

# Research on the Construction of Practical Teaching Base of Intelligent Logistics based on Artificial Intelligence Technology

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## Abstract

While promoting the transformation and upgrading of logistics industry, smart logistics has changed the employment view of logistics enterprises, and smart logistics has put forward new requirements for the professional ability of logistics talents in the new era. After research, based on the requirements of logistics enterprises and the typical characteristics of wisdom logistics, the school establishes an on-campus practical teaching base consisting of logistics big data analysis, Internet of Things technology application and unmanned warehouse training room, so that the objective response to the service mode and application technology of wisdom logistics can be systematized. Through the development and application of practical teaching projects, the school can cultivate technical skill talents with the ability of using software and hardware equipment, on-site operation management and program design and implementation, and promote the transformation and upgrading of logistics majors and students' employment.

## Keywords

Smart Logistics; Practical Teaching; Base Construction.

## 1. Introduction

Smart logistics is concerned by all circles for its ability to significantly reduce logistics costs, improve overall activity[1] efficiency and boost industrial transformation. After scholars' research, the following problems existed in the construction of logistics majors in the past: firstly, schools did not review and explain the connotation of intelligent logistics talents, and schools did not reflect it in their talent training objectives; secondly, schools did not define the professional skills and knowledge structure that logistics college-level students should have under intelligent logistics, and schools[2] did not reflect the characteristics of intelligent logistics in terms of training pathways and teaching resources; thirdly, the The school's original curriculum system and practical teaching environment can no longer meet[3] and support the needs of wisdom logistics personnel training, which restricts the development and transformation and upgrading of the logistics profession.

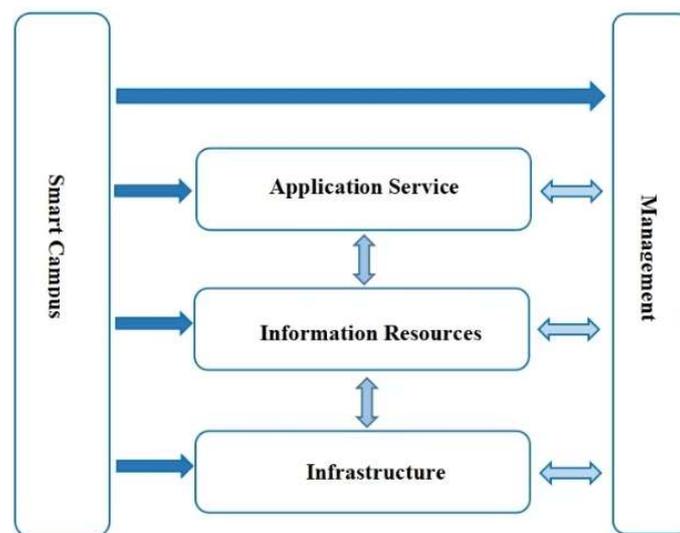
## 2. The Current Situation of the Construction of Wisdom Logistics Teaching Base

At present, the construction of wisdom logistics teaching base is mainly divided into two categories: one is the school wisdom logistics teaching base, and the other is the off-campus wisdom[4] logistics practice base.

### 2.1. On-campus Wisdom Logistics Teaching Base

The construction of on-campus wisdom logistics teaching base needs to be equipped with wide venues, facilities and equipment hardware, on-campus wisdom logistics teaching base needs more advanced simulation software[5] as support, on-campus wisdom logistics teaching base

needs new education and teaching concepts, information technology application ability, teaching and practice experience of "double teacher" teaching. At the same time, the school develops the matching teaching materials and teaching resources about the integration of science and practice of the wisdom logistics profession. This requires schools to invest a lot of money to build or expand the practice base, digital teaching resources, schools to purchase equipment involving wisdom logistics facilities and equipment cognition, logistics equipment operation and wisdom logistics operation process, but due to the high cost of maintenance of these devices, teaching utilization rate is not high enough, the investment effect is not obvious, schools in the case of limited funds, many schools are difficult in the construction of wisdom logistics teaching base. There is sufficient financial support in terms of intelligent logistics teaching base construction. See Figure 1.



