The Triadic Collaborative Innovation Model for Innovation and Entrepreneurship Education in Vocational Colleges

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Abstract: In the context of an innovation-driven development strategy, vocational colleges are central to cultivating skilled professionals for industrial and societal progress. This article investigates the current challenges in innovation and entrepreneurship education, such as inadequate resource allocation, outdated curricula, and weak school-industry collaboration. To address these gaps, the paper proposes a triadic collaborative model involving government, schools, and enterprises. This model aims to facilitate resource integration, promote pedagogical reform, and elevate training quality through shared responsibilities and complementary capabilities. The purpose of this study is to explore and propose an integrated training model for innovation and entrepreneurship education in vocational colleges through a collaborative framework involving government, schools, and enterprises.

Keywords: collaborative innovation; Vocational colleges; Innovation and Entrepreneurship Education

1. Introduction

In the contemporary era marked by globalization and informatization, innovation has become the cornerstone of social progress and economic transformation. The national strategy of innovation-driven development has led to a surging demand for highly skilled and innovative talents. Vocational colleges, with their unique position in vocational education, play a pivotal role in cultivating such talents. The effectiveness of Innovation and Entrepreneurship Education in vocational colleges directly impacts the sustainable development of the socio-economy.

The government's call for "mass entrepreneurship and innovation" has prompted vocational colleges to incorporate Innovation and Entrepreneurship Education into their core initiatives. However, during the implementation process, some colleges still fail to prioritize Innovation and Entrepreneurship Education, resulting in limited resource allocation. Traditional course settings and teaching methods lack innovation, and practical teaching components are weak, depriving students of sufficient opportunities for hands-on training and entrepreneurial practice. These issues severely hinder the improvement of the quality of Innovation and Entrepreneurship Education and affect the ability of vocational colleges to serve local socio-economic development.

Against this backdrop, the Triadic Collaborative Innovation Mechanism has emerged. As a novel cooperative model, it promotes deep integration and resource sharing among the government, schools, and enterprises. This mechanism provides new insights and pathways for the development of Innovation and Entrepreneurship Education in vocational colleges. It emphasizes close cooperation and joint efforts among the three parties, breaking the constraints of traditional education models and facilitating the exploration of the intrinsic laws and operational mechanisms of Innovation and Entrepreneurship Education. By integrating the strengths of each party and creating synergistic effects, this mechanism promotes a comprehensive upgrade of Innovation and Entrepreneurship Education. It offers new perspectives for building a scientific and robust theoretical framework for Innovation and Entrepreneurship Education and enriches the related theories of higher vocational education, providing valuable references for future research (Lu Chunping, Hui Wang, 2021).

This study holds significance as it offers a practical and scalable framework to enhance innovation and entrepreneurship education in vocational settings. It provides a model that addresses existing gaps in collaboration, resource utilization, and educational effectiveness, which can guide policy-making and institutional reforms.

2. Theoretical Foundations

2.1 The Triadic Collaborative Innovation Theory

The Triadic Collaborative Innovation Mechanism is an innovative model that integrates the forces of the government, schools, and enterprises. Its core lies in achieving efficient resource allocation and deep integration through resource sharing, complementary strengths, and joint risk-taking. This mechanism not only enhances the quality and effectiveness of Innovation and Entrepreneurship Education in vocational colleges but also significantly impacts the construction of the national innovation system and the sustainable development of the socio-economy (Quan Liangyuan, Liu Yizheng,2025).

Within this mechanism, the government, as the provider of public services and the policymaker, aligns with the mission of vocational colleges in cultivating high-quality technical and skilled talents and serving socio-economic development. The government formulates relevant policies and regulations to provide policy guidance and institutional guarantees for collaborative innovation. It also allocates and integrates various innovation resources, such as funding, talent, and technology, to support collaborative innovation activities.

Additionally, the government provides public services to create a favorable external environment for collaborative innovation (Nan Li,2021).

Schools, as the cradle of talent cultivation, are tasked with not only imparting knowledge but also fostering students' innovative spirit and practical skills. By collaborating closely with enterprises on technological research and innovation, schools can enhance their research capabilities and provide enterprises with a steady stream of talent and intellectual support. Schools also contribute to socio-economic progress by transforming research outcomes into productive forces through social services.

Enterprises, guided by the market and pursuing technological innovation and product upgrades, require talent and intellectual support from vocational colleges. Through collaboration with the government and schools, enterprises can access the latest technological information and research $\bar{\alpha}$ R, thereby enhancing their technological innovation capabilities and market competitiveness. Furthermore, enterprises guide the innovation directions of the government and schools through market feedback and demand orientation, ensuring the relevance and effectiveness of collaborative innovation activities.

