

Construction and Optimization of Innovation and Entrepreneurship Education in Universities Driven by New-Quality Productivity

Jiaxuan Zhou

Heilongjiang University, Harbin 150000, China

Abstract: The emergence and development of new-quality productivity have given rise to new forms of advanced productivity, which in turn place entirely new demands on the construction of innovation and entrepreneurship (I&E) education in universities. University I&E education is a public service system featuring collaborative participation of multiple stakeholders, including government, universities, research institutions, enterprises, and end-users. It serves as a key bridge connecting the talent demand of new-quality productivity with scientific, technological, and industrial innovation. Based on a three-tier framework consisting of the driving layer, structural layer, and efficiency layer, this paper analyzes the internal logic by which new-quality productivity promotes the development of university I&E education, explores optimization paths from the dimensions of content, structure, and efficiency, and proposes supporting safeguard mechanisms. This study aims to foster a “demand-optimization-feedback” closed-loop system for university I&E education and provide effective theoretical references and practical guidance for its reform.

Keywords: New-quality productivity; University innovation and entrepreneurship education.

1. Introduction

The emergence of disruptive technologies such as artificial intelligence, biotechnology and quantum science has given birth to new industries, new models and new driving forces for development. Against this backdrop, China has launched the economic strategic deployment of “accelerating the development of new-quality productivity”. The Suggestions of the Central Committee of the Communist Party of China on Formulating the 15th Five-Year Plan for National Economic and Social Development puts forward the requirement of “developing new-quality productivity and fostering a new development pattern” (Chinese Communist Party Central Committee. *Recommendations of the Communist Party of China Central Committee on Formulating the 15th Five-Year Plan for National Economic and Social Development*. Adopted at the Fourth Plenary Session of the 20th Central Committee of the Communist Party of China, October 23, 2025. https://www.gov.cn/zhengce/202510/content_7046052.htm). The core of new-quality productivity lies in revolutionary technological breakthroughs and innovative allocation of production factors, and its development essentially relies on the support of innovative, interdisciplinary and practical talents[1]. As a converging platform for education, science and technology, and talent development, universities undertake the important mission of cultivating top innovative talents and generating original scientific and technological achievements. Therefore, the innovation and entrepreneurship education system in universities needs reform under the background of new-quality productivity. This is an internal need for the self-development of the education system. It is also an important task to keep up with the national innovation strategy and use high-quality talents to support high-quality economic development.

At present, China’s university I&E education has achieved phased progress. However, in the context of new-quality productivity, prominent problems remain, including

inadequate adaptation of the discipline-based education model to contemporary demands, rigid evaluation systems[2], and the poor transformation of educational efficiency[3]. Current studies have paid little attention to the relationship between them and lack systematic analysis of their internal mechanism. This paper uses a three-level analytical framework including the driving layer, structural layer and efficiency layer. It explores the construction logic of university innovation and entrepreneurship education driven by new-quality productivity and puts forward optimization paths and safeguard mechanisms. The purpose is to promote the effective connection between talent education, the industrial chain and the innovation chain.

2. Core Concepts

(1) New-Quality Productivity

New-quality productivity is an advanced form of productivity characterized by high technology, high efficiency and high quality[4]. This paper holds that the development of emerging technologies represented by artificial intelligence, blockchain, quantum technology, and biotechnology constitutes its core. The evolution and iteration of emerging technologies have broken the production mode of traditional productivity. At the factor level, it promotes cross-field and cross-stakeholder integration of innovative factors such as talent, technology, capital, and data. At the industrial level, it drives the digital and intelligent transformation and upgrading of traditional industries and fosters new industries and new forms of business.

(2) University Innovation and Entrepreneurship Education in the Context of New-Quality Productivity

Driven by new-quality productivity, university I&E education can no longer be treated merely as skill training for “starting a business”; it has evolved into a public service system featuring multi-stakeholder collaboration among government, universities, research institutions, enterprises, and users.

