

Innovative Practice of Multi modal Transport Composite Talent Training under the Background of Big Data

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Abstract

With the rapid development of the economy and society, the trend of deep integration and development of new generation big data technology and talent cultivation in vocational colleges is becoming increasingly evident. This article takes the cultivation of multimodal transport composite talents as an example, proposing the construction of a new mechanism for the integration of industry and education based on big data platforms, creating a school enterprise collaborative education model guided by big data analysis, establishing a "one-stop" internship and training base based on big data platforms, developing a multi-level and wide-ranging curriculum system of "digitalization+education", establishing a Chinese characteristic apprenticeship practice model empowered by big data, providing the necessary technical and skilled talent guarantee for multimodal transport enterprises, and improving the matching degree between university talent cultivation and enterprise employment needs.

Keywords

Big data, multimodal transportation, talent cultivation, innovative practice.

1. New Changes in Talent Cultivation for Multimodal Transportation Under The Background of Big Data

1.1. Changes in the Talent Training Model for Multimodal Transport through Big Data Thinking

Data is the product of the combination of computers and the Internet. Computers realize the digitization of data, and the Internet realizes the networking of data. The combination of the two endows big data with vitality. With the advent of the big data era, big data thinking will become one of the most fundamental ways of thinking for people. The cultivation of big data thinking ability has become an important task for vocational colleges. In the field of multimodal transportation talent cultivation in vocational colleges, big data has changed students' thinking and cognition, bringing many impacts.

1.2. Changes in the positioning of multimodal transport talents by enterprises in the era of big data

The arrival of the big data era presents new opportunities and challenges for enterprises. Big data, cloud computing, artificial intelligence, automation equipment, and other technologies have been incorporated into the multimodal transport industry. Multimodal transport enterprises are developing across industries, regions, and borders, and the positioning of multimodal transport talents has also changed accordingly. Enterprises require multimodal transport talents to not only master theoretical knowledge in various aspects such as multimodal transport planning and management, be familiar with the basic laws of multimodal transport information operation, effectively combine theoretical knowledge with practical skills, but also have the ability to use cloud computing, big data and other technologies to assist

decision-making skills. Only then do they need to understand the development trends of the multimodal transport industry at home and abroad, and be able to analyze the development trends of the multimodal transport industry from a global strategic perspective.

1.3. Changes in the Requirements for Talent Training Information Systems in the Era of Big Data

The arrival of the big data era has provided the possibility for the comprehensive establishment of talent training information systems. However, due to the constraints of existing conditions, the talent training information system for multimodal transport related majors in Chinese universities is far from keeping up with the development speed of informatization. The inadequacy of this information system directly leads to the backwardness of teaching quality and the inability to accurately provide accurate facial portraits of students, as well as the inability to track and provide feedback on the entire process of talent cultivation. Targeted improvement of education and teaching work, establishment and improvement of data information systems, is also a new requirement for vocational colleges in China.

2. Problems in The Cultivation of Multimodal Transport Talents

2.1. The matching degree between talent supply and demand is not high

On the one hand, the catalog of vocational majors in China has not yet established multimodal transport majors, which are related to modern logistics, railway logistics, aviation logistics, port logistics and other majors, lacking comprehensive majors that cover various modes of transportation. Moreover, few universities have established a direction for talent cultivation in multimodal transportation. On the other hand, the multimodal transport positions in enterprises require interdisciplinary knowledge and skills in transportation, international trade, freight forwarding, customs declaration, and multimodal transport scheme planning. However, the existing majors in universities do not yet have the ability to cultivate such talents. Therefore, the multimodal transport talents needed by enterprises are difficult to meet in universities, and the matching degree between the talent training side of universities and the demand side of enterprises is relatively low.

2.2. Difficulty in collaborative talent cultivation

On the one hand, multimodal transport involves various modes of transportation such as railway transportation, road transportation, air transportation, and waterway transportation. Cultivating multimodal transport talents requires mastering various complex technical skills in transportation. However, there is no logistics enterprise in China that can independently undertake multiple transportation modes. Multimodal transportation requires the cooperation of various logistics transportation enterprises to complete, and the talent training of these enterprises often forms their own system. Therefore, it is very difficult to collaborate with various logistics and transportation enterprises to cultivate multimodal transport talents. On the other hand, there is currently no established multimodal vocational education group or industry education integration community in China. Therefore, there is no collaborative mechanism for cultivating multimodal transport talents among transportation and logistics universities, and the investment in professional construction is highly repetitive; Transportation and logistics enterprises have not been deeply involved in the entire process of multimodal transport talent cultivation, and the demand for enterprise employment and talent cultivation in universities have not achieved a two-way cooperation and win-win situation.