2.2 Innovative Education Theory

Innovation education, a crucial component of modern educational philosophy, focuses on cultivating students' innovative awareness and capabilities. It emphasizes not only the transmission of knowledge but also the stimulation of creative thinking and the development of independent problem-solving abilities. Innovation education aims to inspire students' curiosity, thirst for knowledge, and desire to create, while fostering critical thinking to enable them to view issues with a critical eye and think independently (Song Yuefen et al., 2020).

In implementing innovation education, the following aspects are often addressed:

Optimizing Course Settings: Traditional course settings often focus on knowledge impartation while neglecting students' subjective status and creative thinking. Innovation education requires more flexible and diverse course settings to stimulate students' learning enthusiasm and cultivate their innovative awareness and practical skills.

Reforming Teaching Methods: Traditional teaching methods often center on teachers. Innovation education shifts the teaching focus to students, advocating student-centered teaching methods. These methods aim to stimulate students' intrinsic learning motivation, encourage their active participation in teaching practices, and enhance their innovation capabilities through hands-on activities, collaborative exchanges, and in-depth problem exploration, laying a solid foundation for their all-round development.

Strengthening Practical Teaching: Strengthening practical teaching is crucial for improving talent cultivation quality. Practical teaching tests students' knowledge mastery and exercises their practical and problem-solving abilities,

enabling them to better adapt to future career demands. It also inspires innovative thinking, encouraging students to identify shortcomings in traditional theories or methods and propose new viewpoints and solutions.

Changing the Subject Position: Students are the core of innovation education. Their initiative, enthusiasm, and creativity are key to the success of innovation education. Teachers should fully utilize students' main role, guide them to actively participate in innovation activities, and cultivate their innovative awareness and capabilities. Teachers play a vital role in innovation education by employing scientific teaching methods and advanced teaching tools to unlock students' innovation potential, foster their innovative spirit, enhance their practical abilities, and facilitate the effective transition from theoretical to practical innovation education, ultimately promoting students' all-round development.

2.3 Entrepreneurship Education Theory

Entrepreneurship education focuses on cultivating students' entrepreneurial spirit and capabilities (Chen Changquan, Huang Qianxue,2023), enabling them to possess both the ability to start their own businesses and to be employable (Ramona Isabel S. et al., 2024)). The core concepts of entrepreneurship education include three aspects: market orientation, student-centeredness, and practice-based approaches. These concepts serve as guiding principles for the implementation and evaluation of entrepreneurship education.

Market Orientation: This concept requires entrepreneurship education content to be closely linked with market demands, equipping students with keen market insight and innovative thinking. By introducing market mechanisms, students can better understand market dynamics, grasp entrepreneurial opportunities, and stand out in competition. This philosophy helps students adapt to market changes and improve their entrepreneurial success rates.

Student-Centeredness: As the core concept of entrepreneurship education, this approach emphasizes considering individual differences among students and respecting their uniqueness and diversity. It aims to mobilize students' initiative by creating a positive learning atmosphere and designing diverse teaching activities, transforming students from passive recipients to active explorers.

Practice-Based Approach: This concept stresses the importance of practical teaching components. Practical teaching enables students to better understand and master entrepreneurial knowledge and develop problem-solving skills. It also provides students with opportunities to connect with the industry, expand their horizons and networks, and accumulate valuable experience for future entrepreneurial activities.

In the implementation of entrepreneurship education, methods such as offering entrepreneurship courses, hosting entrepreneurship lectures and training sessions, and establishing entrepreneurship practice bases are widely

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applied. These methods complement each other, forming a comprehensive entrepreneurship education system. Entrepreneurship courses provide a foundation by systematically imparting knowledge and skills. Lectures and training sessions offer additional learning resources and exchange platforms. Entrepreneurship practice bases provide real entrepreneurial environments and opportunities for students to grow and develop through practice.

3. The Current State and Existing Problems of Innovation and Entrepreneurship Education in Vocational Colleges

In the era of "mass entrepreneurship and innovation," the socio-economic structure is undergoing profound changes, with innovation-driven development becoming a core national strategy. Vocational colleges, as key players in cultivating technical and skilled talents, bear the important mission of producing talents with practical abilities and innovative spirits. The roles of the government, schools, and enterprises in Innovation and Entrepreneurship education directly affect education quality and talent cultivation outcomes. Analyzing the current state from these three perspectives is crucial for identifying issues and proposing improvements. Therefore, referring to relevant literature and based on field investigations of the government, schools, and enterprises, this study summarizes the performance and existing problems of these three entities in Innovation and Entrepreneurship Education.

