

Research on the Innovation of Education Management Model in Higher Vocational Colleges in Western Provinces of China

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Abstract: Higher vocational education plays an important role in cultivating technical and applied talents and supporting regional economic development. In recent years, the scale of vocational education in Western Provinces of China has continued to expand. Based on publicly available statistical data from 2019 to 2025, this study analyzes the development trends of higher vocational colleges in the region, focusing on institutional scale, student enrollment, and teacher resources. The results show that both enrollment and teaching staff have increased steadily, indicating the growing importance of vocational education in the regional higher education system. However, challenges remain in terms of management efficiency, industry–education cooperation, and resource coordination. To address these issues, this study proposes an innovative education management framework emphasizing governance optimization, industry–education integration, and digital transformation. The findings provide empirical evidence and practical insights for improving the education management model of higher vocational colleges in Western Provinces of China and promoting the sustainable development of vocational education.

Keywords: Higher vocational education; Education management model; Western Provinces of China; Vocational education reform; Industry–education integration

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1. Introduction

Higher vocational education has become an essential component of modern higher education systems and plays a crucial role in cultivating applied technical talents. In many countries, vocational education is regarded as an important mechanism for improving workforce skills and promoting economic development. In China, the government has continuously strengthened support for vocational education through policies aimed at building a modern vocational education system and enhancing the supply of skilled labor.

Western Provinces of China, located in the western region of China, has experienced significant expansion in its higher education system in recent years. Vocational education institutions in the region play an important role in training technical professionals for key industries such as agriculture, manufacturing, transportation, and energy. According to publicly available statistical data, the number of higher education institutions and vocational colleges in Western Provinces of China has gradually increased during the period from 2019 to 2025. At the same time, student enrollment and teacher resources have shown steady growth, indicating the continuous development of vocational education capacity in the region.

Despite this progress, the rapid expansion of vocational education also brings new challenges to institutional management. Traditional education management models in some vocational colleges remain relatively rigid and may not fully adapt to the evolving needs of regional economic development and industrial transformation. Issues such as insufficient industry–education collaboration, uneven resource distribution, and limited digital management capacity still affect the effectiveness of institutional governance.

Against this background, exploring innovative education management models has become an important topic for vocational education reform. By analyzing publicly available statistical data from 2019 to 2025 and examining the current development of higher vocational colleges in Western Provinces of China, this study aims to identify key challenges in existing management practices and propose feasible strategies for improving education management models in the region.

2.Literature Review

Vocational education has long been regarded as an important component of national education systems and a key mechanism for cultivating technical and applied talents. Existing studies generally agree that vocational education development is closely related to economic transformation and labor market demand. In China, the rapid expansion of higher vocational education has been driven by national policies aimed at strengthening the supply of skilled labor and promoting regional economic development [1].

Many scholars emphasize the importance of governance reform and management innovation in vocational institutions. Research indicates that vocational education institutions operate within a dynamic relationship with local industries and society, which requires flexible management mechanisms and effective institutional governance structures [2]. In particular, the integration of industry and education has become a core strategy for improving talent cultivation quality and enhancing the practical relevance of vocational training [3].

Empirical studies also show that closer cooperation between vocational colleges and enterprises can significantly improve graduate employment outcomes and strengthen the alignment between professional programs and industrial demand [4]. Recent research further demonstrates that the level of industry–education integration has a measurable impact on employment quality and talent cultivation efficiency in higher vocational colleges [5].

In addition, scholars have explored evaluation models and policy mechanisms to improve vocational education management systems. Some studies propose multidimensional evaluation frameworks and policy coordination mechanisms to enhance institutional performance and governance effectiveness [6]. Others highlight the role of digital competence and teacher development in supporting the modernization of vocational education management [7].

Although these studies provide valuable insights into vocational education governance and industry–education integration, research focusing on management model innovation in higher vocational colleges in Western Provinces of China remains relatively limited. Therefore, further analysis of regional vocational education management practices is necessary to provide practical guidance for institutional reform and policy development [8].

3.Research Methodology

This study adopts a quantitative analytical approach based on publicly available statistical data. The primary data sources include the China Education Statistical Yearbook, the Western Provinces of China Statistical Yearbook, and official reports released by the Ministry of Education. Indicators such as the number of higher vocational institutions, student enrollment scale, and teacher resources are used to measure the development level of vocational education management in Western Provinces of China. To examine the relationship between management factors and institutional development outcomes, a multiple linear regression model is employed. The model is specified as follows:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i$$

Where Y_i represents the overall development level of higher vocational education institutions, X_1 denotes institutional scale (number of vocational colleges), X_2 represents student enrollment size, and X_3 indicates teacher resources. α is the intercept term, $\beta_1, \beta_2, \beta_3$ are regression coefficients reflecting the influence of each explanatory variable, and ε_i is the random error term. Through quantitative estimation and comparative analysis of these indicators, the study evaluates the structural characteristics of vocational education development in Western Provinces of China and provides an empirical basis for proposing innovations in education management models.

