

# Research and Practice on the Talent Cultivation System in Integration of Industry and Education of Logistics Management\*

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**Abstract**—In order to adapt to industrial transformation and upgrading and settle the imbalance between supply and demand of talents, based on the exploration and practice on the cultivation system of talents of integration of industry and education and proceeding from the problems existing in the current talent cultivation of integration of industry and education in colleges and universities, this paper puts forward the construction of the "Four Chain Connection" talent cultivation system of integration of industry and education in logistics management major, and keeps pace with "five-in-one" from the transformation of the implementation of talent cultivation program, course system reconstruction, teaching model reform, deepening of practical teaching and innovation of talent evaluation mechanism to take shape a connected talent chain cultivation system with profound integration of industry and education.

**Keywords**—logistics management major; integration of industry and education; talent cultivation system

## I. INTRODUCTION

With the rapid development of logistics industry, there is a strong demand for talent cultivation in logistics management. By the end of 2018, there were 655 undergraduate logistics major distribution points in China, including 512 logistics management points, 134 logistics projects points, 8 procurement management points and 1 supply chain management points. In order to deal with the relationship between quantity and quality of logistics major development, the key to talent cultivation lies in quality and the all-round development of morality, intelligence, physique, fine arts and labor, and specialized, compound and innovative logistics talents in the new era are the cultivation goals of distribution point major. For application-oriented colleges and universities, they need to take the road of integration of industry and education and school-enterprise cooperation, and carry out talent supply side reform, so as to meet the industry's demand for talents and improve the contribution rate of colleges and universities in the industrial transformation and upgrading [1] [2] [3]. The integration of industry and education is the new

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normal state of higher education reform in China, and is the inevitable requirement of cultivating high-quality application-oriented talents in colleges and universities [4]. At present, many local application-oriented undergraduate colleges are actively exploring the reform of talent cultivation mode of integration of industry and education [5] [6] [7]. There are four major modes of integration of industry and education in colleges and universities by the summary: research and development of integration of industry and education, co-construction mode, project traction mode, talent cultivation and communication mode [8]. At the same time, the state has issued a series of policies to deepen the integration of industry and education, and to support colleges and universities to break through the "bottleneck" of the integration of industry and education to cultivate talents. However, there are still many problems in the reform of the cultivation mode of integration of industry and education in colleges and universities.

First of all, there is a mismatch between the demand for industrial development and the supply of education that is manifested in the fact that the talent cultivation classification lags behind the demand for industrial development, that the education chain is only loosely connected with a part of industrial chain, that the interaction between talent cultivation and enterprises in colleges and universities is not close enough, and that the analysis of talent demand is insufficient, which leads to the insufficient total supply of applied talent resources, so it is difficult to meet the demand for development. There is not enough attention to talent cultivation, and there are disconnection between teaching content and market demand. Second, the imperfect practical teaching system in the construction of practical teaching platform in colleges and universities exists, so it is unable to satisfy the needs of industrial development; there still are many problems, such as single practical teaching facilities, poor operability, unable to dock with enterprise operations; weak pertinence of teacher training, weak practical ability of teachers, and so on. Finally, in the process of application-oriented transformation, a large number colleges and universities are easy to fall into the dilemma of technology fragmentation in the reform of talent cultivation mode due to the problems of ideology, path selection and resource allocation. It is difficult to bring in

industrial concept, industrial technology, industrial culture and industrial strength into teaching activities and participate in the process of educating people, nor to monitor and assess the quality of integration of industry and education scientifically and perfectly by docking only with the teaching mode of school-enterprise cooperation of a certain major or enterprise.

Based on the above-mentioned problems, the logistics management major of Fuzhou University of International Studies and Trade constantly innovates the talent cultivation mode, deepens the cooperation between schools and enterprises, explores the deep integration of industry and education, and proposes and constructs a "Four Chain Connection" talent cultivation system of integration of industry and education.

