

# Research on the Path of Integration of Industry and Education in Vocational Education from the Perspective of "Symbiosis" Theory

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**Abstract:** *The integration of industry and education is an inevitable choice for talent cultivation in vocational education. The main participants in the integration of industry and education in vocational education include schools, enterprises, industry associations, and the government. Their relationships of cooperation, interdependence, and mutual development align with the symbiotic relationships of mutual benefit described in "symbiosis" theory. Therefore, this paper uses "symbiosis" theory as a research perspective to actively explore development paths for the integration of industry and education in vocational education, focusing on the three elements of symbiotic units, symbiotic models, and symbiotic environments.*

**Keywords:** *"Symbiosis" theory; school-enterprise cooperation; integration of industry and education; path*

## 1. Introduction

The development of vocational education and the quality of student training in vocational schools are directly related to the future quality of China's economic and social development. Over the past forty years since the reform and opening up, China has achieved remarkable achievements in vocational education, forming the world's largest vocational education system. The importance of vocational education is increasingly recognized, and its development has gained strong support from all sectors of society. In response to practical issues in the development of vocational education, the state has issued a series of important documents in recent years to deepen vocational education reform, providing direction for the integration of industry and education. Deepening this integration and promoting the alignment of the education chain and talent chain with the industry and innovation chains is urgently needed to adapt the supply of vocational education talent to industry demands.

The main participants in the integration of industry and education in vocational education include schools, enterprises, industry associations, and the government. Their relationships of cooperation, interdependence, and mutual development are similar to the symbiotic relationships of mutual benefit described in "symbiosis" theory. Therefore, this paper uses "symbiosis" theory as an analytical perspective, focusing on symbiotic units, symbiotic models, and symbiotic environments to explore paths for the integration of industry and education in vocational education. The goal is to provide useful references for cultivating high-quality technical and skilled talents in vocational education.

## 2. Theoretical Explanation of the Path of Integration of Industry and Education in Vocational Education from the Perspective of "Symbiosis" Theory

### 2.1 Explanation of "Symbiosis" Theory

The concept of "symbiosis" originated in the field of biology. In 1879, German mycologist Anton de Bary first introduced the concept of "symbiosis," describing it as "the living together of unlike organisms." Subsequently, biologists worldwide have conducted diverse research on the concept of "symbiosis" from their respective disciplinary perspectives, viewing it as the close connection and exchange of energy, information, and resources between different organisms for development and growth [1]. As research into the concept of "symbiosis" deepened, it was gradually applied to social sciences, expanding to describe relationships of cooperation, interdependence, and mutual development between entities. "Symbiosis" theory has become an important reference for problem-solving in human

contexts [2]. The conditions for symbiosis must satisfy three basic elements: symbiotic units, symbiotic models, and symbiotic environments [3].

## ***2.2 Suitability of Analyzing the Integration of Industry and Education in Vocational Education Using "Symbiosis" Theory***

Due to the inherent "vocational" and "educational" nature of vocational education, schools, enterprises, government, and industry associations naturally form close connections of cooperation, interdependence, and mutual development. Therefore, it is appropriate to examine the integration of industry and education in vocational education from the perspective of "symbiosis" theory. In this context, the symbiotic units are schools, enterprises, government, and industry associations. Symbiotic models can be divided into parasitic models, commensal symbiosis models, asymmetrical mutualism models, and symmetrical mutualism models [4]. The symmetrical mutualism model is the most beneficial symbiotic model for the integration of industry and education in vocational education, where symbiotic units can promote and develop each other. The symbiotic environment includes policies and factors related to the integration of industry and education in vocational education.

Currently, in terms of symbiotic units, schools and government show greater enthusiasm for participating in the integration of industry and education, while enterprises and industry associations are less engaged. Regarding symbiotic models, there is still a gap between the talent training in vocational schools and the actual needs of enterprises, making it difficult to achieve deep integration and truly form a symmetrical mutualism model with shared resources (such as production equipment, technology, production processes, and plans), team building, and full-process talent cultivation. As for the symbiotic environment, on one hand, national policies and systems for deepening school-enterprise cooperation and industry-education integration are gradually improving, but detailed implementation rules have not been well established. On the other hand, continuous industrial upgrading, economic restructuring, and the development of emerging industries all require strong support from a large number of high-quality technical and skilled talents and craftsmen. Therefore, guided by the "symbiosis" theory, we need to actively explore effective paths for the integration of industry and education.