4. Analysis of the Current Situation of Vocational Colleges in Western Provinces of China

Table 1 .development Scale of Vocational Education in Western Provinces of China (2019–2025)

Year	Number of Higher Education Institutions	Higher Vocational Colleges	Students in Vocational Colleges	Full-time Teachers
2019	55	32	183,500	11,420
2020	56	33	192,436	11,980
2021	57	33	198,700	12,340
2022	58	34	205,600	12,780
2023	58	34	210,300	13,150
2024	59	34	214,800	13,420
2025	60	35	219,500	13,760

Table 1. presents the overall development scale of higher vocational education in Western Provinces of China from 2019 to 2025. The data show a gradual expansion in the number of higher education institutions and vocational colleges during this period. In particular, student enrollment in higher vocational colleges increased steadily from approximately 183,500 in 2019 to around 219,500 in 2025, reflecting the growing demand for technical and skilled talents in the regional labor market. At the same time, the number of full-time teachers also rose continuously, indicating that educational resources have gradually improved along with the expansion of institutional scale. These trends demonstrate that vocational education has become an increasingly important component of the higher education system in Western Provinces of China and plays a significant role in supporting regional economic development and workforce training.

Table 2. Comparison of Selected Vocational Colleges in Western Provinces of China

Institution	Year Established	Students	Teachers	Major Fields
Western Provinces of China Agricultural Vocational Technical University	1958	16,000	1,000	Agriculture, Engineering
Western Provinces of China Vocational University	1962	14,000	720	Engineering, Information Technology
Western Provinces of China Light Industry Technical College	2000	12,500	650	Manufacturing, Food Engineering
Western Provinces of China Transportation Vocational Technical College	1953	10,800	620	Transportation, Logistics
Western Provinces of China Energy Vocational Technical College	1956	9,500	540	Energy Engineering

Table 2. compares several representative higher vocational institutions in Western Provinces of China in terms of institutional background, student scale, teacher resources, and disciplinary focus. The selected institutions cover different professional fields such as agriculture, engineering, transportation, manufacturing, and energy, reflecting the diversified structure of vocational education in the region. The data indicate that major vocational colleges generally maintain student populations ranging from 9,000 to 16,000 and teaching staff of more than 500 members. These institutions play an important role in cultivating applied technical talents and supporting the development of key regional industries. However, differences in institutional scale and resource allocation also suggest that vocational education institutions in Western Provinces of China vary in their development capacity, highlighting the importance of optimizing education management mechanisms and improving resource coordination among institutions.

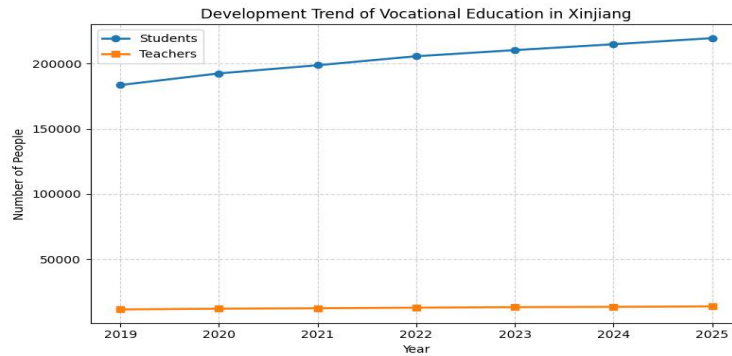


Figure 1 Development Trend of Vocational Education in Western Provinces of China

Figure 1. illustrates the development trend of vocational education in Western Provinces of China between 2019 and 2025. The figure shows a consistent upward trend in both student enrollment and the number of full-time teachers in higher vocational colleges. The increasing enrollment scale reflects the expanding role of vocational education in the regional higher education system and the growing demand for technical skills in local industries. Meanwhile, the gradual increase in teaching staff suggests that educational resources are being strengthened to support this expansion. Overall, the trend indicates that vocational education in Western Provinces of China has entered a stage of stable growth, although further improvements in education management models and institutional governance remain necessary to enhance the efficiency and quality of talent cultivation.

