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Research on Teaching Reform of "Digital Supply Chain Management" Based on the OBE Concept

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Abstract: In the digital era, the demand for supply chain management professionals has evolved, emphasizing the need for individuals adept in digital technologies and their practical applications. The course "Digital Supply Chain Management" aims to integrate digital technology with supply chain management principles. However, current teaching practices reveal several issues: weak alignment between course objectives and graduation requirements, monotonous teaching methods, and unscientific assessment practices. This paper explores teaching reform based on the OBE concept, focusing on refining course objectives, enhancing teaching content, diversifying teaching methods, and improving assessment approaches. The goal is to better align the course with the graduation requirements of supply chain management students and meet the evolving needs of enterprises for skilled professionals.

Keywords: OBE Concept; Digital Technology; Supply Chain Management; Course Objectives; Teaching Reform

1. Introduction

The plan for developing the digital economy over the next five years highlights the critical task of advancing industrial digital transformation. This shift has significantly altered the requirements for professionals in supply chain management. Enterprises now seek supply chain management talent proficient in digital technologies and their application, marking the entrance into a digital era for supply chain management needs[1].

The course "Digital Supply Chain Management" is characterized by its interdisciplinary integration, abstract and complex knowledge, and high practical requirements. During teaching, it has been observed that students struggle to grasp the application of digital technologies in supply chain management, resulting in suboptimal teaching quality. Therefore, it is necessary to reform the teaching methods of this course. The OBE (Outcome-Based Education) concept is an educational philosophy that focuses on student learning outcomes. It employs a reverse design approach to course construction, centering on the student and aiming for continuous improvement[2]. This "student-centered, outcome-oriented, and continuously improving" teaching philosophy can effectively enhance classroom teaching quality[3]. Thus, it is imperative to implement teaching reforms in the "Digital Supply Chain Management" course based on the OBE educational concept.

2. Characteristics of the Digital Supply Chain Management Course

2.1 Interdisciplinary Integration

The hallmark of the "Digital Supply Chain Management" course is its interdisciplinary integration, incorporating digital technologies such as big data, artificial intelligence, the Internet of Things, and blockchain into supply chain management. This fusion of digital technology with supply chain management theory creates a comprehensive course. The integration of digitalization with supply chain management synergizes digital technologies and management techniques, transforming isolated knowledge modules into a cohesive system. This highlights the interdisciplinary nature of the subject, fostering innovation in industry technology and models.

2.2 Combination of Theory and Practice

"Digital Supply Chain Management" emphasizes the combination of theory and practice. On the foundation of understanding supply chain management theories, it employs digital technologies and tools to analyze and resolve real-world problems encountered in

supply chain operations. This approach aims to cultivate applied, multi-skilled professionals suited to the needs of China's new technological revolution and industrial transformation[4].

2.3 Knowledge Iteration and Updating

With the advancement of China's digitalization process, digital technologies are continually evolving, enhancing the application of artificial intelligence, big data, and the Internet of Things in supply chain management[5]. Therefore, it is essential to continuously update the knowledge imparted in this course to ensure that the knowledge system remains aligned with the latest industry developments.

3. Issues in the Teaching of Digital Supply Chain Management

3.1 Weak Alignment Between Course Objectives and Graduation Requirements

To fully ensure and enhance the quality of talent cultivation, course objectives should align with graduation requirements[6]. However, the current course objectives are mostly formulated from the perspective of course teaching itself, without considering whether they match the graduation requirements. Thus, there is a weak connection between course objectives and graduation requirements.

3.2 Monotonous Classroom Teaching Mode

Despite the use of various multimedia aids in the current teaching process, these are often just a conversion of chalkboard writing into PPTs, with a primary focus on teacher-led lectures. The classroom teaching mode is monotonous, and students rarely engage actively in the teaching process. This single-mode teaching leads to difficulty for students in concentrating during class and applying what they have learned to practice, making it hard to meet the demands of modern enterprises for talent[7].

