

# Research on the Construction and Practical Teaching Experience of the International Logistics and Supply Chain Laboratory

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**Abstract.** The idea and goal of laboratory construction of logistics management major, the demand function and planning scheme of laboratory construction, and the design and implementation of experimental project are studied. Combined with the common problems existing in the practical teaching of logistics management, Fuzhou University of International Studies and Trade has established an international logistics and supply chain laboratory, which provides experience and reference for the construction of logistics management laboratory.

## 1. Introduction

According to the national standards of PRC for the teaching quality of logistics management and engineering, the practical teaching credits of logistics management major should not be less than 20%. Practical teaching plays an important role in the talent cultivation of this major, and laboratory construction is an indispensable congenital condition for realizing the training objectives of logistics management major with high practical requirements. The major of logistics management is a compound major integrating the knowledge of management, economics, engineering and other disciplines. It has many practical links and a variety of experimental and practical courses. How to make full use of the limited laboratory resources to satisfy the cultivation of students' practical ability is a new challenge for the construction of logistics management laboratory in Chinese universities.

The current active international trade makes the role and status of international logistics and supply chain constantly appear. The surge of demand for international logistics and supply chain talents in today's society forms a great contradiction with the relatively scarce supply of international logistics and supply chain specialized talents. Traditional logistics professional practice in most Chinese universities is too limited to the training of skills and operations, lack of necessary innovative ideas and overall view. And the laboratory function is single, which has gradually failed to adapt to the development requirements of international logistics in the new era. With the support of the central government finance, Fuzhou University of International Studies and Trade has set up an international logistics and supply chain laboratory. With the goal of "integration of school and enterprise, and integration of production, learning and research", the laboratory further optimizes the training objectives and programs by relying on the school-enterprise co-built industrial college -- Chaojie International Logistics Institute, aiming to realize the talent transfer in regional economic development of Fujian province and international logistics industry.

## 2. Laboratory construction demand

The international logistics and supply chain laboratory based on the requirement of the logistics management professional practice teaching fundamental, targeted with international logistics industry development frontier, create different levels of practice project environment, and integrates into industry-university-research platform.

## **2.1 Basic Logistics Operation Training**

Rapid development in the direction of intelligent, integrated modern logistics, the logistics personnel based operation link in loading and unloading, transportation, packing and so on have a deeper, more stringent requirements, the basic operation solid talent can greatly decrease the cost of enterprise staff training at the same time, and can quickly adapt to the modern logistics operation, so the logistics basic operation training in applied undergraduate talents training is still occupy the important position. The international logistics and supply chain laboratory based on the theory and fundamental operation, focuses on the development of logistics independent module practice projects, which is designed to make students master the arrangement of transportation vehicles, international logistics documents drawn-up and use, customs clearance business, freight settlement and other basic logistics operations.

## **2.2 Comprehensive Logistics Skills Training**

The logistics industry has become a new economic growth point. In the new era, it is of great significance to continuously optimize the logistics operation and supply chain management, so that all logistics links can be reasonably connected, so as to reduce logistics costs and improve logistics efficiency. Logistics has always been changing due to time and events. Faced with the actual operation and management of logistics, in addition to mastering basic logistics operations, logistics management professionals should have comprehensive abilities such as global logistics concept and improvisation of on-site logistics control. So, the construction of international logistics and supply chain laboratory give full consideration to the needs of personnel training in the logistics software procurement, the practice design, teaching mode and practice examination, etc. The laboratory creates the implementation of the design experiment and comprehensive practice conditions to improve students' ability of process reengineering. Students can not only integrate professional knowledge in the laboratory, but also innovate thinking and management methods from logistics practice.

## **2.3 Professional Laboratory Function Extension**

Logistics management major is a core major of Fujian provincial demonstrative specialty group which includes logistics management, marketing, e-commerce and information management and information systems professional, thus the international logistics and supply chain laboratory construction should not only follow applied undergraduate talents training target, but also should provide basic conditions for the realization of the professional group of platform, in order to development professional laboratory of generality. On the other hand, especially for students in innovation experimental class and professional learning club, the laboratory offers courses on innovation and entrepreneurship to cultivate students' innovative thinking and tap their innovative potential.

