

Innovating the Cultivation Model for Applied Talents in Logistics Management from the Perspective of Industry-Education Integration—An Exploration Based on the Pre-employment On-the-Job Internship Model

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ABSTRACT

With China's economic structural transformation and industrial upgrading, the structural imbalance between the supply and demand of applied talents has become increasingly prominent, especially in the modern logistics sector. This paper, set against the backdrop of the fourth phase of the Ministry of Education's Supply-Demand Alignment Employment-Education Project, focuses on the "Employment Internship Base Project" collaboration between Hainan College of Science and Technology and Baotian (Shenzhen) Information Technology Co., Ltd. It deeply analyzes the core issues in the current cultivation of applied logistics management talents, such as the disconnection between curriculum content and job requirements, monotonous teaching methods, and insufficient school-enterprise collaboration. The article systematically elucidates the connotation and value of the "pre-employment on-the-job internship" model and, based on this, constructs a new "five-in-one" talent cultivation path encompassing goal reconstruction, spatial expansion, model innovation, system co-construction, and platform support. This path aims to break down traditional teaching barriers through deep school-enterprise collaboration, fully integrating the actual needs, real-world projects, and professional standards of enterprises into the entire talent cultivation process, thereby effectively enhancing students' job adaptability, professional competence, and practical problem-solving skills. The expected outcomes of this research will not only provide a practical plan for the reform of the logistics management program at the partner institution but also offer a transferable theoretical paradigm and practical reference for other application-oriented universities in deepening industry-education integration and improving the quality of talent cultivation.

KEYWORDS

Industry-education integration; Pre-employment on-the-job internship; Logistics management; Applied talents; Employment internship base; Talent cultivation model

1 Introduction

Driven by the waves of globalization and the digital economy, the modern logistics industry has evolved into a fundamental, strategic, and leading sector supporting national economic development. The construction of the Hainan Free Trade Port, in particular, has placed unprecedentedly high demands on the quality and specifications of logistics management talent cultivation in the region. However, as the primary battleground for talent cultivation, higher education institutions are finding that their traditional teaching models for logistics management are gradually revealing their lag and limitations in the face of rapid industry changes. Issues such as outdated teaching content, weak practical components, and superficial school-enterprise collaboration have led to a situation where the knowledge structure and competencies of graduates fail to meet the real-world needs of enterprises, resulting in a structural dilemma of "difficulty in employment" coexisting with "difficulty in recruitment." Against this backdrop, the Ministry of Education's Supply-Demand Alignment Employment-Education Project has built a bridge for deep collaboration between universities and enterprises, providing an institutional guarantee for solving the talent cultivation challenge. This paper, based on the jointly declared "Pre-employment On-the-Job Internship Model for Applied Technical and Skilled Talents in Logistics Management Employment Internship Base Project" by Hainan College of Science and Technology and Baotian (Shenzhen) Information Technology Co., Ltd., aims to explore an innovative path for cultivating applied logistics management talents that meets contemporary demands and possesses regional characteristics, thereby contributing theoretical and practical wisdom to deepening industry-education integration and serving regional economic development.

2 The practical dilemmas and project background in cultivating applied logistics management talents

On-the-job internship is a crucial component of the talent cultivation model in higher education, typically divided into work-study internships within the curriculum and pre-employment on-the-job internships. The latter has a unique implementation path: enterprises, based on their hiring plans, recruit an equal number of students through formal recruitment procedures to fill positions; students and enterprises reach an employment intention, making students "quasi-employees"; after the internship period, through mutual selection, students and enterprises sign formal labor contracts. This model achieves an organic integration of theory and practice, experience and discovery, and teaching and

learning, offering significant benefits to schools, enterprises, and students alike. It is an important measure for enhancing the quality of talent cultivation, increasing student employment rates, and helping enterprises acquire high-quality human resources.