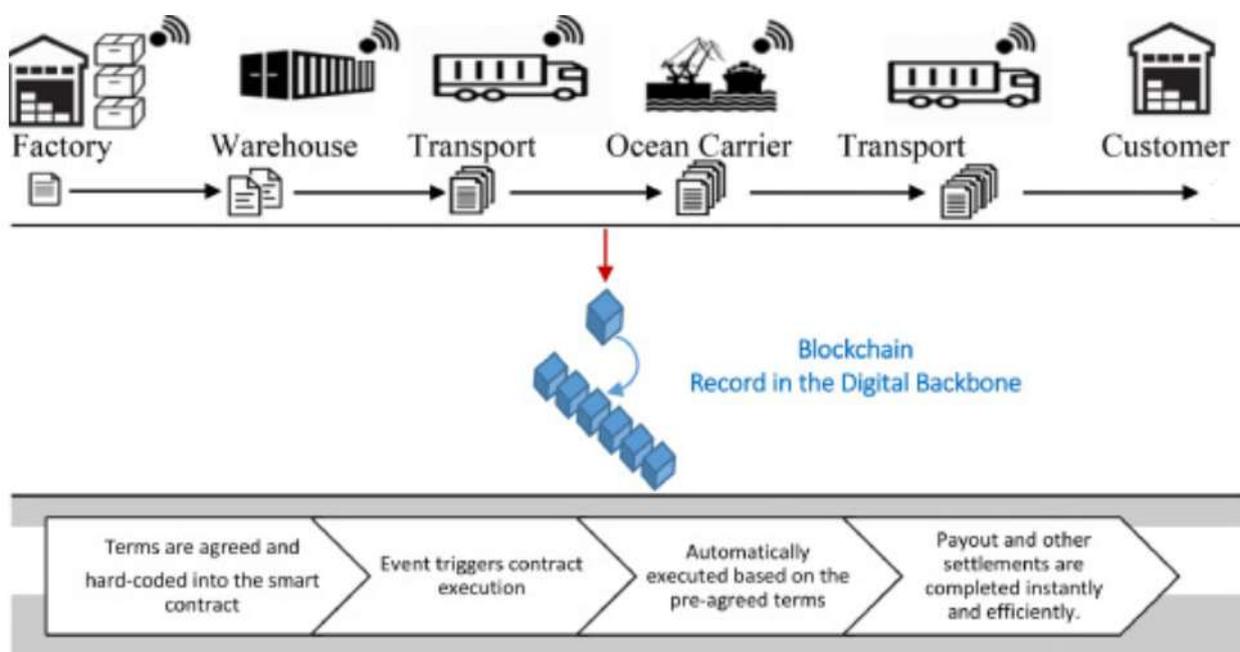
**Figure 1.** On-campus wisdom logistics teaching base

## 2.2. Off-campus Wisdom Logistics Practice Base

Off-campus wisdom logistics teaching base construction form mainly has school investment, enterprise investment, school and enterprise joint investment and other three forms. From the existing practice bases and future development trend, due to the lack of funds for construction of secondary schools themselves, schools invest less in the construction of off-campus logistics bases; and enterprises consider from input and output costs and profits, etc., it is difficult for schools to invest independently in the construction of logistics practice bases to achieve the business objectives. Therefore, off-campus practice bases generally take the way of school-enterprise cooperation to build and share, and off-campus practice bases generally take the form of order-based. This mode is a form of close cooperation between enterprises and schools under the condition that the demand for professional talents is strong, enterprises have high recognition of schools, and the concepts of both schools and enterprises are basically compatible. It is based on the full research of the school-enterprise market demand, the school-enterprise through the "order" signed way, the order clearly school, enterprise, student responsibility of the three parties, the school-enterprise plan, purpose, targeted development of personnel training program, the school for the cooperative enterprises to train specialized personnel. The implementation of teaching activities in the school and the enterprise alternate places, students graduate directly to the cooperative enterprises employment.

### 3. The Necessity of Constructing Intelligent Logistics In-school Training Base

The school for the intelligent logistics industry demand for talents, the school reference logistics professional job standards, the school in the background of the Internet + intelligent logistics personnel training standards, the school construction of "teaching, learning, doing" integrated intelligent logistics training room, the school introduced data storage system and handheld terminals, temperature and humidity sensor kit, smoke sensor The school introduced data storage system and handheld terminal, temperature and humidity sensor kit, smoke sensor kit, gas sensor, box type product inspection weighing aid. The school introduces production station inspector information registration software and inspection operation interface, IOT test supplies, etc. See Figure 2.



