

Machine Learning Algorithms in the Application of the Logistics Curriculum Reform

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Abstract: With the vigorous development of e-commerce, the status of China's logistics industry has become increasingly prominent, and the training of logistics professionals has gradually been concerned. The teaching purpose of secondary vocational education is mainly to cultivate front-line workers with strong practical ability and fast learning ability. Therefore, training logistics talents to meet the social needs has become the fundamental task of school logistics professional education. This paper discusses the application of machine learning algorithm (MLA) in the logistics distribution (LD) curriculum reform (CR), and analyzes the principles, key points and the principles of curriculum content screening of LD CR; This paper analyzes the specific use of MLA, and then discusses the organization and implementation of the curriculum content of logistics management specialty in secondary vocational schools based on MLA. Finally, through experimental analysis, it verifies that MLA has great significance for the success of LD CR.

1. Introduction

The rapid rise of the logistics industry has made the importance of logistics talents increasingly prominent. The State Council has issued important documents, formulated regulations and guidelines to promote the development of the service industry, widened the business channels of the logistics industry, and provided an important guarantee for the sustainable development of the logistics industry. The modern logistics industry is the product of the development of the new era, which not only injects fresh blood into the economic development, but also provides power for the progress of productivity. The vigorous development of the logistics industry will help to create a high-quality market competition environment, change people's lifestyle, improve people's living standards, achieve scientific distribution of market resources, enhance the comprehensive strength of enterprises, and thus promote the sustainable development of the national economy. This paper mainly discusses the application of MLA in LD CR.

The logistics industry covers a wide range of areas, and the career needs also present a trapezoidal framework, which requires not only high-end management talents, but also middle and low-end talents who can operate in practice [1]. In today's society, the demand for technical talents in the logistics industry is increasing, accounting for more than 80% of the total number of talents in the industry. Therefore, creating more and more professional logistics talents is an urgent task for

middle and higher vocational colleges to solve, and it is also an urgent need to promote the healthy development of the logistics industry [2].

In order for the students of logistics management major to develop from moral, intellectual, physical, labor and aesthetic aspects, so that the knowledge and skills learned by students in school can better meet the requirements of enterprise employment, this paper applies machine learning as an algorithm to the CR, analyzes the possible basis for setting courses according to the role of the post, emphasizes students' personalized development, and highlights professional characteristics; Optimize the content of LD course to promote students' employment; Highlight professional skills and strengthen the pertinence of course contents; Finally, a large-scale teaching reform was carried out for the logistics management major, courses were set according to the role of the post, students' enthusiasm for learning was investigated and counted, and the effectiveness of MLAs for the LD CR was verified [3-4].

2. Analysis on the Reform of LD Course

2.1 Principles of LD CR

2.1.1 Keep the Consistency between Curriculum and Training Objectives

The purpose of vigorously developing LD talents is to cultivate talents who can make contributions to the socialist market economy. Reasonable and scientific curriculum is the core and key link to achieve the training objectives. On the one hand, curriculum serves the training objectives, and on the other hand, the training objectives are the basis for curriculum [5]. Therefore, the LD curriculum should be based on the training objectives, and the secondary vocational schools should choose the appropriate and matching curriculum system to achieve the training objectives.

2.1.2 Focus on the Practicality of the Course

The LD curriculum should pay more attention to students' learning perception and feelings, rather than simply passing on knowledge to students in an abstract and general way. In this way, students not only do not know what the courses they have learned are useful, but also know nothing about where and how to use them. On the other hand, the curriculum should also be more life oriented and organically integrated with social life, so that students can experience and contact the society in life. They can integrate the knowledge and skills learned into the curriculum learning in the real social scene, highlight the relationship between the curriculum and life, so that the curriculum can transcend the narrow space restrictions, and enable students to move towards a wider world [6-7].

2.2 Key Points of CR

2.2.1 Emphasize Students' Personalized Development and Highlight Professional Characteristics

First of all, we should reduce the complexity, difficulty and depth of public basic courses, adjust the proportion of class hours, increase the life and interest of the courses, give play to their basic and application functions, get rid of the traditional teaching mode of general education, pay attention to training and improving students' quality, highlight the basic cultural knowledge and practical application of work in professional learning, show professional characteristics, and lay the foundation for students' career development and lifelong development [8]. Secondly, the setting of moral education classes should emphasize the pertinence and sense of the times, increase the

proportion of activity classes, enable students to practice and reflect in activities, understand the characteristics of each student at the same time, pay attention to teaching students in accordance with their aptitude, attach importance to the personalized development of students, and cultivate their socialist core values and behavior habits, so that students can become high-quality workers who are honest, trustworthy, dedicated and diligent.

