

The Reform and Practice of the Blend Teaching Mode with Ideological and Political Elements in the Teaching of Cold Chain Logistics Courses

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Abstract—With the development of economy, the demand for cold chain logistics talents is higher and higher. The traditional teaching mode has been difficult to adapt to the needs of the new era. How to effectively integrate the ideological and political elements of the curriculum, stimulate students' learning motivation, and make full use of various resources online and offline, inside and outside the school, to improve the teaching quality, is a problem that needs to be considered and solved at present. According to the practical experience of the school in carrying out the teaching reform of the cold chain logistics course, a blend teaching mode and integrating the ideological and political aspects of the course has been constructed in various ways, including online and offline, in-school and off-campus, in-class and extracurricular. It puts forward measures such as co-construction of teaching resources in multiple ways, integration of ideological and political elements in the whole process, co-construction of educational content in multiple ways, implementation of blend teaching in multiple ways, and reform of teaching evaluation methods. Combined with concrete practice, the actual effect of the reform is analyzed and summarized.

Keywords—blend teaching, curriculum ideological and political, teaching reform, cold chain logistics

I. INTRODUCTION

With the continuous development of the economy, people's living standards are increasing, the demand for high-quality products is increasing, and the scale of cold chain logistics market continues to expand. However, with the rapid development of the cold chain logistics industry, the demand for cold chain logistics talents is huge, and the shortage of cold chain logistics talents has become the bottleneck restricting the development of cold chain logistics. To solve this problem, governments at all levels have formulated the implementation plan of the "Fourteenth Five-Year Plan" cold chain logistics development plan to promote the high-quality development of cold chain logistics, which requires

deepening the integration of production and education, and strengthening the training of cold chain logistics talents, especially the training of high-quality application-oriented talents [1]. In this situation, the traditional teaching mode has been difficult to meet the needs [2]. Therefore, it is necessary to actively explore effective teaching models and apply them to the teaching reform of cold chain logistics courses to improve the teaching effect and the quality of cold chain logistics personnel training.

II. CURRENT TEACHING SITUATION OF COLD CHAIN LOGISTICS COURSES

A. Current Teaching Situation of Cold Chain Logistics Courses

Guangdong University of Science and Technology is an application-oriented undergraduate college. As the characteristic direction of the logistics management specialty of Guangdong University of Science and Technology Management College, cold-chain logistics mainly trains "application-oriented and compound" management talents facing the needs of cold-chain logistics industry and enterprises. Its cold chain logistics courses mainly include cold chain food commodity, agricultural cold chain logistics, cold chain transportation management, cold chain product quality control, cold chain logistics operation practice, cold chain and quick-freezing technology, cold chain logistics cases, cold chain logistics introduction topics, etc. Compared with ordinary logistics management courses, these courses are more professional and technical. In addition to high theoretical knowledge, they also require higher practical skills, such as the operation, use and maintenance management of cold chain logistics facilities and equipment, cold chain warehousing operation and management, cold chain transportation adjustment, cold chain operation management, etc. [3]. Therefore, the teaching of cold chain logistics courses needs to enable students to master solid theoretical knowledge and practical experience through learning, and have the comprehensive application ability of complex technology and management.

B. Main Difficulties in the Teaching Process of Cold Chain Courses

First, there is a relatively lack of appropriate teaching materials. The development of cold chain logistics in China is relatively late, the academic research is relatively lagging behind, and the basic theory is not mature enough. The published textbooks related to the cold chain are still lacking in both content breadth and depth [4]. In recent years, although many colleges and universities have attached great importance to the construction of relevant teaching material resources and made many achievements, they still can not fully meet the actual needs in the teaching process of relevant courses [5].

The second is that the teaching content pays more attention to theory than practice. Because many of the practical skills in the cold chain logistics course require corresponding experimental conditions, and teachers are also required to have corresponding practical skills and experience, but in the actual teaching process, many of the school's practical conditions are difficult to meet, and some teachers are relatively lack of enterprise practical experience, so there are often many theoretical knowledge settings in the design of teaching content, and specific practical projects such as the use and maintenance of cold chain equipment, cold processing and cold packaging are relatively few.

Third, teaching resources are relatively insufficient. Cold chain logistics courses have high requirements for teachers, experimental environment and facilities, simulation software and other resources, and need to invest a lot of money, manpower and material resources. For many schools, especially private schools, it is difficult to build resources only by their own investment, and it is necessary to explore various ways to improve the level of teaching resource construction.

