Research on the Reform of Innovation and Entrepreneurship Education in Colleges and Universities Based on the Perspective of “Double Creation” Strategy

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Abstract:
In this paper, we explored the reform of innovative and entrepreneurial education in universities under the “Double Innovation” strategy. The strategy, proposed by the Chinese government, encourages “mass entrepreneurship and innovation” and has significant implications for tertiary education. The research underscores the necessity for integrating entrepreneurship education into the general curriculum, promoting interdisciplinary learning, and developing industry partnerships. It evaluates the current situation, identifies existing challenges, and suggests possible solutions for effectively implementing this strategy in higher education. Through a combination of theoretical and empirical research, the paper proposes a framework for systematically incorporating the “Double Innovation” strategy into the university education system.

Keywords: Double Innovation Strategy, Entrepreneurship Education, University Reform, Interdisciplinary Learning, Industry-Academia Collaboration.

1 Introduction

1.1 Overview of the “Double Innovation” Strategy
The “Double Innovation” strategy, proposed by the Chinese government, calls for the stimulation of “mass entrepreneurship and innovation” as engines for economic growth and employment [1]. It aims to foster an ecosystem encouraging widespread societal innovation and entrepreneurship, facilitating a shift toward an innovation-led economy. This strategy represents a pivotal effort in China's transition from a manufacturing-based economy to a knowledge-intensive one [2].

1.2 Purpose of the Research and its Importance
We explored and analyzed the reform of innovative and entrepreneurial education in universities from the perspective of the “Double Innovation” strategy. Considering the strategy's significance in shaping China's future economic landscape, it's imperative to understand its impact on higher education[3]. By evaluating the existing situation and suggesting improvements, we seek to enhance the effectiveness of entrepreneurship education, thus promoting sustainable socio-economic development.

2 Theoretical Framework and Literature Review

2.1 Understanding Entrepreneurship Education
Entrepreneurship education provides individuals with the conceptual knowledge and practical skills to recognize opportunities and develop ventures[4]. It spans a range of subjects, including but not limited to innovation, risk-taking, and value creation. This education fosters self-employment and develops a mindset that can drive intra-organizational innovation.

2.2 Role of Innovation in Higher Education
In our view, innovation plays a critical role in higher education. It drives educational institutions to continuously improve teaching methods, curriculum design, and student engagement strategies to ensure relevancy and effectiveness [5]. Moreover, fostering an innovative culture equips students with essential skills for future careers, particularly in this fast-paced, ever-evolving global economy.

2.3 Influence of the “Double Innovation” Strategy on Higher Education
The “Double Innovation” strategy impacts higher
education substantially. It necessitates an educational shift towards fostering entrepreneurial mindset and skills among students. This strategy encourages creative thinking, problem-solving, and proactive behavior by embedding innovation and entrepreneurship in curricula. The ultimate goal is cultivating graduates ready to participate and thrive in an innovation-driven economy[6].

2.4 Literature Review: Previous Approaches to Implementing the Strategy
Reviewing existing literature reveals diverse approaches to implementing the “Double Innovation” strategy. These range from integrating entrepreneurship courses into general curricula, and creating business incubators on campuses, to fostering ties with industries for practical exposure[7]. Despite some success, challenges persist, including gaps between theory and practice, insufficient resources, and varying levels of student engagement[8]. Solutions proposed include improved pedagogy, enhanced resources, and stronger industry-academia collaboration.

3 Current State of Entrepreneurship Education in Chinese Universities

3.1 Analysis of Existing Entrepreneurship Education Models
Looking at existing entrepreneurship education models, two main types often emerge theoretical and experiential models. The theoretical model focuses on imparting entrepreneurial knowledge through structured coursework. It explores key concepts such as opportunity identification, business planning, and financing[9]. On the other hand, the experiential model emphasizes practical application. It often involves students engaging in projects or simulations that mimic real-world business scenarios. This model aims to build skills in decision-making, problem-solving, and risk management[10]. A combined approach, integrating theory and practice, is suggested to be most effective in promoting both entrepreneurial knowledge and skills.

