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Exploration and Practice of the Application of Large Models in Undergraduate Course Teaching of Economics and Management——"Introduction to Logistics Management" as an Example

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Abstract: With the rapid development of information technology and the continuous growth of the logistics industry, logistics management teaching is also facing new challenges and opportunities. Traditional logistics management courses often focus on imparting theoretical knowledge, but lack the cultivation of practical problem-solving abilities. The introduction of big model technology provides new ideas and methods for logistics management teaching. By simulating real logistics scenarios, students can master the core concepts and methods of logistics management in practice. This article explores the significance and value of the application of big models in logistics management teaching from three aspects: breadth, depth, and timeliness of the impact of the introduction of big models on logistics management teaching. It also analyzes the specific application of big models in logistics management teaching through practical cases, in order to provide reference and inspiration for teaching practice in related fields.

1. Introduction

With the continuous advancement of global economic integration and the flourishing development of e-commerce, the logistics industry is playing an increasingly important role in modern economy. Logistics management, as an interdisciplinary field, involves multiple aspects such as supply chain management, transportation planning, inventory control, information technology, etc [1]. It has the characteristics of complexity and strong practicality. In the teaching of logistics management majors in universities, how to effectively impart relevant knowledge and cultivate students' practical operational abilities has become an important task [2].

Traditional logistics management teaching is often limited to classroom lectures and imparting textbook knowledge, and lacks the cultivation of simulation and problem-solving abilities for

practical problems [3]. Students often only have a theoretical understanding of the concepts and methods of logistics management, and lack a deep understanding and ability to respond to real-life logistics scenarios. In order to better cultivate students' practical and problem-solving abilities, it is necessary to combine advanced information technology with logistics management teaching and introduce large model technology for teaching practice [4, 5].

Although the emergence of large models has not been long, they have demonstrated outstanding capabilities in the field of multimodality. The transformative impact of its characteristic advantages on human life and work will gradually become apparent, and the application effect of large-scale language models in higher education is receiving widespread attention from researchers [6]. Multimodal models will accelerate educational transformation and promote the digital transformation of the education ecosystem [7].

2. The significance and value of big models in logistics management teaching

Large model technology mainly refers to the use of machine learning, deep learning and other algorithms to train models with a large number of parameters, which can process and generate various forms of data including text, images, and audio [8], as shown in Figure 1. These models have shown excellent performance in fields such as natural language processing, image recognition, and data mining. The application of large models in logistics management teaching is an innovation in educational methods, which supports students and optimizes teaching content through various means. Specifically, as an interactive learning tool, the big model plays an important role in improving the quality of logistics management teaching by providing personalized learning experiences, as well as simulation and experimental teaching.

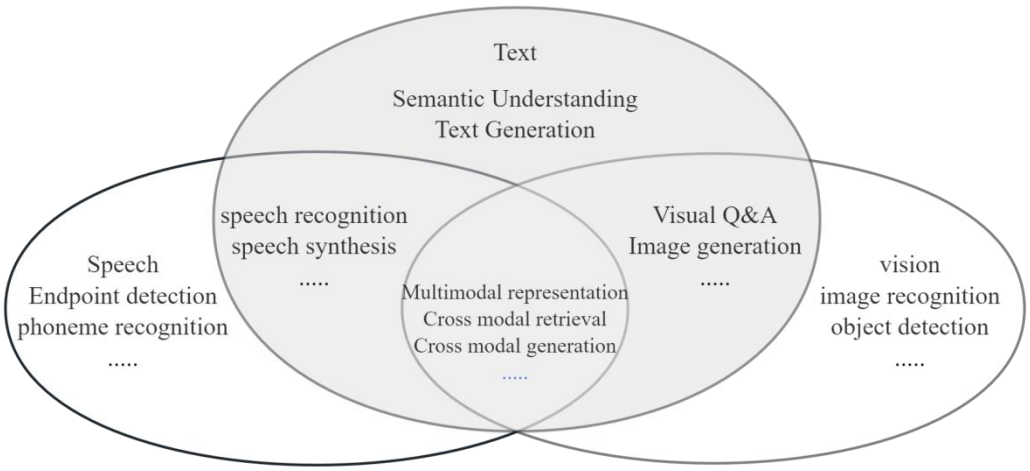

Figure 1: Multimodal Large Model

(1) Expand the breadth of teaching

The application of large models in logistics management teaching has significantly expanded the breadth of teaching and provided a more comprehensive and in-depth educational experience. This expansion is not only reflected in the diversity of teaching content, but also in the innovation of learning methods and experiences. Specifically, the large model has expanded the breadth of

logistics management teaching in the following areas:

Integration of interdisciplinary learning [8]: The big model enables the teaching of logistics management to be integrated with other disciplines such as big data analysis, artificial intelligence, economics, and even environmental science. For example, by using large models for data analysis and training predictive models, students not only learn traditional content of logistics management, but also have access to the latest research and technologies in these fields, enhancing their interdisciplinary knowledge and skills.

