Construction of Modern Vocational Education System in Anhui Province: A Reflective Study in the Context of Yangtze River Delta Integration

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Abstract: As a crucial component of the Yangtze River Delta regional integration, vocational education plays a pivotal role in promoting high-quality economic development and optimizing the education system. However, the vocational education system in Anhui Province faces challenges due to its relative weakness, such as inadequate adaptability, low-level school management, and passive development. To address the need for high-quality development and talent cultivation in vocational education in Anhui Province, this study proposes stimulating internal sustainability within vocational education and enhancing its adaptability to regional development strategies from external perspectives. This will facilitate the more profound and efficient construction of a modern vocational education system that serves high-quality economic development and regional educational integration processes.

1. Introduction

Anhui Province, as a significant participant in the integrated development of the Yangtze River Delta region, is presented with new opportunities for the modernization of vocational education in the new era. The construction of a modern vocational education system in Anhui should align with the strategic development plan of the province and be closely centred around the mission of educational integration in the Yangtze River Delta. Vocational education plays a crucial role in promoting high-quality economic development and optimizing the education system in the region.

However, the existing vocational education system in Anhui Province faces several challenges, including limited adaptability, low standards of school management, and a relatively passive approach to development. To address these challenges and meet the needs of high-quality development and talent cultivation in vocational education, it is necessary to take proactive measures.

This paper proposes a comprehensive approach to the construction of a modern vocational education system in Anhui Province. Internally, efforts should be made to enhance the sustainability of vocational education by continuously learning from advanced experiences and benchmarking against successful models. This will contribute to the development of a dynamic vocational education system that can effectively meet the evolving demands of the labour market. Externally, the
construction of the modern vocational education system should be closely aligned with the regional
development strategies of the Yangtze River Delta. Long-term cross-regional education collaborative
mechanisms should be established to facilitate cooperation and knowledge exchange among
educational institutions, industry stakeholders, and government entities. By leveraging external
resources and expertise, Anhui Province can inject sustainable talent dividends into regional
development, thus contributing to the overall growth and prosperity of the Yangtze River Delta region.

Furthermore, the current context of regional economic restructuring and industrial transformation
poses additional challenges to the alignment between the modern vocational education system and
regional economic development. Factors such as the rapid advancement of technology, changing
industry landscapes, and evolving workforce demands require a flexible and adaptive vocational
education system.

In conclusion, the construction of a modern vocational education system in Anhui Province within
the context of educational integration in the Yangtze River Delta is a critical task for promoting high-
quality economic development and regional educational optimization. By addressing the challenges
and leveraging the opportunities presented by the Yangtze River Delta integration, Anhui Province
can foster the deepening and efficiency of its vocational education system, ultimately contributing to
the sustainable development of the region.

2. The Practical Significance of Building a Modern Vocational Education System in the Context
   of Educational Integration in the Yangtze River Delta

The Yangtze River Delta region is one of the most developed economic areas in China. In recent
years, with the introduction of the national "Belt and Road" strategy and the deepening of the
integration in the Yangtze River Delta, educational integration in the region has become a crucial
direction for educational reform. Through educational integration, resources can be integrated and
developed in a coordinated manner, thereby enhancing the overall educational level within the region.
In this context, the importance of promoting the in-depth development of vocational education
becomes particularly evident.

2.1 Background of Educational Integration in the Yangtze River Delta

In December 2019, the Central Committee of the Communist Party of China and the State Council
elevated the integrated development of the Yangtze River Delta to a national strategy and released
the "Outline of the Development Plan for the Yangtze River Delta Region." Subsequently, in June
2021, the Leading Group Office for Promoting the Integrated Development of the Yangtze River
Delta issued the "Implementation Plan for the 14th Five-Year Plan of Integrated Development in the
Yangtze River Delta." Additionally, various provincial and municipal departments in the Yangtze
River Delta region have introduced relevant policies, including Shanghai's "Implementation Opinions
on Promoting the Integrated Development of Education in the Yangtze River Delta Region," Jiangsu
Province's "Opinions on Promoting the Integrated Development of Education in the Yangtze River
Delta Region," Zhejiang Province's "Development Plan for the Integrated Education of the Yangtze
River Delta Region (2016-2020)," and Anhui Province's "Action Plan for Implementing the 14th
Five-Year Plan of Integrated Development in Anhui Province." These policies aim to enhance the
sharing of educational resources, improve education and teaching quality, and facilitate mutual
recognition of qualifications within the Yangtze River Delta region. Compared to other regions, the
Yangtze River Delta region possesses several advantages in educational development:
2.1.1. Abundant Educational Resources

It boasts abundant educational resources, including numerous higher education institutions, vocational education institutions, and research organizations. Represented by institutions like Shanghai Vocational College of Technology and Business, Zhejiang Gongshang University, and Suzhou Vocational University, the vocational education sector has cultivated a significant number of skilled professionals, contributing to the region's rapid economic growth. Research institutions such as the Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, and Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, exert substantial influence in scientific research and technological innovation, making notable contributions to local and national scientific advancements. The abundance and scale of these institutions give the Yangtze River Delta region tremendous potential for the development of vocational education integration.

2.1.2. Comprehensive Professional Programs

The region offers a comprehensive range of professional programs that cover both traditional fields such as manufacturing, e-commerce, and logistics management, and emerging industries like the Internet and artificial intelligence. This diverse array of vocational education programs provides students with a wider range of choices and better caters to the diverse talent demands of various professions.

