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Collaborative Cultivation Mechanism, Model, and Pathway of New Business Discipline Competitions and Scientific Research Talents

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Abstract: *With the acceleration of digitalization and globalization, traditional business education struggles to meet the demands of the new era for interdisciplinary and application-oriented talents. The concept of New Business Education aims to cultivate talents who integrate information technology, data analytics, innovative thinking, and a sense of social responsibility. However, many universities face challenges such as outdated curricula and limited opportunities for students to engage in scientific research. To address these issues, this study proposes a collaborative talent development model termed "One Core with Two Wings and Three-Party Synergy." By integrating academic competitions with research projects, this model strengthens students' central role in learning and enhances their practical and innovative capabilities. The findings indicate that this approach aligns well with the student-centered educational philosophy and provides a systematic solution for cultivating New Business talents through industry-academia collaboration and intelligent digital empowerment.*

Keywords: *New Business Education, Academic Competitions, Scientific Research Talents, Collaborative Cultivation, Industry-Academia Integration*

1. Research Context

With the accelerating pace of digitalization and globalization, business models are continuously evolving and upgrading. In this context, traditional business education has become increasingly inadequate in terms of training objectives, curriculum systems, and teaching methodologies to meet the new era's demands for interdisciplinary and application-oriented business talents. Particularly in areas such as cross-disciplinary integration, the use of digital tools, and the ability to solve complex business problems, significant shortcomings have emerged. To address these challenges, the concept of New Business Education (NBE) has emerged, aiming to cultivate a new talent development system that integrates information technology, data analytics, innovative thinking, and a sense of social responsibility.

However, in the practical implementation of NBE, many applied undergraduate institutions still face numerous real-world challenges. These include outdated teaching content that lags behind industry developments, limited research training opportunities for students, and narrow or superficial participation in academic competitions. These issues restrict the overall enhancement of students' competencies and weaken their competitiveness in the job market.

Against this backdrop, exploring an innovative talent cultivation model that centers on students, is driven by both scientific research and practical experience, and involves collaboration between schools and enterprises has become a key path toward promoting high-quality development in New Business Education. Strengthening the synergy between academic competitions and research training not only effectively stimulates students' initiative and innovative potential, but also promotes curriculum updates and enhances practical skills, thereby improving the alignment between education and industrial needs.

Based on the current practical requirements of New Business Education reform, this study delves into the collaborative training mechanisms and implementation pathways under the framework of "One Core with Two Wings and Three-Party Synergy". It aims to provide applied universities with a systematic and actionable talent development model, supporting them in achieving connotative growth and improving educational quality in the context of the new era.

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2. Collaborative Cultivation Mechanism of New Business Discipline Competitions and Scientific Research Talents

The collaborative cultivation mechanism of New Business Discipline Competitions and scientific research talents is centered around the core concept of constructivist learning theory, emphasizing students' subjectivity and initiative in knowledge construction. According to scholars such as He (1997)[1] and Liu (2012)[2], constructivism views learning as a process where "students actively explore, interact with their environment, and achieve meaning-making," while teachers are required to stimulate students' innovative thinking and practical abilities through scenario creation and collaborative guidance. Within this framework, New Business competitions serve as practical learning vehicles, providing fields for "knowledge construction" through real business cases, interdisciplinary projects, and team collaboration mechanisms (Zhang et al., 2022)[3]. This encourages students to shift from passive receivers to active explorers, achieving synergistic improvements in research literacy and professional capabilities by solving complex business problems.

Furthermore, the "student-centered" philosophy requires integrating research-oriented thinking training into competition design, such as data-driven analysis and iterative innovation schemes, forming a closed-loop cultivation model of "competition-driven research practice—research enriching competition innovation." This ultimately promotes students' transformation from knowledge consumers to knowledge creators. Under the teaching philosophy of "student-centeredness," the collaborative cultivation mechanism between New Business competitions and research projects becomes a core path to enhancing students' innovation and practical abilities (Li and Cui, 2024)[4].

Practical evidence shows that academic competitions, through the "integration of competition and teaching" model, reconstruct teaching logic. For instance, relying on courses like Brand Planning, embedding national business elite challenge brand planning competitions into the curriculum system, and participating in national college student market survey and analysis competitions as an opportunity for Market Research and Forecast courses create a three-dimensional teaching innovation mechanism of "case-course-competition," prompting students to integrate multidisciplinary knowledge and solve complex problems in real cases. Liu and Yao (2021)[5] further point out that the "integration of competition and learning" ecosystem strengthens students' autonomous learning motivation by standardizing competition processes, incorporating competitions into credit recognition, and building a "student-teacher" bidirectional selection mechanism. The practices of Wuxi Taihu University’s School of Business demonstrate that this model has enabled students to win nearly a hundred national-level academic competition awards within three years, significantly enhancing their employment competitiveness.