**Figure 2.** Campus smart logistics teaching base process

The school to cultivate intelligent logistics as the goal, the school construction characteristics of professional groups, such professional graduates know both logistics business, but also understand computer technology, network technology, communication technology and other related knowledge, such professional graduates are familiar with modern logistics information operation law, such professional graduates can apply the Internet of things, cloud computing, big data, artificial intelligence and other emerging technologies to assist decision-making, improve logistics efficiency There is a huge demand for high quality "composite, technology application" logistics talents. Therefore, the school cultivates complex logistics talents, and according to the operation characteristics of logistics business under the condition of e-commerce and cloud service and Internet+, the school needs not only the development of logistics management profession itself, but also the balanced development of related professions. Therefore, the school takes the construction of logistics management profession as the leader, and the logistics management profession drives the construction of accounting, e-commerce, international business and other related professional groups, and the school builds advanced logistics management professional groups, and the school optimizes the professional structure adjustment and improves the adaptability and relevance of talent training.

## 4. Construction of Intelligent Logistics Time Teaching Base Strategy

### 4.1. Construction Ideas

The school deeply investigates the intelligent logistics enterprises and research institutions, explores the connotation of intelligent logistics, the teacher learns the relevant concepts and application technology, and clarifies the direction and ability requirements of the enterprise's demand for intelligent logistics talents. In the design and construction process of the teaching base, the school based on the core technology of intelligent logistics, the school adopts the school-enterprise cooperation approach, the school establishes a miniature teaching base within the school, the school establishes a practical teaching base with strong practicality, integrating teaching, competition, training, research and other functions. After the completion of the base, the school will join with relevant departments, industry organizations and local sister colleges and universities to jointly promote the wisdom of logistics application technology-based production, learning, research and other work, the school actively carry out social training services, the school to contribute to the development of regional wisdom logistics.

### 4.2. Mining Big Data Information

Logistics big data analysis training room big data background, the school uses scientific analysis methods to mine useful information from the many data, big data information is the key to logistics enterprise service improvement, process re-engineering and operational model innovation. As logisticians value big data and the continuous improvement of big data mining and analysis technology, the logistics industry is accelerating innovation and transformation, which requires logistics practitioners to continuously improve their professional skills. The establishment of logistics big data analysis training room in higher education institutions is of great significance to cultivate technical talents with innovative thinking and independent problem-solving ability that can adapt to the needs of enterprises. Through training, students can, on the one hand, use tools to read the data, summarize the objective laws reflected by the data, students make visual charts, students write innovative solutions to problems through key data points; on the other hand, students run data through simulation, students reflect on the activity process, students diagnose problems and optimize design solutions, students better help enterprises understand customers, target enterprise resources and improve The students better help enterprises understand customers, target enterprise resources and improve enterprise services.

### 4.3. "Internet of Things Technology + Logistics" Application Training Room

IOT technology is an important application technology for the realization of intelligent logistics, and IOT technology is the basis for promoting informationization, automation and intelligence of logistics activities. The establishment of "Internet of things technology + logistics" training room, the training room in the popularization of Internet of things technology to students at the same time, the training room to promote the formation of special skills of students. Students are trained, on the one hand, students can master the principles of IOT related technology and equipment use, students can reduce the cost of logistics enterprise staff training after employment, reduce equipment damage and maintenance losses caused by non-professional misoperation; on the other hand, "IOT + logistics" practice teaching environment, this teaching environment presents On the other hand, "Internet of things technology and intelligent logistics, this teaching environment to improve people's awareness of intelligent logistics, change the impression of the traditional logistics industry low technical content, the school with the help of the environment can carry out professional personnel order training, teacher skills training and enterprise staff pre-service training services, training room for the promotion and popularization of Internet of things technology to provide a platform, training room for school-

enterprise cooperation in the training of professional personnel to provide teaching environment.

