

Changes in the Layout Structure of Higher Education Institutions in Guangdong-Hong Kong-Macao Greater Bay Area

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Abstract: The rapid development of Guangdong-Hong Kong-Macao Greater Bay Area has put forward new expectations and tests on the layout structure of higher vocational colleges. Based on this, this paper explored the changes experienced by the layout structure of higher vocational colleges and universities and the influencing factors behind them. Using multidisciplinary theories such as economics, management, and pedagogy, and combining various methods such as literature research, statistical analysis and field research, this paper analyzed in-depth the characteristics of the changes of higher vocational colleges in Guangdong-Hong Kong-Macao Greater Bay Area in terms of their regional structure, type of structure, professional structure, and the scale of schooling. It was found that factors such as policy, economy, population and location jointly play a role in the adjustment and optimization of the layout structure of higher vocational colleges. This paper aims to provide scientific basis and strategic suggestions for the future development of higher vocational colleges in Guangdong-Hong Kong-Macao Greater Bay Area, in order to meet the regional economic and social demand for high-quality technical and skilled talents, and to promote the in-depth integration and development of higher vocational education with the economy of the Bay Area.

Keywords: Guangdong-Hong Kong-Macao Greater Bay Area; Higher Vocational Colleges; Layout structure; Influencing factors

DOI: 10.62639/sspjiss12.20240103

Guangdong-Hong Kong-Macao Greater Bay Area(hereinafter referred to as the Greater Bay Area), as an economic circle jointly constructed by Hong Kong and Macao Special Administrative Regions and nine cities in Guangdong Province, namely, Guangzhou, Shenzhen, Zhuhai, Foshan, Zhongshan, Dongguan, Huizhou, Jiangmen and Zhaoqing, has gained prominence in the global economic map, and is the world's fourth largest Bay Area after New York Bay Area and San Francisco Bay Area of the United States and Tokyo Bay Area of Japan. With a land area of about 56,000 square kilometers, the region is currently one of the regions with the highest degree of openness and the strongest economic vitality in China, which demonstrates the high degree of openness and strong vitality of China's economy.

On February 18, 2019, the Communist Party of China (CPC) Central Committee and the State Council joined hands to promulgate the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area. The Outline comprehensively depicts the blueprint for the development of the Greater Bay Area from a multi-dimensional perspective, covering various aspects such as the background of the plan, general guiding principles, optimization of

(Manuscript NO.: JISS-24-3-1002)

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Funding

Guangdong Provincial Education Science: "13th Five-Year Plan" Research Project "Research on the Layout and Structure Adjustment of Higher Vocational Colleges in the Perspective of Guangdong-Hong Kong-Macao Greater Bay Area", moderated by Xiao Mengqi (Project No.: 2020GXJK122).

spatial layout, construction of science and technology innovation centers, infrastructure connectivity, construction of a modern industrial system, construction of an eco-civilization, creation of a high-quality living area, participation in the construction of the "The Belt and Road", and the construction of development of platforms for cooperation, as well as the implementation of the plan. development platform construction and planning implementation. The Outline emphasizes the need to deepen supply-side structural reform, promote the transformation of traditional industries into high-end and intelligent ones, enhance the core competitiveness of emerging industries and the manufacturing industry, accelerate the growth of the digital economy, and promote the rapid development of the financial and other modern service industries.

The implementation of this series of strategic plans will help the Greater Bay Area play a more important role in the global economic landscape and inject new vitality into the sustained and healthy development of China's economy. With the deepening of cooperation among cities within the region, the Greater Bay Area is expected to become an important hub for international scientific and technological innovation, leading the future development of China's economy.

1. Research Purpose and Significance

As an emerging growth pole of China's economy, the layout structure of higher vocational education in the Greater Bay Area not only reflects the trajectory of regional economic and social development, but also has a far-reaching impact on the construction of the theoretical system of higher vocational education as a whole. On the basis of the theories of economics, management, education and other disciplines, this project applies various research methods, such as literature research method, statistical analysis method and survey research method, to analyze the characteristics of the layout structure of higher vocational colleges in the Greater Bay Area, the market demand of the Greater Bay Area, and to explore the layout structure of higher vocational colleges with the characteristics of the Greater Bay Area, and to deepen the existing related research on the layout structure of higher vocational colleges in the Greater Bay Area.

