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Research on the Cultivation Path of College Students' Innovation and Entrepreneurship Ability from the Perspective of Mass Entrepreneurship and Innovation

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ABSTRACT

In the context of the deep integration between the "Mass Entrepreneurship and Innovation" strategy and higher education reform, innovation and entrepreneurship education has become a key mechanism for cultivating students 'entrepreneurial capabilities in universities. However, current university innovation and entrepreneurship education still faces challenges such as disconnection between curriculum systems and majors, insufficient practical platform support, a lack of professional expertise among faculty, and monolithic evaluation mechanisms, which hinder the effective development of students' entrepreneurial skills. This paper proposes a systematic capability development framework based on the connotation of innovation and entrepreneurship education and the core components of students 'entrepreneurial competencies (innovative thinking, practical skills, collaborative abilities, and risk management capabilities). Through four dimensions-"curriculum integration, platform coordination, faculty empowerment, and evaluation optimization" - the study provides theoretical references and practical solutions to enhance the quality of innovation and entrepreneurship education in universities, thereby supporting high-quality entrepreneurship and employment among students.

KEYWORDS

Mass Entrepreneurship and Innovation Education; College Students; Innovation and Entrepreneurship Capabilities; Cultivation Pathways; Practical Platforms.

1. INTRODUCTION

The "Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Higher Education Institutions" issued by the State Council in 2015 clearly proposed to "focus on cultivating students 'innovative spirit, entrepreneurial awareness, and innovation and entrepreneurship capabilities," elevating innovation and entrepreneurship education to the level of national education reform strategy.[1] With the advancement of national strategies such as the digital economy and rural revitalization, the demand for versatile talents with innovative thinking and entrepreneurial abilities has become increasingly urgent. According to the "China College Student Entrepreneurship Development Report (2024)", the entrepreneurship rate among college students nationwide was only 3.8% in 2023, significantly lower than the 15%-20% level in developed countries. One of the core reasons lies in the failure of higher education institutions to effectively align innovation and entrepreneurship education with market demands and students' capability gaps.[2]

Entrepreneurship and innovation education transcends basic "entrepreneurship skills training". As an integrated educational system anchored in innovation and practice-oriented, it combines specialized education, quality education, and vocational training. Its core mission is to cultivate students

'entrepreneurial competencies through the process of "identifying challenges, integrating resources, solving problems, and creating value".[3] However, some universities currently equate entrepreneurship education with "general entrepreneurship courses" or "innovation competitions", neglecting deep integration with specialized disciplines and effective market connections. This disconnect has resulted in theoretical abstraction and practical detachment in cultivating students' innovative capabilities. Addressing these issues, this paper explores actionable pathways for competency development that align with the fundamental requirements of entrepreneurship education and the growth patterns of college students. Such approaches not only respond to national reform policies but also provide crucial solutions to the persistent challenge of "wanting to start businesses but lacking practical skills, and innovating ideas but struggling to implement them".

2. THE NECESSITY OF CULTIVATING STUDENTS' INNOVATION AND ENTREPRENEURSHIP ABILITY UNDER THE PERSPECTIVE OF INNOVATION AND ENTREPRENEURSHIP EDUCATION

2.1. Meet the Inevitable Requirements of Economic Restructuring

China is currently transitioning from "factor-driven" to "innovation-driven" development, with urgent demand for talents skilled in innovation and entrepreneurship across sectors like digital economy, green economy, and rural revitalization. For instance, the artificial intelligence industry requires college students to possess "technological innovation + commercialization" capabilities, while rural revitalization demands interdisciplinary professionals combining "agricultural expertise + entrepreneurial operations."[4] By integrating cross-disciplinary knowledge and aligning with industry needs, innovation and entrepreneurship education helps students transform their professional skills into innovative achievements and startup projects, addressing market talent gaps. According to data from the Ministry of Education, 83% of college students participating in innovation and entrepreneurship education in 2023 focused their entrepreneurial projects on strategic fields like digital economy and modern agriculture. This demonstrates that such students' ventures better align with national economic transformation needs compared to those without such education.

2.2. Practical Choices to Address the Employment Challenges of College Students

In recent years, China's college graduate population has been steadily growing, with 11.79 million graduates nationwide in 2024. The traditional "employment-oriented" talent cultivation model has become inadequate to meet market demands. Innovation and entrepreneurship education not only directly fosters entrepreneurial projects (creating job opportunities) but also enhances students' employability by cultivating "innovative thinking, collaborative skills, and problem-solving abilities". For instance, business and management majors can directly apply skills like "business model design" and "market research" to corporate operations and marketing roles through such education. Meanwhile, STEM students benefit from "technological innovation + entrepreneurial practice", enabling them to pursue technical R&D positions or independently launch tech commercialization ventures. This approach achieves dual empowerment through both employment and entrepreneurship.