Its core goal is to cultivate students' innovative thinking, entrepreneurial awareness, and practical abilities, while fulfilling the important functions of transforming scientific and technological achievements, matching industrial innovation demands, and boosting regional economic development. As a hub for talent supply, I&E education should translate the cutting-edge technological demands of new-quality productivity into training objectives for top innovative talents[5]. Its development needs support from many sides. The government needs to provide policy guidance. Enterprises need to provide practical support. Universities need to carry out talent training. Society needs to create a good atmosphere. Multi-stakeholder collaborative governance is very important. It is a key guarantee for the

efficient operation of the education system. In the context of new-quality productivity, the function of university I&E education has further evolved, becoming an important bridge linking talent demand and industrial innovation.

3. Construction Logic of University I&E Education Driven by New-Quality Productivity

Based on the three-tier analytical framework of the driving layer, structural layer, and efficiency layer, the construction goal of university I&E education driven by new-quality productivity is to form a “demand-optimization-feedback” closed-loop system, see Figure 1.

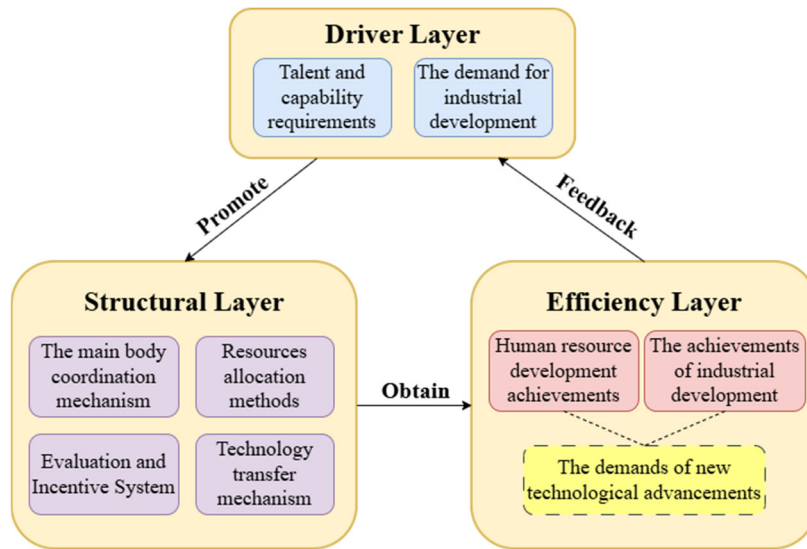


Figure 1. The relationship diagram of the driving layer, structural layer, and efficiency layer

(1) Driving Layer

As the logical starting point of the framework, the driving layer consists of two components: talent competency requirements and industrial development needs. Its core purpose is to cultivate top innovative talents compatible with the development of new-quality productivity. New-quality productivity raises new requirements for I&E talent training, such as digital literacy and interdisciplinary innovation capabilities. Meanwhile, the upgrading of traditional industries and the emergence of new industries driven by new-quality productivity also require university I&E education to align with actual industrial needs and carry out targeted research and project incubation. The driving layer defines the development direction of university I&E education and provides guidance for both the structural layer and the efficiency layer.

(2) Structural Layer

As the operational foundation, the structural layer includes modules such as a multi-stakeholder coordination mechanism, resource allocation methods, and an evaluation and incentive system. Its core is to build a systematic multi-stakeholder collaborative governance structure for government-university-industry-research-application that meets the development needs of new-quality productivity. A diversified collaborative governance structure should be established, covering stakeholder coordination, resource allocation, evaluation and incentives, and achievement transformation. Through cooperation among government, universities,

enterprises, and other parties, an integrated community featuring benefit sharing and risk sharing is formed to promote the optimal allocation of innovative factors across sectors and stakeholders. A diversified evaluation and incentive system adapted to new-quality productivity is established, and a professional achievement transformation platform is built to tackle transformation bottlenecks. The maturity of the structural layer directly determines the operational efficiency of the university I&E education system and serves as a key bridge connecting the driving layer and the efficiency layer.