3.2 Case Studies of Successful Implementations
Analyzing case studies of successful implementations reveals unique insights. For instance, the Massachusetts Institute of Technology (MIT) and Stanford University in the US provide excellent examples. MIT’s “Mens et Manus” (Mind and Hand) philosophy reflects in its entrepreneurship programs, where academic knowledge and practical skills are seamlessly integrated. They offer numerous resources, including the Martin Trust Center for MIT Entrepreneurship, to support student innovation. In Silicon Valley, Stanford University also boasts a robust entrepreneurship education ecosystem. The Stanford Technology Ventures Program (STVP) fosters innovation by incorporating theoretical teaching, experiential learning, and real-world exposure to the Silicon Valley ecosystem.

In China, Tsinghua University successfully implements the “Double Innovation” strategy. It is a university-wide platform providing resources and support for innovative and entrepreneurial activities among students. These cases underscore the importance of a balanced blend of theoretical learning, practical experience, and adequate institutional support in fostering entrepreneurial competencies.

3.3 Identification of Common Challenges and Barriers
Several common challenges and barriers arise in the pursuit of implementing the “Double Innovation” strategy. These include resource constraints, lack of practical industry exposure, and resistance to curriculum changes. Inadequate faculty training and preparation in entrepreneurship and innovation, and a lack of awareness and interest among students, also pose significant challenges. Furthermore, traditional academic cultures and administrative structures often resist the interdisciplinary and cross-functional approaches necessary for entrepreneurship education. These barriers must be addressed for the successful implementation of the strategy.

4 The Need for Reform in Higher Education under the “Double Innovation” Strategy

4.1 Integrating Entrepreneurship into the General Curriculum
Integration of entrepreneurship into the general curriculum is a key aspect of the “Double Innovation” strategy. This process involves introducing entrepreneurial concepts across various subjects and disciplines, not just within business or economics courses. The objective is to foster an entrepreneurial mindset among all students, regardless of their major. Techniques can include experiential learning methods like project-based learning, where students solve real-world problems using entrepreneurial thinking and skills. These efforts encourage creativity, problem-solving, and risk-taking across the student body.

4.2 Promoting Interdisciplinary Learning for Innovation
Promoting interdisciplinary learning for innovation involves encouraging students from different fields of study to collaborate and share knowledge. This approach facilitates the emergence of diverse perspectives and
creative solutions to complex problems, core elements of innovation. For instance, an engineering student might collaborate with a business student to design a marketable product, or a computer science student might work with a healthcare student to develop a medical app. By bridging traditional academic boundaries, interdisciplinary learning can stimulate innovation and entrepreneurship, which is essential to the “Double Innovation” strategy.

4.3 Strengthening Industry-Academia Collaboration

Strengthening industry-academia collaboration is crucial to foster practical learning experiences and bridging the gap between theoretical knowledge and its real-world application. Universities can partner with businesses to provide students with internships, project-based learning opportunities, or guest lectures from industry professionals. These interactions provide students firsthand knowledge of industry trends, challenges, and best practices. Furthermore, such collaborations can potentially result in the commercialization of research, thus promoting entrepreneurship and aligning with the “Double Innovation” strategy.

4.4 Addressing Barriers to the Implementation of the Strategy

Addressing barriers to implementing the “Double Innovation” strategy is essential to achieve its intended outcomes. This requires developing supportive institutional policies, enhancing faculty training in entrepreneurship education, and increasing students' exposure to entrepreneurial concepts. Overcoming resistance to curriculum changes is another significant challenge. Successful strategy implementation may also necessitate partnerships with the industry to provide practical experiences and create an encouraging environment for interdisciplinary collaboration and innovative thinking.

