The Synergy Mechanism and Path of the Integration of "Double Innovation" Education and Industry-Education Integration

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Abstract. "Double innovation" education is one of the most popular educational research topics in China today. It is of great significance to promote the social development and economic structural transformation of a country. Exploring the effective synergy mechanism between "double innovation" education and industry-education integration, and expanding the synergy path between two sides have become a new topic of "double innovation" education in colleges and universities and an important way to promote industry-education integration. The mechanism of "double innovation" education and industry-education integration, including the feasibility and necessity of value synergy, object synergy and subject synergy. The coordinated development of "double innovation" education and industry-education integration requires relevant parties to establish the "double innovation" education development concept of industry-education integration, combine professional education and industrial chain to carry out "double innovation" education, and building a "double-creation" education ecosystem of "government, universities, enterprise and society".

1. Introduction

Deepening the industry-education integration and promoting the integration of education and talent chains with industry chains and innovation chains are urgent requirements for the current structural reform of the supply side of human resources, which is of great significance to comprehensively improve the quality of education, expand employment and entrepreneurship, promote economic transformation and upgrading, and cultivate new kinetic energy for economic development in the new situation. Clarifying the effective synergy mechanism between "double innovation" education and the integration of production and education, exploring the synergetic path of "double innovation" education and industry-education integration, provide new ideas and methods for expanding the new path of "double innovation" education and cultivating a new mode of integration of production and education. It has become a new topic of "double innovation" education in universities and an important way to promote the development of the strategy of integration of production and education.

2. Literature Review

At present, China has richer research results on "double innovation" education, industry-education integration, and school-enterprise cooperation. However, there are fewer studies on the two as a community, and there has been a gradual increase in the past two years. There are two main types of related research: one is speculative research and the other is empirical research.

In terms of speculative research, Ji (2015) pointed out that entrepreneurship education has not yet formed a talent training mechanism for industry-education integration, the role of various education subjects is insufficient, and the integration of talent training models with engineering is limited, and he suggested that under the system of industry-education integration, follow the principles of multi-agent, self-organization, and collaborative sharing to build an innovative entrepreneurial mechanism[1]. Liu
(2016) constructed a mechanism for in-depth cooperation between universities and enterprises under the guidance of industry-education integration in colleges and universities through the "real workplace" practice carrier and the method of docking with industrial needs in colleges and universities to enhance the innovative entrepreneurship and ability of college students, and provide an incubation platform for the cultivation of innovative entrepreneurship talents [2]. Zhou (2017) believes that the industry-education integration is the key to cultivating applied innovation and entrepreneurship talents. Full play must be given to the strength of government, enterprises and universities to promote the improvement of the quality of "double innovation"[3]. In terms of empirical research, Zhao Qian (2015) and Liu Dongyan (2016) discussed the construction and practice of a "double innovation" education model based on the integration of production and education. They believe that case-study universities, colleges, and enterprises cooperate to jointly train talents, build teaching, practice, scientific research platforms, and jointly build dual-teacher teachers, which provides hardware support for the cultivation of applied innovative entrepreneurship talents [4,5].

A comprehensive review of existing research shows that some scholars have recognized the connection between industry-education integration, school-enterprise cooperation, and "double innovation" education, and have explored the integration of the two in terms of theory and practice to promote the quality of "double innovation" education personnel training promotion. Most of the existing researches are mostly empirical researches, and there is a lack of theoretical research on supporting the "double innovation" education into the production-education integration training model, and less research in the perspective of industry-education integration. The industry-education integration has expanded from the connotation of school-enterprise cooperation to the cross-educational system of education and production. The connotation and extension are broader and more in line with China's current economic and social development situation and requirements. Therefore, broadening the scope of research from school-enterprise cooperation to industry-education integration enriches the connotation of "double innovation" education, and also provides new ideas for the industry-education integration and "double innovation" education.

3. Analysis of Synergy Mechanism of "Double Innovation" Education and Industry-Education Integration

3.1 Relevance of "Double Innovation" Education and Industry-Education Integration

"Double innovation" education is an educational philosophy and model that aims to cultivate students' innovative entrepreneurial consciousness and ability, promote human personality and all-round development under the transformation of traditional education and teaching methods, and promote economic and social development by training more innovative entrepreneurial talent improvement. The industry-education integration is based on the respective advantages and resources of the education and industrial sectors, with collaborative education as the core, win-win as the driving force, school-enterprise cooperation as the main line, supported by cultural integration, an optimized combination of various elements in industry and education, and an economic and educational activity that involves the cooperation of subjects. In the process of talent training in colleges and universities, there are many common essential connotations in the value synergy, factor synergy and subject synergy between the industry-education integration and "double innovation" education.