Moreover, the integration of scientific research education projects with the digital intelligence trend of New Business provides students with interdisciplinary practical platforms. Lü et al. (2022)[6] emphasize that New Business should center on "student development, learning process, and learning outcomes," reconstructing the teaching paradigm of "learning by doing." For example, guiding students to participate in real enterprise proposition research activities through a "Business + Digital Technology" curriculum system and practicing in the "Internet +" innovation and entrepreneurship competitions have validated the role of scientific research practice in shaping data analysis and business planning capabilities. The Experimental Teaching Center of Wuxi Taihu University’s School of Business, focusing on "disciplinary integration" and "industry-academia collaboration," uses artificial intelligence and big data technology to design multi-disciplinary crossover scenarios, promoting students' knowledge transfer in simulated environments.

In summary, the synergy between academic competitions and research projects not only aligns with the educational philosophy of "student-centeredness" but also provides systematic solutions for cultivating interdisciplinary talents with innovative thinking and practical wisdom in New Business through industry-academia integration, digital empowerment, and evaluation reform.

3. The Innovative Collaborative Cultivation Model of OCTWTS

The innovative model of "One Core with Two Wings and Three-Party Synergy"(OCTWTS) centers on the cultivation of New Business talents, aiming to build a more systematic, scientific, and practice-oriented talent development system. Figure 1 illustrates the key elements of this model.

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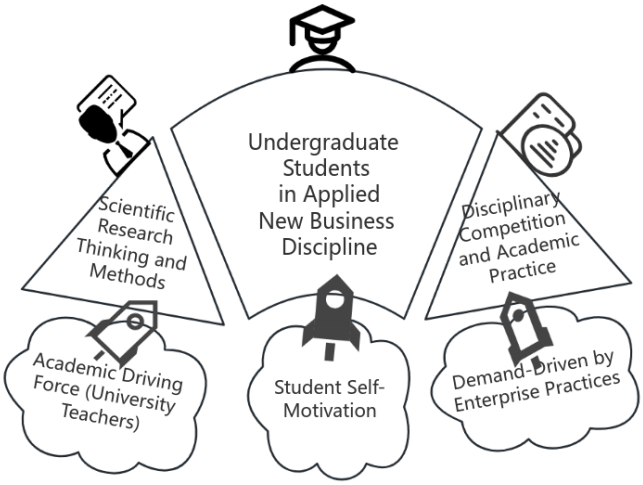

Figure 1: Model of OCTWT

One Core: This refers to placing students at the core, reinforcing their central position to fully mobilize their enthusiasm and initiative in learning. At the "core" level, the model focuses on designing personalized learning paths tailored to students' interests and developmental directions. It introduces Project-Based Learning (PBL) methods, allowing students to hone their comprehensive abilities through real or simulated projects. Additionally, a dynamic feedback mechanism is established to continuously assess and guide students, helping them optimize learning strategies and enhance autonomous learning and problem-solving skills.

Two Wings: These represent research thinking training and discipline competition practices, which complement each other to form a virtuous cycle of mutual empowerment. In terms of research thinking training, the model systematically designs courses such as literature retrieval, data analysis and modeling, and business case studies to foster rigorous logical thinking and solid research capabilities. Students are encouraged to participate in enterprise project research, such as the informatization construction of new energy enterprises and smart supply chain management, enhancing critical thinking and complex problem-solving skills in real-world scenarios. Discipline competition practices provide opportunities for students to apply learned research methods to practical business contexts, leveraging platforms like the Global Business Elite Challenge and the CP Group Market Research Competition to boost teamwork, communication skills, innovation awareness, and practical capabilities.