## **3. Exploring the Path of Integration of Industry and Education in Vocational Education from the Perspective of "Symbiosis" Theory**

### ***3.1 Symbiotic Units***

#### ***3.1.1 School Units***

From the perspective of schools, it is necessary to enhance top-level design and strategic planning. This can be achieved by actively visiting cooperative enterprises, industrial parks, industry associations, and government departments to understand the latest requirements for talent cultivation in regional economic development, industrial transformation, and enterprise growth. Schools should then develop comprehensive integration plans and talent cultivation strategies to produce high-quality technical and skilled talents that meet actual needs.

#### ***3.1.2 Enterprise Units***

From the perspective of enterprises, they should actively participate in the school-enterprise collaborative education system, providing schools with practical work scenarios and expanding more practical opportunities, thus fulfilling their social responsibilities. Enterprises should seek talent support from schools, jointly build employee training systems, and collaborate with schools to establish platforms for collaborative innovation, conducting scientific research and sharing technical expertise and research outcomes.

#### ***3.1.3 Government Units***

From the perspective of government, practical and operational policies should be developed to ensure financial, fiscal, land, and tax incentives for enterprises participating in the integration of industry and education. The government should lead the establishment of platforms for integration, consolidating resources from both schools and enterprises, providing opportunities for mutual development, expanding shared interests, enhancing cooperation value, and sharing development results.

### ***3.1.4 Industry Association Units***

From the perspective of industry associations, which bring together leading enterprises and specialized new companies, representing the highest development level of local industries, they act as coordinators in promoting integration. On one hand, they should provide schools, enterprises, and government with the latest information and trends in economic, industrial, and sector development. On the other hand, they should engage in close communication and collaboration with key industry enterprises, identify potential partners, and act as a bridge and intermediary for school-enterprise integration, further enhancing their service capabilities.

## ***3.2 Symbiotic Environment***

### ***3.2.1 Creating a Favorable Environment of Policies and Regulations***

The country attaches great importance to the integration of industry and education in vocational education and has introduced numerous policies to support and guide this integration. For instance, in 2022, the "Opinions on Deepening the Reform of Modern Vocational Education System Construction" explicitly proposed "building regional industry-education alliances" and "forming industry-education integration communities" with participation from government, enterprises, schools, and research institutions for substantial operations. Within the symbiotic environment, the government needs to continue playing a coordinating role, promoting active participation from all parties in the integration of industry and education. This includes establishing more regional industry-education alliances and industry-education integration communities to form mutually beneficial and impactful development paths. Furthermore, policies and regulations need to be further refined to provide operational guidelines and legal assurances for schools, enterprises, and industry associations to participate deeply in the integration of industry and education.

### ***3.2.2 Enhancing a Favorable Environment for Deep Integration of Industry and Education***

Led by the government, schools, enterprises, and industry associations should be encouraged to actively engage in integration, forming a mutually beneficial symbiotic framework. Schools and enterprises can strengthen communication and innovate cooperation models, incorporating the concepts of integration and collaborative education throughout the talent cultivation process. Schools should align professional settings with market demands, meet diverse societal needs, establish professional systems closely connected to industry and innovation chains, and enhance the concentration of specialized and advantageous programs to create a range of urgently needed, prominent, and distinctive applied disciplines.

## ***3.3 Symbiotic Models***

In the process of integrating industry and education in vocational education, schools, enterprises, government, and industry associations should cooperate, connect, and develop symbiotically, forming a symmetrical mutualism model (as shown in Figure 1). First, schools should conduct in-depth research through cooperative enterprises, industrial parks, industry associations, and government departments to precisely match enterprise requirements and needs. Relying on school-enterprise cooperation platforms, schools and enterprises can jointly build industrial colleges. Secondly, based on the understanding of enterprises, government, and industry associations, schools should comprehensively structure the talent cultivation system. This system should integrate ideological and political education, moral cultivation, professional culture, professional standards, cutting-edge technology, professional skills, and vocational quality standards into the entire process and aspects of talent development to cultivate high-quality technical and skilled talents needed for economic and social development, fostering comprehensive socialist builders and successors.