## **2.4 Industrial College Base Settled In**

Relying on the international logistics and supply chain laboratory, professional and Oriental Logistics Group Co., Ltd. build Chaojie International Logistics Institute. The institute carries out a series of courses for students of ordering cultivation, graduation practice, named subject competition and innovation entrepreneurship guidance, at the same time it is a communication platform through convenient teachers learning channel to carry out various production, project and technical research. The value-added function of international logistics and supply chain laboratory is further expanded, which enriches the construction of teaching resources and strengthens the connotation construction of practical teaching.

## **3. Laboratory construction scheme**

According to the logistics management specialty, the international logistics and supply chain

laboratory determine the experimental course, and then overall plan laboratory teaching resources and the management system including both hardware and software facilities, in order to provide more professional, more stable, more humanized ancillary services for the majority of teachers and students.

### 3.1 The Lab Partition Layout

The international logistics and supply chain laboratory covers an area of 500 square meters. In order to carry out experimental activities more effectively, the laboratory is divided into three areas according to experimental purposes and learning functions: logistics simulation area, hypercity area and international logistics experiment area.

Logistics simulation experimental area, is based on the model of logistics equipment design, creative wit assembled and logistics operation scheme against the design concept of simulation through the analysis of logistics facilities simulation design, logistics business processes and operations, the logistics enterprises operating scheme. It helps training students' theory with practice, independent ability to solve the problem of logistics enterprise operation management.

Hypercity area is designed to integrate RFID, computer vision, Internet payment and other technologies to create a simulation of "new retail", showing the functions of commodity information push, quick settlement and payment, and automatic update of inventory data.

International logistics area, based on the practical teaching design ideas, under the enterprise mentors' guidance and participation in the lab construction, creates the international logistics business operating environment, simulates the role actual logistics business like the international logistics company, ship companies and airlines, customs, trailers and shippers etc.

### 3.2 Lab Hardware and Software Configuration

The international logistics and supply chain laboratory integrates the logistics process and function, builds the enterprise operation environment by combining the enterprise operation examples, and introduces the enterprise business operation and simulation. Laboratory hardware and software configuration follow the principle of economical, practical and forward-looking, the basic hardware equipment including projection screen, the computer, the operation simulation against stage desk, radio frequency identification equipment, scanning printing equipment, goods shelves, logistics simulation equipment (including forklift, container, gantry cranes, crane, etc.). Basic software includes logistics simulation software, logistics tools software, logistics management software and experimental teaching management system.

### 3.3 Design of Laboratory Practice Teaching Project

Combined with professional teaching and learning needs of students, the international logistics and supply chain laboratory has built international logistics business experiment project, supply chain management experiment project and logistics system simulation experiment project, which can provide teaching services for students majoring in logistics management of different grades, and basically covers various experimental and practical courses of the major.

#### 3.3.1 *International logistics business experiment project*

The experimental project undertakes the experimental links of international freight business experiment, international logistics, international freight forwarding and other courses. The project adopts Kinsoft System widely used in the international logistics enterprise, which mainly includes six functional modules of shipping business, air transport business, business administration, financial settlement, statistical inquiry and customer management. Through the enterprise case guided teaching, students can master the practical operation skills of Kinsoft System, make clear the key points of international logistics document filling and circulation, and basically have the quality and application ability of international logistics practitioners who are calm, careful and proficient in business.

### 3.3.2 *Supply chain management experiment project*

Supply chain management experimental project is designed for several curriculums such as supply chain management, supply chain deduction comprehensive experiment, logistics information management, enterprise logistics operations. By using Real-time Supply Chain Management System, RFID and Database Management System, students can simulate different roles on the supply chain in practice, understand the customer role of specific operations in the supply chain of suppliers, manufacturers, warehouse center, distribution center, transportation center, to master the actual operation and their relationship between different modules.