However, although the education for applied logistics management talents has formed a relatively independent knowledge system and runs through the entire process of student development, numerous challenges persist in the specific implementation of pre-employment on-the-job internships. Particularly against the backdrop of rapid economic globalization and industrial intelligence, traditional teaching content and methods struggle to meet the complex demands of modern logistics society for talent. These issues are mainly manifested in three aspects. First, curriculum content is not effectively aligned with job characteristics. Traditional teaching relies excessively on textbooks, with content that updates slowly and lacks a high degree of fit with cutting-edge job skills such as smart logistics, cross-border supply chains, and big data analytics. This leads to students struggling to correctly recognize the value of their positions during internships and exhibiting poor adaptability and self-control when facing setbacks, significantly diminishing the effectiveness of the internship. Second, teaching methods are monotonous, failing to create a high-quality classroom atmosphere. Some teachers still adhere to traditional, one-way teaching methods, where students passively receive knowledge. This approach fails to stimulate students' interest, resulting in low classroom participation and a poor learning experience, which hinders the rapid internalization of knowledge and prevents the educational role of logistics management from being fully realized. Concurrently, some teachers lack proficiency in using modern information technology, resulting in outdated teaching methods that cannot diversify learning channels to meet the current growth needs of students. Third, the developmental characteristics of the logistics management discipline are not distinct, with a serious tendency toward homogenization. Teachers overly focus on meeting unified syllabus requirements and fail to tailor their teaching to local conditions or individual student needs during specific internships. In terms of talent cultivation goals, curriculum planning, and teaching methods, the institution's positioning and educational traditions are insufficiently reflected. Discipline construction emphasizes uniformity, leading to unclear educational characteristics and an inability to meet the diverse demands of various industries for applied logistics management talents. Although existing curriculum systems, practical components, and cultivation goals have incorporated some industry elements, they are often mere supplements to specific training plans, failing to systematically promote the overall improvement of talent cultivation quality from a top-down professional development perspective. Therefore, based on the research background above, launching an employment internship base project under the pre-employment on-the-job internship model and establishing a scientific and rational educational system for applied logistics management talents is particularly necessary and urgent.

3 The connotation and contemporary value of the pre-employment on-the-job internship model

The core value of the pre-employment on-the-job internship model lies in its construction of a "transition period" and "buffer zone" connecting student identity with professional social identity. It is more than just an internship; it is a quasi-professional experience. Its connotation transcends traditional practical teaching, becoming a comprehensive educational mechanism that integrates skills training, professional cognition, cultural immersion, and mutual selection. The implementation of this model has profound positive significance for all participating parties.

First, this model meets the growth needs of students. The pre-employment on-the-job internship is a critical step for students transitioning from campus to society. Innovatively carrying out education for applied logistics management talents at this stage is of great significance for helping students adapt to new jobs and integrate smoothly into society. By integrating the cultivation of professional ethics, values, psychology, and interpersonal skills into the internship process, it can effectively enhance students' sense of social responsibility and mission, develop their innovative thinking, and guide them in establishing a correct worldview, outlook on life, and values. Oriented by social needs and aimed at cultivating a sense of contribution and action in the new era, this model exercises students' ability to solve practical problems, helps them form correct value judgments, and ultimately enables them to grow into adaptable talents who keep pace with the times.

Second, this model meets the intrinsic developmental needs of the discipline. Incorporating the education of applied logistics management talents during the pre-employment on-the-job internship phase as an important part of the school's logistics management curriculum can achieve a seamless connection between the classroom and the workplace, significantly enhancing the attractiveness and effectiveness of professional courses. By introducing real enterprise cases, project tasks, and technical standards, it ensures that the education of applied logistics management talents is more effective, continuously promotes the updating and iteration of disciplinary content and teaching methods, and drives the discipline's development forward.

Third, this model meets the macro needs of social development. The launch of this project is a targeted solution proposed to address the existing problems in the education of applied logistics management talents in the current social environment. The existence of these problems reflects, to a certain extent, the deficiencies or shortcomings in related

teaching concepts, content, and methods. Therefore, advancing the employment internship base project is conducive to theoretical innovation and practical exploration in various aspects, including educational philosophy, teaching content, classroom teaching methods and means, and the development of the faculty. The vitality of teaching lies in innovation; only then can it have lasting persuasiveness and provide effective value guidance for a constantly changing social environment, continuously supplying high-quality applied talents to society.

4 The construction path and core content of the new talent cultivation model

To effectively address the practical challenges and fully leverage the value of the pre-employment on-the-job internship model, this project has designed and constructed a systematic, multi-dimensional new talent cultivation path. This path is guided by the developmental needs of students, founded on deep school-enterprise collaboration, and supported by modern information technology, aiming to comprehensively enhance the quality of talent cultivation.

