified teaching and precise guidance; Assessment and Evaluation supports the setting of multiple indicators and fully digitalized process management, ensuring fairness and impartiality in evaluation. Furthermore, a dedicated technical team is assigned to handle platform maintenance, functional optimization, and technical support, ensuring stable and reliable platform operation.

2.3.2 Integrating High-Quality Teaching Resources

Adopting a model of "university-led, industry-participated, and teacher-student co-constructed" development, this initiative establishes a high-quality, discipline-specific, and dynamically updated digital teaching resource repository. It aims to break down resource barriers and meet the needs of blended teaching. The repository encompasses four core types of resources: Theoretical Resources, covering premium course videos, lecture slides, and exercise banks to ensure comprehensive theoretical knowledge coverage; Practical Resources, focusing on the pedagogy discipline, which collect first-hand materials such as exemplary teaching plans from primary and secondary schools, trial teaching videos, and class meeting cases; Innovative Resources, including industry frontier trends, interdisciplinary knowledge, and research commercialization cases to foster innovative capacity; and Co-constructed Resources, which encourage teachers and students to upload self-developed teaching materials, outstanding project outcomes, and learning reflections, thereby forming a continuously optimized resource ecosystem. Furthermore, it strengthens collaboration with primary and secondary schools, enterprises, and research institutions to introduce practical operation videos, virtual simulation resources, and expert lectures, while also establishing off-campus practice bases. These efforts enhance the practicality and currency of the resource repository.

2.3.3 Improving the Teacher Development Mechanism

Developing a professional teaching staff equipped with information-based teaching competencies, an awareness of pedagogical model innovation, and practical guidance abilities is crucial for the effective implementation of blended teaching. Specialized training sessions are conducted regularly, covering topics such as information technology, blended teaching design, and integration techniques for project-based and flipped classroom approaches. Experts and exemplary instructors are invited to

deliver demonstration classes and practical workshops. A teaching support system is established by forming interdisciplinary innovation teams. Through activities like collaborative lesson preparation and teaching practice discussions, these teams work together to address pedagogical challenges, leveraging the guiding role of key teachers. Instructors are required to participate in at least one month of frontline practical engagement annually to integrate job requirements and industry trends into their teaching design. An incentive system is also implemented, where achievements in blended teaching reform are incorporated as core indicators for performance evaluation and professional title assessment. Outstanding contributors receive commendation to stimulate teachers' enthusiasm for reform.

2.3.4 Constructing a Multidimensional and Diversified Evaluation System

This initiative aims to break away from the traditional evaluation model that "emphasizes outcomes over process and theory over practice." Instead, it constructs a three-dimensional, diversified evaluation system that integrates "process and outcome evaluation, quantitative and qualitative assessment, as well as input from instructors, peer students, and industry professionals." The evaluation weight is distributed as follows: formative evaluation accounts for 60%, and summative evaluation accounts for 40%. Specifically, formative evaluation includes online learning performance (20%), project implementation process (25%), and phased outcomes (15%). Summative evaluation comprises the final project outcome (25%) and a comprehensive competency test (15%).

The evaluation subjects are allocated diversely: instructor evaluation accounts for 50%, focusing on overall performance and competency development; peer evaluation accounts for 30%, including both intra-group and inter-group assessment, emphasizing collaboration skills and level of engagement; industry evaluation accounts for 20%, inviting frontline teachers and teaching researchers to assess the practicality of outcomes and their alignment with job requirements. Furthermore, an evaluation feedback mechanism is established to provide regular feedback on results and offer suggestions for improvement, thereby forming a closed loop of "evaluation, feedback, and improvement."

2.3.5 Improving the Supporting Hardware Infrastructure

Increasing investment in hardware and enhancing offline teaching and practical training facilities are essential to solidify the foundation for blended teaching. Standardized flipped classrooms are to be constructed, equipped with multimedia systems, interactive whiteboards, recording and broadcasting systems, and other necessary devices to meet the demands of interactive teaching and outcome presentations. For the pedagogy discipline, micro-teaching training laboratories will be established, outfitted with equipment such as video playback systems and simulated blackboards to support the refinement of trial teaching and simulated class meetings. Comprehensive campus WiFi coverage will be achieved with upgraded bandwidth to ensure the needs of online learning and collaboration are met. Virtual simulation equipment will be provided to construct virtual teaching scenarios, thereby reducing practical costs and enhancing training effectiveness. A regular hardware maintenance mechanism will be established, with designated personnel responsible for equipment inspection and updates, ensuring the smooth execution of teaching activities.