3.1.1 Value Synergy: the Need for Individual Student Development, Higher Education Development and National Strategy Implementation

From the perspective of value synergy, whether it is "double innovation" education or industry-education integration, it has played a vital role in the development of individual students and the development of higher education. For the individual development of students, the "double innovation" education helps to stimulate students' learning interest and entrepreneurial enthusiasm,
stimulates students' creative potential, and improves the success rate of a new venture. The industry-education integration helps to cultivate students' solid professional skills, form a good work ethic and a spirit of excellence in craftsmanship, promote the comprehensive development of students' personality, and then realize the value of students' lives. For the development of higher education, the implementation of “double innovation” education is in line with the educational philosophy of universities to build “entrepreneurial” universities, and can help to improve the scientific research and innovation ability of teachers. The industry-education integration meets the needs of China in a fiercely competitive environment in the global industrial chain layout. By following the path of integration of production and education, schools can cultivate more high-skilled and high-quality craftsmen.

3.1.2 Element Synergy: Organization, Curriculum, Teachers and Platforms

From the perspective of element synergy, whether it is "double innovation" education or industry-education integration, it contains some basic elements. These elements constitute a complete system, which is generally composed of organizations, courses, teachers and platforms. Organization is the basic guarantee for the development of "double innovation" education and industry-education integration. The "double innovation" education organization has established a normal operation to ensure the education of "double innovation". Curriculum is the core of "double innovation" education. It is the starting point and end point of the industry-education integration. It includes a curriculum system that combines theory and practice. Curriculum teaching mode, curriculum content and industry standards must be effectively connected, and production processes and teaching methods must be integrated with each other. Teachers are a key factor affecting the quality of "double innovation" education. The "double innovation" education teachers need a part-time and full-time teaching team with reasonable structure, diversification, theoretical knowledge and practical experience. The platform is an important carrier for "double innovation" education and an important carrier for the industry-education integration. It includes a practical training platform jointly constructed by the school and the enterprise, an innovation laboratory, and a variety of vocational skills competitions.

3.1.3 Subject Synergy: Collaborative Participation of Multiple Subjects in Government, School, Enterprise, Industry and Society

In terms of subject synergy, "double innovation" education has the essential characteristics of practicality, openness and sociality. The university's own resources are difficult to meet the effective implementation of "double innovation" education. It requires the cooperation of government, enterprises, universities, industries and other social organizations to promote the quality of "double innovation" education. The government should make corresponding strategic plans for the "double innovation" education and industry-education integration, and issue corresponding incentive policies and measures. Colleges and enterprises cooperate to promote a "double innovation" education ecology, build a community of interests. By organizing industry and industry development needs, industry organizations provide decision-making references for the government to formulate related policies, formulate industry standards, and coordinate the relationship between the government, enterprises and schools. "Double innovation" education and the industry-education integration need to give play to the respective advantages of governments, schools, enterprises, and social organizations to form a community of interests, build a development mechanism with a reasonable division of labor and healthy interaction, and form a highly open education model with social participation To achieve the "Pareto Optimality" of the overall interests of all parties.

3.2 The Necessity of Integrating the Concept of Industry-Education Integration into the "Double Innovation" Education

The ultimate goal of the industry-education integration is to cultivate applied technical talents, and the "double innovation" education is a breakthrough in the cultivation of innovative talents. In order to make the most of the function of "double innovation" education, it is necessary to closely integrate the
"double innovation" education with the industry-education integration, and provide motivation to support the improvement of the quality of "double innovation" education.

3.2.1 "Double Innovation" Education is an Important Carrier for the Implementation of the Industry-Education Integration

"Double innovation" education aims to promote economic and social progress by cultivating more innovative and entrepreneurial talents. The goal of the industry-education integration is to meet the development requirements of the industry, cultivate applied technical talents, and provide human capital for the transformation and upgrading of the industry. "Double innovation" education plays an important role in the cultivation of college students' applied skills, and is an important carrier for the implementation of the concept of industry-education integration. "Double innovation" education is also conducive to transforming teachers' traditional closed teaching methods, strengthening the connection and cooperation with the industry.