## II. THE CONNOTATION OF TALENT CULTIVATION SYSTEM OF "FOUR CHAIN CONNECTION" INTEGRATION OF INDUSTRY AND EDUCATION

The logistics management major in Fuzhou University of International Studies and Trade is characterized by "integration of industry and education", and takes the reform of supply side of applied talents as goal. At the same time, both schools and enterprises jointly explore the talent cultivation system and new mechanism to elevate the overall teaching quality and teaching level, and to promote the balance between supply and demand of advanced applied talents. What's more, they also make great efforts to build a "Four Chain Connection" talent cultivation system characterized by "industry chain-education chain-innovation chain-talent chain", which changes the previous "push-type" talent cultivation mode. The new system takes the demand of enterprise talents as the driving point,

carry out the deep integration of schools and enterprises, and continuously promote the reform of education and teaching, so as to realize the transformation from fragmentation reform to the overall reform of system design.

"Four Chain Connection" refers to taking the idea of supply chain management as the guide, and injecting an endless source of innovation driving force into the development of industry enterprises by depending on the industrial chain, restructuring the education chain, integrating the innovation chain, optimizing the talent chain, and finally through the aggregation of the talent chain.

The logistics management major of Fuzhou University of International Studies and Trade relies on the regional advantages of the state-level new area where the school is located to run through the industrial chain of manufacturing industry, retail industry and third party logistics service providers; it makes use of the advantages of the developed cross-border e-commerce industry in Fujian Free Trade Zone to perfect the educational chain of "the coordinated development of e-commerce logistics and international logistics", adjusts and optimizes the direction of talent cultivation and professional development, and constructs the mechanism of school-enterprise co-construction and sharing, enterprise operation platform on campus and the innovation chain of off-campus practice platform, pays attention to the integration of resources, and share teachers, courses and practice platforms with marketing, information management and information system majors to build a compound talent cultivation chain with solid professional English and outstanding operational ability of logistics enterprises, as shown in "Fig.1".

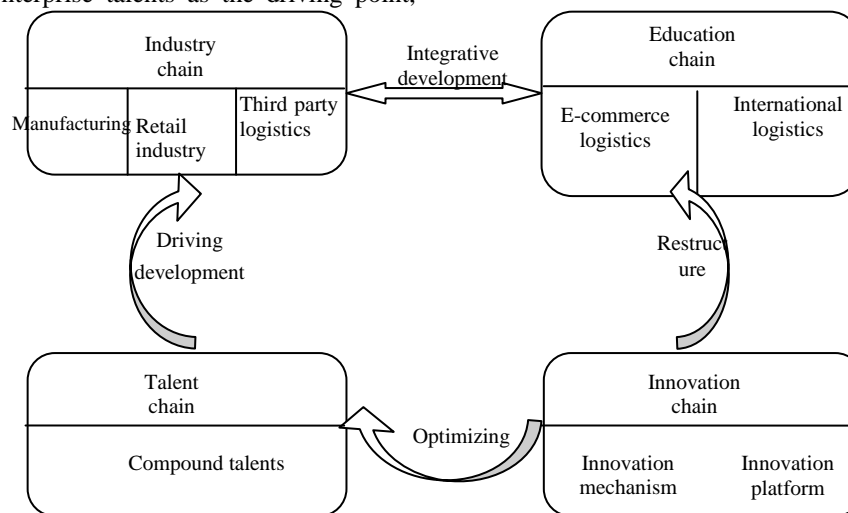


Fig. 1. "Four Chain Connection" talent cultivation system.

### A. Relying on the Industrial Chain and Reconstructing the Education Chain

Relying on the regional advantage of Fujian Province, it runs through the industrial chain of manufacturing industry, retail industry and third-party logistics service providers. It has formed a talent cultivation platform for school-enterprise cooperation with Xiangjin Group, Taiwan Chaojie Group,