3.1 Government Aspect

Policy Support and Guidance: In recent years, the government has attached growing importance to Innovation and Entrepreneurship Education in vocational colleges. Driven by the national innovation-driven development strategy, a series of targeted and guiding policy documents have been issued, providing clear action guidelines and a favorable policy environment. These policies have promoted the standardized and systematic development of Innovation and Entrepreneurship Education in vocational colleges.

Funding and Financial Support: The government has actively increased funding for Innovation and Entrepreneurship Education in vocational colleges, providing a solid financial foundation. Some local governments have even collaborated with enterprises to establish entrepreneurship and innovation investment funds to support students' entrepreneurial projects.

Platform Development and Resource Integration: The government has actively developed Innovation and Entrepreneurship Education platforms and integrated resources to build comprehensive, multi-level service systems. In terms of hardware support, national and provincial-level entrepreneurship and innovation incubation bases have been established to provide students with well-equipped facilities(Gong Fan,2024). In terms of software services, various entrepreneurship and innovation competitions have been organized to offer students platforms to showcase their achievements and test their capabilities.

exist. Policy implementation is often weak, with some policies failing to be effectively executed at the grassroots level. Resource allocation is also uneven, with significant disparities in policy support and funding among different regions and vocational colleges, which limits the development of Innovation and Entrepreneurship Education.

3.2 Schools Aspect

Course Development and Teaching Reform: Vocational colleges have actively advanced the development of Innovation and Entrepreneurship Education courses. They have incorporated Innovation and Entrepreneurship Education into talent cultivation programs and offered a series of related courses, such as management and entrepreneurship basics, providing students with rich and systematic learning resources. In terms of teaching methods, vocational colleges have moved away from traditional, monotonous approaches and adopted diverse methods such as project-based and case-based teaching. These methods encourage student participation and practice, stimulating their learning interest and innovative thinking(Liang Xiaochi,2023).

Faculty Development: Schools have emphasized the development of faculty for Innovation and Entrepreneurship Education. They have enhanced teachers' capabilities and practical skills through training, further studies, and enterprise internships. Some vocational colleges have also recruited external resources, such as enterprise executives and entrepreneurs, to teach students cutting-edge entrepreneurial concepts, practical skills, and industry trends.

Entrepreneurship Platforms and Base Development: To provide students with comprehensive entrepreneurship guidance and funding services, vocational colleges have established entrepreneurship incubation bases and makerspaces. These platforms offer students physical spaces, venues, and equipment support to transform their ideas into tangible products.

Despite these efforts, several problems still constrain the improvement of Innovation and Entrepreneurship Education quality. The course system remains imperfect, with some content disconnected from market demands and lacking relevance and practicality(Huang Lijing, Yang Yu,2024). The practical abilities of faculty need improvement, as some teachers lack enterprise experience and struggle to guide students in real entrepreneurship and innovation projects. The utilization rate of practice platforms and bases is low, with some suffering from idle equipment and poor management, affecting the effectiveness of practical teaching.

3.3 Enterprises Aspect

Participation in Collaboration and Talent Cultivation: Against the backdrop of vocational education reform and the promotion of "industry-education integration and school-enterprise cooperation," enterprises have actively participated in Innovation and Entrepreneurship Education in vocational colleges. This involvement has injected new

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vitality into Innovation and Entrepreneurship Education and provided rich practical teaching resources and employment opportunities. Enterprises and schools have collaborated on projects such as joint 办学, order-based training, and co-built training bases.

Providing Practice Opportunities and Project Support: By participating in Innovation and Entrepreneurship Education, enterprises offer students valuable practice opportunities and project support. They can identify and cultivate high-quality talents with innovative thinking and practical abilities, injecting new vitality into their development. At the same time, enterprise practice projects enrich schools' teaching resources, enhance the practical teaching system, and improve talent cultivation quality.

Promoting Technology Transfer and Industry-Academia Integration: As market entities with keen market insight, extensive sales channels, mature business models, and rich industry resources, enterprises can provide clear market guidance and feasible commercialization paths for entrepreneurship and innovation projects. Their advantages in funding, equipment, and production management also offer material support for the industrialization of projects, helping students bring their projects to market and achieve industrial development.

However, enterprises also face several challenges in participating in Innovation and Entrepreneurship Education. The depth of collaboration is insufficient, with some enterprises only engaging superficially and lacking deep industry-education integration. Participation enthusiasm is low, as some enterprises view involvement in Innovation and Entrepreneurship Education as costly with minimal returns. Collaboration mechanisms are also underdeveloped, with communication barriers and inefficient information exchange between enterprises and schools. Additionally, the lack of scientific and rational rules for the distribution of benefits leads to uneven benefit distribution, severely hindering smooth collaboration.