(3) Efficiency Layer

The efficiency layer represents the ultimate goal of the education system construction. Its core is to produce talent training outcomes and industrial service outcomes that match the development of new-quality productivity and achieve their synchronous improvement. We need to systematically cultivate top innovative and entrepreneurial talents. These talents have the core abilities required by new-quality productivity. This provides solid talent support and intellectual support for the development of new-quality productivity. The cooperation of multiple parties is very important. It promotes the industrial transformation of original scientific and technological achievements in universities and incubates a number of entrepreneurial projects. These projects fit the development direction of new-quality productivity. Meanwhile, the output of the efficiency layer provides feedback to the driving layer. Practical results

can accurately identify the development needs of new-quality productivity. They can guide the continuous optimization of the structural layer. Finally, a closed-loop development system will be formed. This system is interconnected and keeps upgrading.

4. Optimization Paths of University I&E Education Driven by New-Quality Productivity

(1) Build a Talent Training System Matched with the Needs of New-Quality Productivity

With the talent capability needs of new-quality productivity as the core, the training system is reconstructed to realize the accurate matching between talent training and market demand[6]. The curriculum system should be optimized by adding courses related to artificial intelligence, blockchain, and other frontier fields, and developing practical simulation training such as scientific and technological achievement transformation and digital business, so as to promote the in-depth integration of theoretical and practical courses. In addition, differentiated training should be implemented, and personalized I&E education programs formulated according to the types and disciplinary strengths of different universities. A stepped training model should be constructed that integrates I&E education into the whole process of talent training: innovative thinking training and basic entrepreneurship courses for junior students, and practical simulations and project incubation for middle and senior students, so as to realize the systematic cultivation of entrepreneurial capabilities.

(2) Build a Diversified Collaborative System with Profit Sharing for Government-University-Research-Institute-Enterprise-User

The coordination mechanism is improved to build a fusion community with profit sharing, where all subjects give full play to their respective advantages and complement each other[7]. The government provides top-level design and policy support, issues industrial demand-oriented special policies, coordinates the resource allocation of multiple stakeholders, and creates an open and inclusive collaborative environment. Universities focus on talent training. They promote the research of advanced technologies and the initial transformation of achievements. They accurately meet the talent and technology needs of industries. As the demand side and industrial undertaker, enterprises deeply participate in the whole process of I&E education, provide practical scenarios, industrial resources, and incubation platforms, and help industrialize university scientific and technological achievements. Social institutions are responsible for connecting resources and providing service support. They build cooperation platforms through innovation and entrepreneurship parks, financial institutions and industry associations. They provide financial support, entrepreneurship incubation services and industry connection channels for universities and enterprises. Meanwhile, all parties establish a mechanism for benefit sharing and risk sharing. A collaborative innovation risk fund is set up. This breaks information barriers between different stakeholders and solves the difficulties in the transformation of scientific and technological achievements. Finally, a collaborative development system is formed, featuring “government guidance, university research, enterprise application and social support”.

(3) Establish an Evaluation System Centered on Achievement Transformation and Industrial Driving Effect

A diversified talent training evaluation system is established. Relying on big data, electronic portfolios and other tools, the growth track of students’ innovation and entrepreneurship is recorded, realizing the extension from node evaluation to multi-dimensional “growth-oriented” evaluation[8]. We include digital literacy, hard-technology application ability and employment adaptability in the evaluation indicators, and no longer regard the number of competitions and projects as the single standard. Meanwhile, we improve the incentive mechanism and provide special rewards for educators, partner enterprises and student entrepreneurs in the field related to new-quality productivity. Industrial chain-oriented incubation should be promoted to launch entrepreneurial project incubation around core industries of new-quality productivity and enhance the driving role of projects in the upgrading of relevant industrial sectors.

5. Safeguard Mechanisms for University I&E Education Driven by New-Quality Productivity

The optimization and implementation of university I&E education require comprehensive safeguard mechanisms. Combining the development needs of new-quality productivity and the characteristics of multi-stakeholder collaboration, safeguard mechanisms are constructed from four dimensions: policy, resources, teaching staff, and fault tolerance, to ensure the effective operation of the education system.