2. Research on the Connotation and Adjustment of the Layout Structure of Higher Vocational Colleges from Domestic and Foreign Perspectives

Domestic researchers have explored the connotation of layout structure quite abundantly. Due to the different focuses of their respective studies, the understanding of layout structure also shows diversity. Among the many related studies, the layout structure of colleges or higher education has become a hotly debated topic. Some scholars referred to layout structure as regional structure, distribution structure or area structure. Prof. Xue Tianxiang (2001) suggested that the regional structure reflects the distribution of higher education institutions in various places, specifically the proportion of their numbers and types distributed in different regions, which can also be referred to as the regional structure^[1]. On the other hand, some researchers believed that layout structure contains two levels of meaning. For example, in the study of Hu et al. (2008), it is pointed out that the regional structure of higher education involves not only the way in which national higher education resources are distributed and combined in different regions, but also the structural situation of higher education within a certain region, which covers a variety of aspects such as the ratio of subjects and categories, the layout of specialties, the hierarchical structure, the formal structure, and the structure of schools^[2]. By synthesizing these perspectives, we can gain a more comprehensive understanding of the layout structure of higher education and provide guidance for future adjustment and optimization.

Foreign research on the restructuring of the layout of higher education institutions has been carried out for many years. At present, many developed countries have established a multi-level, multi-type and multi-specification

higher education layout structure through reorganization and new construction, and basically achieved national and regional equalization and integration in terms of spatial distribution of colleges and universities as well as the number of scales, for example, Korea's "Daejeon Science and Technology Industrial Park" has set up 38 consortiums including 21 universities, 13 research institutes and design bureaus, more than 80 production enterprises and more than 100 experimental and production workshops, as well as Sweden's "Engineering Exchange Center" and the UK's "Science Park", which embody the strategy of spatial distribution of colleges. At the same time, adjusting and optimizing the layout of vocational education is the way to go. In 2007, Germany issued the "Ten Strategies for the Modernization and Restructuring of Vocational Education - Opinions and Recommendations for Implementation"^[3], aiming to realize the articulation of vocational education and higher education through various transition methods, provide equal and equal-value educational opportunities for the articulation of vocational education and continuing vocational education, and strengthen the educational opportunities of all vocational education institutions, and so on.

3. The Theoretical Basis of the Layout Structure of Higher Vocational Colleges and Universities in the Greater Bay Area

The theoretical foundation of the layout structure of higher vocational colleges in the Greater Bay Area mainly originates from a number of disciplinary fields, the most central of which is the law of the relationship between education and society^[4]. As a subsystem of society, education must be compatible with social development, which is the core essence of the law of external relationship of education. In the context of the Greater Bay Area, the layout structure of higher vocational colleges should be more closely adapted to the industrial structure and development needs of the Greater Bay Area. This adaptability is not only reflected in the specialty setting and talent cultivation direction, but also includes the strategic planning of higher vocational institutions in terms of spatial layout and resource allocation.

Unbalanced development theory provides another perspective for the layout and structural adjustment of higher vocational colleges in the Greater Bay Area. The theory holds that in the process of regional development, unbalanced development is reasonable and even necessary. By prioritizing the development of a part of higher vocational colleges and universities, a demonstration effect can be formed to drive other higher vocational colleges in the region to gradually move towards common development^{[5][6]}. This strategy helps to concentrate limited resources and maximize benefits, and at the same time, it can also stimulate competition and cooperation among higher vocational colleges in the region, and promote the improvement of the overall quality of education.

Main functional area theory further emphasizes the close connection between the layout structure of higher vocational colleges and the characteristics of regional economic development. The theory holds that the layout and restructuring of higher vocational colleges should be based on the development characteristics and needs of the regional economy to ensure the coordinated development between education and the economy^{[7][8]}. In the Greater Bay Area, a region with highly developed economy and diversified industries, the layout and structure of higher vocational colleges should be more closely centered on the development direction of the regional economy, so as to provide strong talent support and intellectual guarantee for the sustained and healthy development of the Greater Bay Area economy.

