

Integrating Industry Education in Modern Industrial Colleges

Tong Zhang*, Gemma M. Perey

College of Teacher Education, University of the Cordilleras, 2600

E-mail: 13176677898@163.com

Abstract. Since the new era, integrating industry education in modern industrial colleges has become an innovative exploration model for university education in China. This paper takes the construction of the modern industrial college of Shandong Sport University as the research object. It uses literature review and interview methods to conduct study for modern industrial colleges. There are challenges of incomplete policy system construction, weak resource integration, and limited participation of enterprises in industry education integration in the modern industrial college. Based on this, Shandong Sport University should optimize the policy environment, formulate or issue specialized guidance documents, build a resource-sharing platform, and build a joint communication mechanism between universities and enterprises to improve integrating industry education in modern industrial colleges.

Keywords: industry education integration, modern industrial college, construction path

Introduction

Industry education integration is a global trend. Klingstrom (1987) [1] pointed out that industry education integration was a new talent cultivation model that combined schools with social industry activities. Its characteristic was the two-way participation of schools and enterprises to serve society. Whittle (2012) [2] pointed out that the connotation of industry education integration can be understood from three levels: "macro meso micro," and its essence points out the three-layer relationship between educational development and social development.

The construction and development of industry education integration in China began after the Third Plenary Session of the 18th Central Committee. Qiu (2016) [3] pointed out that industry education integration involves multiple parties, including universities, enterprises, and the government. Its fundamental purpose is to meet society's demand for high-quality and versatile talents.

Industry education integration is based on cooperation between schools and enterprises, driven by win-win outcomes from multiple parties, and carried out through project cooperation. Through resource integration and sharing, it achieves multi-subject collaborative education. Wang (2019) [4] believed that in the process of promoting industry education integration, the connotation is constantly enriched, and it is a new model of knowledge innovation and technological innovation and a new ecology for the collaborative development of higher education industries^[4].

Based on the above discussion, this paper takes the construction of the Modern Industrial College of Shandong Sport University as a specific case, reshapes the path of modern industry construction, provides practical and relevant suggestions for the development plan of the Modern Industrial College of Shandong Sport University, constructs a planning and development model, and ultimately achieves the integration of theory and practice. It internalizes theory as the driving force for the development of the Modern Industry College and builds excellent case studies for the development of other similar industry colleges.

2. Definition of Core Concepts

1.1. Industry Education Integration

Industry Education Integration has both macro and micro implications. From a macro perspective, integrating industry and education constructs a new pattern of coordinated development between education and industry, corresponding to the scale and structure of education and industry

development. From a micro perspective, the integration of industry and education refers to the deep cooperation between enterprises and universities, strengthening the primary role of enterprises, jointly participating in talent cultivation activities, and constructing a market-oriented talent cultivation mechanism.

1.2. Modern Industrial College

Modern Industrial College is built in a university with distinct characteristics and a close connection with industry. It is a platform for industry education integration that is jointly created, managed, and shared with local governments, industry enterprises, and other multiple entities. It is an essential field for cultivating high-quality, composite, innovative, and professional talents in the new era. Therefore, universities must continuously deepen industry education integration, combine their development reality, actively create conditions, boldly innovate, and strive to build a university with its characteristics. The modern industrial college with local features strongly supports local economic development and integration of industry and education.

3. Research Process

1.3. Research Paradigm

The research paradigm consists of four parts: problem input, research process, output results, and expected results. The specific contents are described as follows.

Input: This paper addresses the construction path of modern industrial colleges in the context of industry education integration. It highlights three core issues and problem-solving.

Research process: Based on the needs of this paper, the method of teacher interviews is adopted to achieve the best practice of industry education integration with the construction of modern industrial colleges, as well as the challenges encountered in industry education integration to the construction of modern industrial colleges.

Output: This paper summarizes and analyzes the interview response information.

Expected results: Through data results, this paper will help Shandong Sport University Modern Industrial College build a practical and feasible path, find the optimal construction plan, and assist the long-term and sustainable development of the university.

1.4. Research Method

This paper mainly adopts the research method of interviews. The saturation method will select key information personnel from teachers and university and enterprise leaders with rich experience in constructing modern industrial college and university tasks, solid theoretical literacy, and rich practical experience. Their knowledge and professional knowledge will make significant contributions to the research objectives.

3.2.1 Interview Guide

The interview guide asks: What challenges are encountered in integrating industry education into modern industrial colleges?

3.2.2 Interview Implementation

Interview purpose: This interview mainly aimed to explore the path and possibility of the construction of the Modern Industry College of Shandong Sport University through answers from university leaders, university teachers, and enterprise leaders and find the best solution for the construction of the Modern Industrial College and provide excellent case references for the construction of modern industrial colleges in other universities.

Interview date: August 2, 2023

Interview method: Appointment interview.