Fujian SF Express, EMS Company, Wal-Mart Company, Jingdong Logistics and others as the main partners. For example, on the basis of years of teaching cooperation with ChaoJie Logistics Company and in accordance with industry standards, the school integrates teaching resources, comprehensively improve the level of school-running cooperation and build industry colleges. Meanwhile, they jointly establish the ten major construction tasks, such as

provincial reform of pilot major and service industry characteristic major, joint building and sharing of high-quality courses and laboratories, realization of logistics documents + logistics marketing outsourcing, joint construction of the case library of school-enterprise cooperation, joint declaration of the provincial and departmental topics, joint guidance of graduation thesis and graduation practice, co-education of teachers team, joint completion of student career planning, certification counseling and employment tracking. Especially, the establishment of school enterprise operation center and the realization of the introduction of enterprise business processes and data documents provide a strong guarantee for the enterprise's long-term human resources cultivation and the comprehensive promotion of application-oriented talent cultivation level.

### *B. Co-constructing Education Chain and Integrating Innovation Chain*

In view of the urgent need for talent cultivation for the development of Fujian free trade area, the educational chain of e-commerce logistics and international logistics has been perfected; the direction of talent cultivation and major development has been adjusted and optimized, and innovative chains such as the mechanism of school-enterprise co-construction and sharing, the platform of enterprise operation on campus and the platform of off-campus practice have been integrated. In order to meet the needs of professional chain construction and talent development, the school has cooperated with Fuzhou Nicro Modern Crafts Co., Ltd. to co-construct and share cross-border e-commerce studio of Nicro. The purpose is to promote the improvement of talent cultivation level and construct a distinctive practice teaching base on campus, which is conducive to students applying theoretical knowledge into practice, improving business operation ability and boosting students' comprehensive competitiveness.

### *C. Optimizing the Talent Chain and Serving the Industry Chain*

The school should take full advantage of the regional advantages of schools located in the core area along the One Belt and Road Initiative, and vigorously cultivate and transport talents in the fields of economy and trade and logistics. On this basis, The school should take this opportunity of professional chain construction, focus on resource integration, and share teachers, courses and practical platforms with marketing, information management and information system majors, so as to build a compound talent chain of cultivating and transporting enterprises' logistics operation and logistics marketing. In addition, in order to elevate enterprise resource integration and business outsourcing cooperation, several activities such as school-enterprise federations and industry forums are held to deeply dock local textile enterprises with logistics enterprises, and school-enterprise-enterprise

cooperation is also carried out. Through combining with the demands of international business development of textile enterprises, international logistics enterprises are invited to carry out the training of business management problems, which enable textile enterprises to fully cooperate with international logistics enterprises, so as to serve the industrial chain.

Starting from the demand pull of industry chain, the school analyses the characteristics of talent demand, makes re-position for the talent training classifications, systematically integrates the resources of education chain from top-level design to teaching units, and implements them at the functional level. At the same time, the school also fully mobilizes the enthusiasm of enterprises in the integration of industry and education, integrates the genes of innovation chain in the whole process of teaching and learning to avoid the separation of closed and single elements, so as to take shape the connected talent chain cultivation system of the deep integration of industry and education.

## III. THE CONSTRUCTION OF TALENT CULTIVATION SYSTEM OF "FOUR CHAIN CONNECTION" INTEGRATION OF INDUSTRY AND EDUCATION

The "Four Chain Connection" talent cultivation system of integration of industry and education brings into force the reform and development system that keeps pace with and mutually supports each other of "five-in-one" of talent cultivation scheme transformation, course system reconstruction, teaching mode reform, deepening of practical teaching, talent evaluation mechanism innovation. Through the compilation of career development road map, the formulation of course standards, the development of course teaching case library, the construction of industrial school, enterprise studios on campus, enterprise title classes and other measures, all these promote the integration of industry and education from the concept to the system supply landing, promote the all-around integration between industrial demand side and education supply side elements.

### *A. Reforming the Talents Cultivation Program Guided by Career Development Route Chart*

Talents cultivation program is a concrete and practical form of talent cultivation goals and classifications. The transformation of talent cultivation program settles the non-docking imbalance between talent demand and talent training from the source. Through investigating the employment needs of relevant enterprises in the industrial chain, the school can jointly analyze the vocational abilities with enterprises required by professional employment posts, determine the training classifications.