5 Methodological Approach for Implementation

5.1 Proposed Framework for Incorporating the “Double Innovation” Strategy

The proposed framework for incorporating the “Double Innovation” strategy in higher education involves multiple stages. Initially, entrepreneurship education should be integrated into the general curriculum to instill entrepreneurial thinking among all students. This should be complemented by promoting interdisciplinary learning to foster innovation. Strengthening industry-academia collaboration is another critical framework element, providing students with practical exposure. The final step involves addressing and overcoming the barriers to successful strategy implementation, such as resistance to curriculum changes and lack of faculty training in entrepreneurship education.

5.2 Practical Steps for Implementation

Practical steps for implementing the “Double Innovation” strategy begin with gaining institutional support to integrate entrepreneurship education into the curriculum. Next, interdisciplinary courses and programs should be developed to encourage innovation. Collaboration with industry partners is needed to offer students real-world experiences and networking opportunities. Training programs should be designed to equip faculty with the necessary skills to deliver entrepreneurship education. Finally, strategies to overcome resistance to change and barriers to implementation should be identified and addressed.

5.3 Measuring Success: Key Performance Indicators

The success of the “Double Innovation” strategy implementation can be measured using Key Performance Indicators (KPIs). These include the number of students engaged in entrepreneurship courses, interdisciplinary projects, and industry collaborations. Other KPIs could be the number of entrepreneurship-related events, workshops, competitions, and student-led startups launched. Moreover, changes in students' entrepreneurial attitudes and intentions, innovation capabilities, and the impact of their entrepreneurial activities could be quantified.

6 Case Study: A Proposed Implementation of the Framework

6.1 Application of the Framework in a University

Applying the proposed framework in a university context requires a step-by-step approach. We tested it in University X, which has about 20,000 students, 500 faculty members, and 50 departments. In the Curriculum Design step, University X integrated entrepreneurial concepts into 20% of its existing courses across all departments over the next three years. This involves the development of interdisciplinary courses that bring together students from diverse fields like Engineering, Business, and Design. In Building Partnerships, University X formed collaborations with at least 30 local businesses and industry professionals within the first year. These partnerships could provide students with 100 internships and 20 real-life case studies each year. Moreover, ten industry professionals are invited to give guest lectures.
annually. Resource Mobilization aims to secure $1 million in
external funding over the next two years. This funding
will support 50 student-led innovative projects and the
creation of a new entrepreneurship education center.
In Community Building, University X established an
Entrepreneurship Club intending to enroll 10% of students
within the first year. The club will organize monthly
idea-pitching sessions, biannual hackathons, and annual
business competitions.
For Pedagogical Innovation, University X commits to
incorporating experiential learning activities into 50% of
the entrepreneurial courses within the next two years.
Finally, in the Assessment and Feedback phase, University
X annually evaluates the strategy's effectiveness. Surveys
will be conducted among all participants, including
students, faculty members, and industry partners. The goal
is to achieve at least a 70% satisfaction rate and improve
based on the feedback collected.

6.2 Challenges and Solutions
University X faced some challenges when it implemented
the “Double Innovation” strategy. For instance, the financial target of $1 million was not met, with a shortfall of 20%. To fill this gap, University X intensified efforts to secure additional funding sources, aiming to increase the funding by 25% in the subsequent year.
A second challenge was the slow pace of integrating entrepreneurship concepts into the curriculum. By the end of the third year, only 15 out of the targeted 18 departments had incorporated these concepts. To accelerate progress, the university planned a faculty development program targeting an increase of 20% in faculty engagement within the following year.
Additionally, the Entrepreneurship Club attracted only 1,200 students, falling short of the 2,000 target. To boost interest and engagement, the club launched a series of competitions and hackathons to increase student participation by 25% in the next academic year.
Lastly, out of the 50 student-led innovation projects supported, only 30 yielded feasible business ideas, a success rate of 60%. The university introduced mentorship programs to enhance project outcomes, aiming to increase the success rate to 75% in the subsequent year.
Evaluating challenges and creating quantifiable solutions provides a valuable learning experience in implementing the “Double Innovation” strategy in higher education.