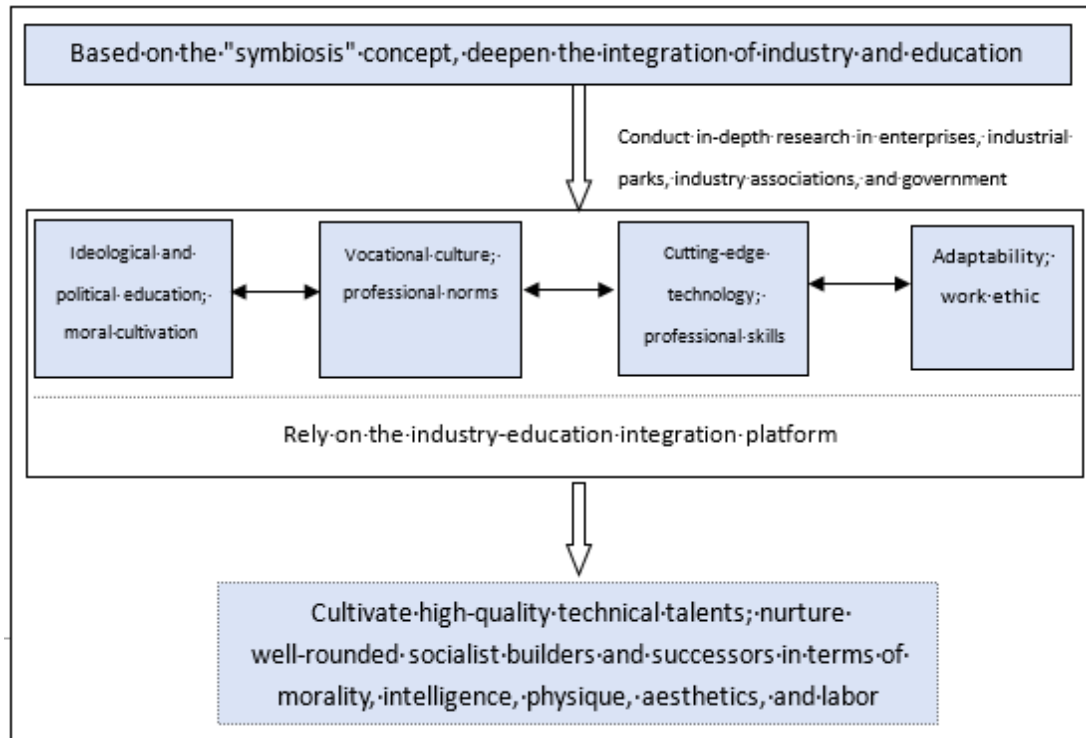


Figure 1: Symbiotic Model of Integration of Industry and Education in Vocational Education

### 3.3.1 Ideological and Political Education

The four main entities—schools, enterprises, government, and industry associations—jointly participate in the ideological and political education of students, integrating it into the entire process of student growth and development. First, focusing on moral education as the core, schools incorporate ideological and political education throughout their educational management services. This approach highlights that instilling ideals and beliefs is a key element in achieving the fundamental task of moral education and is the main thread in constructing a comprehensive ideological framework in modern colleges and universities [5]. Second, schools develop flexible, modular ideological and political education projects, continuously advancing the reform of political theory courses through "project-based, thematic, and networked" approaches. By utilizing various teaching methods such as on-site teaching, scenario simulation, case teaching, and online teaching, schools enhance the ideological, targeted, and impactful nature of political courses, ensuring that students internalize these lessons deeply and effectively. Third, leveraging the main platform of "thematic ideological education," universities utilize the expertise of the Communist Youth League, Marxism academies, and other specialized resources to conduct ideological and political education for students, fully utilizing the key roles of counselors and class advisors. Finally, through specialized forums, lectures, and seminars, along with activities like reading sessions, knowledge contests, speeches, and debates, both online and offline methods are combined to vigorously promote education in ideals and beliefs, patriotism, morality, mental health, legal safety, honesty, and gratitude. These efforts are combined with major festivals and anniversaries to conduct specialized educational activities, effectively implementing and improving student ideological and political work. Additionally, during significant historical events, close attention is paid to students' ideological dynamics to strengthen their patriotic feelings.