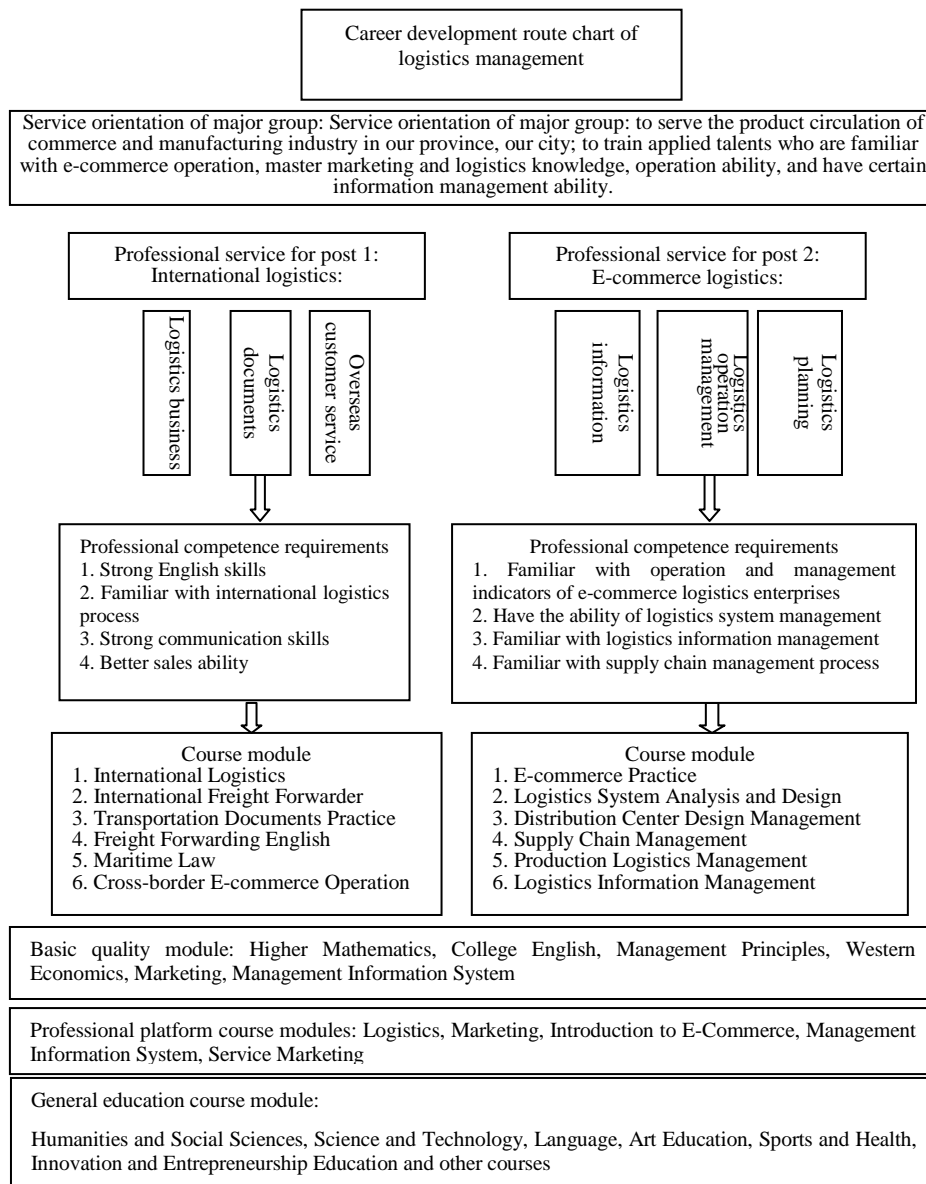


Fig. 2. Career development route chart.

