Exploration and Research on Joint Training and Education of Logistics Elite Apprentices by College and Enterprise

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Abstract. The author investigates the implementation of the modern apprenticeship project of logistics management major in domestic higher vocational colleges, summarizes the problems existing in the implementation process, such as the quality of apprenticeship sources, the orientation of talent training objectives, professional teaching, apprenticeship training platform, apprenticeship career, enterprise teachers and so on, and makes a thorough analysis of the causes of the problems. Taking the exploration of training logistics elite apprentices in Hubei Communications Technical College as an example, it puts forward the precise orientation of the training objectives of logistics elite apprenticeship, implements the joint enrollment, joint training and joint employment of college and enterprise, and standardizes the selection mechanism of enterprise teachers to improve the quality of apprenticeship training. These practices of training logistics elite apprentices have been popularized and applied in other higher vocational colleges, and have achieved good results.

Introduction
In June 2014, the State Council promulgated “the Decision on Accelerating the Development of Modern Vocational Education”, proposing that "the pilot of modern apprenticeship system of joint enrollment and joint training between schools and enterprises should be carried out, the supporting policies should be improved, and the integration of schools and enterprises should be promoted to educate people”. In August 2014, the Ministry of Education promulgated “the Opinions on the Pilot Work of Developing Modern Apprenticeship System”, pointing out that "the local educational administrative departments should promote the government to promulgate supporting policies, increase investment, and guide enterprises and vocational colleges to actively carry out the pilot work of modern apprenticeship system through financial support, government purchase and other incentives”. Modern apprenticeship is a new mode to explore school-enterprise cooperation and a new breakthrough in the form of cooperation between college and enterprise [1]. This new mode can strengthen the integration of industry and education, work and study, further improve the quality of talents training in logistics management major, and solve the bottleneck problem of professional development of higher vocational education and students’ employment [2].

Problem Analysis of Modern Apprenticeship Pilot Project
Many domestic higher vocational colleges’ logistics management specialty have made some useful explorations at the practical level of modern apprenticeship personnel training, and formed some unique logistics apprenticeship personnel training mode, which has played a certain reference role in the implementation of modern apprenticeship training practice in Higher Vocational logistics specialty.[3] However, these explorations are still in the primary stage of development of modern apprenticeship pilot. We have made a survey on schools, enterprises and apprenticeships participating in the modern apprenticeship project. Statistics show that 70% of the respondents are not satisfied with the effect of apprenticeship training, and only 30% think that apprenticeship training
has achieved the desired effect. There are still some problems and shortcomings in the implementation of Modern Apprenticeship.

**There is a Gap between Apprenticeship Quality and Enterprise Expectation**

According to the survey of the front-line staff of enrollment in Higher Vocational Colleges in China, many high-level students’ first volunteers in college entrance examination are concentrated in the fields of "UAV application", "industrial robots" and "mobile communication technology". The reasons for filling up these majors are mainly based on the reports of advanced technology and good development prospects of these industries by various social media. In contrast, the logistics industry seldom publicizes the bright future of the industry, and the application of intelligent logistics technology mostly stays at the level of enterprise cognition [4]. Many students unilaterally believe that "logistics is equivalent to courier delivery", and there are fewer volunteers to fill in this major. There are more low-level students in this major who are transferred from other majors. This directly leads to a certain gap between the quality of logistics apprentices and the expectations of logistics enterprises.

**Target Orientation of Talent Training is not High**

At present, the orientation of logistics apprenticeship training in higher vocational colleges is mostly located in labor-intensive, low-tech traditional operational posts, which has little attraction for students to participate in apprenticeship projects. In recent years, with the rise of "Internet +" logistics and the continuous optimization of logistics production process, artificial intelligence, big data and intelligent equipment have been widely applied in the logistics industry, and the demand for qualified personnel in large quantities of modern logistics technology is derived from corresponding jobs [5]. According to the research and discussion of SF Group, the technical and skilled personnel needed by the company in the next three years are mainly those who can optimize the production process of modern logistics, operate and maintain intelligent logistics facilities and equipment. Therefore, the training specifications of logistics apprentices should be improved with the technological development of logistics industry and the technological progress of enterprises.

