

## Research on the Construction Mode of Talent Supply Chain System in the Logistics Industry of Higher Vocational Colleges

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### Abstract

The logistics industry is experiencing a constant increase in demand for talents. However, the existing logistics management curricula in colleges and universities are inadequate in meeting market demands due to the insufficient educational levels and limited learning capacity of students in higher vocational colleges. These students frequently harbor misconceptions about the logistics industry, display a lack of interest in acquiring logistics knowledge, and as a result, possess limited practical skills in the field. To address these problems, this study employs the concept of integrated education to enhance students' interest in learning logistics by improving their professional perception through practice. Additionally, a school-enterprise cooperation model is implemented to improve students' practical skills. The study analyzes the effects of practical teaching on achievement and compares the advantages and disadvantages of independent college logistics training bases versus those built in collaboration with enterprises. A win-win cooperation model is proposed, in which schools and enterprises co-construct training bases led by enterprises and enterprise projects are combined into the teaching process. The teaching model combines theory and practice, enabling students to participate in the construction of enterprise projects. The proposed solutions facilitate the integrated education, co-construction of training sites, and development of the talent supply chain system.

**Keywords:** Fusion of Education, Co-Construction of Training Sites, Talent Supply Chain System.

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**Introduction**

At present, the logistics industry is developing rapidly, but the talent supply chain system that adapts to the development of the industry is not perfect. In higher vocational colleges which have logistics majors, the teaching content in the school cannot match the development speed of the industry. Especially in the practical teaching process of enterprises, schools cannot update the training conditions in time according to the development of the industry. Therefore, students cannot perceive the real status of the development of the industry, and the knowledge learned is not adapted to the real development of the industry, which may lead to their lower interest in the learning of logistics knowledge. Therefore, it is particularly important to find an education model suitable for the development of the industry. This paper aims to change students' cognition on logistics and improve their interest in learning by investigating the school-enterprise cooperation mode for talent training strategy under the background of rapid developing logistics industry in China (Zhu, et al, 2011; Li, et al, 2019; Tao, et al., 2021)

This paper presents the findings of a survey conducted in 2021, involving 547 college students who are pursuing a major in logistics management. Table 1 presents the findings on students' comprehension of career selection, professional perception, and job awareness. The data includes statistics on the employment status of logistics management graduates over the past three years, with a sample size of 300 graduates per academic year. The employment statistics are depicted in Table 2 below.

Table 1: Descriptive Analysis of Survey Data on Career Selection, Professional Perception, and Job Awareness

number of investigators	professional choice			professional cognition			Job cognition		
	voluntarily	parental choice	casual	understand	know a little	do not understand	Manager	Express delivery	Transport cargo
546 students	168	262	116	54	436	56	62	398	86
proportion%	30.77	47.99	21.24	9.89	79.85	10.26	11.36	72.89	15.75

Based on the data, the likelihood of logistics management students securing employment within the industry after graduation is relatively low, and this trend of diminishing prospects persists over the years.

Table 2: Statistics of graduates' Employment

	graduates of the class of 2021		graduates of the class of 2020		graduates of the class of 2019	
	Number of people	percentage	Number of people	percentage	Number of people	percentage
300 graduates per grade						
Employment logistics industry	168	56%	172	57.30%	145	48.30%
Half a year later Employment logistics industry	123	41%	120	40%	130	43.30%
one year later Employment logistics industry			98	32.70%	91	30.30%

According to the data, the probability of logistics management students' employment in this industry after graduation is not high, and they are lost year by year.

A set of three research questions was formulated to explore an appropriate training model.:

1. Exploring the Relationship between Professional Perception and Learning Interest in the Construction of Supply Chain Systems for Logistics Management Professionals.

2. Methods for Implementing Practical Teaching in the Process of School-Enterprise Integrated Education

3. How should enterprise projects be integrated into teaching process?

A logistics professional training base was proposed by analyzing the relationship between schools and enterprises in logistics vocational education. The impact of logistics practice teaching on students, as well as the advantages and disadvantages of two approaches: schools building practice teaching bases alone and jointly building them with enterprises. Additionally, utilizing enterprise projects as teaching resources to develop a teaching model that integrates theory and practice.