Fourth, students' learning enthusiasm is not high. The cold chain logistics courses are highly technical and practical. Because students generally have a poor foundation in science and engineering, it is difficult to learn, and the working environment of cold chain logistics enterprises is in low temperature conditions for a long time, and the work tasks are heavy, and the students' recognition level is also low, leading to students' learning enthusiasm and initiative, which affects the learning effect.

III. BLENDED TEACHING MODE INTEGRATING IDEOLOGICAL AND POLITICAL ELEMENTS

In order to solve many problems encountered in the teaching of cold chain logistics courses and improve the training quality of cold chain logistics courses, on the basis of the traditional course teaching mode, the cold chain industry college is taken as the platform, and the mode of multi-education of government, administration, enterprise and school is adopted to jointly build and construct teaching resources, and in the teaching process, the gradually enriched online course resources, offline classroom teaching, enterprise practice and skill training are fully utilized, ingeniously integrate the ideological

and political elements of the course to form a blend teaching mode, as shown in Fig. 1, and apply it to practical teaching to achieve innovation and reform in the teaching of cold chain logistics courses [6].

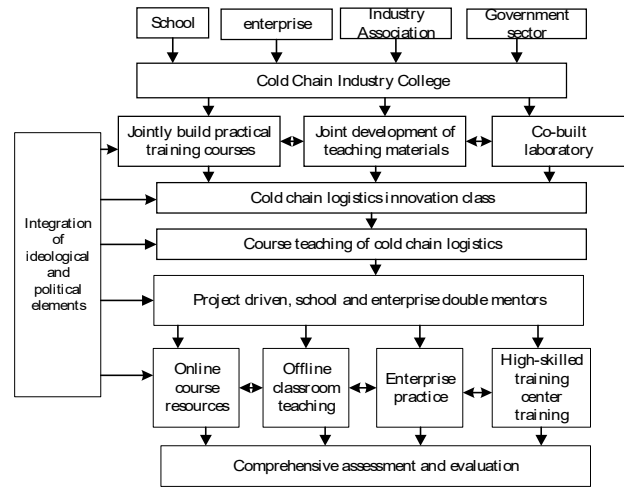


Fig. 1. Blended teaching mode integrating ideological and political elements.

A. Multi-construction of Teaching Resources

Multi-construction refers to the joint participation of relevant government departments, industry associations, enterprises, schools and other subjects in the construction of relevant teaching resources based on the cooperation agreement reached.

In order to cultivate high-quality application-oriented cold chain logistics talents, the logistics management specialty of the Management College of Guangdong University of Science and Technology has started to establish a cold chain logistics innovation class since 2015 to explore the teaching reform of cold chain logistics courses. In 2018, it cooperated with relevant government departments and the Guangdong Cold Chain Industry Association to establish the Cold Chain Industry College, and took it as a platform to cooperate with Shunfeng Cold Transport, Huaxue Cold Chain (Dongguan) Logistics Co., Ltd Enterprises and units such as Jiangnan Agricultural Batch Market Co., Ltd., Tiandi Huayu (Shenzhen) Logistics Co., Ltd., Dongguan High-skilled Public Training Center actively carry out school-enterprise cooperation. On the basis of the construction of cold-chain logistics laboratory with self-raised funds of the school, they also work with relevant enterprises and units to build logistics training center and practice base; Jointly develop curriculum textbooks such as cold chain logistics and cold chain food commodities; Jointly build cold chain logistics related training courses. The teaching resources of cold chain logistics courses have been greatly enriched. At the same time, the cooperation with relevant government departments, industry associations, enterprises and units has also laid a good foundation for the construction of the school's teaching staff. The logistics management professional teachers have actively entered the cold chain logistics enterprises to carry out research, practical skills learning and other activities to improve the practical teaching ability.

B. *Integration of Ideological and Political Elements in the Whole Process*

To fully tap the ideological and political education resources contained in the professional courses and teaching methods and realize the all-round education of the whole staff is the key to implement the Party's education policy and the fundamental task of building morality and cultivating people [7]. At the same time, the effective integration of ideological and political elements in the teaching process can effectively stimulate students' sense of responsibility and mission, enhance the initiative and enthusiasm of hard study, and correctly understand the cold chain logistics work. For this reason, during the teaching process of cold chain logistics courses, the teachers have redesigned the syllabus, selected appropriate ideological and political elements and combined with the teaching of specific knowledge points, so that students can actively think about relevant ideological and political elements while learning specific knowledge points, and gradually form a correct understanding.