2.3. The Internal Need to Implement the "Cultivating People with Virtue" in Higher Education

The core value of mass entrepreneurship and innovation education lies not only in "cultivating entrepreneurs," but more importantly in fostering college students 'social responsibility, perseverance, and collaborative spirit through entrepreneurial practices - a mission that aligns closely with higher education's fundamental goal of "nurturing virtue and shaping character". In these entrepreneurial endeavors, students confront market research complexities, project uncertainties, and team

collaboration challenges. These experiences help them develop values like "serving society through innovation" (as seen in projects addressing left-behind children or vulnerable groups), build resilience to "facing failure head-on" (such as overcoming setbacks during project iterations), and enhance "interdisciplinary collaboration" awareness (evident in tech-business-design hybrid teams).

3. EXISTING PROBLEMS IN CULTIVATING STUDENTS' INNOVATION AND ENTREPRENEURSHIP ABILITY UNDER THE PERSPECTIVE OF INNOVATION AND ENTREPRENEURSHIP EDUCATION

3.1. The Curriculum System is Fragmented and Disconnected from Professional Education

Most universities currently face two major disconnects in innovation and entrepreneurship education: First, the disconnect between general education and specialized courses. Universities only offer general courses like "Entrepreneurship Fundamentals" and "Innovative Thinking" without integrating them with professional knowledge. For instance, STEM programs lack courses like "Technological Innovation and Commercialization", while humanities programs don't offer "Business Model Design and Cultural Creativity Integration". This disconnect makes it difficult for students to translate their professional skills into innovative outcomes. Second, the disconnect between theoretical instruction and practical application. Course content primarily focuses on "case analysis and policy interpretation" while lacking practical components like "project planning, market validation, and risk assessment". In some universities' "Introduction to Innovation and Entrepreneurship" courses, 70% of class hours are dedicated to theoretical lectures, with only 30% allocated for case discussions. Students still struggle to independently complete a business plan after class. This fragmented curriculum system results in a lack of systematic cultivation of college students' innovation and entrepreneurship capabilities, making it challenging to establish a progressive growth model of "knowledge → skills → competencies".

3.2. The "Formalization" of the Practice Platform and the Lack of Resource Integration Ability

The innovation and entrepreneurship practice platforms in universities commonly suffer from the problem of "overemphasis on construction while neglecting operation." Firstly, "intra-university platforms remain isolated." Maker spaces and startup incubators are often managed separately by Youth League committees or career offices, lacking integration with specialized laboratories and research platforms. For instance, a university's "Entrepreneurship Incubation Center" saw 15 out of 20 projects fail due to "technological impracticality" or "ambiguous market positioning," lacking professional faculty guidance and technical support. Secondly, "external platforms remain disconnected." Collaborations with enterprises and local governments mostly remain at the level of "jointly established plaques," without establishing deep collaborative mechanisms. Enterprises merely provide "visitation opportunities" without participating in project guidance, while local governments offer only "policy subsidies" without assisting in market resource connections. As Yang Fang et al. (2023) found through research, "80% of university innovation and entrepreneurship practice bases face resource idleness issues, with enterprise mentors contributing less than 30% of the time, failing to provide continuous practical support for students."[5]

3.3. The Teaching Staff is "Single", and There are Shortcomings in Professional Ability

The faculty for mass entrepreneurship and innovation (MEI) education faces three critical shortcomings: First, "narrow disciplinary backgrounds" - most instructors lack practical experience

in business operations, technology transfer, and venture capital. Surveys reveal that only 18% of MEI teachers have corporate work experience, and merely 12% have participated in entrepreneurial projects. Second, "rigid teaching methods" - traditional lecture-based approaches dominate, with limited proficiency in project-based learning and collaborative case studies, which fails to stimulate students' innovative thinking. Third, "insufficient mentoring capacity" - university teachers are overwhelmed by heavy teaching and research workloads, averaging 30-50 students per MEI instructor, making it difficult to provide detailed project guidance. During university "Internet Plus" competition mentoring, most teachers can only make "textual revisions" to project proposals, lacking substantive support like "market validation and technical optimization".

3.4. The Evaluation Mechanism is "Single", Ignoring the Process of Ability Growth

Current evaluation systems for innovation and entrepreneurship education in universities predominantly focus on "result-oriented" assessments, which exhibit two critical limitations. First, the evaluation criteria remain overly simplistic, centering solely on quantitative metrics like the number of awards won in entrepreneurship competitions and registered startup projects. This approach neglects essential process-oriented competencies such as innovative thinking development and collaborative skills enhancement. Some institutions even treat "competition award status" as the sole measure of educational effectiveness, leading students to hastily assemble projects for awards while ignoring their market viability. Second, the evaluation process lacks diversity, being predominantly conducted by internal faculty members without incorporating external stakeholders including businesses, investors, or industry experts. Consequently, these evaluations often lack market validation-take, for instance, student project proposals that receive "excellent" ratings within academic circles but repeatedly fail to secure funding due to inadequate consideration of market demands.[6] This "homogenized" evaluation mechanism not only fails to comprehensively reflect the growth of students' innovation capabilities but also hinders the transformation of entrepreneurship education toward a "quality-oriented" approach.