2.3. Organizing practical teaching is not easy

On the one hand, vocational colleges and school enterprise cooperation enterprises jointly implement multimodal transport practical teaching, which requires the participation of

enterprises with different transportation modes such as highways, railways, waterways, and aviation, involving multiple types of enterprises. On the other hand, the transportation routes of multimodal transport cover a wide geographical area, sometimes even involving a global scale, and require long-distance sea or air transportation to complete. Therefore, the practical teaching of multimodal transport involves a wide range of enterprise categories, a large number of them, scattered locations, complex environments, and difficult arrangements and organizations.

3. Practice of Talent Cultivation in Multimodal Transport under the Background of Big Data

3.1. Build a new mechanism for the integration of industry and education based on a big data platform

One is to establish a big data platform that deeply involves the government, industry, enterprises, and universities in talent cultivation. A multimodal transport talent training community composed of vocational colleges, multimodal transport enterprises, industry associations, etc. under the guidance of government departments. In terms of theoretical teaching, through the analysis of big data platforms, we can leverage the advantages of educational resources in various universities, break down barriers between schools, carry out mutual recruitment of backbone teachers, share high-quality practical training resources, reconstruct the talent training system, transform the model of independent training of multimodal transport talents in a single school into a model of collaborative training of talents among multiple schools, and fully utilize the maximum efficiency of resources in various universities to cultivate multimodal transport technical and skilled talents; In practice, by using big data platforms to select leading enterprises with strong influence and educational teaching capabilities in the multimodal transport industry, we can drive upstream and downstream enterprises in multimodal transport to jointly participate in the training of technical and skilled talents.

Secondly, data collected through enterprise operation big data platforms can accurately track the development trends of the multimodal transport industry; By collecting information through the talent cultivation big data platform, focusing on key nodes of multimodal transport talent cultivation, clarifying the corresponding job clusters for multimodal transport, and clarifying the mapping relationship between professional groups and job groups; Collect information through the school's professional development big data platform, optimize the key points and quality of professional group construction, and jointly lead the reform of professional construction and talent training mode; Through big data feedback on the integration of industry and education carried out by schools and enterprises, we will strengthen the connection between professional settings and industry needs, course content and vocational standards, teaching process and production process, and graduation certificate and vocational certificate; Through big data feedback on talent growth dimensions, the focus is on cultivating multimodal transportation composite technical and skilled talents in areas such as industry needs, enterprise recognition, and university satisfaction.