Three-Party Synergy: This emphasizes the collaborative advancement mechanism among student self-motivation, faculty academic drive, and corporate practical needs. For students, diversified incentive mechanisms, including competition awards, showcases of outstanding achievements, and support for academic outcome conversion, effectively stimulate intrinsic learning motivation and exploratory desires. Faculty members actively engage in competition guidance, research project incubation, and industry-academia collaboration, integrating teaching and research to improve educational quality and promote the social transformation of research outcomes. Enterprises serve as significant external drivers by providing lateral projects, internship positions, and industry mentor resources, bringing real commercial demands into classrooms and keeping teaching content aligned with industry developments. This three-way interaction not only enhances the relevance and effectiveness of education but also provides students with broader practical platforms and development spaces. Successful university-enterprise cooperation cases further validate the effectiveness of this model, demonstrating the possibility of deeply integrating corporate needs with educational practices. These cases offer replicable and scalable collaborative education paradigms for applied undergraduate institutions and provide practical solutions to long-standing issues such as outdated teaching content and scarce practical opportunities.

4. Deep Coupling of the "Research Competence Pool" and the "Academic Competition Competence Pool"

Table 1 illustrates the approach to the deep coupling between the "Research Competence Pool" and the "Academic Competition Competence Pool."

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Table 1: Detailed Explanation of Deep Coupling Methods between Competence Pools

Research Competence Pool	Academic Competition Competence Pool	Coupling Method (Complementary/Integrated)
Data Analysis Skills	Data Modeling and Algorithm Design Skills	Utilize real data for modeling in research, enhance model optimization and rapid iteration capabilities in competitions, forming a "theory-practice-reoptimization" loop.
Literature Search and Review Skills	Problem Identification and Innovative Thinking Skills	Competition projects often require quickly pinpointing the core issue; literature review skills in research help students build systematic knowledge backgrounds to propose more innovative solutions.
Experimental Design and Execution Skills	Team Collaboration and Project Management Skills	Emphasize process standardization and detail control in research experiments, while competitions focus on efficient collaboration and execution under time pressure, combining both to enhance students' comprehensive project management abilities.
Theoretical Derivation and Logical Reasoning Skills	Solution Presentation and Defense Skills	Research trains students in rigorous logic, whereas competitions demand concise expression of complex content, fostering versatile talents who can conduct in-depth research and clearly present their findings.
Programming and Software Development Skills	Innovative Solution Implementation Skills	Master programming basics and tool usage in research, apply these skills to solve practical problems like AI and big data applications in competitions.
Report Writing and Paper Composition Skills	PPT Creation and Presentation Skills	Research outcomes need to be presented as papers, while competitions emphasize live demonstrations and oral defenses, combining both to improve students' multidimensional communication skills.
Critical Thinking Skills	Rapid Adaptation and Decision-Making Skills	Cultivate profound understanding of problem essence through research, train reasonable judgment within limited time in competitions, enhancing flexible response capabilities in practical scenarios.
System Modeling and Simulation Skills	Algorithm Optimization and Performance Tuning Skills	Establish system models for prediction and analysis in research, focus more on algorithm efficiency and optimal solutions under resource constraints in competitions, combining both to build accurate and efficient model systems.
Domain Knowledge Accumulation	Comprehensive Cross-Disciplinary Application Skills	Deepen understanding in a specific field through research, involve interdisciplinary issues in competitions, promoting students to apply specialized knowledge across various contexts, enhancing cross-boundary integration capabilities.

Through data-driven approaches and modeling integration, research provides authentic data and methodological support, while academic competitions set challenging tasks and evaluation criteria, promoting model optimization and algorithm implementation. In the combination of theoretical learning and practical training, research strengthens students' foundational knowledge, whereas competitions offer real-world application scenarios, reinforcing the transformation of knowledge into practical skills ("learning by doing").

Moreover, individual research and team collaboration complement each other: research fosters independent exploration, while competitions emphasize division of labor and teamwork, jointly enhancing students' adaptability to diverse working environments. Long-term knowledge accumulation and short-term breakthroughs coexist harmoniously — as a continuous process of knowledge building, research works in tandem with the intensive, practice-oriented platform of competitions, forming a spiral growth path. The integration of output orientation and process orientation ensures that students not only possess solid research foundations but also demonstrate strong capabilities in outcome presentation and communication.

This model aims to establish a talent cultivation system driven simultaneously by research and competitions, dedicated to nurturing interdisciplinary talents equipped with innovation capability, practical skills, and comprehensive qualities. Through this cross-disciplinary and multi-dimensional integration of competencies, students' employability is significantly enhanced, along with their ability to contribute to local economic development and participate in industrial transformation and upgrading.

Furthermore, this competence-oriented approach drives higher education institutions to transition from traditional "knowledge transmission" to "competency-based development," providing strong support for cultivating high-quality talents in the new era.