3.2.2 Improving the Quality of "Double Innovation" Education Requires the Support of the Industry-Education Integration

At the current stage, the "double innovation" education is out of touch with social needs in terms of talent training. Many schools have a misunderstanding of the "double innovation" education and are limited to employment guidance or entrepreneurship education, and has not formed a complete education system. "Double innovation" education is separated from professional education and regional economic development, the level of government, business and social institutions' participation in "double innovation" education is not deep, and the effectiveness of "double innovation" education is difficult to guarantee. If these problems cannot be solved, it will be difficult to improve the effectiveness of "double innovation" education.

4. An Analysis of the Cooperative Realistic Resistance of the "Double Innovation" Education and the Industry-Education Integration

Theoretically, the "double innovation" education and the integration of production and education have the same essential connotation in many aspects, but in the actual situation of talent training in China's universities, there are many obstacles to the cooperation between the two.

4.1 The Concept of the Industry-Education Integration Has not Penetrated into the "Double Creation" Education

From the logical starting point of "double innovation" education and the industry-education integration, the two are to solve different problems. "Double innovation" education is to cultivate the innovative and entrepreneurial skills of college students, and the industry-education integration is to cultivate high-quality, high-skilled professionals to meet the needs of industrial development. Many colleges and universities have not yet established the concept of "double innovation" education development in the industry-education integration. Some schools believe that "double innovation" education is to achieve self-employment of college students, improve entrepreneurship, and ease employment pressure. The idea is the precursor of action. Some schools did not realize the dialectical relationship between "double innovation" education and industrial development during the implementation of "double innovation" education.

4.2 "Double Innovation" Education is Separated from Professional Education and Industrial Development

Professional education in colleges and universities has a sound discipline system, and "double innovation" education is often used by colleges and universities as part of employment guidance. It is conducted in isolation, such as elective courses, entrepreneurship lectures, entrepreneurship
competitions, and entrepreneurship incubation. Skills training outside the professional curriculum. At present, most of the achievements of students' "double innovation" education have nothing to do with the students' majors, and their professional skills are low, the displayed utilitarianism runs counter to the cultivation of students' innovative entrepreneurship. The problem of “dual innovation” education being separated from professional education and industrial development is widespread. Many so-called success stories of innovation and entrepreneurship are often just changes in business models, and the power to promote industrial and economic development appears insignificant.

4.3 The Industry-Education Integration Platform Set up by Professional Education has not Been Integrated into the "Double Innovation" Education

At present, the practice base of "double innovation" education in China is mainly established and operated by the school itself. The purpose is to provide a place for incubation for start-up enterprises. Problems such as insufficient funding, lack of "Skilled" teachers, system guarantees, and guidance and service functions need to be improved. In terms of professional education, many universities and enterprises have jointly established a practical base for the industry-education integration. However, it is mainly limited to training students' professional practice skills. Lack of cross-cutting, no good interoperability and integration mechanism, and the advantages of professional education practice bases in promoting "double innovation" education have not been fully explored.

4.4 Insufficient Role of "Double Innovation" Education

At present, China's "double innovation" education is mainly implemented by schools, and a multi-agent collaborative promotion mechanism among government, industry, enterprises and universities has not yet been formed. Universities are limited to weak strength and limited resources in all aspects, so the quality of "double innovation" education is not high. The government's guidance and support policies for "double innovation" education need to be further improved. The implementation of existing policies is not enough. The resources and strength of the enterprise's "double innovation" education have not yet been stimulated. The long-term mechanism of school-enterprise collaboration to promote "double innovation" education has not been established. Insufficient tolerance and support for innovation and entrepreneurship in social culture, insufficient guidance services provided by social organizations for innovation and entrepreneurship, single financing channels for innovation and entrepreneurship, and the combined efforts of multiple entities have not been fully utilized.

5. The Synergetic Path of "Double Innovation" Education and the Industry-Education Integration

Industry-education integration development strategy provides new perspectives and policy opportunities for the deepening of "double innovation" education in universities. It is necessary to build a "double creation" education with integrated production and education under the new situation, and it is necessary to establish the concept of "double creation" education with industry-education integration, build a professional and industrial development-oriented platform, and use existing resources and resources to integrate the production and education platform to build Establish a collaborative training system for the government, universities, enterprises, industries and society, and promote the implementation of the multi-level and multi-faceted implementation concept of the industry-education integration.