Integration of practical industrial applications: By using large models, the teaching of logistics management can be more closely integrated with practical industrial applications [9]. Large model models can simulate real-world logistics challenges such as supply chain optimization, demand forecasting, and transportation management, enabling students to directly apply theory to practical operations during learning, providing them with practical experience for entering the workplace in the future.

The integration of a global perspective: Large models, due to their ability to process large-scale data, enable the teaching of logistics management to incorporate more global perspectives [10]. Students can understand the dynamics and challenges of global supply chains by simulating logistics cases from different countries and regions, which is particularly important for today's globalized and closely connected economic system.

Innovation in teaching methods: The large model has also promoted innovation in logistics management teaching methods [11]. Traditional teaching and case study methods can be supplemented through more interactive and participatory teaching tools such as simulation games and virtual reality (VR) experiences. This diversified teaching method can increase student participation and interest, and improve teaching effectiveness [9, 12].

The promotion of personalized and adaptive learning[7]: By utilizing the analysis and prediction functions of large models, teachers can more accurately understand the learning needs and progress of each student, thereby providing personalized learning materials and progress adjustments [13]. This adaptive learning method can make teaching more efficient and help each student learn at their most suitable speed and method [14].

Through these methods, the large model not only expands the coverage of logistics management teaching, but also greatly improves the quality of education and the learning experience of students. The introduction of this technology is part of innovation in the field of education, providing new perspectives and methods for the teaching of logistics management and related disciplines.

Increase teaching depth

The large model has indeed played a significant role in increasing the depth of logistics management teaching. These models not only expand the breadth of teaching content, but also deepen students' understanding and analytical abilities towards complex logistics management problems. Specifically, the large model has improved the depth of logistics management teaching through the following aspects:

In depth case analysis [7]: Using large models, educators can construct complex simulation environments, enabling students to analyze and solve practical logistics management problems in depth. For example, by simulating a multi-level global supply chain network, students can see the impact of their decisions in real time and learn how to optimize supply chain efficiency. This in-depth case study helps students better understand the integration of theory and practice.

Multi perspective problem-solving: Large models can simulate various logistics scenarios, including extreme or rare situations, providing students with the opportunity to consider problem-solving strategies from multiple perspectives [15]. For example, large models can generate scenarios about the impact of weather changes, political instability, or economic fluctuations on supply chains, prompting students to consider multi factor decision-making processes.

Data driven decision-making: In modern logistics management, data analysis and interpretation are essential skills [16]. The application of large models enables students to access real, large-scale datasets and learn how to use these data for effective decision-making. By practicing data-driven decision-making processes, students' analytical abilities and critical thinking have been enhanced.

Interaction and real-time feedback [12]: Large models can also provide interactive learning experiences and real-time feedback, which is particularly important for deepening students' learning understanding. By interacting with the big model, students can immediately understand the effectiveness of their answers and solutions, and make adjustments based on the feedback provided by the model [17]. This rapid iterative learning process helps students gain a deeper understanding of complex issues in logistics management.

Cultivation of innovative and creative thinking: Big models stimulate students' innovative thinking and encourage them to explore non-traditional solutions. In logistics management teaching, this innovative ability is crucial, especially when facing rapidly changing markets and technological environments [18]. By interacting with advanced large-scale modeling techniques, students are encouraged to think and experiment with novel strategies and techniques.

Through these approaches, the big model not only enriches and details the teaching content of logistics management, but also enhances students' problem-solving ability and deepens their understanding of the challenges of logistics and supply chain management. This increase in depth is an undeniable contribution of big models in the field of education.

Improving information lag in teaching

The traditional education model faces many challenges in logistics management and other rapidly changing fields, especially regarding the timeliness of case studies, updating teacher knowledge, and timely feedback on student learning processes [19]. In this context, big model technology provides an effective solution to address these challenges, thereby better adapting to the evolution of social changes and industry demands.