Meanwhile, the school should plan students' career development orientation and ability requirements and compile career development road map by combining with students' employment and career development; the school should add career map in the talent training program (as shown in "Fig. 2"), and set up courses according to posts and vocational abilities to effectively promote the transformation of the cultivation program of application-oriented talents. At the same time, enterprises are invited to revise the professional cultivation program. Seminar on professional construction should be held to revise the talent cultivation goals, course settings, talent cultivation modes and methods, teaching plans and other aspects. The school also should add the courses with major pertinence to strengthen the cultivation of application ability, innovation ability and basic quality, so as to cultivate

talents who can apply what they have learned and improve the adaptability of talent cultivation to society.

### B. Reconstructing the Course System Guided by Innovative Entrepreneurship Concept and Course Standards

On the basis of the fully conduct of the research of industry and enterprise, the school should break the traditional subject course model and reconstruct the course construction based on the demand of post vocational ability. According to the idea of "professional position orientation → work flow analysis → typical task extraction → learning situation design", the course system is reconstructed. The course system structure takes "platform co-construction, professional expertise, career extension" as the reconstruction goal to design course system. From vocational foundation, vocational ability to vocational quality, students' vocational competitiveness can be boosted in

an all-round way. At the same time, innovative entrepreneurship education is integrated into the talent cultivation system. By means of organically combining liberal education with professional education, gathering innovative entrepreneurship education resources both inside and outside the school and in the whole society, the school offers series of "platform-type + industry-type + embedding-type" innovative entrepreneurship courses that focus on students and carry out innovation and entrepreneurship education step by step. Meanwhile, the school also reforms course evaluation mechanism, and takes entrepreneurial practical achievements and requirement investigation report as the basis of assessment. The results of entrepreneurship are nurtured and incubated by both schools and enterprises, and the success rate and incubation rate of entrepreneurship are fully boosted.

In terms of course content reconstruction, the school should actively promote both schools and enterprises to sort out course content, optimize course plan and formulate course standards. By taking the improvement of students' comprehensive employment ability as the goal, taking students as the main body of learning activities, taking work (learning) process as the guidance, and taking business processes and project processes of industry enterprises as the starting point, the school should organize teaching contents according to actual work tasks, working processes and work contexts, and formulate course standards that match with the training goals of application-oriented talents.

Enterprise tutors should participate in major courses teaching. Each year, 3-5 courses with strong practicality are selected to be taught by enterprise tutors alone or participated in, and they should take the ability requirements of enterprise for jobs as the major evaluation methods of the courses. At the same time, 2-3 actual operation projects in enterprises are introduced each year, and 3-4 horizontal projects are undertaken by students. Students should participate in the operation of the relevant links of the project, and teachers and students can work together to research horizontal projects, so as to improve students' practical ability and application-oriented research ability.

#### *C. Reforming the Teaching Mode with the Opportunity of Joint Construction of Industrial Colleges*

On the basis of the cooperation between the original school and enterprise, relying on the advantages of enterprises in talent demand, resource reserve, industry trend, market information and the theoretical teaching system and teachers' strength of the school system, the school should carry out in-depth cooperation in talent cultivation, industry-university-research cooperation, teachers' strength and other aspects, integrate resources advantages to build an "industrial school" with enterprises. The school should promote the development of the cooperative education mechanism of "major co-construction, talent co-education, teacher co-cultivation, resource sharing, internship and employment co-sharing" between school associations and enterprises, and transform talent cultivation from "close to industry" to "integration into industry". On this platform, enterprises and schools teach together to cultivate young teachers' practical ability and constantly receive students to head for enterprises for in-depth

learning, so as to achieve resource sharing and make their respective advantages complementary to each other in cooperation. Industrial school carries out construction work from such four links as cooperative school-running, cooperative teaching, cooperative scientific research and cooperative employment. They should integrate vocational qualification standards into professional talent cultivation programs, carry out cross-disciplinary integration according to job requirements, and reform the original talent cultivation system and course system according to the employment standards of industries and enterprises.

#### *D. Deepening Practical Teaching by Means of Case Teaching, Training Base and Titled Class*

First of all, the teaching case library is developed on the basis of enterprise operation cases, and the cooperation between schools and enterprises is deepened to jointly develop the course teaching case base. Through collecting and sorting out the typical business, new processes and the use of new technologies in the actual operation of enterprises, the school can discuss with enterprises for the compiling and formation of case base to boost the cultivation of students' practical application ability.