2.2.2 Optimize the Content of LD Courses to Promote Students' Employment

On the basis of analyzing the requirements of the posts provided by the market for professional competence, taking practical application as the basic goal, taking "necessary" and "sufficient" as the basis, and according to the requirements of post groups, further break the boundaries between disciplines, eliminate the drawbacks of too many and difficult teaching contents in the discipline standard, integrate and expand the discipline courses, and establish a comprehensive curriculum system required by the post groups [9-10]. At the same time, promote the exchange and integration of different disciplines, lay the foundation for students' employment, job transfer and further study, so as to meet the needs of different technical talents in modern society.

2.2.3 Highlight Professional Skills and Strengthen the Pertinence of Course Contents

The curriculum should clearly point to the LD post group, strengthen the specific pertinence of the curriculum content, clarify the curriculum objectives, and relatively weaken the systematization of knowledge and theory according to the simulation training of typical work tasks in professional posts to a certain extent, and put it in the process of practical tasks, so that the basic knowledge and practice can be effectively connected, and the knowledge system can be supplemented according to the needs of LD posts. At the same time, it emphasizes the pertinence of the theory learned, and applies the basic knowledge to solving practical problems. In this way, students can not only have the core competitiveness of a certain position, but also have enough ability to adapt to job changes, so as to increase their basic ability of employment, job transfer and promotion in the occupational group, so that students can find their own occupation when facing the competitive pressure of employment [11].

2.3 Principles of Course Content Screening

2.3.1 The Principle of "Necessary, Sufficient, Applicable and Practical"

According to the training objectives of secondary vocational schools for students, the logistics management major of secondary vocational schools trains students to deliver the first applicable course content to the society and enterprises before they can use it after they have learned their jobs. Therefore, when selecting the course content, we should take into account the needs of social and economic development, and keep abreast of new changes in enterprises. If the enterprise technology or operating skills are innovative, the course content we offer should also change accordingly. The courses and teaching contents offered in this way are applicable. In the course setting, we should strengthen market research, listen to the opinions of enterprises and experts, pay attention to the study of students' intelligent structure, level differences and individual needs, design teaching content in a targeted way, and avoid the course setting from being divorced from the needs of professional practice activities [12].

2.3.2 Principle of Skill Practicability

The principle of skill practicality refers to that the proportion of theoretical content is relatively small, while the proportion of skill content is more. In addition, we should pay attention to practicality and apply what we have learned. The warehouse keeper must have the use of warehouse packaging machine, stacker and other equipment and the use of warehouse management related software. Pay attention to the training of practical ability to enable students to acquire strong professional operating skills. When screening the course content, we should do that: the proportion of teaching practical courses is much higher than theoretical knowledge. Only when the proportion of operation courses in the course structure is more, can students have more opportunities to practice and master skilled actions. For example, only when students practice more in warehouse management, can students master the use of warehouse equipment and use relevant software to carry out the warehousing and unloading operation process of goods.

2.4 Implementation Conditions of LD Course Content

2.4.1 Analysis of Teaching Content

After defining the job and post capacity requirements, we need to further analyze the teaching content in order to truly carry out teaching. At this stage, the number and variety of textbooks used by the logistics management major in secondary vocational schools in China are various, and the content and quality of textbooks published by various publishing houses are uneven due to the lack of uniform standards and requirements. Some refer to the requirements of universities, and some copy the teaching content of economics. Generally speaking, the theory is too strong, and the teaching content belongs to academic research, which is far beyond the understanding and acceptance ability of secondary vocational students.

In order to arrange the teaching content suitable for secondary vocational school students, especially the students of the school, all secondary vocational schools should encourage professional teachers to develop school-based textbooks. When developing school-based teaching materials for logistics management, the school can invite front-line staff with rich practical experience from enterprises to directly participate in the development of school-based teaching materials according to the actual job and skill requirements of enterprises through joint research with professional teachers; By mastering the core post ability of the major and various work tasks, we can summarize and integrate the main typical tasks to form a work process that connects with the major. We can also extract the required work ability through various links of the work process, reasonably develop and learn the teaching process, and form the featured practical training materials.

2.4.2 Assessment Methods for Students' Achievements

It should be different from the traditional curriculum to assess students by using post roles to train students. In this way, students' process performance should be emphasized. Students' ability to learn, analyze, solve, explore, and innovate may be reflected in the whole process of completing the post tasks according to their usual learning ability. Therefore, when assessing students' performance and evaluating students, the overall evaluation should be based on the learning process. The proportion of students' practical performance and theoretical performance can be allocated according to the actual situation, If necessary, you can complete the practical skills instead of the theoretical examination. In addition, when assessing the student's performance, the requirements of relevant positions and occupations should be taken as the premise to ensure the employment of

students, and the performance should be checked according to the students' operation performance and results.