Rapid response to social change demands [20]: Large models can process and analyze large amounts of real-time data, enabling educational content to quickly adapt to the latest industry dynamics and market changes [21]. With the rapid changes in the global economy and technology, industry demand is also constantly changing. The big model enables the education sector to quickly adjust its curriculum and teaching strategies to adapt to social and industry changes, such as adding teaching content on emerging technologies such as automation and the application of artificial intelligence in logistics, or focusing on strengthening certain new technologies that are about to become industry standards [19]. This ability keeps logistics management courses in sync with actual industry trends [22].

Adaptive learning path: Traditional teaching methods find it difficult to provide immediate and personalized feedback on the specific progress of each student, which may lead to students not being able to receive timely help when facing difficulties [17]. The large model can dynamically adjust the teaching content and difficulty, and adjust the curriculum in a timely manner based on student progress and feedback [21]. This personalized teaching method not only improves learning efficiency, but also ensures the timeliness and relevance of learning content. Students can receive more support when needed, and the parts that are efficiently mastered can be passed faster.

Dynamic case studies and simulations: In logistics management education, large models can generate dynamic case studies related to current industry issues. These cases not only reflect the latest industry challenges, but also simulate different market conditions and operational issues, providing a real-time learning and testing environment [13]. Through this approach, students can directly tackle cutting-edge problems and improve their ability to solve complex and timely problems.

Continuously updated teaching resources: Teachers need a lot of time to research and prepare for

the latest industry development content before teaching [13], and this process itself has a lag. The big model can assist teachers in quickly understanding and mastering the latest knowledge by providing real-time industry news, research progress, and data analysis. Meanwhile, the big model can assist teachers in continuously updating teaching materials, including textbook content, instructional videos, and online resources. Through machine learning algorithms, it is possible to identify which content needs to be updated or improved, ensuring that teaching resources remain up-to-date [23]. This automated content update greatly reduces the time and labor costs of textbook updates.

Through these approaches, the big model not only improves the timeliness of logistics management teaching, but also effectively improves the lag problem in teaching. This timeliness is very important, especially in rapidly changing industries such as logistics and supply chain management. Timely updating of teaching content and methods is crucial for cultivating graduates with the skills required in the current market.