5. Collaborative Cultivation Pathways for New Business Discipline Competitions and Scientific Research Talents

The collaborative cultivation path of New Business Discipline Competitions and scientific research talents needs to be developed from multiple dimensions, including the construction of a multi-level competition system, the deep integration of specialized education with competitions, optimization of

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university-enterprise cooperation mechanisms, and improvement of dynamic feedback systems.

Firstly, establishing a comprehensive and hierarchical competition system is foundational to achieving this goal. This system is designed as “three levels and three types,” encompassing university-level selection competitions, regional competitions, and international events such as the Global Business Elite Challenge. By setting up progressively layered competition platforms, it can meet the participation needs of students at different levels while providing opportunities to apply theoretical knowledge to solve practical problems, especially in addressing real business needs, thereby enhancing core capabilities like data analysis and market research.

Secondly, deepening the integration between specialized education and academic competitions is crucial. Specific measures include organically incorporating competition content into curriculum design. For example, embedding competition case analysis modules into courses like Business Data Analysis and Market Research Methodology. This not only allows students to master practical operational skills while learning theories but also encourages them to write academic papers while completing competition projects, promoting bidirectional interaction between teaching and research. Such deep integration not only enhances students' professional application abilities but also updates course content through feedback from competitions, creating a virtuous cycle of "competition promotes teaching, competition promotes learning," which helps stimulate students' enthusiasm for learning and innovative potential.

University-enterprise cooperation serves as a critical support for collaborative cultivation and plays an indispensable role in improving talent quality. Teachers can convert enterprises' actual needs into competition topics by undertaking corporate horizontal projects, guiding students to transform research outcomes into academic papers or competition entries, thus achieving deep linkage among industry, academia, and research. Additionally, inviting corporate mentors to participate in competition guidance not only provides students with authentic commercial scenario experiences but also effectively bridges the gap between teaching content and corporate technology demands, ensuring that students' knowledge and skills align with market requirements.

To ensure continuous optimization of the cultivation path, establishing an effective dynamic feedback mechanism is particularly necessary. Based on dynamic analysis of competition results, enterprise feedback, and student growth data, teachers can continuously adjust teaching strategies, optimize the coupling paths of the research competence pool and the academic competition competence pool, forming a closed-loop management system of "competence assessment—path adjustment—outcome validation." This approach not only improves the efficiency of educational resource utilization but also facilitates precise positioning and support for student development.

Case-based teaching and outcome promotion are essential means to ensure the implementation of the aforementioned paths. By constructing a series of innovative cultivation model case studies covering aspects such as transforming corporate topics into competition projects and feeding back research outcomes into teaching, these practices not only provide replicable collaborative cultivation paradigms for other universities but also offer reference solutions for solving common challenges encountered during teaching reforms in applied undergraduate institutions.

Ultimately, this collaborative cultivation path constructs a new innovation ecosystem for New Business talent cultivation through the triple drive of "student-centeredness—research and competition—university-enterprise collaboration." It covers the complete chain from accepting corporate projects, competition practice, to the transformation of research outcomes. Not only does it significantly enhance students' employment competitiveness, but it also serves local economic development and industrial upgrade needs through interdisciplinary capability training (such as the intersection of information technology and business). This practice-oriented cultivation model provides solid theoretical foundations and rich practical experiences for exploring new pathways of industry-education integration in applied universities.

6. Conclusion

The innovative OCTWTS model for New Business discipline competitions and scientific research talents aims to construct a systematic, scientific, and practice-oriented talent development system through a student-centered approach, driven by both research and competitions. This model integrates industry-academia collaboration and digital empowerment. The study shows that this cultivation method not only aligns with modern educational philosophies emphasizing students' subjectivity but also provides a systematic solution for nurturing interdisciplinary capabilities, innovative thinking, and practical wisdom

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in New Business talents. By establishing a multi-level competition system, deeply integrating specialized education with competitions, optimizing university-enterprise cooperation mechanisms, and improving dynamic feedback systems, this approach effectively aligns teaching content with industrial needs, significantly enhancing students' employment competitiveness, and contributing to local economic development and industrial upgrading. This model offers significant theoretical foundations and practical experiences for applied undergraduate institutions exploring new pathways for high-quality talent cultivation in the new era. Future research will further investigate how to expand the application scope of this model and its adaptability and effectiveness across different educational contexts.

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