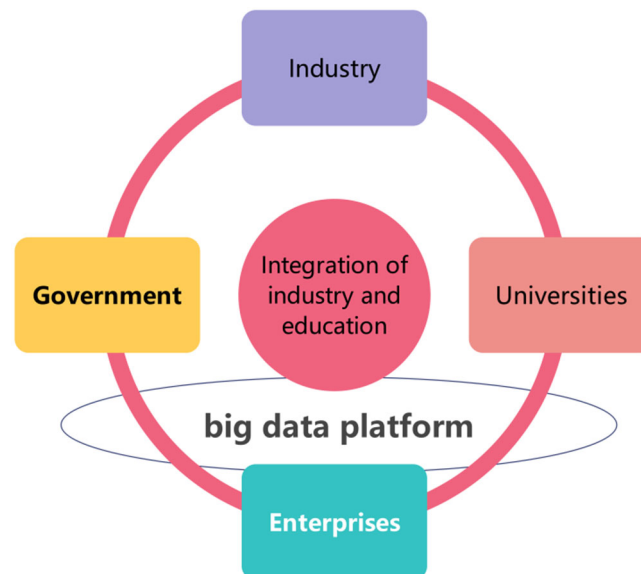


Figure 1. Integration of industry and education based on big data platform

3.2. Create a school enterprise collaborative education model guided by big data analysis

Firstly, based on big data analysis of the talent demand of multimodal transport enterprises, the key links of school talent training reform will be benchmarked against the supply-demand gap of multimodal transport positions. Taking enterprise talent demand as the driving point, school enterprise joint enrollment, joint training, and joint employment as the entry point, data-driven talent training will be implemented, and both schools and enterprises will focus on sports personnel. In the process of talent cultivation goals, through big data analysis, induction, and summarization of the enterprise's talent demand goals, the positioning of talent cultivation will shift from traditional warehousing management to intelligent logistics applications, supply chain operations, and implementation of multimodal transport solutions; In the process of cultivating core competencies for job positions, we will shift from the application of single logistics technology to the integration of multimodal transportation information, in order to enhance the matching degree between the talent training side of vocational colleges and the demand side of enterprises; In the talent supply chain, there is a shift from a one-way output of "single person, single position" to a multi skilled package supply of "technology+talent". Through the transformation of the three links of "target positioning → ability cultivation → talent supply", a coupling link of talent cultivation reform is formed, a new path for improving the quality of talent cultivation is created, and the talent cultivation mode is upgraded from passive response to active adjustment.

Secondly, through big data analysis, the dimensions of engineering alternation between enterprises and schools can be sorted out, and schools can jointly build a multimodal transportation industry college with enterprises. Based on the multimodal transport industry chain, the school enterprise joint construction of internship and training bases has formed a "dual subject of school enterprise, dual track of engineering, and integration of theory and practice" engineering alternation path, solving the problem of scattered projects, multi head docking, and repetitive management in school enterprise cooperation; Through big data analysis, identify the training programs that enterprises urgently need, and jointly establish a multimodal transport training academy with enterprises. Leveraging the resources of enterprises in artificial intelligence, big data, automation, and other fields, jointly develop training programs to provide on-the-job training for students and enterprise employees, filling the talent gap in multimodal transport caused by rapid technological iteration in the field. By

constructing a new pattern of "three institutions integration" with vocational colleges as the core body of talent cultivation, multimodal transport industry colleges as collaborative educational support, and multimodal transport training colleges as industry technology leaders, we aim to solve the problems of talent cultivation being unable to keep up, run, or meet the technological progress and standard updates of enterprises, and enhance the compatibility between majors and industries.

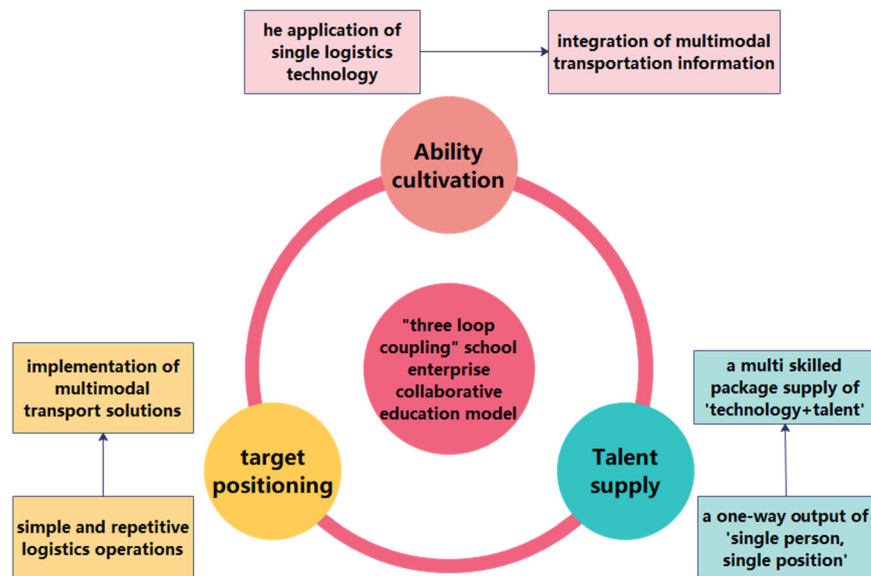


Figure 2. 'Three institutions integration' school enterprise collaborative education model

3.3. Establish a "one-stop" internship and training base based on big data platform

One is to establish a big data platform for school enterprise cooperation, and summarize the technical skills required for multimodal transport positions through big data analysis. Guided by job skills, the school collaborates with leading enterprises in the multimodal transport industry to establish a multimodal transport training room, integrating the school's virtual simulation, intelligent logistics warehousing and other training resources, and jointly building a "one-stop" training base on campus. The school integrates knowledge learning, skill training, and production practice related to multimodal transport in teaching design and implementation, and continuously improves it through big data analysis in continuous implementation, innovating the integrated education of teaching, learning, and production in the campus cycle.