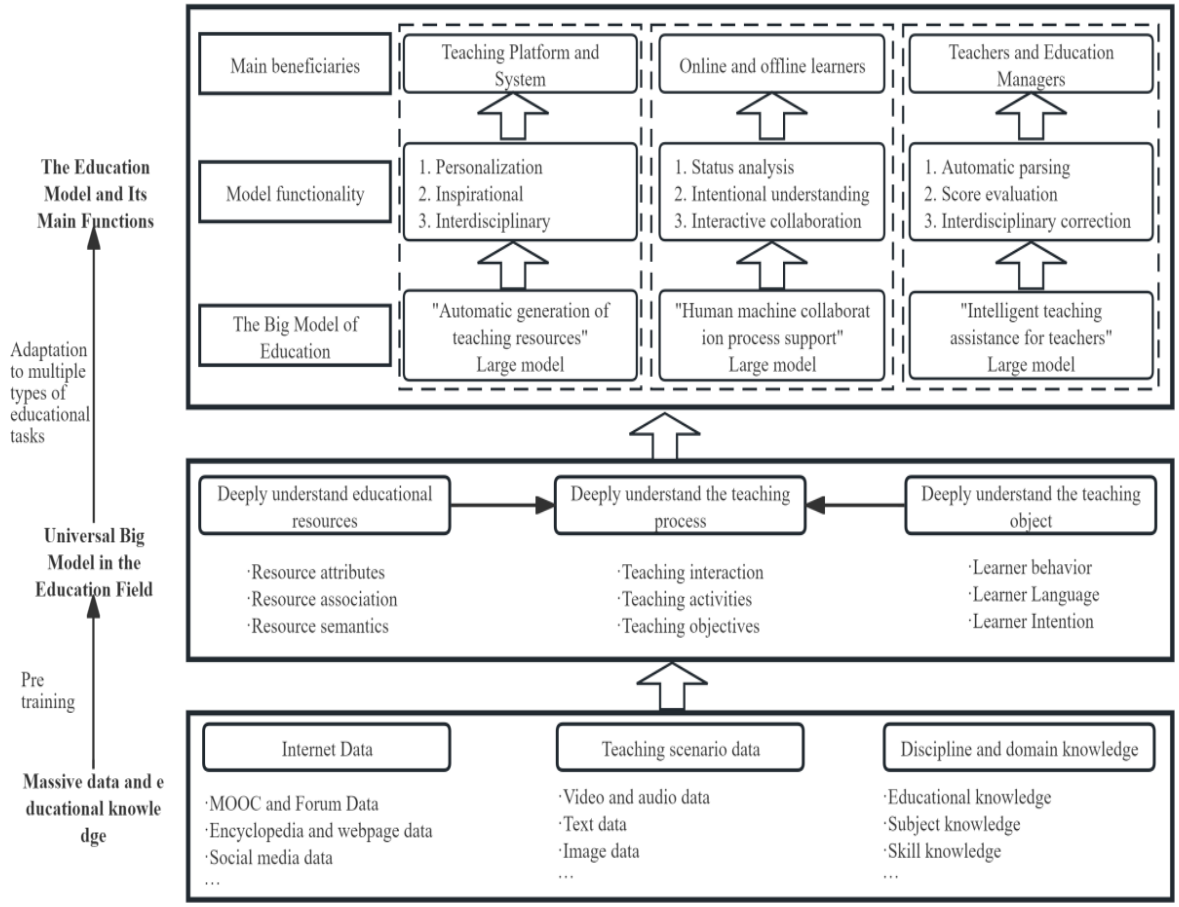

Figure 2: Construction of a large model in the field of education and its adaptation to various types of educational tasks

3. The specific application of large models in logistics management teaching

(1) Supply chain optimization simulation

Supply chain optimization simulation is an important application direction of large models in logistics management teaching. By simulating various links and processes in the supply chain, students can deeply understand the core concepts and methods of supply chain management, master the strategies and skills of supply chain optimization, and thereby improve their practical and problem-solving abilities [24]. The specific application cases of big models in logistics management teaching mainly include the following aspects:

Simulate supply chain network structure: Students can use big model technology to construct a simulated supply chain network structure, including raw material suppliers, manufacturers, distributors, and end users [25]. By modeling and simulating these links, students can understand the relationships and mutual influences between different links, thereby gaining a deeper understanding of the composition and operational mechanisms of the supply chain.

Optimize order processing flow: Students can use big model technology to simulate different order processing processes, including order receiving, processing, allocation, tracking, and feedback. By modeling and simulating the order processing process, students can analyze the impact of different processes on supply chain efficiency and customer satisfaction, thereby guiding enterprises to optimize order processing processes and improve the efficiency and quality of order processing.

Adjusting inventory strategies: Students can use large-scale modeling techniques to simulate different inventory strategies, including setting parameters such as safety stock, order points, and order quantities [1]. By modeling and simulating different inventory strategies, students can analyze the impact of different strategies on inventory levels and service levels, thereby guiding enterprises to adjust inventory strategies, reduce inventory costs, and improve inventory turnover.

Optimizing transportation routes: Students can use large-scale modeling techniques to simulate different transportation routes, including the setting of parameters such as transportation mode, transportation path, and transportation time. By modeling and simulating different transportation routes, students can analyze the impact of different routes on transportation costs and time, thereby guiding enterprises to optimize transportation routes, reduce transportation costs, and improve transportation efficiency.

(2) Logistics network planning simulation

Logistics network planning simulation is another important application direction of large models in logistics management teaching. By simulating the structure and operation process of logistics networks, students can gain a deeper understanding of the principles and methods of logistics network planning, master strategies and techniques for optimizing logistics networks, and thus improve their practical and problem-solving abilities. The following are specific application cases of the big model in logistics management teaching:

Establishing a logistics network model: Students can use large-scale modeling techniques to build a simulated logistics network model, including elements such as warehouses, distribution centers, and transportation routes. By modeling and simulating these elements, students can understand the relationships and mutual influences between different elements [24], thereby gaining a deeper understanding of the composition and operational mechanisms of logistics networks.

Optimize warehouse location: Students can use large model technology to simulate different warehouse location schemes, including the selection of warehouse locations, determination of quantities, etc. By modeling and simulating different warehouse location schemes, students can analyze the impact of different schemes on logistics costs and service levels, thereby guiding enterprises to optimize warehouse locations, reduce logistics costs, and improve service levels.

Planning delivery routes: Students can use large model technology to simulate different delivery route schemes, including the selection of delivery routes, scheduling of delivery vehicles, etc. By modeling and simulating different delivery route schemes, students can analyze the impact of different schemes on transportation costs and delivery time [25], thereby guiding enterprises in

planning delivery routes, reducing transportation costs, and improving delivery efficiency.