### Literature review

He (2019) discussed the mode of constructing a training base in his college. This mode features the co-construction of a "school-enterprise" cooperation, where the school and the enterprise sign a cooperation and co-construction base agreement to determine the base construction goals, and to establish an innovative cooperation platform to realize teaching, research, and technological development of the industry, as well as social training service function. He also created five kinds of higher vocational training, including school-enterprise linkage, engineering and learning integration, learning-research interaction, skills competition, and social service. (Jiao, 2018; Li, et al., 2019; Li, et al., 2020)

Liu (2021) proposed an active integration into the regional economic development needs and the formation of alliances with industry brands. To achieve this, Liu suggested the deepening of the education and teaching reform by integrating production and education. Additionally, it is recommended to jointly build and share a win-win virtual training system with domestic and foreign universities and well-known enterprises to integrate educational resources. This would result in talent training that accurately meets the dynamic needs of industrial development, particularly in the logistics specialty and its specialty group in vocational colleges.

Pilz (2009) elucidated the process of transitioning from secondary education to apprenticeship and higher education in Germany. Furthermore, Pilz tentatively identified factors that may explain the motivations of specific school-leavers in this context. According to Gambin and Hogarth (2017), apprenticeship training poses financial risks for enterprises. In her interpretation of the European Common Vocational Training Policy, Cort (2009) noted that vocational training has gradually extended from the policy sphere to encompass general and higher education, as well as the establishment of a European lifelong learning mechanism.

In 1982, the French government introduced the National Vocational Education Plan (NVEP), which allowed regional governments to develop their own programs and curricula, established cooperative education

that links education to the world of work, and created an Assessment and Observation System, as explained by Colardyn and Malglaive (1986). According to Brockmann, Clarke, and Winch (2010), succeeding in the education and training system framework requires considering changes in the labor market, employees' long-term interests, and addressing the problem of employer turnover. Deissinger and Hellwig (2019) investigated the modernization of the German Dual System for apprenticeships, examining the system's development history and the challenges it currently faces.

Hummelsheim and Baur (2014) proposed that in adopting the dual system of primary vocational education and training in Germany as a model, it is necessary to carefully consider its constituent elements rather than simply replicating them. Rauner and Wittig (2010) discussed the theoretical framework of multi-system classification, including dual apprenticeship training, and proposed a method for implementing the framework through data collection and analysis, which can serve as an evaluation tool for expert seminars. Kuhlee. (2015) analyzed political reform initiatives and the changing stakeholder interests and configurations, particularly those of the social partners, and their impact on the functioning and development of the German dual apprenticeship system.

Chen, Cai, and Cui (2017) examined the integration of production and education in higher vocational colleges based on the Belt and Road Initiative. He, Li, and Li (2019) explored and practiced a production-education integration model based on "Industry-Education Integration" development. Gao, Liu, and Hu (2020) conducted research on the integration of production and education in colleges and universities. Lastly, Wu, Chen, and Chen (2020) discussed the application and innovation of production-education integration in higher vocational education. All four studies aimed to investigate and improve the integration of production and education in higher education institutions.

The construction mode of talent training supply chain system based on the integration of industry and education can be graphically shown in Figure 1.