The theoretical basis of the layout structure of higher vocational colleges in the Greater Bay Area covers the law of the relationship between education and society, unbalanced development theory, and the theory of the main functional area, etc. These theories provide the necessary guidance and support for the adjustment of the layout structure of higher vocational colleges, which helps to promote the in-depth integration and common development of higher vocational colleges in the Greater Bay Area and the regional economy.

4. Characteristics of the Layout Structure of Higher Vocational Colleges in the Greater Bay Area

The research on the characteristics of the layout structure of higher vocational colleges in the Greater Bay Area is still in the initial stage. Although there is a certain research foundation for the layout structure of higher vocational colleges both at home and abroad, the in-depth exploration of the layout structure of higher vocational colleges in the Greater Bay Area is still relatively insufficient in the special background of the region. As a new growth pole of China's economy and an important region for the reform and development of higher education, the layout structure of its higher vocational colleges has distinctive contemporary characteristics and regional features^[9].

From the existing information, the characteristics of the layout structure of higher vocational colleges in the Greater Bay Area are mainly reflected in the following aspects: firstly, the characteristics of diversified development are obvious, and higher vocational colleges are showing a diversified trend in terms of type, level, and specialty setting to meet the diversified needs of the industrial structure of the Greater Bay Area. Secondly, the spatial layout is becoming more and more reasonable, and the distribution of higher vocational colleges in geographic space is gradually adapted to the demand for optimizing regional economic development, forming a certain agglomeration effect and radiation effect. Again, the trend of integration between industry and education is remarkable, and the cooperation between higher vocational colleges and enterprises in the Greater Bay Area has become increasingly close to jointly promote talent training and scientific and technological innovation^[10].

Although the development plan about the Greater Bay Area has been issued, the development of the Greater Bay Area is still in the preliminary exploration stage, and the essential and evolutionary characteristics of the layout structure of higher vocational colleges in the Greater Bay Area have yet to be explored. This study theoretically analyzes the characteristics of the layout structure of higher vocational colleges in the Greater Bay Area, which helps to deepen the understanding of the layout structure of higher vocational colleges in the Greater Bay Area.

5. Analyzing Dimensions of the Layout Structure of Higher Vocational Colleges in the Greater Bay Area

In order to deeply explore the characteristics and patterns of the layout structure of higher vocational colleges in the Greater Bay Area, this study will carry out a comprehensive analysis from multiple dimensions. First, from the perspective of regional structure, we will examine the distribution of higher vocational colleges among different cities in the Greater Bay Area, including the distribution of the number and the distribution of the number of enrolled students, in order to reveal the relationship between the layout of higher vocational colleges and the regional economy, the distribution of population and other factors. Second, from the perspective of type structure, we will analyze the proportion and distribution of different types of higher vocational colleges in the Greater Bay Area, such as public versus private, vocational and technical colleges versus technical colleges, etc., in order to understand the positioning and roles of different types of higher vocational colleges in the regional education system. Again, from the perspective of professional structure, we will study the degree of matching between the professional settings of higher vocational colleges and the demands of industrial development in the Greater Bay Area, as well as the degree of diversity and specialization of professional settings, so as to assess the ability of higher vocational colleges to support the economic development of the Bay Area in terms of their professional layouts. In addition, the scale of operation is also one of the important dimensions in analyzing the layout structure of higher vocational institutions. We will assess the strength and influence of the operation of higher vocational institutions and their contribution to talent cultivation in the Greater Bay Area by examining the data on the enrollment scale, faculty strength and educational resources of each higher vocational institution^[11].

In order to more specifically analyze the changes in the layout structure of higher vocational institutions in the Greater Bay Area, we will also introduce two quantitative indicators, namely, regional distribution concentration

index and spatial autocorrelation. The regional distribution concentration index will be used to measure the proportion of the number of higher vocational colleges and the number of enrolled students among different cities to the total number of colleges in the Bay Area, in order to reveal the trends and patterns of changes in the layout of higher vocational colleges over time. The spatial autocorrelation analysis, on the other hand, will be used to calculate the correlation coefficients of higher vocational colleges among different cities to explore the correlation and degree of agglomeration of higher vocational colleges in their spatial distribution, so as to reveal the spatial characteristics of the layout of higher vocational colleges.