Optimizing transportation modes: Students can use large-scale modeling techniques to simulate different transportation mode schemes, including land transportation, sea transportation, air transportation, etc. By modeling and simulating different transportation modes, students can analyze the impact of different modes on transportation costs and time, thereby guiding enterprises to choose appropriate transportation modes, reduce transportation costs, and improve transportation efficiency.

(3) Inventory management simulation

Inventory management simulation is one of the important application directions of large models in logistics management teaching. By simulating different inventory management strategies and solutions, students can gain a deeper understanding of the core concepts and methods of inventory management, master effective inventory management skills, and thus improve their practical and problem-solving abilities. The following are specific application cases of the big model in logistics management teaching:

Simulate different inventory levels: Students can use large model technology to simulate different inventory level schemes, including safety stock, economic order quantity, maximum inventory quantity, etc. By modeling and simulating different inventory level schemes, students can analyze the impact of different schemes on inventory costs and service levels, thereby guiding enterprises to determine appropriate inventory levels, reduce inventory costs, and improve service levels.

Simulate different replenishment strategies: Students can use big model technology to simulate different replenishment strategy schemes, including regular replenishment, quantitative replenishment, demand based replenishment, etc. By modeling and simulating different replenishment strategy schemes, students can analyze the impact of different schemes on inventory turnover and out of stock rates, thereby guiding enterprises to optimize replenishment strategies, improve inventory turnover, and reduce out of stock rates.

Analyzing inventory holding costs: Students can use large-scale modeling techniques to simulate different inventory holding cost schemes, including storage costs, capital costs, risk costs, etc. By modeling and simulating different holding cost schemes, students can analyze the impact of different costs on total inventory costs, thereby guiding enterprises to reduce inventory holding costs and improve inventory management efficiency.

Optimizing inventory management strategies: Students can use big model technology to simulate different combinations of inventory management strategies, including inventory levels, replenishment strategies, order processing processes, etc. By modeling and simulating different strategy combinations, students can analyze the comprehensive impact of different combinations on inventory costs, service levels, and operational efficiency, thereby guiding enterprises to optimize inventory management strategies and improve overall operational efficiency.

4. The practical challenges of implementing large-scale language models in higher education applications

The implementation of large-scale language models in higher education faces some practical challenges [14], which may affect the effectiveness and promotion of their practical applications:

Data privacy and security [12]: When using large-scale language models, it involves a large amount of data from students, teachers, and schools, including student information, academic performance, teaching resources, etc. Ensuring the security and privacy of these data is an important challenge [11]. Schools and educational institutions need to take effective measures to ensure the secure storage and transmission of data, and comply with relevant privacy regulations and policies.

Data bias and incompleteness [9]: Large language models require a large amount of data for training, but real-world educational data may have bias and incompleteness [11]. For example, data in certain academic fields may be relatively scarce, or data for certain student groups may be insufficient. This may lead to poor performance of the model in specific fields or groups.

Model bias and bias [7, 9]: Large language models may absorb biases and biases from data during the training process, such as gender, race, geography, etc. If left untreated, these biases may affect the output of the model and result in unfair or discriminatory outcomes. Therefore, measures need to be taken to monitor and correct biases in the model to ensure its fairness and objectivity.

Model interpretability and transparency [12]: Large language models are usually black box models, making it difficult to explain their internal decision-making processes and reasoning logic. In educational applications, teachers and students may need to understand how models make decisions and why they produce specific output results [16]. Therefore, improving the interpretability and transparency of the model is an important challenge.

Technical skills and training needs [10]: Teachers and educational practitioners may lack the technical skills and training required to use large-scale language models [9]. They need to learn how to effectively use these models and integrate them into teaching and curriculum design. Therefore, it is necessary to provide relevant training and support to help teachers and educational practitioners master these technologies.

Model generalization ability [9]: Large language models often rely on large-scale data during training, but in practical applications, they may encounter situations and scenarios different from the training data [4]. The generalization ability of the model becomes a challenge, and it is necessary to ensure that the model can work well in different environments and tasks.

5. Conclusion

The introduction of big model technology provides new ideas and methods for logistics management teaching, which can better cultivate students' practical ability and problem-solving ability [3]. By simulating real logistics scenarios, students can master the core concepts and methods of logistics management in practice, and improve teaching effectiveness. However, the application of large models in logistics management teaching is still in its early stages and needs further exploration and improvement. In the future, the application of large models in logistics management teaching can be further expanded, and teaching content and methods can be enriched to better adapt to the development needs of the logistics industry.

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