**Professional Teaching and Enterprise Production are not Synchronized**

The production business of logistics enterprises has obvious off-peak season (such as 618, double 11, etc.), and the combination of the teaching plan of apprenticeship project of school logistics and the production plan of enterprises is often not close enough [6]. This phenomenon often occurs: Business teachers are idle while apprentices are busy with theoretical study. However, Apprentices look forward to their technical guidance when business teachers are busy. The disconnection between teaching and production practice has greatly reduced the training effect of logistics apprenticeship.

**Lack of an Effective Platform for Training Logistics Apprentices**

From the practical exploration of the modern apprenticeship project of logistics management specialty in many colleges, it can be seen that the apprenticeship’s theory study is carried out in colleges, production practice is carried out in enterprises, and there is a phenomenon of "two skins" between learning and production practice [7]. There is no effective platform between colleges and logistics enterprises to connect learning, training and production in real time and dynamically. The new technology, new method and new technology of logistics industry cannot be introduced into school classroom at the first time, the combination of teaching content and production content is not close enough, and the pertinence of personnel training is not strong [8].

**The Planning and Design of Apprenticeship Career Path is not Flexible Enough**

Generally speaking, the career paths of logistics apprentices are designed according to the positions determined during apprenticeship [9]. However, with the rapid development of logistics industry in recent years, apprenticeship will change with the three years of college life in the logistics field of interest. Fixed career paths are not conducive to mobilizing the enthusiasm and initiative of apprentices in learning [10], but also reduce the effectiveness of personnel training.
The Qualifications of Enterprise Teachers Need to be Improved

Logistics enterprises usually select the first-line technical staff for apprentices, whose original intention is to let the apprentices learn practical technical skills. However, the educational background of grass-roots staff in domestic logistics industry is generally low, and the overall quality needs to be improved [11]. At the same time, most of the enterprise teachers have not received the training of apprentices’ skills, lack of experience in education and teaching, and lack of systematic and planned training of apprentices [12]. Therefore, the qualifications of enterprise teachers need to be improved, and the selection mechanism needs to be standardized.

Exploration and Research on "Triple Combination" of College and Enterprise to Educate Logistics Elite Apprentices

In 2017, the logistics management major of Hubei Communications Technical College was selected as modern apprenticeship pilot unit of Ministry of Education, and jointly implemented the modern apprenticeship project with SF Group. In order to explore the methods and paths of training logistics apprentices, the research group has used the mature practices at home and abroad for reference, accurately positioned the training objectives of elite apprentices, carried out joint enrollment, joint training and joint employment of logistics apprentices, and realized the co-management of logistics apprenticeship training process, the co-negotiation of training programs and the co-evaluation of training effects, and achieved certain results.

Accurate Positioning of Logistics Elite Apprenticeship Training Objectives

Based on the in-depth study of the "dual system" school-enterprise cooperation model in Germany and the requirements of the Ministry of Education for the pilot project of modern apprenticeship, starting from the actual needs of both college and enterprise, the logistics elite apprenticeship class we set up is based on the background of SF modern intelligent logistics technology, takes elite apprenticeship as training objective, takes the task content of building "SF Business Department" jointly by college and enterprise as teaching content, and takes the in-depth guidance of senior teachers in college and enterprise as the support of personnel training mode.