#### **4.4. Unmanned Warehouse Training Room**

The school-enterprise cooperation plans and designs the unmanned warehouse training room, and the teacher shows the unmanned warehouse operation process through the extensive use of software and hardware such as intelligent logistics system, automation equipment, intelligent robots and information technology. Through practical training project development and practical teaching, students will have the ability to use logistics system, automatic equipment and information technology correctly, students will be able to describe accurately the faults encountered in the application process of each software and hardware equipment, and students will have the basic maintenance ability of relevant equipment. Practical training projects include barcode technology, order data analysis including front order data and back order data analysis practical training. Logistics robots include resource allocation and operation training of picking robots and sorting robots, as well as robot maintenance, repair and simple maintenance training.

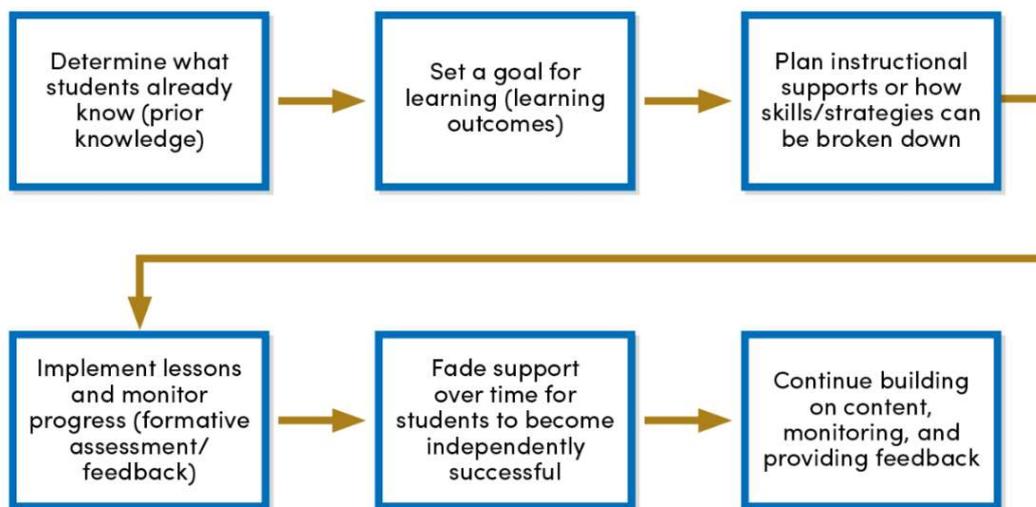
### **5. Construction of Practical Training Teaching System of Intelligent Logistics in Higher Vocational Institutions**

#### **5.1. Mutual Integration of Teaching and Practice, Innovative Teaching Methods**

The practical teaching base should improve the teaching effect of wisdom logistics practical training, the practical training teaching practice system of wisdom logistics should be based on the construction of logistics information technology, automation technology and Internet of things, big data technology, and the practical teaching base should be built around the demand analysis, automatic information collection and control technology of wisdom logistics system. In the wisdom logistics practical training teaching, the school uses industry-education integration collaborative innovation teaching method, the school strengthens school-enterprise cooperation, the school and the enterprise jointly develop the wisdom logistics project practice course, the school reasonably sets the actual wisdom logistics project case representative problems, practical operation points, etc. The school makes the wisdom logistics course from teaching to application organic combination, forming a complete knowledge system structure, so as to build the wisdom logistics practical training teaching practice system, in order to cultivate the students' application ability and innovation ability in the context of wisdom logistics.

#### **5.2. Student-centered Training Mode**

The implementation of student-centered wisdom logistics practical training teaching mode, this teaching mode to enhance the level of comprehensive practical skills of students. The course of intelligent logistics has a strong practical nature. Technical knowledge points, practical operation points need to be closely integrated with the practical application of logistics industry. The knowledge taught in the teacher's classroom may not be fully grasped by students, students must learn on the wisdom logistics practical training base, students design practical solutions from wisdom logistics projects to understand the principles of wisdom logistics technology system, students through the practical training platform for simulation, simulation, practical operation to find problems, refining problems, students and teachers to exchange and discuss, students from the classroom theory learning to find practical problems, students through research analysis to solve problems. Student-centered wisdom logistics practical training teaching mode, this mode really allows students to master the real application of wisdom logistics projects in logistics enterprises and improve the level of comprehensive practical skills of students. See Figure 3.