4.1 Goal reconstruction: re-defining curriculum objectives centered on professional competence

Traditional curriculum objectives often focus on the transmission of professional knowledge and the training of skills. Under the pre-employment on-the-job internship model, curriculum objectives must be reconstructed and expanded. In addition to core professional teaching content, the curriculum should place greater systematic emphasis on cultivating students' comprehensive competencies, such as professional ethics, values, psychology, and interpersonal skills. The goal is to guide students toward self-cognition, self-development, and self-management, helping them form a positive professional attitude and a clear awareness of career development. Based on the context of the new era, teachers can use modern information technology to conduct precise analyses of student learning situations, competency levels, and pre-employment internship needs, and accordingly formulate comprehensive, personalized, and phased objectives. These small objectives should be achievable, student-centered, and designed to guide students in conscious learning and expansion through customized teaching content and methods, thereby improving learning efficiency. When students achieve these phased objectives, they gain a sense of accomplishment and satisfaction, continuously building confidence in their learning and internships, which in turn mobilizes their enthusiasm and initiative for pre-employment and ensures the efficient delivery of education.

4.2 Spatial expansion: constructing a new educational field integrating online and offline learning

Traditional teaching is constrained by fixed locations and times, which affects its effectiveness. The application of modern information technology has greatly extended the time and space of education. The project is dedicated to constructing a deeply integrated educational field that combines online and offline, in-class and extracurricular, and on-campus and off-campus elements, creating a virtual expansion of educational space and an intangible extension of educational time. To cater to the fragmented learning habits of contemporary students, teachers can leverage the breadth of information and richness of content available online to create and push diverse, job-related extended learning materials. This not only aligns with the expression and viewing habits of modern students and enriches online learning resources but also achieves a fundamental breakthrough in educational time and space, laying the foundation for students' lifelong learning.

4.3 Model innovation: building an adaptive teaching model for students, society, and the discipline

To cope with dynamically changing demands, it is essential to construct a highly adaptive teaching model. First, the teaching model should adapt to the developmental needs of students. Teachers need to explore teaching methods and strategies better suited to job requirements based on the actual needs of the pre-employment on-the-job internship. Simultaneously, they should establish a long-term dynamic linkage mechanism to grasp changes in student needs, enhancing the relevance and individuality of teaching and helping students improve their ability to solve practical problems. Second, the teaching model should adapt to the needs of social development. As the cradle of talent cultivation, higher education institutions must keep pace with the times, ensuring that teaching models, content, and methods are perfectly aligned with the job requirements of enterprises, cultivating the applied talents that society truly needs. Third, the teaching model should adapt to the developmental needs of the discipline. The new era places new demands on teachers, who must not only possess solid professional knowledge and operational skills but also be proficient in modern digital technology and able to integrate it seamlessly, thereby continuously improving their teaching capabilities and driving the forward development of the discipline.

4.4 System co-construction: establishing a knowledge system that balances professional study and internship practice

Curriculum content is the foundation of talent cultivation. To enhance students' future job adaptability and teamwork skills, it is necessary to construct a knowledge system that balances professional study with internship practice. The pre-employment on-the-job internship model breaks down the barriers between schools and enterprises, strengthening

deep communication and cooperation. By enhancing school-enterprise collaboration and orienting it towards job requirements, the actual needs, cultural concepts, and professional standards of enterprises are truly integrated into the educational program for applied logistics management talents. Through positive guidance, dual management, and dual education from both the school and the enterprise, each party leverages its advantages to jointly implement talent cultivation. The ultimate goal is to produce talents who meet the needs of both enterprises and society, truly achieving a seamless connection between the supply and demand sides of talent.

4.5 Platform support: building a digital platform for teaching resource sharing and interaction

A network teaching platform is the basic carrier for implementing online teaching models. The project will optimize and integrate resources to build a powerful teaching resource sharing platform and network teaching platform. Teachers can optimize the platform's content according to the requirements of the pre-employment on-the-job internship and even develop a dedicated platform with specific functionalities. Using the platform's data statistics functions, teachers can accurately analyze problems in the teaching process, assess students' knowledge mastery and application levels, and provide targeted comments and guidance. The platform can also help teachers understand students' learning intentions and interests, allowing them to push personalized teaching resources based on learning analytics, thereby enhancing student participation, increasing their sense of accomplishment and interest in learning, and contributing to improved teaching effectiveness. Through the platform, students can access more real industry cases, whose practicality enhances the hands-on nature of the curriculum and attracts students to learn more autonomously. Teachers can publish project task orders online, organize study of related resources, and students can use the platform for knowledge expansion after class, gradually improving their job adaptability. Real-time communication between teachers and students enhances teaching quality, and students can upload assignments or internship reports to the platform for teachers to review and provide feedback at any time, significantly improving teaching efficiency.