5.1 To Establish the "Double Innovation" Education Development Concept of the Integration of Production and Education in Related Parties

"Double innovation" education is not simply to teach students the basic knowledge and skills of entrepreneurship. "Double innovation" education under the concept of industry-education integration should guide students to pay attention to the frontiers of the entire industry development and
professional fields, provide new impetus for industrial transformation and upgrading, and build a new pattern of "double innovation" education and the industry-education integration. Entrepreneurship is a “production or supply” activity that is directed at specific consumption. It needs to keep up with the form of economic and industrial development and regional development characteristics, and improve the predictive level of “double innovation” education for innovation and entrepreneurship.

5.2 To Combine Professional Education and Industry Chain to Promote "Double Innovation" Education

At present, the construction of the "double innovation" education curriculum is at the stage of exploration and development. In the context of the industry-education integration, it is necessary to carry out the "double innovation" education according to the modern economic system structure, and strengthen the simultaneous promotion of entrepreneurship education and industrial development. It is necessary to adhere to the curriculum design principles of "professional docking industry, entrepreneurship docking market", and combine "double innovation" education with local economic and industrial structure. Teachers must actively carry out theoretical and case studies on innovation education in the process of professional teaching, and improve students' innovative ability in the course of professional courses. It is necessary to form a community of "industry, profession, and entrepreneurship" teaching activities through the innovation of ideas, the formulation of talent training programs, the reconstruction of the curriculum system, and the transformation of teaching methods to build an application-oriented talent training that integrates "industry, profession, and entrepreneurship" Ecology, realize talent training from industry following, industry mutual assistance to industry leading.

5.3 To Carry out "Double Innovation" Education Relying on the Industry-Education Integration Platform

The industry-education integration base not only provides students with a true training environment, cultivates students' solid post skills, artisan spirit, but also implicitly cultivates students' innovative and entrepreneurial qualities. The industry-education integration base is generally based on professional groups. The combination of enterprise innovation and development and professional construction in colleges and universities avoids the status quo of entrepreneurship education and professional education. There is a need to build more industry-education integration bases, establish and improve institutional mechanisms, integrate into the "double innovation" education and education platform, carry out the practice of student innovation and entrepreneurship projects, and realize the effective connection of production and operation, professional teaching, innovation and entrepreneurship, and promote each other.

5.4 To Construct the "Double Creation" Education Ecosystem of "Politics, Schools, Enterprises and Communities"

Fully learn from international experience, realize the guidance mechanism of government-led and market-oriented "double innovation" education, and give full play to the role of enterprises. Establish a multi-party participation mechanism, cooperate to jointly build a "double innovation" education curriculum system, build a "double innovation" education dual-teacher faculty, build a "double innovation" education practice platform, organize innovation and entrepreneurship competitions, and promote the transformation of innovation and technological achievements. It is necessary to give play to the role of the government and the guild to form agglomeration advantages, and promote the long-term stable and standardized development of integrated "double innovation" education.

5.5 To Improve Supporting System and Mechanism Construction

The integration of the industry-education integration of professional talent training and the "double
innovation” education requires the establishment of a reasonable system and mechanism, the government needs to reasonably guide the industry-education integration through incentives, and the development of supporting production-education integration in personnel, finance, credit, and tax encourage measures and preferential policies for school-enterprise cooperation, formulate strict access and normative standards, and establish a comprehensive benefit compensation mechanism. Creating a good public opinion orientation and social atmosphere to support the industry-education integration, and give spiritual encouragement and material rewards to schools, enterprises and local governments that actively participate in industry-education integration.

6. Conclusion

Implementing "double innovation" education under the concept of industry-education integration and industry-academia cooperation, and jointly cultivating innovative and entrepreneurial talents, must not only play the basic role of the market in resource allocation, but also the government's macro-control role, and establish corresponding education results sharing Institutional mechanism to encourage participants to actively build a "double innovation" education community, share responsibility, share benefits, and promote a virtuous circle of "double innovation" education. Organizational security is a prerequisite, and an organization that includes government departments, industry organizations, and schools to promote the "double innovation" education and the coordinated development of industry-education integration is needed. Establish corresponding legal and policy guarantees, clarify the responsibilities and rights of enterprises to participate in "double innovation" education. The evaluation index system must not only focus on the economic effects of "double innovation" education, but also on personal effectiveness. Only by firmly establishing the concept of synergistic promotion of the "double innovation" education and industry-education integration n, and establishing a good ecosystem of synergy between the two, can the "double innovation" education really achieve results, and "industry" and "education" can truly integrate and develop.

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