In terms of personnel training objectives, college and enterprise have positioned them as "three high" (high specification, high skill, high quality) elite technical and skilled personnel. High specifications are mainly embodied in relying on the integration platform of industry and education, such as SF Business Department, which is co-constructed by college and enterprise, implementing the integrated training mode of learning, training and production, completing the all-round training of apprentices’ knowledge, ability and quality, and taking into account the latest technology in the field of intelligent logistics in the course content positioning, such as UAV distribution, automated warehousing and other design courses. High skills are mainly embodied in the independent operation of SF Business Department under the guidance of teachers in college and enterprise, and the systematic training of apprentices’ team cooperation ability, practical operation ability, innovation and entrepreneurship ability and self-learning ability. High-quality is mainly embodied in the integration of school campus culture and SF enterprise culture, the systematic development of moral education and quality education, and the cultivation of apprentices’ professional sentiment, professional quality and professional accomplishment, so that apprentices not only inherit the unique spirit of hard work and dedication of travelers, but also internalize and externalize SF enterprise culture (vision, core values and basic principles of integrity).

In the curriculum system, college and enterprise have reconstructed from the ability dimension, post dimension and certificate dimension. In the dimension of competence, the curriculum corresponding to the basic competence, professional competence and development competence of elite apprentices is constructed. Ability dimension reflects the requirements of Vocational education, and has a deeper graft with the needs of enterprises and the development of apprentices in terms of vocational ability and development ability, which ensures the seamless connection between apprenticeship and occupation. In terms of position dimension, theoretical and practical courses are
set around the target positions of enterprises. Based on the typical tasks of enterprises, action fields are analyzed and summarized, and the curriculum module systems are reconstructed according to the core requirements of the industry. In terms of certificate dimension, to meet the requirements of modern apprenticeship system and reflect the need of "course certificate integration", the training contents of vocational skill certificate and enterprise training certificate are effectively integrated into the curriculum system, and become an important component of curriculum system reconstruction under the mode of modern apprenticeship, Work-study Integration and talent training. On the basis of three dimension modules, it integrates the strength of enterprises and industries, and constructs a "three-dimensional interactive" curriculum system to meet the needs of modern apprenticeship teaching.

Training Logistics Elite Apprentices by "Triple Combination" between School and Enterprise

Joint Enrollment Between College and Enterprise to Ensure the Quality of Apprentices. In terms of enrollment publicity, college and enterprise, together with Hubei Logistics Development Bureau, Wuhan Logistics Association and other industry organizations, invited authoritative experts of logistics industry to hold a forum on logistics industry, interpreted the good situation of logistics industry development and the demand for high-end technical and skilled personnel, pointed out the superior direction for students to study logistics management specialty. College and enterprise cooperated with well-known media such as Hubei TV and Wuhan TV to interview outstanding graduates of typical logistics management specialty, produce TV columnar programs for outstanding logistics talents, and set up a model of successful figures in logistics industry. Colleges and enterprise also introduced the latest applications of high and new technologies in logistics industry, such as UAV distribution, automated warehousing, artificial intelligence and image intelligent recognition, in the media of Douyu live broadcasting and Wuhan Radio, so as to build up the public's interest and confidence in logistics management specialty. In the selection of apprentices, college and enterprise jointly select high-quality students to join the elite apprenticeship team, taking the students in the college entrance examination as the main body, emphasizing "quality" and not seeking "quantity", and taking the students’ college entrance examination scores, physical fitness, emotional quotient, hardship and endurance as evaluation indicators.

Establishing a Platform for College and Enterprise to Ensure the Quality of Apprenticeship Training. The college and enterprise have jointly built the production training base in the school - "SF Business Department of Hubei Communications Technical College" (hereinafter referred to as "SF Business Department"). The base is co-funded and co-managed by the college and enterprise. It is not only an integral part of SF production, but also an integral part of school teaching. "SF Business Department” initiated the Trinity Teaching Mode of "learning, training and production", that is, based on SF’s intelligent logistics business work, setting up curriculum modules matching with the situation, taking work items as the carrier, carrying out the integration of theory and practice teaching, strengthening the flexible grasp of theoretical knowledge, consolidating the theoretical learning foundation of specialty, and constructing the "progressive cycle" post skills. Practice training system, in the "SF Business Department" to carry out comprehensive training, training students’ professional ability, training team mutual assistance and other professional post literacy; to "SF Business Department" as the business center, with apprentices as the main body, under the guidance of teachers in college and enterprise to receive and complete logistics business. Apprentices not only participated in the real production of enterprises, but also tested the theoretical and practical results in practice, and realized the seamless link of learning, training and production.