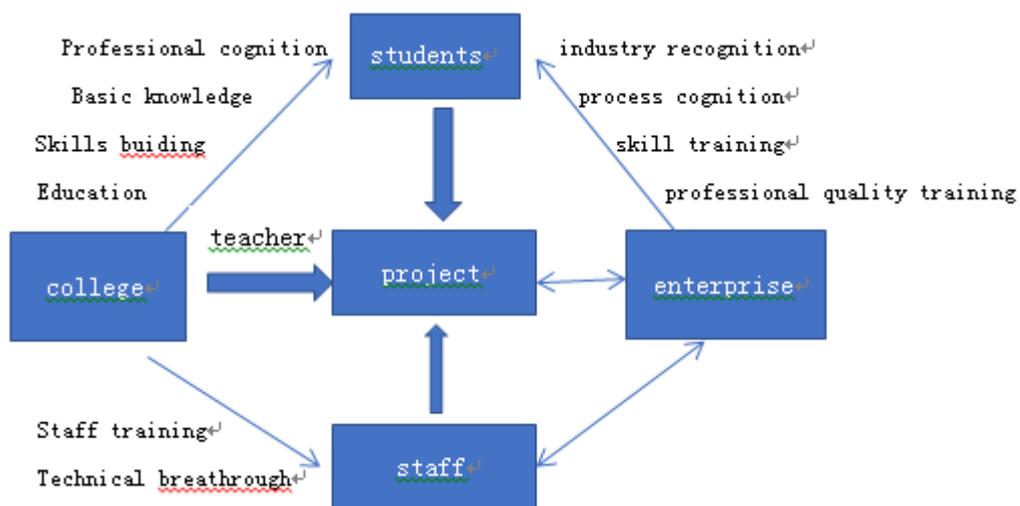


Figure1. The construction mode of talent training supply chain system based on the integration of industry and education

## Research Methodology

This paper aims to explore the development of an appropriate logistics personnel training system in response to the rapid growth of the logistics industry. The research methods employed include literature analysis, questionnaire surveys, and discussion. The study draws on a range of sources, including academic literature and investigations of relevant colleges and universities. Practical teaching methods and school-enterprise cooperation modes adopted by vocational colleges were examined to identify best practices.

The present paper is based on the theoretical framework of the integration of production and education. Specifically, the integration of production and education in higher vocational colleges refers to the process of integrating production and teaching, which encompasses three aspects: first, the integration of the educational process and the production process, thereby integrating educational methodologies; second, the integration of educational content and production technical skills, thereby integrating educational content; and third, the integration of educational achievements and technological product research and development, thereby integrating educational outcomes.

## Results and discussion

The rapid advancement of e-commerce platforms has accelerated the growth of the logistics industry, leading to an increased need for establishing a talent supply chain system in response. Many students enter vocational colleges without a genuine passion for the subject, merely aiming to secure admission. Consequently, their enthusiasm for studying the profession is not adequately nurtured. Moreover, students have limited exposure to practical experiences before entering college, relying mainly on book knowledge. As a result, their understanding of the logistics industry remains limited, often associating it solely with delivery services. Therefore, it becomes crucial to explore teaching methods that can foster a correct understanding of the dynamic logistics industry and enhance students' engagement and interest in learning. This serves as the focal point for research on training professionals in the logistics field.

### (1) The influence of logistics practice teaching on Students

The logistics industry holds the closest connection to our everyday lives. The widespread adoption of e-commerce platforms and online shopping has become a routine for young individuals. As a result, the delivery sector has become familiar to students. In their perception, the logistics industry is often equated with the delivery industry, where employment mainly involves delivering goods and takeaway food. Such limited understanding diminishes their interest in learning, as they perceive delivery jobs as unchallenging and requiring minimal knowledge. Consequently, their motivation to study diminishes. To reframe their perception, it is crucial for students to gain a renewed understanding of logistics enterprises and engage in practical learning experiences that involve more demanding roles. This approach will not only provide them with a genuine comprehension of the logistics industry but also ignite their curiosity and enthusiasm for learning.

(2) Advantages and disadvantages of building professional practice teaching base in colleges.

Based on the needs of professional learning, if colleges and universities can build their own training bases, it will facilitate students' learning and practice and meet the needs of teaching. The establishment of a training base in line with the development of the logistics major can enable students majoring in logistics management to comprehensively learn the skills required by professionals. However, China's logistics industry is currently in a stage of rapid development, and the application of logistics information technology and logistics equipment is constantly being updated. If a training base in line with the development stage of the logistics industry is built on the campus, it is necessary to update and supplement the training equipment and information system in a timely manner, which requires huge investment. and supplements, which require a huge investment. Moreover, repeated investment will also lead to waste of resources. If there is no company involved in the school's training base, students will not have practical project operations to improve their skills, and they will not be able to cultivate students' other abilities other than skills, such as analyzing data, processing data, and adapting to changes in customer needs.