3. Application of MLA in the Course Reform of LD

3.1 MLA

Neural network is the basis of machine learning, which is also called artificial neural network. Inspired by bionics research, it simulates the operation mode of brain neurons. Neurons in the brain are composed of cell body, dendrites and axons. The role of cell body is to process signals, dendrites are responsible for transmitting signals, and axons are responsible for receiving signals. It is hundreds of millions of such neurons that form our human brain through complex connections.

The target vocabulary is uniquely mapped into a low dimensional dense vector. The probability of the Skip gram model to predict the target vocabulary context vocabulary is calculated using the following formula (1):

$$p(\text{context}(k) | k) = \prod_{u \in \text{context}(w)} p(s | k) \quad (1)$$

Context (k) represents the context vocabulary of the target vocabulary k. Because the calculation efficiency is often very low when using Softmax to calculate $p(s | k)$, Hierarchical Softmax is often used in existing models for efficient calculation. Integrate all comments written by user s, that is, user comments, into a single document for recording. The document consists of n words in total, as shown in Formula (2).

$$T_{1:n}^s = \Phi(b_1^s) \oplus \Phi(b_2^s) \oplus \Phi(b_3^s) \oplus \dots \oplus \Phi(b_n^s) \quad (2)$$

Where represents the e-th word in the comment document. The function is to map the e word into a low dimensional dense real word vector through word embedding technology. The symbol \oplus is an association operation, which combines the word vectors of each word by line to form a word vector matrix. For the information of LD CR, this method is also used.

3.2 Organization and Implementation of Curriculum Content of Logistics Management Major in Secondary Vocational School based on MLA

3.2.1 Principles of Organization and Implementation of Course Content Linked to Posts

Openness. It means that in the process of organizing teaching, we are not only limited to the teaching facilities and simulation training room of the school, but also can go out of the school gate, visit the cooperative enterprises, visit the production line, invite employees to explain at the enterprise posts, or invite professionals to attend classes. In this way, our classroom is open, and students can go to the production site to learn, deepen their contact with the society, and also increase their perceptual knowledge. It also increases the opportunities for students to operate their skills.

Practicality. The essence of secondary vocational education is to cultivate operational talents who are competent for front-line work. The learning of operational skills is generally divided into the operation orientation stage, the operation imitation stage, the operation integration and operation proficiency stage. To reach the proficiency stage, the teaching process requires students to practice and operate more in simulation posts or enterprise posts. It is impossible to cultivate skilled operational talents without practical learning. For example, the stacking method of goods, theoretically speaking, students may not choose different stacking methods according to different

goods for many times, but if students practice, they will soon master the relevant knowledge or become proficient.

Combination of collective teaching and individual guidance. Whether it is theoretical teaching or operation skill training, when the teaching content belongs to basic ability and basic skill knowledge, that is to say, it belongs to low-level teaching, collective teaching and collective demonstration can be used; when it belongs to directional development skills or high-level content, individual guidance, individual learning or group mutual learning can be used.

3.2.2 Methods for Organizing and Implementing the Course Content Linked to the Post

The ability progressive implementation method can be used in the organization and implementation of curriculum content. According to the requirements of post ability, the basic training module - single training module - comprehensive training module - practical exercise and post placement practice - innovation and entrepreneurship training module is designed. Each training module has different emphasis on the cultivation of students' ability, so as to achieve the effect of simultaneous development of professional core ability and sustainable development ability.

In the teaching process, a practical teaching system of progressive ability is adopted, that is, in the first semester, students learn public basic courses and basic professional skills at school, and adopt the teaching mode of "learning and doing in one" to enable students to master professional quality and basic ability, logistics post cognition, and basic skills training module. In the second and third semesters, individual post training will be carried out, teaching plans will be jointly formulated with the cooperative enterprise and the school, and the two parties will jointly cultivate, and courses will be interspersed. The class hour training courses should account for 2/3 of the total class hours. The fourth semester comprehensive training should be carried out to carry out comprehensive training on typical projects of logistics enterprises, highlighting the real background of enterprises or simulation training requirements. In the form of job rotation training and comprehensive factory training on campus, the class hour training courses for cultivating students' vocational skills should account for 3/4 of the total class hours. In the third academic year, the enterprise takes the post practice and conducts training in the practice unit for the real business process and equipment operation of the enterprise, which is the test of the comprehensive training project on campus. Direct employment after graduation to achieve seamless employment.