3.3 Unscientific Course Assessment Methods

At present, the course assessment method is evaluative, with regular performance accounting for 60% and the final exam for 40% of the total grade. Regular performance comprises attendance, classroom performance, and homework, with each constituting 30%, 40%, and 30% of the regular performance grade respectively. The high proportion of attendance and the vague standards for evaluating classroom performance make it difficult to measure whether the course objectives are being achieved[8].

4. Design of the Digital Supply Chain Management Course Based on OBE

4.1 Course Objectives

Table 1. Course Objectives of "Digital Supply Chain Management" Supporting Graduation Requirements

Graduation Requirements	Decomposed Indicators of Graduation Requirements	Course Objectives
Graduation Requirement 1: Possess solid foundational and professional knowledge, master essential research methods, and understand the latest trends and developments in this and related fields.	Focus on the latest research and practical results in the field of supply chain management, understand the development trends in digital supply chains, cross-border supply chains, intelligent supply chain management, green supply chain management, and global supply chain management. Additionally, have forward-thinking abilities to predict and respond to future trends and challenges in supply chain management.	Course Objective 1 - Explain the connotations and basic principles of digital supply chain management; analyze the current state of development in digital supply chain management, and illustrate the latest applications of digital technology in the supply chain field; study the development trends of digital supply chain management.
Graduation Requirement 2: Have the ability to apply information technology. Be able to appropriately use modern information	Be able to select and use appropriate technologies, resources, modern information technology tools, and professional software to design and simulate the practical application	Course Objective 2- Explain the basic principles of general technologies and software tools in digital supply chain management; flexibly use digital

technology tools and methods to solve practical problems.	problems of supply chain optimization design and collaborative operation management, addressing actual operational needs in the field of supply chain management, and understand their limitations.	technologies and tools to solve practical problems in procurement, production, sales, and logistics operation management processes of the supply chain.
Graduation Requirement 3: Possess good teamwork skills. Be able to get along harmoniously with team members, collaborate on work, and play an active role as a member or leader in team activities.	Play an individual role in a multidisciplinary team, effectively communicate and collaborate with team members and other discipline members, possess organizational coordination and teamwork skills, efficiently communicate with other team members, resolve conflicts, and collaborate on work.	Course Objective 3 - Possess good teamwork skills and play an active role as a member or leader in team activities.
Graduation Requirement 4: Lifelong learning (learning ability). Possess an awareness of lifelong learning and self-management, the ability for autonomous learning, and the capability to adapt to social and personal sustainable development through continuous learning.	Further understand the importance of autonomous learning, reinforce the awareness of autonomous learning, be able to use online learning and extracurricular resources to cultivate the habit of autonomous learning, understand the requirements of technical progress and diversity of technical environments on knowledge and ability, and recognize the necessity of continuous learning, having the awareness of autonomous learning and lifelong learning.	Course Objective 4 - Be able to use online learning and extracurricular resources to cultivate the habit of autonomous learning.

The objective of this course is for students to learn the fundamental theories, core technologies, and methodologies of digital supply chain management. Students should be able to utilize common digital supply chain management technologies and software tools to analyze and solve comprehensive enterprise supply chain operation and management issues in a digital context. Additionally, students are expected to develop strong team collaboration skills and the ability to engage in self-directed learning.

Based on the graduation requirements of the undergraduate program in supply chain management, the course objectives are further divided into the following four goals, as shown in Table 1.

4.2 Course Content and Schedule

The course content primarily encompasses the basic theories of digital supply chain management, the fundamental processes of digital supply chain supply management (SRM), production, marketing, and customer relationship management (CRM), as well as the main aspects of digital management. Emphasis is placed on explaining the basic theories of digital supply chain management, elucidating its fundamental principles, introducing its basic concepts and core technologies, and exploring industry applications derived from digital supply chains, such as financial management and smart logistics. Following the OBE philosophy, the teaching content is restructured and optimized to ensure that each part serves the achievement of the anticipated learning outcomes for students[9]. The specific course content and schedule are detailed in Table 2 below.