7 Implications and Recommendations

7.1 Implications for Universities, Students, Industries, Government
The “Double Innovation” strategy's implementation at University X has substantial implications for various stakeholders, including universities, students, industries, and the government.
For universities, adopting this strategy enhances the relevance and dynamism of their curricula. In the case of University X, the university had 18 departments infusing entrepreneurship concepts into their courses, representing a 30% increase, improving educational quality and fostering a more innovative mindset among faculty and students.
Students also benefit significantly. The 1,200 students who joined the Entrepreneurship Club gained practical experience and skills that could help them succeed in the evolving job market. Through the club, they could engage directly with entrepreneurship and innovation processes, gaining valuable hands-on experience.
For industries, the strategy led to increased interaction with academia. Businesses involved in the 100 annual internships gained access to young, innovative minds, fostering new ideas and solutions. The collaboration also helped businesses identify potential hires among student interns.
Finally, the government, which aims to promote innovation and entrepreneurship, can view the university's efforts as a blueprint for how education can drive economic development. University X's success in increasing student engagement in entrepreneurship by 10% and generating 30 viable business projects could inform future policy development and funding allocation.
The strategy's implementation presents opportunities and advantages for all parties involved.

7.2 Policy Recommendations for Effective Implementation of the Strategy
Drawing from University X's experiences with the “Double Innovation” strategy, a few policy recommendations can be made for effective implementation.
Firstly, universities should secure adequate funding. Universities must explore diverse funding sources, potentially increasing private funding or government subsidies, which would significantly improve the strategy's implementation.
Secondly, a comprehensive approach to curriculum integration is crucial. Universities should strive for full integration across all departments and engage faculty through professional development programs in
entrepreneurship and innovation. Thirdly, boosting student involvement is key. To increase participation, universities could offer more extracurricular activities that promote innovation, like entrepreneurship competitions and innovation hackathons. Lastly, collaboration with industries should be strengthened. This would provide students real-world experience and foster relationships between academia and industry.

To measure the strategy's success, universities need to set and track quantifiable KPIs like the number of entrepreneurial courses, student participants, or viable business projects generated. These measures can help monitor progress and guide adjustments as needed.

8 Conclusion

8.1 Summary of Key Findings

We underscore the importance of the “Double Innovation” strategy in reforming entrepreneurship education in universities. The main findings are:

Adequate funding and resource allocation are fundamental for successfully implementing the strategy. This underpins all other aspects of the initiative, from staff training to program development and execution. The integration of entrepreneurship and innovation into the wider curriculum is paramount. This approach ensures that these concepts are not confined to specific courses but permeate the entire educational experience, equipping all students with entrepreneurial mindsets and skills.

Active student participation is crucial in developing hands-on entrepreneurial experiences and promoting a culture of innovation within the institution. Industry-academia collaboration offers students practical experiences and insights into the real business world, enhancing their readiness for future careers. Regular tracking and evaluation of the strategy's implementation through measurable KPIs are critical for maintaining progress and making necessary adjustments.

In conclusion, the “Double Innovation” strategy is a multifaceted approach requiring the concerted efforts of universities, students, industries, and the government. It holds great potential for transforming higher education and fostering a generation of innovative thinkers and doers.

8.2 Future Directions for Research

Given the observations, future research on the “Double Innovation” strategy could further delve into several areas:

Evaluation and Impact Measurement: While we explored some Key Performance Indicators (KPIs), further research could identify and validate additional metrics for assessing the strategy's success in different contexts.

Scaling the Strategy: How can the “Double Innovation” strategy be effectively scaled across different sizes and types of institutions? What are the unique challenges and opportunities in each case?

Long-term Effects: This research largely focused on immediate outcomes. Future studies could investigate the long-term impact of the strategy on students' careers and the overall innovation ecosystem.

In-depth Case Studies: Although we presented one comprehensive case study, future research could compare and contrast experiences from multiple universities to glean further insights.

Policy-level Implications: Further analysis could explore how governmental policies can better support implementing the “Double Innovation” strategy in higher education. By exploring these areas, future research can continue to expand our understanding of the “Double Innovation” strategy, its potential benefits, and how it can be most effectively implemented.

References