C. *Multi-construction of Teaching Content*

Combined with the practice of industry enterprises to better achieve the goal and cultivate qualified talents that meet the needs of enterprises. To this end, in the teaching process, we worked closely with Shunfeng Cold Transport, Huaxue Cold Transport, Jiangnan Agricultural Batch and other enterprises, and invited industry and enterprise experts to jointly develop talent training programs based on the actual work of the post, and the professional teachers of the school and the tutors of the cooperative enterprises with rich practical experience jointly formed a teaching team to re-integrate the teaching content of cold chain logistics courses, driven by specific projects, Combine theoretical knowledge with practical skills, reasonably design teaching content and allocate teaching time.

D. *Carry out Blended Teaching in Multiple Ways*

At present, online and offline blended teaching is generally valued, but blended teaching can also be realized in many ways according to the actual situation [8, 9].

First, actively build and use online course resources to carry out online and offline blend teaching. For example, cold chain logistics, cold chain logistics operation practice, cold storage and quick-freezing technology and other courses have built rich curriculum resources such as courseware, lesson plans, exercises, videos, etc. on the platform of Wisdom Tree, Learning Pass or Rain Classroom. After students complete corresponding learning tasks online, they can discuss relevant knowledge with teachers online and offline, or teachers can reasonably arrange offline teaching activities according to the completion of learning [10].

The second is the blend teaching inside and outside the school. According to the requirements of teaching content and resource conditions, cold-chain logistics courses can organically combine the teaching based on theoretical knowledge by the school teachers and the teaching based

on practical knowledge by the enterprise tutors, and can also combine the school teaching, the off-campus training base, or the enterprise post practice to carry out blend teaching to improve the teaching quality. For example, on the basis of in-school teaching, more than 30 students of Grade 2018 and more than 70 students of Grade 2019 have been organized to carry out short-term job-holding practice in relevant posts of Shunfeng Cold Transport, so that students can deepen their understanding and thinking of the knowledge learned in the school through their own practice.

The third is the combination of online theoretical self-learning and offline practical learning. According to the plan, students in the direction of cold chain logistics will enter relevant positions of Shunfeng Cold Transport, Huaxue Cold Transport and other enterprises in the 7th semester to carry out post practical learning. Therefore, it is necessary to adopt a blend teaching method. Some courses will be carried out through online self-study and credit exchange, so as to ensure that students can successfully complete relevant teaching and enhance practical skills and abilities.

E. *Reform the Teaching Assessment Method*

The adoption of blend teaching, the traditional examination method determined by one or two examinations, also requires necessary reform. To this end, according to the specific situation of blend teaching, the assessment should be carried out in a way that pays equal attention to process assessment and result assessment, and knowledge mastery and ability improvement. The reform of the assessment method should promote students to actively participate in learning, understand, analyze and solve problems, and change from the assessment of simple knowledge points memorization to the assessment of proficiency in mastering and applying knowledge [11]. For example, some courses of industrial class students are in the form of credit exchange, and their course assessment is determined by the completion of online learning and the comprehensive assessment of the work performance, work performance and task completion given by the enterprise tutor and personnel department in the process of post practice [12].

IV. ANALYSIS OF THE EFFECT OF THE BLENDED TEACHING MODE INTEGRATING IDEOLOGICAL AND POLITICAL ELEMENTS IN THE TEACHING REFORM OF COLD CHAIN COURSES

A. *Curriculum Ideological and Political Element Design*

The integration of ideological and political elements should pay attention to the effective connection of content and knowledge points, and also pay attention to the way and method to avoid being too rigid and affecting the ideological and political effect. Therefore, it is necessary to select appropriate ideological and political content for connection according to the teaching knowledge points of the cold chain logistics courses. Take the "Cold Chain Logistics" as an example, the integration of ideological and political elements and the course knowledge points is shown in Table I [13].