The proportion of each cooperation mode adopted by colleges is shown in figure 2.

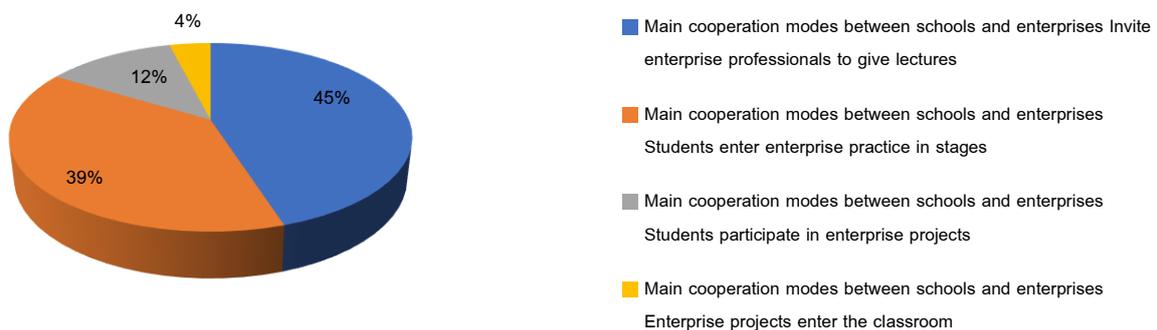


figure 2: The cooperation mode is adopted by colleges

(3) Advantages and disadvantages of enterprises as student practice bases.

Leading enterprises in the logistics industry are in sync with the industry's development stage, showcasing cutting-edge equipment, technology applications, and operational concepts. There are two notable advantages for students engaging in professional learning and internships within such enterprises prior to graduation. Firstly, from the students' perspective, this opportunity allows them to grasp the industry's trajectory, gain a genuine understanding of the logistics sector, and acquire essential professional skills while learning to collaborate effectively within teams. Secondly, from the enterprise's standpoint, students readily embrace the company's corporate culture. Through three years of practical experience within the company, students gradually become familiar with fundamental operational skills and the work environment. As a result, they can seamlessly integrate into the company's team and competently fulfill their job responsibilities upon graduation. Furthermore, the company assumes the responsibility of educating and training students, demonstrating its

commitment to social responsibility. However, this endeavor necessitates companies to allocate resources in terms of time, energy, and cost to provide practice venues for students. Assigning mentors to guide students during their internships is essential, and companies may also face potential challenges arising from students' unfamiliarity with certain work skills.

(4) The method of practical teaching of logistics talents training by school enterprise cooperation.

To cultivate talents, schools and enterprises should collaborate to develop talent training programs that can adapt to the evolving industry. These programs should be flexible enough to adjust the content of knowledge required for training, increasing or decreasing it in accordance with the industry's development.

For theoretical knowledge, a detailed and specific assessment process and assessment mode need to be formulated considering the job skills requirements of the enterprise. For practical teaching, the same assessment system and standards as the enterprise are formulated. In the teaching process, enterprise technicians and college teachers work together to form a dual-tutorial teaching model. In order to reflect the concept of school-enterprise cooperation and a win-win situation between schools and enterprises, schools and enterprises can jointly build training bases. However, due to the particularity of the logistics industry, constructing a base on campus may cause adverse effects, because logistics requires circulation equipment, which may cause potential safety hazards to students. Therefore, the base is mainly an enterprise planning base, and the school participates in the joint construction. The links of base planning, process reorganization, process improvement, and equipment upgrade are all jointly participated by schools and enterprises, so that teachers can keep abreast of the development trend of the industry at any time, so that teaching content can be updated in time. In the process of base construction and planning, there are convenient channels for field trips, to meet the needs of learning from on-site visits without affecting the operation of the enterprise; at the same time, there are designated school teachers and enterprise mentors providing joint guidance for the students. The training base jointly built by the school and the enterprise is also a base for college teachers to conduct practical learning and scientific research. The co-construction base is not only a practical teaching base for students, but also a working base for enterprises, which can improve the utilization rate and ensure that students' practical activities are in line with the development of the industry.