3.2.3 Analysis of Interview Results

Table 1. Challenges of Industry Education Integration in Modern Industrial Colleges

Themes	Frequency	Sample Responses
1. Incomplete policy system construction	5	<p>“The legal system for industry education integration in the modern industrial college of our university has not yet been improved.” (University Leader 1)</p> <p>“The formulation of policies is one thing, the implementation of policies is another, and the implementation is not thorough enough.”(University Teacher 5)</p> <p>“The formulation and implementation of policies for industry education integration seem to be not very smooth in the connection between enterprises and universities.” (Enterprise Leader 3)</p>
2. Weak integration of resources	6	<p>“The integration between universities and industries is not enough, and there is a lack of a highly professional and high-quality teaching team.” (University Leadership 2)</p> <p>“There is less cooperation between universities and the government, and the funding guarantee is not yet in place.” (University Leadership 3)</p>
3. Limited participation of enterprises	6	<p>“Yes, to my knowledge, in the modern industrial construction of our school, the participation of enterprises is low, and the integration of industry and education is not thorough.” (University Teacher 4)</p>

As seen from Table 1, industry education integration in modern industrial colleges involves multiple subjects. The best practical approach still faces many practical challenges, which restrict the construction and development of modern industrial colleges. Among them, through in-depth interviews with university leaders, teachers, and enterprise leaders, it was found that there are challenges in the construction of modern industrial colleges, such as incomplete policy system construction, weak resource integration, and small participation of enterprises.

Incomplete policy system construction poses a significant challenge for industry education integration at the Modern Industrial College of Shandong Sport University. University leaders, teachers, and enterprise executives know this problem. As University Leader 1 put it, "The legal framework for industry education integration at our university's modern industrial college has yet to be improved." University Teacher 5 noted, "While policies are important, thorough implementation is equally crucial." Enterprise leader 3 added, "The communication mechanism between universities and enterprises is not well-established, and timely and accurate information sharing remains a challenge leading to problems in resource sharing." Therefore, the first step towards building a better modern industrial college is to improve the relevant legal and policy systems. Wang (2023) [5] pointed out that "policies are formal documents with certain mandatory and guaranteed powers, such as laws, regulations, and policies related to the integration of industry and education and the construction of modern industrial colleges." Wang (2022) [6] also identified four problems in China's industry education integration policy: the policy itself, the executing subject, the target group, and the executing environment. To overcome these challenges and build a better modern industrial college, Shandong Sport University must optimize its policy environment and formulate specialized guidance documents based on the actual needs of the construction. Liu et al. (2023) [7] suggested building a coordinated policy support system for the integration of industry and education at the macro, meso, and micro levels from prefecture-level administrative regions to establish a 'four in one' policy support system for vocational education integration of industry and education. These measures provide helpful ideas and references for building modern industrial colleges.

The Modern Industry College of Shandong Sport University faces weak resource integration as another challenge in its construction practice. According to Gao (2022) [8], there are many types of resources for integrating industry and education, such as society, schools, and enterprises. Therefore,

it is necessary to develop a resource-sharing platform, which is currently lacking in Shandong Sport University. University Leadership 2 believes that the integration between universities and industries is insufficient, and a highly professional and high-quality teaching team is lacking. Similarly, University Leadership 3 pointed out that there is less cooperation between universities and the government, and the funding guarantee is not yet in place. To promote high-quality integration of industry and education, Li et al. (2021)[9] suggested that a value-based approach is required, which involves seeking the 'four chain integration,' with the funding chain being a critical link. To achieve better resource integration and sharing, building a sound communication mechanism is necessary, connecting the government, universities, and society, strengthening trust, and achieving information sharing and exchange. All these factors are critical to the construction practice of the Modern Industrial College of Shandong Sport University.

A third challenge in the construction practice of Shandong Sport University's Modern Industrial College, as revealed in the interview, is enterprises' limited participation. Wu (2023) [10] pointed out that "enterprises are one of the main entities in the construction of modern industrial colleges and are also important partners of universities. They are indispensable factors in achieving industry and education integration." Zhao (2018) [11] pointed out that the construction of the Modern Industrial College of Industry Education Integration has the nature of a group, which is based on the organization of enterprise groups to build an open and shared platform with complementary advantages and win-win cooperation, fully leveraging the advantages of various entities, and promoting the integration of industry, academia, and research. According to the organization of interview information from interviewees, due to the lack of communication mechanisms and the influence of traditional concepts, the construction of the Modern Industrial College of Shandong Sport University neglects the dominant position of enterprises. University Teacher 4 said, "The participation of enterprises is low, and the integration of industry and education is not thorough." Xie (2023) [12] believed that the disconnect between the theory provided by universities and the practice of enterprise positions also affects the effectiveness of practice.

Therefore, to build a joint communication mechanism between universities and enterprises and improve the cooperation mechanism between universities and enterprises, in addition to improving the communication mechanism, strengthening enterprise trust, and enhancing enterprise participation, the curriculum of universities should consider the actual needs of enterprises, and through on-site research, develop a curriculum system that is suitable for enterprise positions, genuinely achieving the integration of students' theory and practice.

4. Conclusion

Through interviews, the construction practice of the Modern Industry College of Shandong Sport University has explored a suitable path to integrate internal and external educational resources with policy support, actively attract enterprises to settle in, and achieve joint education. However, many policies, resource integration, and enterprise participation challenges remain. Based on these challenges, Shandong Sport University needs to continuously improve the policy system, innovate resource integration models, create a better cooperative atmosphere and environment for enterprises, and provide excellent experience and case studies for constructing modern industry colleges in other universities.

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