Second, the school should construct an enterprise order-based talent training platform, and introduce off-campus enterprises to establish training bases on campus. At present, the school have established e-commerce incubation centers, and built Nicro cross-border e-commerce studios and Chaojie Group studios, etc to cultivate students by enterprise order-based way. Through cooperation with enterprises, students are transferred to enterprises for internship. On the basis of equality and mutual benefit among enterprises, students and schools, triple agreements are signed to realize order-based training of students. The function of industry-university-research cooperation is really played by means of cooperation with enterprises such as Dongfang Chaojie and Shunfeng to co-build talent training project. The school also set up Chaojie class and Shunfeng class, and employs enterprise tutors to set up enterprise tutor team that carries out professional practical courses for students on campus. At the same time, the preposition of enterprise training can directly cultivate enterprise human resources reserve force in practical courses, and realize seamless docking between talent and industry.

#### *E. Innovating Talent Evaluation Mechanism in Accordance with Radar Map of Students' Academic Evaluation*

According to the six-dimensional evaluation index system of students' learning and growth, the curriculum is divided into such modules as foreign language application ability, development and innovation quality, general knowledge quality, information quality, major core application ability, cross-domain development ability, etc to evaluate the comprehensive ability of students, so that the radar map of students' academic evaluation is formed. In the course assessment, the teaching evaluation system covering "learning content evaluation" and "learning performance evaluation" is put into force, and the multi-dimensional evaluation system is put into force with the joint evaluation of enterprises according to the curriculum standards. In addition to the routine results

assessment, the students introduce process assessment indicators such as team cooperation and career growth to comprehensively evaluate the students' mastery degree of basic knowledge of the major, practical application ability, development of innovation ability and team cooperation consciousness presented in a variety of teaching links.

#### IV. THE PRACTICAL RESULTS OF THE TALENT CULTIVATION SYSTEM OF "FOUR CHAIN CONNECTION" INTEGRATION OF INDUSTRY AND EDUCATION

"Four Chain Connection" breaks through the bottleneck of integration of industry and education, gives full play to the role of enterprise subject in the cultivation of applied talents and leads and supports the reform of talent cultivation mode, and connected thinking promotes the design of the overall talent cultivation system on campus, so as to avoid fragmentation reform. Through the research and practice of the "Four Chain Connection" talent cultivation system, the effect of talent cultivation is extremely remarkable. Taking the logistics management major of Fuzhou University of International Studies and Trade as an example, besides eight provincial construction projects such as provincial service industry characteristic major, provincial innovation and entrepreneurship reform pilot major, provincial application-oriented discipline construction project, provincial experimental teaching demonstration center and so on, it has also been highly recognized by the industry and enterprise, including the approved Alibaba talent cultivation base, advanced server cultivation base of China Post Logistics, China International Freight Association commendation, SF Express, China Post Express Company commendation and others. The results of students' employment and entrepreneurship are much more favorable. The employment rate of graduates is as high as 98%, and the major counterpart rate is more than 70%. The number of students who head for the above-mentioned cooperative enterprises for internship and employment exceeds 35%.

#### V. CONCLUSION

Combined with the exploration and practice of the logistics management major in Fuzhou University of International Studies and Trade in recent years, this paper innovatively puts forward the concept of "Four Chain Connection" from the perspective of industry and education, production and learning, supply and demand, builds a sustained talent cultivation chain, and digests industry demand, industry association coordination, talent cultivation, innovation and entrepreneurship. Colleges and universities should break the fragmentation reform mode, expand the connotation of school-enterprise cooperation, promote collaborative innovation between schools and enterprises, transform the integration of industry and education into the overall reform of system design, construct the "four chain connection" talent cultivation system, and promote the education chain to acquire self-improvement power from the industry chain; and then the industry chain to acquire intellectual capital support from the education chain.

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