Secondly, based on the occupational profile of the big data platform, we will fully leverage the educational function of off campus internship bases for multimodal transport enterprises, jointly develop a list of vocational job skills, construct a practical module of "vocational general abilities+professional basic skills+core job skills+vocational digital skills", implement a systematic training process of cognitive internship, job internship, on-the-job education, and job promotion, innovate the "one-stop" education of off campus circulation, and enhance students' vocational skills and professional qualities.

3.4. Develop a multi-level and wide-ranging curriculum system of "digitalization+education"

One is to take the digital transformation and upgrading of the transportation industry as an opportunity, and through industry big data analysis, accurately locate the ability requirements of new business formats, new models, new technologies, and new positions for multimodal

transport related technical and skilled talents. Guided by enterprise needs and serving society, reconstruct the curriculum system according to the laws of education and teaching and talent growth, and establish high-quality resource sharing courses and practical training courses for multimodal transport related lines. Add digital technology courses and digital professional courses to organically integrate digital ability cultivation with professional education and vocational ability cultivation. Intensify the construction of online high-quality resource sharing courses and teaching resource libraries, create a multi-level and wide-ranging digital curriculum system of "digitalization+education", and provide digital course services for academic education and skills training for secondary vocational students, vocational college students, enterprise employees, retired soldiers, etc.

Secondly, guided by the demand for high-level skilled management talents from enterprises using big data analysis, we will promote the pilot construction of undergraduate vocational education. Accelerate the construction of a multi-level digital curriculum system for vocational education with a reasonable structure and clear positioning, achieve bottom-up coordination and integration of secondary vocational education, higher vocational education, and undergraduate vocational education, and cultivate high-quality technical and skilled talents in a digital and systematic manner.

3.5. Establish a Chinese style apprenticeship practice model empowered by big data

Big data empowers the apprenticeship system with Chinese characteristics, which refers to the establishment of a human-machine coupled intelligent education concept, the improvement of multi-party linkage intelligent key mechanisms, the formation of an open and collaborative intelligent governance model, and the establishment of a technological ecological intelligent education system, thereby constructing a practical framework for intelligent technology empowering the apprenticeship system with Chinese characteristics.

One is to use big data, the Internet of Things, and artificial intelligence technologies to intelligently perceive and analyze the needs of apprentices, as well as apply virtual reality to provide them with real and interactive internship and training experience content. Through the integration and full process application of various intelligent technologies, it is beneficial to form a modern apprenticeship training network that is ubiquitous and deeply intelligent, promoting the intelligent training of high skilled talents.

Secondly, with intelligent technology as the key support, by creating an intelligent education environment, driving the construction of a new form of apprenticeship education required for the reform of vocational education talent training models, promoting innovative changes in learning methods, teaching methods, education models, and training models, and providing appropriate, accurate, convenient, and humanized high-quality educational services for students, school teachers, enterprise masters, and other stakeholders.

4. The Results of Practical Exploration

Through the joint implementation of the multimodal transport talent cultivation project by schools and enterprises, the school has established a national level demonstration major, a national vocational college transportation demonstration major point, a productive training base for the Ministry of Education's smart logistics professional group, and a national postal industry talent training base. The case of ideological and political education in the course has been selected as a research project of the national vocational education teacher teaching innovation team, and the case of educating students has been awarded as an excellent typical case of school enterprise cooperation in the national postal industry. The teaching team has been selected for the National Youth Civilization Award and the National Women's Civilization

Post, and the teachers have been selected for the Hubei Province Famous Teacher and Craftsman Training Program and Hubei Industry Professors. Students have won over 50 awards in various competitions and received more than 20 commendations at or above the provincial level. Within three years after graduation, their job promotion rate has reached 65%, and their employer satisfaction rate is 98%.

5. Conclusions

Through research and practice, it can be found that the application of big data technology in areas such as industry education integration mechanisms, school enterprise collaborative education models, internship and training bases, curriculum systems, and apprenticeship models can help universities better integrate their talent development goals into the actual needs of enterprises, improve the matching between talent supply and demand, and provide the necessary technical and skilled talent support for multimodal transport enterprises.

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