**Figure 3.** Student-centered training mode training base system

### 5.3. Effective Integration and Optimization of Practical Training Teaching Resources

Effective integration of practical training teaching resources and sound supervision and evaluation mechanism of wisdom logistics practical training. The practical training resources of the wisdom logistics base in higher vocational institutions include the wisdom logistics training room in the school and the wisdom logistics practice base outside the school. The school needs to effectively integrate and optimize these practical training resources. More importantly, on the basis of this, the school needs to establish a supervision and evaluation mechanism with wisdom logistics training base, practical training instructors and practical training students as the objects, and this evaluation mechanism is comprehensive, two-way and multi-dimensional. The evaluation of the practical training instructors and practical training students on the wisdom logistics training base, this evaluation is conducive to reaching the long-term cooperation intention of the school and enterprises, and to promote the transformation of the on-campus wisdom logistics training base, which is conducive to the construction of a high level of wisdom logistics training base. The evaluation of off-campus wisdom logistics training base and practical training students to practical training instructors is conducive to reasonable and comprehensive evaluation of practical teaching process and effect, focusing on the practical teaching level of practical training instructors and quality assessment of teaching contents, thus promoting practical training instructors to continuously improve teaching methods, innovate practical training teaching mode, integrate, optimize and make good use of practical training teaching resources; off-campus wisdom logistics practical training The evaluation of the base for practical training students is conducive to urging students to devote themselves to the practical training project of wisdom logistics, integrate theoretical knowledge with application practice, consolidate professional knowledge, and improve comprehensive practical skills and professional literacy level.

### 5.4. Reform the Assessment System

Teaching practice base to reward and punish clearly, "smart logistics" content is not only the textbook content, more is the practical operation ability and the ability to master the intelligent system, based on the "smart logistics" background of logistics management professional core courses can increase The teacher can judge and assess the students' mastery of knowledge through their actual operation ability and operation process, and the students' written test can be used as an auxiliary tool. In addition to the final examination of each semester, teachers can

also add assessment methods in the ordinary teaching process, for example, teachers can appropriately conduct some small tests for students in the course of ordinary practical teaching, teachers can also carry out some extracurricular competitions from time to time, etc. Teachers will include the results of these assessments in the final overall assessment, which can also promote the students' ordinary This will also promote students' motivation to study.

### **5.5. Deepen the Reform of Teaching Materials and Innovate and Reform the Teaching Materials of Logistics Courses**

The educational objectives and tasks of most higher vocational institutions are focused on the cultivation of students' vocational ability, so when schools choose teaching materials, they should take into account both theoretical knowledge and practical teaching contents. At the same time, the school should also take into account the system system based on "intelligent logistics", the teacher selects and prepares teaching materials under the mode of "intelligent logistics", the teaching materials should not make it difficult for students to understand and master, and the teaching materials should realize the perfect combination of theory and practice. Enterprises are more concerned about whether employees have comprehensive professionalism and the ability of sustainable development. This has put forward new and higher requirements for vocational education. In the process of selecting and writing teaching materials and teaching core courses of logistics management, higher vocational colleges and universities should adhere to the special characteristics of logistics management and not follow the trend.

## **6. Conclusion**

At present, the research on the theory and application of "intelligent logistics" has become a hot spot, however, the reform based on "intelligent logistics" in the curriculum of logistics management in some higher vocational colleges is relatively small. With the emergence and development of logistics industry, it is a great test for the talents who choose logistics direction, which is both a good opportunity and a heavy challenge for them. Especially in the context of "smart logistics", the society demands more and more talents for logistics professionals, and the quality of the talents needed is getting higher and higher, which also brings a great challenge to the logistics management profession in higher vocational colleges. Schools can only keep up with the pace of society and the rhythm of continuous reform of teaching materials and teaching content, teaching form, the school will focus on education from the practical teaching content of students, strengthen the exercise of students' hands-on skills, strengthen students' understanding of the practical teaching content. Only in this way can we achieve the expected teaching effect and cultivate high-quality logistics talents suitable for the society.

## **Acknowledgments**

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