### 3.3.3 *Logistics system simulation experiment project*

The experimental project is oriented to logistics system simulation experiment, logistics enterprise operation sand table experiment, logistics facilities and equipment and other courses. Flexsim Logistics Simulation System and ITMC Logistics Enterprise Simulation Operation Electronic Sand Table Platform are used to model the logistics object system and simulate the related logistics process. The experimental project not only allows students to observe the overall picture of logistics enterprise management from a strategic perspective, but also allows them to personally experience the main links of logistics management from the perspective of implementation, and learn how to solve typical problems encountered in practice.

At the same time, the experiment project use Fischer Creative Model and LLWin Programming System for simulation and design of logistics facilities and equipment. Students in this project who should learn to realize the microcomputer control of the movement model. Through the project their comprehensive ability to use logistics knowledge to solve practical problems and manual ability cloud be improved.

## 3.4 Improvement Proposal

### 3.4.1 *Laboratory openness and intelligent management*

At present, the international logistics and supply chain laboratory is open according to the course arrangement and paper application submission, and the open management authority belongs to the experimental technical management personnel, so the lab cannot be open 24 hours. Considering the approval process to apply for the lab is too complicated and time-consuming, the laboratory should make use of the Internet technology to realize openness and intelligent management, which could be connected to campus ID cards, educational system and WeChat campus public account. This new lab management system also cloud include laboratory approval regulation, access to equipment management, the open experiment project management module and more open multi-level demand. This change will increase student in the laboratory to carry out the innovative undertaking and the subjective initiative of subject contests, and improve the use of hardware and software equipment in the laboratory responsibility tracking.

### 3.4.2 *Laboratory teachers cultivation*

The overall educational level of the laboratory teachers is rapidly improving, and the practical teaching ability and quality of the laboratory are constantly enhanced. The teachers who undertake the experimental projects are reasonable and stable, but the development ability and completion ability of the experimental projects of the logistics management major need to be further improved. To perfect the construction of international logistics and supply chain laboratory and keep up with the needs of the development of specialty experiment teaching reform, we should in a planned way provide good learning chance for teachers into some of the key universities and enterprise, actively encourage teachers to participate in domestic experimental teaching seminars and international academic conference. In this way, through strengthening cooperation with universities and unit of communication between colleges, teachers can learn the advanced theoretical knowledge and academic technology, introduce excellent experiment teaching content, and grasp and flexibly apply new teaching methods. In short, the growing maturity of the laboratory faculty ensures that the international logistics and supply chain laboratory can adapt to the development of the major and meet the changing learning needs of students.

### 3.4.3 Introduction and update of cutting-edge technologies in the laboratory

With the rapid development of logistics, everything in the industry has been updated. Intelligent express cabinets, three-dimensional automated warehouses, automatic sorting and other technologies have been relatively mature. Moreover, wearable devices, unmanned driving, unmanned aerial vehicles, 3D printers and other technologies in development have made rapid progress, which is believed to overturn the development and application of modern logistics in the near future. Based on the present situation and looking into the future, the hardware and software equipment of the international logistics and supply chain laboratory which has been built and put into use for a certain number of years is not completely matched with the current industry situation. Some university laboratories have been used teaching information management system, learning community interaction system, comprehensive ability analysis system and virtual experiment development system to realize the management of laboratory curriculum resources and improve the development and utilization of laboratory functions. To keep pace with logistics industry high quality development, we should push laboratory hardware and software in the supply chain and large data, artificial intelligence, Internet plus to realize the depth of fusion, as much as possible to upgrade to exploit the existing equipment system, at the same time, in a planned way, batch purchase and install new systems and equipment to improve laboratory conditions and supplement teaching content blank board.

## 4. Summary

The international logistics and supply chain laboratory is supported by the central government financial support and aims at college students' practical ability improvement. The laboratory construction closely follows the leading edge of professional development and fits the pace of students' learning and growth, effectively improving the teaching quality and teaching level of logistics management major. The international logistics and supply chain laboratory is Fuzhou University of International Studies and Trade logistics management professional to explore "new arts" an important link of practice teaching. Future contact will be more closely between university and industry, and logistics management major and other related professional mutual melting each other will be more closely. Therefore, professional laboratory construction keeping pace with times is bound to develop a new era of first-class new cornerstone of liberal arts talent.

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