4. Building an Innovation and Entrepreneurship Education Model for Vocational Colleges Under the Triadic Collaborative Innovation Framework

The government, schools, and enterprises are key players in the Triadic Collaborative Innovation Model and play indispensable roles in promoting Innovation and Entrepreneurship Education in vocational colleges. However, numerous shortcomings exist in current practices. Exploring strategies to build an Innovation and Entrepreneurship Education model under the Triadic Collaborative Innovation Framework holds significant practical importance.

4.1 Strengthening Government Coordination and Guidance to Improve Policy Support and Resource Guarantee Systems

Enhancing Policy Implementation Supervision and Evaluation: The government should establish robust supervision mechanisms to regularly inspect and evaluate the implementation of policies related to Innovation and Entrepreneurship Education in vocational colleges. It can set up dedicated supervisory bodies or entrust third-party agencies to conduct on-site investigations of policy implementation and promptly correct deviations. Additionally, a scientific and reasonable evaluation indicator system should be developed to assess policy implementation from multiple dimensions, including policy awareness, implementation strength, and effectiveness. The evaluation results should be linked to policy adjustments and subsequent resource allocation to ensure effective policy implementation.

Optimizing Resource Allocation Mechanisms: The government should consider regional differences and the actual needs of vocational colleges to optimize the resource allocation mechanism for Innovation and Entrepreneurship Education. Increased funding and policy support should be provided to central and western regions and underdeveloped vocational colleges through measures such as special transfer payments and project application preferences to narrow resource gaps. A dynamic adjustment mechanism for resource utilization efficiency based on the development and needs of Innovation and Entrepreneurship Education in vocational colleges.

Developing Information Sharing and Service Platforms: The government should actively develop information sharing and service platforms among the government, schools, and enterprises to break down information barriers and promote efficient circulation of resources such as policies, demands, and technologies. By integrating information on entrepreneurship and innovation policies, project updates, enterprise demands, and talent resources, the platform should enable real-time sharing and precise information delivery. Vocational colleges can adjust their teaching plans based on government policies and enterprise demands. Enterprises can access talent and technological resources from vocational colleges for collaboration. The government can monitor the development of Innovation and Entrepreneurship Education to inform policy-making and resource allocation.

4.2 Optimizing the School Education System to Improve the Quality and Level of Innovation and Entrepreneurship Education

Enhancing Curriculum System Development: Vocational colleges should market demands to improve their Innovation and Entrepreneurship Education curriculum. Integrating Innovation and Entrepreneurship Education into various professional courses helps students think about entrepreneurship and innovation from a professional perspective, stimulating their innovative thinking and enhancing their entrepreneurial abilities. Additionally, vocational colleges should offer specialized entrepreneurship and innovation general education courses, practical courses, and elective courses to form a comprehensive curriculum system from theory to practice and from basic to advanced levels. They should also provide personalized course options based on different majors and student interests to meet diverse needs(Wang Jian, 2025).

Strengthening Faculty Development: Vocational colleges should establish comprehensive and targeted faculty development plans to inject vitality into Innovation and Entrepreneurship Education. They can enhance teachers' capabilities and practical skills through training, enterprise internships, and appointing external entrepreneurs. A well-structured faculty development system should be built to improve the overall quality of Innovation and Entrepreneurship Education faculty, providing strong talent support for high-quality Innovation and Entrepreneurship Education and Entrepreneurship Education faculty and Entrepreneurship Education Educ

Refining Practical Teaching Reforms: In the context of deep integration between vocational education and industrial innovation, practical teaching is a crucial component of Innovation and Entrepreneurship Education. The quality of practical teaching directly impacts talent cultivation effectiveness. On the one hand, schools should increase funding to improve facilities in on-campus entrepreneurship incubation bases and makerspaces. On the other hand, they should strengthen collaboration with enterprises to expand off-campus practical teaching resources. Additionally, schools should innovate teaching methods by introducing diverse approaches such as project-driven and case-based teaching to invigorate practical teaching and enhance students' practical abilities(Wu Wei, Tang Lijun,2018).

4.3 Deepening Enterprise Participation and Collaboration to Build an Industry-Education Integrated Innovation and Entrepreneurship Education Ecosystem

Expanding the Depth and Breadth of Collaboration: Enterprises can collaborate with vocational colleges to jointly develop talent cultivation programs. Based on their industrial characteristics, technological development trends, and talent capability requirements, enterprises can provide precise industry guidance and practical demand information for talent development. Furthermore, enterprises can jointly invest funds and equipment with vocational colleges to establish enterprise-specific training bases. Through practical training in these bases, students can better integrate theoretical knowledge with practice, enhancing their problem-solving and innovation abilities(Famei S. et al.,2025).