3. Typical Case Studies

Amid the wave of reform in cultivating applied talents, several universities have adopted the core principle of "dual drives of technology and mechanism, and three-dimensional empowerment of competency and values" to construct distinctive blended teaching models. These models break through the barriers of traditional instruction, achieving a transition from knowledge transmission to competency development, and forming replicable and scalable practical experience. One university, focusing on "the integrated dual drive of online and offline teaching," has addressed the challenges of insufficient class hours and passive learning.

Since initiating the reform in 2017, this university has moved away from "didactic instruction" and established a closed-loop system comprising "pre-class guided learning, online self-study, in-class knowledge deepening, and online review." Instructors deconstruct foundational knowledge points into online resources such as micro-videos and PowerPoint presentations. Students independently complete learning tasks and online quizzes before class, allowing classroom time to focus on resolving difficult concepts and facilitating in-depth interaction. For instance, in the Preventive Medicine course, 91 precise knowledge modules were developed. Offline sessions deepen understanding through group collaboration and problem-based inquiry. The Effective Communication course introduced legal scenario dramas, where students engage in online discussions on script design and perform offline

role-playing, thereby achieving knowledge internalization and enhancement of expressive abilities.

Following the reform, 92.85% of students acknowledged the value of online learning, with classroom efficiency and student initiative significantly enhanced. Another college, leveraging the "dual drive of industry-education integration and digital-intelligent empowerment," established an applied talent cultivation system for its Health Services and Management program. It constructed a three-dimensional curriculum matrix integrating "professional education, scenario-based practice, and innovation-entrepreneurship," incorporating cutting-edge technologies into core courses and introducing virtual simulation training and 3D printing training courses. Through a practical closed-loop of "observing on-site operations, practicing on projects, and competing with real-world problems," and by co-establishing joint laboratories with enterprises, 88% of students participated in authentic corporate projects. Utilizing industry-education integration workshops, students tackled real corporate challenges under the guidance of "dual-qualified instructors" (practicing professionals and academics). Over the past three years, they have won national awards in competitions such as the "Internet+" innovation contest, demonstrating simultaneous improvement in innovation capability and job readiness.

Another institution, focusing on the "dual drive of professional competency and value-based commitment," developed a cultivation model for grassroots applied talents. It achieved three-dimensional empowerment through the dual-helix integration of a four-stage competency chain ("foundational, core, job-specific, innovative") and a four-dimensional value chain ("cognition, identification, responsibility, conviction"). Pathways such as "integration of general and specialized education" and "integration of theory and practice" were implemented, resulting in the development of 86 industry-university cooperative courses and the co-establishment of 231 internship bases. By integrating local Qionghai culture and grassroots service into teaching, the institution facilitated students' progression from skill acquisition to a sense of responsibility, effectively addressing the disconnection between talent cultivation and regional needs.

An applied undergraduate institution implemented a "Dual-Drive Integration and Three-Dimensional Empowerment" blended teaching model in its Marketing course as a practical initiative. This model was developed to address issues such as the disconnect between course theory and industry practice, as well as students' weak application skills, and was implemented over two semesters. The practice involved 132 students from two classes of the Business Administration major, enrolled in 2024. The experimental class adopted this blended teaching model, while the control class continued with traditional lecture-based instruction.

During implementation, the model centered on the core principle of "technology-driven and job demand-driven" integration. Online, it utilized the intelligent teaching platform to distribute industry case studies, micro-lecture videos, and practical job-related question banks. This guided students to conduct independent study before class, participate in scenario simulations and group discussions during class, and complete authentic corporate marketing plan design tasks after class. From the three dimensions of knowledge construction, skill cultivation, and value development, the model incorporated corporate mentors for co-teaching and established a diversified evaluation system combining "formative assessment, practical outcome evaluation, and corporate feedback evaluation."

The practical results show that the experimental class achieved an excellent rate of 32% in course assessment, which is 16 percentage points higher than the control class. Additionally, 78% of the students were able to independently develop qualified marketing plans, and corporate satisfaction with students' practical abilities reached 83%. These outcomes effectively validate the feasibility and effectiveness of this model in cultivating applied talents.

These cases confirm the core value of the blended teaching model: utilizing the dual drive of technology and institutional mechanisms to break through the boundaries of traditional teaching, and leveraging the three-dimensional empowerment of competency, literacy, and values to solidify the foundation for applied talents. This provides a paradigm for universities to deepen teaching reform and better align with industry demands.

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