Integration of enterprise projects into the teaching process

In the construction of the talent training supply chain system, the real projects of the enterprise should be integrated into the students' learning. Students enrolled in higher vocational colleges demonstrate subpar study habits and a lack of enthusiasm for learning, with little to no interest in the study of theoretical knowledge by participating in some simple projects of the enterprise, students can be gradually guided to enter the professional study, or completed some simple projects led by double mentor. For example, in the process of learning the theoretical knowledge of warehousing, we need to guide students to investigate the warehousing situation of enterprises, and formulate warehousing plans or improvement plans for warehousing management. During the process of acquiring theoretical knowledge in distribution, involving students in the development of distribution plans when enterprises encounter diverse business scenarios. Integrating real projects into the teaching process can cultivate students' professional skills while developing their professional ethics and

professionalism. By relocating the classroom to the enterprise practice base, students can actively participate as members of project execution teams. This approach allows for the integration of theoretical teachings with practical experiences during project execution practice activities.

With the development of the industry, the update of business processes and plans can be entered into the classroom in the form of projects. This can not only stimulate students' interest in learning, but also enhance their sense of identity within the logistics industry. Glover & Bilginsoy (2005) proposed that alternative forms of training sponsorship have substantially different effects on enrolment and graduation. Identification of the practices that improve enrolment and retention, and their widespread adoption would enhance the effectiveness of training programs.

Figure 3 illustrates the substantial significance of enterprise project practice teaching for 900 students, as revealed through a survey conducted over the past three years.

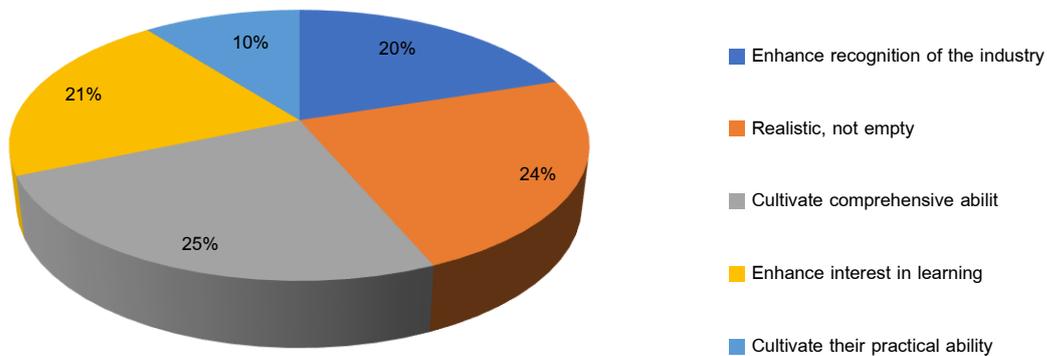


Figure 3. How students think the significance of enterprise project teaching for them

### Conclusion

Based on the analysis, the main conclusions of this article can be summarized as follows:

To establish an optimal supply chain system for meeting logistics talent demand, it is essential to initiate a comprehensive integration of production and education through collaboration between educational institutions and enterprises. This involves establishing training bases centered in enterprises. Considering the alignment between industry development trends and vocational education standards, vocational education should receive support. Integrating corporate projects into the classroom and immersing students in real-world projects will enhance their learning experience. As the logistics industry progresses, it becomes imperative to introduce the theoretical training of industry employees and address technical challenges within the curriculum. This approach transforms educational institutions into channels for industry innovation, facilitating enterprise development in tandem.

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