TABLE I. INTEGRATION METHOD OF IDEOLOGICAL AND POLITICAL ELEMENTS IN CURRICULUM

Order number	Course knowledge points	Ideological and political elements	Ideological and political integration point
1	Basic concept and development trend of cold chain logistics	Self-confidence education of socialist system	Through the fact that China's cold chain logistics has been developing and improving, students can feel the superiority of concentrating on major events under the socialist system, and enhance the confidence of the socialist system and theory.
2	Refrigeration principle and method	Cultural self-confidence and national self-confidence education	Through the development and changes of ancient refrigeration appliances and modern refrigeration technology and methods in China, enhance students' cultural self-confidence and national pride.
3	Cold chain logistics center planning and cold storage Management	Team cooperation awareness education	Through team work and cooperation to design the planning scheme of cold chain logistics center, formulate cold storage management measures and processes, let students realize the importance of team cooperation in practice.
4	Cold chain transportation	Education of positive enterprising spirit	By comparing the situation of cold chain transportation in developed countries and domestic countries, the students are encouraged to face up to the gap, dare to take responsibility, work hard and forge ahead.
5	Cold chain commodity distribution management	Innovative spirit education	Discuss the new technology of intelligent cold chain under the epidemic situation, analyze how the new technology plays a role in cold chain logistics, and encourage students to attach importance to scientific and technological innovation.
6	Cold chain logistics safety and risk management	Safety and risk awareness education	In combination with the positive case of COVID-19 test of salmon cutting chopping board, guide students to think and discuss where the safety boundary of cold chain logistics is: what risks exist? How to ensure safety? Strengthen safety and risk awareness.
7	Standardization of cold chain logistics	Education of standard awareness	Through the analysis and discussion of the common "broken chain" problems in the domestic cold chain logistics process, the awareness of standards and norms will be strengthened.
8	Cold chain logistics informatization	Education on the spirit of overcoming difficulties	Carry out case study based on the current situation of cold chain logistics informatization construction in China, and guide students to understand the spirit of not afraid of difficulties and dare to overcome difficulties while recognizing difficulties and progress.

B. Implementation of the Blended Teaching Mode of Integrating Ideological and Political Courses

As shown in Fig. 2, before the class, the curriculum team formed by the school teachers and enterprise tutors jointly developed the design of the ideological and political elements of the curriculum, built the online curriculum resources and designed the task content and requirements of each teaching project, and the students independently studied the relevant teaching content according to the schedule, task requirements and learning rules; In the course, the teacher will carry out case teaching or the enterprise tutor will guide the off-campus practice, and organize the students to discuss the ideological and political issues and elements, and display and discuss the learning results of the professional theory and practical knowledge of the cold chain logistics courses, point out the shortcomings of online independent learning, put forward the direction of improvement, and reasonably arrange the homework after class. Teachers and enterprise supervisors will comprehensively evaluate students' learning achievements according to the completion of various tasks in the learning process and the actual performance in the practice process.

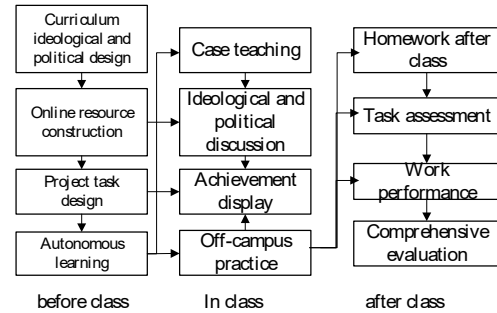


Fig. 2. Implementation of blend teaching mode with ideological and political elements.

C. Analysis of the Effect of Teaching Reform

After years of exploration and continuous improvement of the blend teaching mode integrating ideological and political elements, the teaching quality of cold-chain logistics courses has been gradually improved. As shown in Fig. 3, the number of graduates who participated in cold-chain logistics innovation classes in recent years and the proportion of those who eventually joined cold-chain logistics enterprises have changed very well to explain the effect of teaching reform.

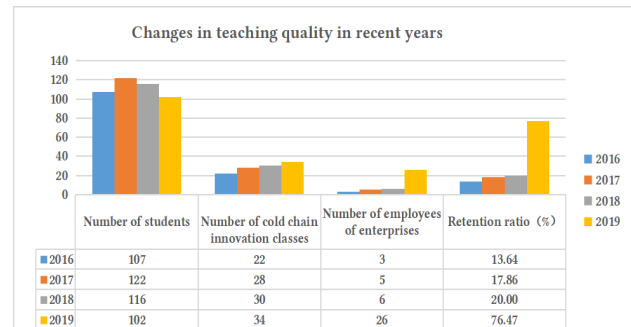


Fig. 3. Changes in teaching quality in recent years.