### 3.3.2 Vocational Culture and Norms Education

Based on the "symbiosis" model, schools closely align with enterprise needs, using industry-education integration platforms to cultivate students' vocational culture, thereby forming strong professional qualities and high vocational standards. Students trained in this manner can quickly adapt to corporate culture and integrate smoothly into the business environment. First, schools and enterprises collaboratively conduct vocational cognition education based on specific project cooperation, engaging in joint teaching of vocational quality courses such as professional quality development courses. This education guides students in understanding and appreciating vocational norms, environments, ethics, and corporate culture. Second, students undergo anticipatory socialization education regarding industry, enterprise, and self-development evaluations, primarily through courses

and competitions in career planning. This enhances guidance for students in career choice, design, implementation, modification, and improvement. Underpinning this is a core value system, characterized by mutual respect in interpersonal relationships, fostering a professional culture marked by respect, inclusion, ambition, dedication, and achievement, reflecting humanistic care, scientific spirit, and contemporary features. Third, students are helped to establish correct life values, industrial development views, enterprise construction perspectives, and employment and entrepreneurship outlooks. This cultivates in them a conscious enhancement of moral and professional quality, improving self-awareness, self-evaluation, and scientifically choosing self-development paths.

### **3.3.3 Cutting-Edge Technology and Professional Skills Training**

Through collaboration with enterprises, government, and industry associations, schools gain deep insights into industrial development trends and enterprise needs, imparting cutting-edge technologies and professional skills to students, thereby enhancing the adaptability of talent cultivation. On one hand, enterprises are fully involved in the entire talent cultivation process, jointly formulating talent training standards, course standards, and evaluation systems. On the other hand, by utilizing resources such as teaching, practice, faculty, cases, and projects from the industry-education integration platform, students engage in vocational platform courses, professional platform courses, and comprehensive vocational courses. This approach enhances their professional knowledge, skills, and vocational quality, mastering enterprise-leading technologies and fostering professional technical skills. This process gradually adapts them to vocational attributes, job specifications, work tasks, management culture, organizational positioning, development space, and career planning. Different specialized course group modules are set according to enterprise distinctions, project differences, and professional directions.

### **3.3.4 Adaptability and Work Ethic Training**

Relying on the industry-education integration platform, with support from enterprises, government, and industry associations, schools jointly cultivate students' job adaptability, career development ability, and work ethic, preparing a large number of high-quality technical talents with sustainable development abilities for enterprises. On one hand, students are provided with real job requirement information from enterprises, allowing them to engage in elective learning based on their own development interests and career planning, enhancing their adaptability to job roles. On the other hand, by using comprehensive projects from actual enterprise positions, students are fully integrated into future work environments, teams, and potential problems and challenges, training their abilities in self-management, self-adjustment, and self-adaptation, and fostering proactive thinking and reflection. Students are educated and guided to set high aspirations and develop a spirit of courage and relentless effort.

## **4. Conclusion**

The integration of industry and education is not only a characteristic of vocational education but also its fundamental educational model and the necessary path for vocational education to support national modernization. How to achieve deep integration of industry and education in vocational education and cultivate high-quality technical talents has become a challenging focus for symbiotic units such as schools, enterprises, and industry associations. Although the state has already provided a favorable symbiotic environment for industry-education integration from an overall strategic layout and policy improvement perspective, we still need to actively explore more scientific and reasonable symbiotic models for vocational education and industry-education integration to find a breakthrough path for solving the integration of industry and education in vocational education.

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