4. PATHWAYS TO CULTIVATE STUDENTS' INNOVATION AND ENTREPRENEURSHIP ABILITY UNDER THE PERSPECTIVE OF INNOVATION AND ENTREPRENEURSHIP EDUCATION

4.1. Establish a "Three-tier Integration" Curriculum System to Strengthen the Foundation of Competency Development

Guided by the principles of "professional knowledge as the foundation, innovation as the essence, and practice as the orientation," we have developed an integrated innovation and entrepreneurship curriculum system comprising three tiers: general education, specialized training, and practical application. This framework synergistically enhances both professional knowledge and entrepreneurial competencies.

General Education: Cultivating Innovative Thinking: Offer courses like "Innovative Thinking Training", "Entrepreneurship Fundamentals", and "Business Ethics" to equip all students with essential knowledge of innovation and entrepreneurship. The program emphasizes developing "problem awareness and critical thinking" - for example, through "Design Thinking Workshops" that guide students to identify problems from "user needs" rather than relying solely on theoretical derivations.

Professional Development: Deepening Competency Integration. By leveraging disciplinary strengths, specialized innovation and entrepreneurship courses are developed: Engineering disciplines offer "Technological Innovation and Patent Commercialization" and "Smart Manufacturing Entrepreneurship Practice"; Liberal Arts disciplines provide "Intangible Cultural Heritage

Craftsmanship" and "Red Tourism Planning"; Medical disciplines introduce "Health Management Entrepreneurship". These courses transform professional knowledge into innovation platforms. For example, agricultural colleges may offer "Smart Agriculture Entrepreneurship" courses, guiding students to apply "Internet of Things technology" (professional knowledge) to design "Smart Irrigation Entrepreneurship Projects" (innovation and entrepreneurship capabilities).

Practical Training: Enhancing Project Implementation. The program offers hands-on courses including 'Business Plan Writing', 'Entrepreneurship Project Management', and 'Venture Capital Simulation', using real-world projects as teaching materials. Students work in teams, participating in the entire process from market research to trial operations. Teachers provide targeted guidance based on issues encountered during the process, such as 'poor user feedback' or 'cost overruns'.

4.2. Establish a Collaborative Practice Platform for Universities, Localities, and Enterprises to Strengthen Practical Support for Capability Development

Break down resource barriers and build a full-chain practice platform featuring "on-campus incubation, off-campus connection, and market validation" to provide scenario-based support and resources for cultivating college students' innovation and entrepreneurship capabilities.

Campus Integration: Establishing a 'Specialization + Innovation and Entrepreneurship' Fusion Platform. This initiative combines specialized laboratories, research platforms, and maker spaces to create 'Disciplinary Innovation Labs' and 'Entrepreneurship Incubators'. For example, universities collaborating with AI companies establish 'AI Entrepreneurship Labs', where students can utilize corporate technical equipment for 'Smart Hardware Innovation' projects. Professional instructors provide technical guidance, while corporate mentors offer business transformation advice.

Off-campus: Establishing "Government-Enterprise Collaboration" Practice Bases: Collaborate with local governments, industry leaders, and venture capital institutions to create "Innovation and Entrepreneurship Practice Bases" with clearly defined roles and responsibilities. The government provides policy support (such as venue subsidies and tax incentives), enterprises offer "project proposals, mentorship, and market access" (for example, enterprises propose "agricultural product preservation technology improvement" projects, which students develop into entrepreneurial ventures), while venture capital institutions provide "financing connections and business model optimization" services. For instance, universities could partner with Yiwu Small Commodities City in Zhejiang to establish an "E-commerce Entrepreneurship Base," where students can launch "cross-border e-commerce ventures" and enjoy one-stop services including "supply chain coordination, logistics support, and operational training."

Competitions: Building a Practical Platform for Innovation through Competition. By leveraging platforms like "Internet Plus" and "Challenge Cup", we establish a progressive competition system spanning school, provincial, and national levels. Transforming competitions into a "training process", we implement three key measures: Pre-competition "Training Camps" with industry mentors and past winners guiding projects; During-competition "Project Pitch Simulations" to enhance students' communication and adaptability; Post-competition "Incubation Programs" to ensure sustained development of winning projects, avoiding the "competition - to - project" disconnect.