5. Innovation Path of Education Management Model in Western Provinces of China Higher Vocational Colleges

The innovation of the education management model in higher vocational colleges in Western Provinces of China should focus on three interconnected dimensions: governance optimization, industry–education integration, and digital transformation. First, colleges need to improve internal governance structures by clarifying management responsibilities and enhancing coordination among administrative, teaching, and service departments. Second, stronger cooperation with enterprises should be established to align program design, practical training, and talent cultivation with regional industrial needs. This can improve the relevance of vocational education and strengthen students’ employability. Third, digital governance should be promoted through the application of information platforms in teaching management, student services, and performance evaluation. The integration of these three dimensions can gradually build a more flexible, efficient, and practice-oriented management system. Such a model is better suited to the developmental needs of higher vocational education in Western Provinces of China and can provide stronger support for regional economic and social development.

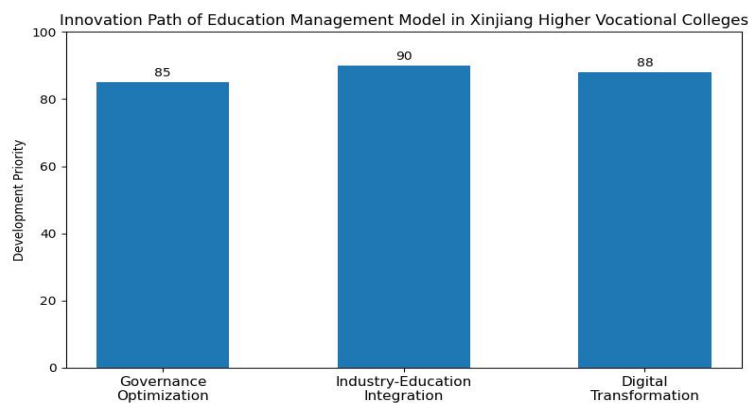


Figure 2. innovation Path of Education Management Model in Western Provinces of China

The figure 2. presents the three major dimensions of education management innovation in higher vocational colleges in Western Provinces of China. Among them, industry–education integration shows the highest priority,

followed by digital transformation and governance optimization. This structure indicates that management innovation should not rely on a single reform measure, but rather on coordinated improvement in institutional governance, external cooperation, and digital support systems.

6. Discussion

The analysis of vocational education development in Western Provinces of China reveals several important trends. First, the scale of higher vocational education has expanded steadily in recent years, as reflected in the increasing number of institutions, student enrollment, and teaching staff. This expansion indicates that vocational education has become an important channel for cultivating technical and skilled talents and supporting regional economic development. In particular, the continuous growth of student enrollment suggests a rising demand for applied talents in sectors such as manufacturing, transportation, agriculture, and modern services.

Second, although the institutional scale has expanded, challenges related to education management remain evident. Some vocational colleges still rely on traditional administrative management models, which may limit institutional flexibility and responsiveness to industry demands. In addition, the level of collaboration between vocational institutions and enterprises varies significantly across institutions, indicating that industry–education integration has not yet been fully realized.

Third, the analysis highlights the importance of digital governance and management innovation in vocational education. With the development of information technologies and digital learning platforms, vocational institutions have new opportunities to improve management efficiency and optimize educational resource allocation. The integration of digital tools into teaching management, student services, and institutional governance can contribute to more efficient and transparent management systems.

Overall, the findings suggest that while vocational education in Western Provinces of China has achieved notable progress in terms of scale and institutional development, further improvements in management models are necessary to enhance the quality and sustainability of vocational education development.

7. Conclusion

Higher vocational education plays a critical role in cultivating applied talents and supporting regional economic development. Based on publicly available statistical data and institutional information, this study examined the development status of higher vocational colleges in Western Provinces of China and analyzed key challenges in the existing education management system.

The results indicate that vocational education in Western Provinces of China has experienced stable growth in institutional scale, student enrollment, and teaching resources in recent years. However, the traditional education management model still faces limitations in terms of flexibility, industry cooperation, and resource coordination. In response to these challenges, this study proposes an innovative education management framework that emphasizes governance optimization, industry–education integration, and digital transformation.

The findings of this research contribute to understanding the development characteristics of vocational education in Western Provinces of China and provide practical insights for improving institutional governance and education management efficiency. Strengthening cooperation between vocational colleges and regional industries, promoting digital governance, and optimizing institutional management mechanisms will be essential for enhancing the effectiveness of vocational education in the future. These efforts can further support talent cultivation and sustainable economic development in Western Provinces of China.

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