This study will conduct a comprehensive and in-depth analysis of the layout structure of higher vocational colleges in the Greater Bay Area from various dimensions, such as regional structure, type structure, professional structure and scale of operation, and will combine quantitative indexes to reveal their changes, with a view to providing powerful support for optimizing the layout of higher vocational colleges in the Greater Bay Area and improving the quality of higher vocational education.

6. Influential Factors on the Layout and Structural Adjustment of Higher Vocational Colleges in the Greater Bay Area

The development of higher vocational education is a complex process, especially education as a subsystem of society, which is influenced and constrained by various factors, mainly including the influence of the policy level, the influence of the economic level, the influence of the population level, and the influence of the location level. First of all, the influence at the policy level means that the state or government will influence the development of higher vocational colleges through laws and regulations and other forms, thus affecting the presentation form of the layout structure of higher vocational colleges. For example, the proposal of Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area points out the direction for the development of higher vocational colleges in the Greater Bay Area, so that the layout structure of higher vocational colleges in the Greater Bay Area develops in the direction of integration. Secondly, the impact of the economic level mainly refers to the industrial structure of the Bay Area will directly affect the professional layout structure of higher vocational colleges, and the economy is a decisive factor affecting the layout structure of higher vocational colleges. Again, the impact of the population level refers to the population status in the Bay Area will affect the number of local higher vocational colleges, the scale of schooling and so on. And at present, higher vocational education has entered the stage of connotative development, and the local people's demand for higher vocational education has gradually become the main driving force for the development of higher vocational colleges. Finally, the impact of location level means that the geographic location of higher vocational colleges will also have a certain impact on the type structure of higher vocational colleges^[13].

References

- [1] Xue, Tianxiang. (2001). Promoting the reform and development of China's higher education according to the idea of "Three Represents". *Journal of Qingdao University of Science and Technology (Natural Science Edition)*, 022(004), 1-2.
- [2] Hu Jianhua, Chen Yuxiang, Shao Bo, Li Li, Li Xin, Yang Qiguang. (2008). Thirty years of teaching reform in China's higher education institutions. *Educational Research* (10), 11-20.
- [3] Jiang, Dayuan. (2010). The strategic decision of reform and innovation of German vocational education system and mechanism--Interpretation of ten major strategies for modernization and structural adjustment of German vocational education. *Chinese Vocational and Technical Education* (30), 11.
- [4] Ma Fengqi. (2017). The "law" of the relationship between higher education and society: adaptation and game. *Journal of Higher Education*.
- [5] Ruan Qian. (2022). Uneven development: A perspective for understanding the construction of "double first-class" higher education in China. *Administrative Reform* (10), 49-58.

- [6] Zhou, Shangyi, Gong, Lijuan. (2000). An analysis of the effects of disequilibrium theory in the practice of the Yangtze River Delta. *Economic Geography*, 4, 1-5.
- [7] Li, Zhaohui. (2019). Research on the optimization of higher education layout structure based on the theory of main function area. *Journal of Jiamusi Education Institute* (10), 109-110.
- [8] Guo Ying. (2018). Structural adjustment of higher education layout based on the theory of main function area. *China Adult Education*.
- [9] Changqing Xu, Xiaozhong Lu. (2019). Integration and development of higher education in Guangdong, Hong Kong and Macao Greater Bay Area: Concept, reality and institutional isomorphism. *Research on Higher Education* (01), 28-36.
- [10] State Council. National vocational education reform implementation program [R]. http://www.gov.cn/zhengce/content/2019-02/13/content_5365341.htm.
- [11] Lu Xiaozhong, Qin Qin. (2021). Research on the autonomy of universities in Guangdong, Hong Kong and Macao Greater Bay Area under the perspective of higher education cluster development. *China Higher Education Research* (04), 55-63.
- [12] Li Penghu. (2022). Integration of higher education in Guangdong, Hong Kong and Macao Bay Area: Foundations, difficulties and breakthroughs. *World Education Information*, 35(09):7-13.
- [13] Xiang, Xinghua, Wu, Xiaona, & Sun, Lixin. (2022). Spatial effects of higher education agglomeration on science and technology innovation in Guangdong, Hong Kong and Macao Greater Bay Area. *Higher Education Exploration*. (02):73-81.