4.3. Build a "Three-dimensional Empowerment" Teaching Team to Improve the Quality of Guidance

Building a multidisciplinary innovation and entrepreneurship faculty team integrating "in-house teachers, corporate mentors, and venture capital experts" through three dimensions: professional competence, practical experience, and teaching methodology.

Institutional Faculty Development: Enhancing Dual-qualified Educators Through the "Dual Innovation Teacher Capacity Building Program". This initiative involves assigning faculty members

to corporate internships (e.g., as operational consultants) to gain hands-on experience, while organizing training in "innovation and entrepreneurship pedagogy" to master methodologies like "project-based learning" and "case co-creation". For example, universities collaborate with local tech firms to annually deploy teachers for "digital product operations" internships, where they transform corporate case studies into teaching materials.

Corporate Mentoring Program: Establish a "Corporate Mentor Database" to recruit part-time mentors including startup founders, CTOs, and HR executives. Clearly define their responsibilities (e.g., guiding technical implementation, providing market access) and incentive mechanisms (e.g., course fee subsidies, "Out-of-School Mentor" recognition). For example, universities could regularly invite e-commerce executives to conduct "project consultations" to help students address practical challenges like supply chain integration and traffic management.

Venture Capital Experts: Supplement "Capital-oriented" Guidance: Collaborate with angel investors and venture capital partners to offer "Practical Entrepreneurship Financing Courses," guiding students in writing business plans and conducting roadshows. For example, a university invited a partner from Sequoia Capital to help students understand the "key metrics investors focus on" (such as user growth and profit models) through "roadshow simulations + feedback," preventing projects from falling into the trap of being "technology-driven."

4.4. Improve the "Multi-dimensional Collaboration" Evaluation Mechanism to Guide the Comprehensive Growth of Capabilities

Establish a multi-dimensional evaluation mechanism integrating "process + outcome, on-campus + off-campus, quantitative + qualitative" to comprehensively reflect the growth trajectory of college students' innovation and entrepreneurship capabilities.

Evaluation Content: Balancing "Process and Results" - Design a "Competency Growth Portfolio" to document students' entire journey from "project conception - market research - trial operation". Process indicators include "innovative thinking (e.g., number of proposed solutions), collaborative skills (e.g., team contribution), and risk resilience (e.g., adjustment measures for setbacks)". Outcome indicators include "project implementation rate, market revenue, and employment quality". Teachers may increase the weight of process indicators to prevent students from overemphasizing short-term results.

Evaluation Framework: Implementing "Multi-stakeholder Collaboration" - Establishing a collaborative evaluation system involving "in-house faculty + industry mentors + venture capital experts + student peer reviews". Faculty assesses professional knowledge application, industry mentors evaluate market adaptability of projects, venture capital experts analyze commercial viability, while students mutually evaluate team collaboration. In a university's "Entrepreneurship Project Evaluation" system, the "Market Feasibility Score" from industry mentors and the "Financing Potential Score" from venture capital experts account for 50% of the total weight, ensuring evaluation outcomes align with market demands.

Application of Evaluation: Linking 'Growth and Development' - The evaluation results are linked to students' credit recognition, awards and honors, and employment recommendations '. Students with' significant ability growth' will receive innovation and entrepreneurship credit exemption and comprehensive assessment bonus points. Outstanding entrepreneurial projects will be prioritized for incubation center entry and investment resource connections.

5. CONCLUSION AND PERSPECTIVES

Cultivating innovation and entrepreneurship capabilities among college students through mass entrepreneurship and innovation (MEI) education requires a systematic approach. To overcome

challenges like "disconnected courses, fragmented platforms, limited faculty diversity, and biased evaluations," we should implement a four-pronged strategy: "course integration to build solid foundations, platform collaboration to enhance practical skills, faculty empowerment to improve quality, and evaluation optimization to guide development." This comprehensive framework creates a "holistic, multidimensional, and collaborative" training ecosystem. Not only does this approach help students develop innovative thinking and entrepreneurial competencies, but it also drives universities to transition from "scale expansion" to "quality enhancement" in MEI education, ultimately producing more versatile professionals to support China's innovation-driven development strategy.

In the future, as digital technologies (such as AI and the metaverse) advance alongside national strategies like rural revitalization and green economy initiatives, innovation and entrepreneurship education requires further optimization. First, we should explore a "digital innovation and entrepreneurship education" model by leveraging virtual simulation technology to build "entrepreneurship scenario simulation platforms" that reduce practical costs. Second, we need to focus on "strategic fields" by strengthening capacity building in areas like "rural revitalization entrepreneurship" and "green technology innovation," ensuring the education better aligns with national needs. Only through continuous innovation in training approaches can innovation and entrepreneurship education truly become a "booster" for college students' capability development, injecting new vitality into socioeconomic progress.

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