(1) Policy Safeguard

The government improves the policy system through top-level design to support education reform. Special development plans for university I&E education in the context of new-quality productivity are issued to clarify reform objectives, phased tasks, and implementation paths. Fiscal and tax incentive policies are improved to provide financial subsidies for universities carrying out relevant I&E education, tax reductions for enterprises engaged in university-enterprise cooperation, and subsidies and loan interest discounts for student entrepreneurs. Intellectual property protection is strengthened, the IPR system for university scientific and technological achievements is improved, application and transfer procedures are simplified, and the innovation rights and interests of all stakeholders are protected.

(2) Resource Safeguard

The integration of multi-stakeholder resources is promoted to form an allocation system featuring resource sharing and complementary advantages[9]. A cross-stakeholder resource sharing platform is built to open up university teaching and research resources, enterprise practical and industrial resources, government park platform resources, and social service and financial resources for efficient utilization. Precise docking of financial resources is promoted to guide social capital to set up I&E funds for new-quality productivity, improve the angel investment and venture capital system, and solve financing difficulties for entrepreneurship. Data resource allocation is optimized to promote the opening of government and enterprise industrial data to universities, providing data support for research and talent training.

(3) Teaching Staff Safeguard

A teaching team with solid theoretical literacy, hard-technology capabilities, and practical experience is built to provide talent support for the education system. The training of in-house university teachers is strengthened, encouraging teachers to participate in training and research on core technologies of new-quality productivity and promoting interdisciplinary cooperation among teachers. High-quality external teachers are introduced, including enterprise technical backbones, entrepreneurial mentors, and industry experts as part-time teachers. We need to establish a mutual employment system for teachers between universities and enterprises. We encourage university teachers to work temporarily in enterprises and enterprise technicians to teach in universities, so as to realize two-way communication and capacity complementation of teaching staff.

(4) Fault Tolerance Safeguard

Innovation and entrepreneurship are highly risky. Therefore, universities should establish a fault-tolerance mechanism for innovation and entrepreneurship education. This mechanism tolerates exploratory behaviors in education reform and does not regard short-term achievements as the only assessment criterion. A fault tolerance mechanism for teachers' research and teaching is set up to tolerate reasonable failures in teachers' research and teaching practices in the field of new-quality productivity. A fault tolerance mechanism for student entrepreneurship is established to evaluate failed entrepreneurial cases and provide re-entrepreneurship support where appropriate, improving the bottom-line guarantee mechanism [10]. University-enterprise cooperation is encouraged to build an entrepreneurial risk sharing mechanism to reduce the entrepreneurial risks of students.

6. Conclusion

The development of new-quality productivity brings new opportunities and challenges to the reform of I&E education in universities. Building and optimizing an I&E education system adapted to the development needs of new-quality productivity is an inevitable choice for universities to serve the national development strategy and achieve their own high-quality development. The "demand-optimization-feedback" closed-loop system built on the three-tier framework of the driving layer, structural layer, and efficiency layer provides clear logical guidance for the reform of university I&E education. Furthermore, the optimization paths proposed from the three dimensions of talent training, multi-stakeholder collaboration, and evaluation systems, together with the safeguard mechanisms constructed from the four dimensions of policy, resources, teaching staff, and fault tolerance, form a complete practical system for the reform of university I&E education.

The reform and development of innovation and entrepreneurship education in universities is a systematic project. It requires coordinated and sustained efforts from multiple stakeholders, including the government, universities, enterprises and society. Each stakeholder should base on its own positioning, give full play to its advantages, and promote cross-field and cross-stakeholder integration of

innovative factors. This will enable university I&E education to truly become a core base for cultivating top innovative talents needed for new-quality productivity, an important platform for promoting the transformation of scientific and technological achievements, and a key support for boosting industrial upgrading and high-quality economic development. Ultimately, it will achieve synchronized development and two-way empowerment between the development of new-quality productivity and the reform of university I&E education.

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