4. Experimental Test Analysis

In this paper, MLAs are applied to the reform of LD courses. A large-scale teaching reform has been carried out for the logistics management major. Courses are set up according to the role of the post, and warehouse management training room, express delivery training room, comprehensive training room, etc. are equipped according to the role of the post. At the same time, professional teachers are trained and students are taught according to the role of the post in four classes A, B, C, D of the logistics management major, The students' enthusiasm for learning was investigated and the results are shown in Table 1.

Table 1: Comparison Table of Class Discipline

class	Sleep phenomenon (person time/total number)	Playing with mobile phones(person time/total number)	Listen to the music(person time/total number)
A	35/45	12/45	0/45
B	51/80	32/80	3/80
C	156/80	167/80	43/80
D	54/27	67/27	14/27

Students were taught through post setting courses, and they became interested in class, and their enthusiasm for learning was greatly improved. In the past, the traditional teaching of two classes was very long for students. Sleeping in class and playing with mobile phones were endless, but this way was different. Students really became the main body of learning. In order to complete the work of their posts, students cooperated with each other to find answers and study together. It has achieved good teaching results and won praise from students and enterprises.

The reform of LD courses through MLAs is used to educate practical students. According to the employment situation, the number of students who can directly go to logistics companies or enterprises' logistics posts during their careers has increased significantly. Table 2 Figure 1 shows the number and proportion of employees in logistics posts in the past three years of CR.

Table 2: Number and proportion of employees in logistics posts

	Year 1	Year 2	Year 3
Total number of people	40	45	45
Number of employees	15	21	25
proportion	37.5%	46.67%	55.55%

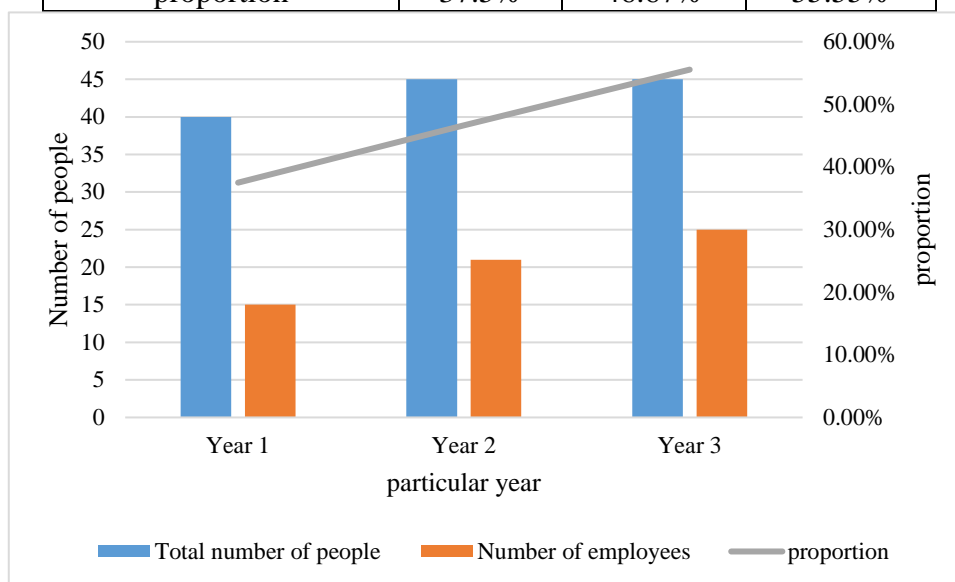


Figure 1: Analysis on the number of employees in logistics posts

It can be seen from the above chart data that the application of MLAs in the reform of LD courses will help to increase the employment rate of students majoring in LD. The students' learning ability, analysis and solution ability, exploration ability, innovation awareness, etc. may be reflected in the whole process of completing the post tasks, and students can learn professional basic knowledge and basic operating skills at their posts, It is also of great significance to cultivate LD professionals.

5. Conclusions

Although the logistics industry in China has been developing rapidly in recent years, compared with developed countries, the logistics industry in China is still in its infancy, and the logistics education in China is also developing constantly. However, because there is no national unified education and training goal standard for logistics majors, CR alone is not possible to solve the existing problems. This paper only analyzes the application of MLA in LD CR, and only provides a way of thinking for CR. Curriculum setting is an extremely complex and tedious curriculum design

activity. The curriculum development needs a long time. The specific CR needs further discussion and research. I hope this work can be further improved in the future study.

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