Enhancing Participation Enthusiasm: The government should introduce incentive policies to boost enterprises' participation in Innovation and Entrepreneurship Education in vocational colleges. For example, tax incentives and financial subsidies can be provided to reduce enterprises' collaboration costs. An honor and recognition system for enterprise participation in Innovation and Entrepreneurship Education should also be established to recognize and publicize outstanding enterprises, enhancing their social reputation. Additionally, schools should strengthen communication and collaboration with enterprises, promptly address their needs and feedback, and provide quality services to build enterprises' confidence and motivation for collaboration (Chen Junhao,2021).

Improving Collaboration Mechanisms: First, establish communication bridges by setting up joint teams for regular

project updates and problem-solving, supported by online platforms for seamless communication and shared industry and academic information. Second, enhance benefits sharing and incentives by allocating collaboration returns based on investment, contributions, and risk-sharing, while rewarding outstanding performers. Third, develop risk-sharing systems by comprehensively assessing technological and market risks before collaboration and devising contingency plans.

5. Conclusion

Triadic collaborative innovation is an effective approach to advancing Innovation and Entrepreneurship Education in vocational colleges. To address the shortcomings of the government, schools, and enterprises, strategies such as strengthening government coordination, optimizing school education systems, and deepening enterprise collaboration should be employed to build an integrated Innovation and Entrepreneurship Education ecosystem. The government should play a coordinating role to improve policy support and resource guarantee systems. Schools should refine their education systems to enhance the quality of Innovation and Entrepreneurship Education. Enterprises should deepen their participation to foster an industry-education integrated Innovation and Entrepreneurship Education ecosystem. This study offers theoretical and practical guidance for vocational colleges to enhance their Innovation and Entrepreneurship Education and provides valuable references for government, enterprises, and society to participate in and support and Entrepreneurship Education. Innovation More importantly, the implementation and promotion of this study are expected to inspire students' innovation awareness and entrepreneurial passion, cultivate a large number of high-quality technical and skilled talents with entrepreneurship and innovation capabilities and a sense of social responsibility, and make positive and far-reaching contributions to regional socio-economic development and employment promotion.

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References

- [1] Wu Wei, & Tang Lijun. (2018). Exploration on the training mode of entrepreneurial talents in higher vocational colleges under the background of "internet plus". Journal of Guangxi Vocational and Technical College, 11(2), 4.
- [2] Song Yuefen, Pan Wenhua, Tian Qixiang, & Zhang Weiguo. (2020). Review on the current situation and theme of domestic innovation and entrepreneurship education evaluation research. Heilongjiang Higher Education Research, 38(6), 6.
- [3] Lu Chunping, & Hui Wang. (2021). The "three-chain synergy" operation mode of innovation and entrepreneurship education in Shenzhen universities-taking S University as an example. Exploration of higher education (6), 9.
- [4] Chen Changquan, & Huang Qianxue. (2023). Research on the connotative development of dual-innovation

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education in higher vocational colleges. China Educational Technology and Equipment (7).

- [5] Liang Xiaochi. (2023). Investigation and Countermeasures of Innovation and Entrepreneurship Education in Guangxi Higher Vocational Colleges-Taking Guangxi Agricultural Vocational and Technical University as an example. Modern Vocational Education (26), 21-24.
- [6] Gong Fan. (2024). Exploration and research on innovation and entrepreneurship education in colleges and universities and the incubation model of achievements. Educational theory and practice (1).
- [7] Ramona Isabel S. Ramirez & Ma. Teresa B. Lirag. (2024). The Entrepreneurial Mindset: Views and Perspectives of Cacao Entrepreneurs on Innovation and Entrepreneurship in Bicol Region, Philippines. South Asian Journal of Social Studies and Economics,21(12),88-101.
- [8] Huang Lijing, & Yang Yu. (2024). Innovation and Entrepreneurship Education Ecology in Colleges and Universities: System Structure, Dilemma and Optimization. Heilongjiang Higher Education Research, 42(8), 147-153.
- [9] Famei S. et al.. (2025). Exploring the effect of students' engagement in entrepreneurship competitions on their entrepreneurial intention. The International Journal of Management Education, 23(2), 101103-101103.
- [11] Quan Liangyuan & Liu Yizheng. (2025). Research on the influence of multi-subjects on the cultivation of innovative and entrepreneurial talents in colleges and universities from the perspective of collaborative education. Jiangsu Higher Education, (01), 89-97.