V. CONCLUSION

Cultivating high-quality application-oriented cold chain logistics talents is an urgent task at present. Traditional teaching methods have met the needs of reality. There is a relatively lack of appropriate teaching materials in the teaching of cold chain logistics courses; The teaching content emphasizes theory, but neglects practice; The teaching resources are relatively insufficient; Students' learning enthusiasm and initiative are not high. In view of these problems, combined with the practice of cold chain logistics teaching reform of logistics management specialty, a blend teaching mode integrating ideological and political elements is proposed, which emphasizes that in the teaching process, multiple co-construction of teaching resources, integration of ideological and political elements in the whole process, multiple co-construction of teaching content, multiple ways to carry out blend teaching, and reform of teaching assessment methods. This paper illustrates the way of integrating curriculum ideological and political education and the concrete measures of blend teaching with examples, analyzes the effect of teaching reform based on students' recognition of cold chain logistics and enterprises' recognition of students' quality, and illustrates the practical effect of the blend teaching mode of integrating curriculum ideological and political education. Of course, this model still has some shortcomings, such as the way and method of integrating the ideological and political elements of the curriculum need to be combined with the form that students are willing to accept, the specific process of blend teaching needs to be flexibly handled according to the actual situation of the curriculum teaching content and teaching objectives, and so on. It still needs continuous improvement and perfection.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Huichuan Dai and Huihua Shang conducted the research; Hui Ming analyzed the data; Huichuan Dai wrote the paper; all authors had approved the final version.

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REFERENCES

- [1] A. Adya, P. Bahl, J. Padhye, *et al.* (2004). A multi-radio unification protocol for IEEE 802.11 wireless network "Fourteenth Five-Year Plan" cold chain logistics development plan. [Online] Available: https://www.ndrc.gov.cn/fggz/fzzlgh/gjjzxgh/202203/t20220325_1320204.html
- [2] M. Zeng, Q. Cai, and L. Shuai, "Teaching reform on cold chain logistics under applied educational philosophy," *Logistics Engineering and Management*, vol. 37, no. 4, pp. 148–150, April 2015.
- [3] Z. Wang, J. Gan, H. Yang, *et al.*, "Exploration on teaching practice of first-class curriculum of cold chain logistics under two-wheel drive," *Logistics Engineering and Management*, vol. 44, no. 11, pp. 140–143, November 2022.
- [4] Chenjun, "Analysis of cold chain logistics talent training system," *Science and Technology Innovation Herald*, vol. 21, p. 3, July 2011.
- [5] H. Li and G. Feng, "Teaching reform research on cold chain logistics under applied educational philosophy of Hainan province," *Logistics Engineering and Management*, vol. 41, no. 1, pp. 145–147, January 2019.
- [6] J. Gan, Z. Wang, and J. Li, "Training path of application-oriented innovative cold chain logistics talents based on three integrations," *Logistics Technology*, vol. 41, no. 3, pp. 130–134, March 2022.
- [7] (2019). Xi Jinping presided over a symposium for teachers of ideological and political theory courses in schools. [Online] Available: http://www.gov.cn/xinwen/2019-03/18/content_5374831.htm
- [8] S. Jin, L. Wang, and M. Wan, "Reflection and strategy optimization of online and offline mixed teaching," *Chinese University Teaching*, no. 11, pp. 72–77, 2022.
- [9] C. Zhang, Y. Zhu, C. Wang, *et al.*, "Blended teaching based on multiple teaching and learning platforms: A case study of programming course," in *Proc. 2021 10th International Conference on Educational and Information Technology (ICEIT)*, 2021. Doi: 10.1109/ICEIT51700.2021.9375587
- [10] F. Kellilynn and P. Deidre, "An experiential approach to teaching mixed methods research," *Journal of Education for Business*, vol. 95, pp. 193–205, 2020.

- [11] H. Li and H. Wu, "Research on the evaluation system of mixed teaching quality based on the whole process -- Taking the national online and offline mixed first-class courses as an example," *Chinese University Teaching*, no. 5, pp. 65–71, 2021.
- [12] X. Wu, "Research on the reform of ideological and political teaching evaluation method of college English course based on "Online and Offline" teaching," *Journal of Higher Education Research*, vol. 3, no. 1, pp. 87–90, 2022.
- [13] H. Li, "Teaching reform and exploration of "Cold Chain Logistics Management" based on curriculum ideology and politics," *Logistics Technology*, vol. 44, no. 12, pp. 168–170, 2021.

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