Application of Complex Systems Learning Methods in Business and Management Education

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Abstract: This paper aims to explore the application value of complex systems learning methods in economic management education. Firstly, the basic ideas and theoretical support of this method, including system science, network science, information science, and other theories are introduced. Secondly, the practical implementation and evaluation of this method in economic management education are proposed. Finally, measures on promoting and better applying this method in economic management education are presented. The significance of this paper lies in providing new ideas for economic management education, serving as a reference for the research of complex systems learning methods, improving students' practical application ability, and promoting the quality and effectiveness of economic management education.

Keywords: Application of Complex Systems; Business and Management Education; Learning Methods in

1. Introduction

With the rapid development of economic globalization and information technology, business and management have become one of the most important disciplines in modern society. However, business and management education faces increasing challenges, as the complexity of this discipline demands a wide range of theoretical systems, practical experience, and adaptability to different environments, all of which require higher levels of practical knowledge application from students [1]. The complexity of the discipline means that students need to master various theories, skills, and methods to solve complex problems in practice [2].

2. Theoretical Support of Complex System Learning Methods Applied to Business and Management Education

Complex systems learning methods begin with a holistic and network perspective, constructing an integrated knowledge structure system and using concept models, simulation models, etc., to help students better understand the complexity of business and management, establish their own analytical frameworks and methodologies, and better apply what they have learned to practice. This method believes that the economic and management disciplines are complex systems composed of numerous interacting and influencing factors. Therefore, it is necessary to adopt a global thinking mode, grasp the whole problem, and master various different theories, skills, and methods to solve complex problems in practice.

2.1 Theoretical support from systems science

Systems science is one of the theoretical foundations of complex system learning methods. It is a comprehensive discipline that aims to study the holistic properties of things, as well as the interactions and influences among various factors within them. It

emphasizes the connections, correlations, and interactions between system elements. In the discipline of business and management, systems science can help students to deepen their understanding of the complexity of economic and management issues, grasp the interactions among various factors, form a global thinking mode, and establish a scientific decision-making framework. For example, systems thinking can help students understand the connections and interactions between various departments within an organization, thereby improving teamwork and management abilities[5].

2.2 Theoretical support from network science

Network science is another theoretical foundation of complex system learning methods. It studies various network structures and their dynamic changes, emphasizing the connections and interactions between network nodes. In the discipline of business and management, network science can help students understand the connections and interactions among various organizations and enterprises, form a global perspective, and deepen their understanding of complex phenomena in the field of economic and management. For example, students can analyze the relationships and influences among different nodes by studying knowledge points such as supply chain management networks, and design more effective supply chain management strategies.

3. Practice and Evaluation of Complex System Learning Method in Business and Management Education

After seeking theoretical support for the complex system learning method in business and management education, the next step is to discuss the implementation and evaluation process.

3.1 Practice of Complex System Learning Method in Business and Management Education

The application of the complex system learning method in business and management education requires exploration and practice. The following analysis and discussion approach the issue from the perspective of practical process.

3.1.1 Determine Learning Objectives

When determining learning objectives, it is essential to understand the core concepts and theoretical models of the discipline of business and management and identify the abilities and qualities that students need to develop. For example, analyzing typical cases in the field of business and management can help determine the knowledge points, skills, and abilities required for students to master. At the same time, it is necessary to combine the complex system learning method with the discipline of business and management and clarify the basic qualities that students need, such as global thinking, systemic thinking, information integration, and innovation ability.

3.1.2 Select Appropriate Teaching Models

The complex system learning method emphasizes diverse teaching models and forms. Therefore, when selecting teaching models, appropriate teaching methods and forms should be adopted according to different stages of teaching objectives and student characteristics. For example, for beginners, a combination of lectures and demonstrations can guide them to gradually understand the core concepts and theoretical models in the field of business and management. For advanced learners, case-based teaching, project-based teaching, and team collaboration teaching can be used to deepen their understanding of the core ideas and practical applications of the complex system learning method through practical operations and activities.

3.2 Evaluation of the Effectiveness of Complex System Learning Methods in Management Education

This study explores the effectiveness of complex system learning methods in management education, and evaluates their advantages and applications through data collection and analysis, analysis of influencing factors, and case studies.

3.2.1 Data Collection and Analysis

Both quantitative and qualitative research methods will be used to collect and analyze data from students participating in the teaching of complex system learning methods in the field of economics and management. This will provide a deep understanding of student comprehension of complex system learning methods, the cognitive effects of using this method for studying economics and management, and their academic performance. Specifically, the following measures will be used for data collection and analysis:

Anonymous survey design: We will design anonymous surveys covering various aspects, including students' understanding of complex system learning methods, their knowledge of the method's application and actual effects in economics and management education, and their satisfaction with the course content and teaching methods. These questions relate to multiple factors, such as student attitudes, learning outcomes, and teacher quality, which will help evaluate the application of complex system learning methods in economics and management education from a comprehensive perspective.

3.2.2 Analysis of Influencing Factors

Through data collection and analysis, we will further explore factors that affect students' acceptance of complex system learning methods, including student background characteristics, course content and teaching methods, and teacher teaching abilities.

Specifically, the following factors will be analyzed:

The impact of student background characteristics on learning outcomes: Based on factors such as gender, grade level, and major, we will explore how these factors affect student acceptance of complex system learning methods. For example, we will analyze whether there are significant differences in cognitive ability and learning attitudes between students of different grades, and how adaptable students from different majors are to this teaching method.

4. Measures for promoting the implementation of complex system learning methods

Based on the above analysis results, this study proposes suggestions on how to promote the implementation of complex system learning methods and better apply this method to economics and management education. Specifically, it is recommended to improve in the following areas:

4.1 Improving the teaching system and curriculum development

To better integrate knowledge with practice, we need to explore the knowledge system of economics and management disciplines and organically integrate complex system learning methods into economics and management courses to enhance students' understanding and recognition of complex systems. Complex system learning methods have high relevance to the course content, research methods, and application scenarios of economics and management disciplines. By sorting out and integrating relevant theories and practices within the discipline, they can be made more in line with students' needs and characteristics of complex system learning methods. At the same time, to improve the comprehensive quality of teachers, we also need to strengthen teacher team building, improve their ability in complex system learning method teaching, and provide better teaching resources for teachers, such as case analysis and laboratories, to better convey knowledge to students.

4.2 Actively promoting relevant teacher training and exchanges

In view of the characteristics of complex system learning methods, it is necessary to promote the training of teachers and improve the overall quality of the teacher team. Through teacher training and exchanges, the method can be continuously updated and optimized, thereby better serving economics and management education. In addition, teachers should be encouraged to participate in domestic and international academic conferences and seminars, engage in in-depth exchanges with peers, and understand the latest research progress and trends, making the teaching content more in line with student needs and front-line development trends.

5. Conclusion

Complex system learning methods have proven to be highly effective in the teaching of management education, helping students overcome problems such as limited knowledge, logical inconsistency, and a lack of theoretical support while improving their ability to apply practical knowledge and solve problems. Despite the significant effectiveness of complex system learning methods in management education, there are still limitations in their practical application. Future efforts should further refine the method by broadening the overall perspective of the discipline to encompass more fields, constructing a more complete knowledge framework, optimizing the design of practical background models to better align with practice and adapt to changing environments, and exploring and refining teaching strategies for complex system learning methods, such as designing innovative course curriculums, integrating case analyses, and project training to improve student learning outcomes. Based on these recommendations, promoting the application of complex system learning methods in management education can provide useful references and guidance for contemporary management education development.

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