College and Enterprise should Optimize Career Planning to Achieve High-quality Employment of Apprentices.[13] Colleges and SF have jointly developed four career paths for elite apprentices, namely, intelligent logistics technology operation, intelligent logistics equipment maintenance, functional management and innovative entrepreneurship career paths. Intelligent logistics equipment operation is to train technical personnel who can operate modern intelligent logistics equipment. Intelligent logistics equipment maintenance is to train technical personnel who can maintain and maintain intelligent logistics equipment. The main employment directions of these
two types of personnel are SF large and medium-sized automatic cargo transfer station, warehousing center and SF airport. Functional management is to train grass-roots management that can optimize logistics business process. Innovation and entrepreneurship refers to the cultivation of comprehensive talents who can operate logistics points or branches independently. These two types of talents are mainly employed in small and medium-sized logistics hubs in SF city. Multi-type career planning provides a variety of possibilities for the development of apprentices. It not only greatly stimulates the enthusiasm of students to apply for apprenticeship, but also promotes the interest of apprentices, making logistics elite apprenticeship project a "fragrant baboon".

Standardizing the Selection Mechanism of Enterprise Teachers and Improving the Qualification Standard

College and enterprise have jointly established elite apprenticeship training centers and established a mechanism for selecting, establishing a team of modern apprenticeship teachers, assessing and rewarding teachers in modern apprenticeship enterprises to ensure the standardization of apprenticeship guidance by teachers in enterprises by institutionalized regulations. In the selection of enterprise teachers, referring to the requirements of foreign modern apprenticeship enterprises, combining with the actual situation of Chinese logistics industry, the qualification requirements of enterprise teachers participating in the modern apprenticeship system mainly include two aspects, namely, the practical experience and teaching ability of enterprise teachers. After evaluating the overall quality of SF employees, the school and enterprise positioned the qualifications of apprentices as having a college degree or above, having 5 years or more working experience in relevant positions, and having or equivalent to the requirements of senior workers and their technical grades.

In order to improve teachers' teaching ability and practice level, enterprise regularly carries out learning and training on vocational education teaching ideas, teaching methods and other contents, so as to make enterprise teachers constantly improve their teaching ability. College has appointed professional teachers to practice in enterprises and improve their practical ability and solution of logistics operation.

The establishment of enterprise master management system avoids the arbitrariness in the selection of enterprise master, and also guarantees the qualifications and abilities of enterprises with apprentices.

Conclusion

In view of the problems existing in the process of training logistics apprentices in domestic higher vocational colleges, this project explores and studies the recruitment, training and employment of logistics elite apprentices, and achieves the following results.

The base of apprenticeship training - "SF Business Department of Hubei Communications Technical College" was awarded the national productive training base by Ministry of Education and the national post industry talent training base by State Post Bureau. Hubei Communications Technical College was awarded the Best School-Enterprise Cooperative College by SF group.

Twenty elite apprentices jointly trained by college and enterprise have officially taken up their posts through examinations. Ten of them have won the title of excellent apprentices, five of them have won the first prize in the vocational skills competition of the postal industry in Hubei Province, and have won the title of "Hubei Express Technician". SF group, college, these apprentices and their parents are all 100% satisfied with this apprenticeship training project. This project achieved win-win situation for all sides.

The training path and measures of logistics elite apprenticeship have been applied and promoted in Changjiang Polytechnic, Wuhan Railway Vocational College of Technology, Hubei Urban Construction Vocational and Technological College and other higher vocational colleges, and have been highly praised by these colleges.
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References