4.6 Guarantee mechanisms and expected outcomes of project implementation

The smooth implementation and achievement of the expected goals of this project depend on a solid guarantee mechanism. Hainan College of Science and Technology's School of Finance and Economics, as the project undertaking unit, possesses superior preliminary foundations and conditions. Founded in 2008, the school focuses on modern service industries such as finance, tourism, and logistics, relying on the "Big Finance and Digital Intelligence" platform to promote deep cross-disciplinary integration. The school has a well-structured and highly qualified faculty, with a high proportion of senior titles, including provincial-level high-level talents, PhDs, and "dual-skilled" teachers, and has established a provincial-level "dual-skilled" teaching team for logistics management. In terms of hardware facilities, the school has built several modern skills training labs, such as the Smart Logistics Training Center and Supply Chain Lab, and has signed internship and training cooperation agreements with 27 enterprises, providing strong support for the practical teaching components of the project. Furthermore, the school has a fruitful track record in research, undertaking multiple vertical and horizontal research projects, publishing a large number of high-level papers, and providing a profound academic foundation for the project's theoretical research.

Based on the above guarantees, the project is expected to achieve a series of fruitful outcomes. First, significantly enhance students' ability to solve practical problems. Through technology-assisted teaching centered on job adaptability and professional competence, a student-centered autonomous learning system will be constructed, and the advantages of school-enterprise joint education will be leveraged to strengthen practice, leading to a qualitative leap in students' comprehensive abilities. Second, effectively improve teaching efficiency and quality. The project will promote a shift in teachers' educational philosophies, enhance their mastery of modern technology and interdisciplinary capabilities, and significantly improve teaching efficiency through the rational use of resources and platforms. Third, form a batch of high-quality teaching resources. The project plans to create 15-20 curriculum resources related to the pre-employment on-the-job internship model, complete corresponding PPTs and lesson plans, and adopt diversified assessment methods to solidify the reform outcomes. Fourth, build a fully functional software and hardware platform. The constructed teaching resource sharing and network teaching platform will become a sustainable digital teaching infrastructure. Fifth, deepen the school-enterprise collaborative education mechanism. The university will proactively connect with enterprise needs, adjust its academic programs and talent cultivation models, invite enterprises to participate in curriculum design, case development, and faculty training, and jointly hold job fairs, giving priority to recommending outstanding graduates to the partner, forming a virtuous cycle of talent supply and demand. Sixth, produce theoretical outcomes. At the project's conclusion, a research summary report will be written, and one or more thematic papers based on the project's core content will be published, providing theoretical reference for research and practice in related fields.

5 Conclusion and outlook

Facing the urgent demand for high-quality applied talents in the transformation and upgrading of the modern

logistics industry, the traditional closed, theory-heavy talent cultivation model is no longer sustainable. The new model for cultivating applied logistics management talents proposed in this paper, based on the Ministry of Education's Supply-Demand Alignment Employment-Education Project and centered on the "pre-employment on-the-job internship," systematically responds to the core pain points in current talent cultivation through its "five-in-one" path of goal reconstruction, spatial expansion, model innovation, system co-construction, and platform support. The core of this model lies in breaking down the "walls" between the campus and the enterprise, deeply integrating the real needs, resources, and culture of the enterprise into the entire talent cultivation process, and achieving an organic connection between the education chain, talent chain, and industry chain.

Looking ahead, the successful implementation of this model will not only directly enhance the employability and career development potential of logistics management graduates from Hainan College of Science and Technology, supplying much-needed logistics talent for the construction of the Hainan Free Trade Port, but its constructed school-enterprise collaborative education mechanism, dynamically adaptive curriculum system, and digital teaching platform also have broad promotional value. Its experience is replicable and transferable to other applied majors and universities in different regions, providing strong practical support and a theoretical paradigm for deepening industry-education integration and comprehensively improving the quality of talent cultivation in China's higher education. Of course, any model innovation requires continuous testing, revision, and improvement in practice. Future research will focus on the specific implementation process, effect evaluation, and continuous optimization mechanisms of this model, with the aim of making it more mature and vital.

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