Table 2. Course Content and Schedule for "Digital Supply Chain Management" Based on OBE

No.	Course Content	Teaching Methods	Supporting Course Objectives	Class hours
1	Overview of Digital Supply Chain Management	Lecture Method, Task-Driven Method	Objective 1, Objective 4	4
2	SRM and Digital Supply Chain Management	Lecture Method, Case Study Method, Discussion Method	Objective 1, Objective 2, Objective3, Objective 4	4
3	Production Operation in	Lecture Method, Case Study Method,	Objective 1, Objective 2,	4

	Digital Supply Chain	Discussion Method	Objective 3, Objective 4	
4	Sales Digital Supply Chain Management	Lecture Method, Situational Teaching Method, Discussion Method	Objective 1, Objective 2, Objective 3, Objective 4	4
5	CRM and Digital Supply Chain Management	Lecture Method, Case Study Method, Discussion Method	Objective 1, Objective 2, Objective 3, Objective 4	4
6	Reverse Digital Supply Chain Management	Lecture Method, Case Study Method	Objective 1, Objective 2, Objective 4	2
7	Global Digital Supply Chain Management	Lecture Method, Case Study Method, Discussion Method	Objective 1, Objective 3, Objective 4	4
8	Virtual Supply Chain Management	Lecture Method, Case Study Method	Objective 2, Objective 3, Objective 4	2
9	Smart Supply Chain	Lecture Method, Case Study Method, Discussion Method	Objective 1, Objective 3, Objective 4	4

4.3 Course Assessment and Grading

The course assessment primarily includes formative assessment and a final exam. Formative assessment accounts for 60% and encompasses pre-class self-study, in-class discussions, group tasks, learning attitude, and homework. This diversified approach aims to cultivate students' self-learning habits, enhance their teamwork capabilities, and evaluate their understanding and application of basic digital supply chain management theories. The final exam accounts for 40% and includes essay questions and case analysis, focusing on assessing students' abilities to apply digital technologies and tools to solve practical issues in supply chain procurement, production, sales, and logistics operations.

Tables 3 and 4 present the course assessment methods and grading standards, as well as the evaluation methods aligned with course objectives and their corresponding grading proportions.

Table 3. Course Assessment Methods and Grading Standards

Assessment Method	Assessment Content	Grading Standard	Weight
Formative Assessment (60%)	Pre-class Self-Study	Students independently study documents, watch videos, and utilize other course resources on the Chaoxing App. Scores are based on the completion of chapter tests, with a total of 100 points.	5%
	In-class Discussions	Participation in class discussions via the Chaoxing App through methods such as quick responses, selection, and themed discussions. Scoring is based on participation and performance, with a total of 100 points.	20%
	Homework	Completion of assignments on the Chaoxing App. Scoring is based on the quality and completeness of the assignments, with a total of 100 points.	20%
	Group Tasks	Completion of group tasks on the Chaoxing App. Scoring is based on the presentation and quality of the group tasks, with a total of 100 points.	10%
	Learning Attitude	Scoring based on the number of online sign-ins by students, with a total of 100 points.	5%
Final Examination (40%)	Exam Syllabus	According to the standards set for final exam grading.	40%

Table 4. Assessment and Evaluation Methods Aligned with Course Objectives and Grading

Course Objective	Evaluation Method and Proportion (%)						Grade Proportion (%)
	Pre-class Self-Study	In-class Discussions	Homework	Group Tasks	Learning Attitude	Final Test	
Objective 1	0	15	15	0	0	25	55
Objective **2**	0	5	5	5	0	15	30
Objective 3	0	0	0	5	5	0	10
Objective 4	5	0	0	0	0	0	5
Total	5	20	20	10	5	40	100

5. Conclusions

This paper conducts a teaching reform study on the digital supply chain management course based on the OBE philosophy, focusing on three aspects: course objectives, teaching content, teaching methods, and course assessment. Through this teaching reform, course objectives are better aligned with graduation requirements, aiding students in learning according to these requirements. Teachers can enhance interaction with students by creating scenarios and introducing case studies, thereby increasing students' enthusiasm and ability to apply knowledge. Thus, it is evident that course reform based on the "student-centered, outcome-oriented, and continuous improvement philosophy" of OBE is beneficial and can enhance the effectiveness of classroom teaching.

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