2.1.3. High Education Standards

The Yangtze River Delta region enjoys a high level of education, which is the result of concerted efforts by governments and education departments at all levels. The region has advantages in terms of educational resource investment, education system reform, and education quality assessment. It boasts a strong faculty, advanced teaching equipment, close collaboration between educational institutions and enterprises, substantial government investments, and the establishment of numerous educational facilities and teaching resources, including high-quality schools and prestigious universities. The region actively promotes education system reforms, including vocational education reform, primary and secondary education reform, and places great emphasis on education quality assessment. Each province has implemented corresponding evaluation mechanisms to ensure a steady improvement in the overall quality of education.

2.1.4. Favorable Employment Prospects for Graduates

The region presents favourable employment prospects for vocational education graduates. The Yangtze River Delta region generally exhibits a high employment rate, attributed to factors such as stable economic development, a well-developed industrial structure, a large number of enterprises, and strong innovation capabilities. The region's vibrant economy attracts numerous companies and investments, creating abundant employment opportunities for graduates. Cities like Hangzhou, Shanghai, and Suzhou are particularly known for their thriving high-tech industries and financial services, which serve as popular employment sectors. Furthermore, the region's well-rounded industrial structure encompasses various sectors, providing graduates with diverse employment options. For instance, Nanjing serves as a national base for the robotics industry and an automotive manufacturing center, while Wuxi is a national base for light industries and a textile industry hub. Additionally, the Yangtze River Delta region hosts numerous enterprises and offers a favourable environment for entrepreneurship and innovation, providing graduates with broad prospects for development. For example, the Suzhou Industrial Park, as China's earliest comprehensive national-level development zone, has attracted a multitude of innovative companies and research institutions,
offering graduates excellent platforms for entrepreneurship and abundant employment opportunities.

2.2 The Practical Significance of Building a Modern Vocational Education System

Defining the practical significance of building a modern vocational education system in the region is essential for overcoming challenges and exploring the development of vocational education. China has entered a new era, characterized by high-quality economic development. To effectively integrate vocational education in the Yangtze River Delta region into this development process, it is crucial to determine the practical significance of building a modern vocational education system for the high-quality development of vocational education in the region. From a practical perspective, the practical significance includes the following three aspects.

2.2.1. Promoting industrial upgrading and economic transformation

In recent years, vocational education has actively adapted to economic structural adjustments and industrial transformations by offering a large number of specialized programs that align with the needs of the economy. It has provided a significant supply of highly skilled professionals for industrial upgrading and economic transformation, becoming an important component of high-quality economic development. For example, vocational colleges have collaborated with companies such as Huawei and Tencent to train a large number of digital technology professionals. The frontline workers in modern manufacturing, emerging industries, and the service sector often come from vocational colleges. Integrated vocational education facilitates the cultivation of high-quality professionals that meet market demands, promoting industrial upgrading and economic transformation.

2.2.2. Innovating talent development methods and establishing regional integrated talent mobility mechanisms

One of the practical significances of building a modern vocational education system is to innovate talent development methods and establish regional integrated talent mobility mechanisms. With the globalization of the economy and industrial structural adjustments, economic interconnections and talent mobility between different regions have become increasingly frequent. In this context, the importance of establishing regional integrated talent mobility mechanisms and innovating talent development methods continues to grow.

On one hand, the construction of a modern vocational education system requires innovative talent development methods to adapt to the needs of social and economic development. For example, the manufacturing and information technology industries in the Yangtze River Delta region have continuously changing demands, requiring professionals with adaptability and innovation capabilities. Through innovative teaching methods, curriculum design, and practical components, vocational education can better cultivate professionals who can meet the evolving needs of different industries.

On the other hand, establishing regional integrated talent mobility mechanisms can facilitate the sharing and optimized allocation of talent resources, promoting collaborative development among different regions. For example, by establishing mechanisms for collaborative talent development in the Yangtze River Delta region, vocational education institutions can cooperate with each other. Through the sharing of educational resources and teaching experiences, the quality and level of talent development can be improved. Moreover, talent mobility can also facilitate technology innovation and knowledge transfer, further driving the development of regional industries.

2.2.3. Serving the high-quality development of vocational education

Building a high-quality education system is an inevitable requirement for educational
modernization, and vocational education has become an important component of constructing such a
system. Therefore, enhancing the quality of vocational education occupies a prominent position in
achieving high-quality development. With rapid economic and social development, vocational
education has become an important pathway for cultivating various types of talents. To improve the
quality of vocational education, it is necessary to establish a modern vocational education system,
enhance teaching quality and standards, and meet market demands and talent development
requirements. In recent years, the Yangtze River Delta region has implemented various measures to
enhance the quality of vocational education. For example, Zhejiang Gongshang University has
established industry-education integration alliances in collaboration with local companies, providing
students with practical industry experience and enhancing their employability. Shanghai Business
School emphasizes practical teaching, focusing on developing students' practical abilities and offering
innovative and highly practical courses to enhance students' vocational skills and competitiveness.
Wuhu Vocational and Technical College emphasizes innovative teaching models and has introduced
online teaching platforms, implementing "Internet + education" to improve students' information
literacy and comprehensive abilities.

Therefore, building a modern vocational education system is of significant importance in serving
the high-quality development of vocational education. Through the establishment of a modern
vocational education system, more diversified, personalized, and comprehensive educational services
can be provided for talent development. It promotes deep integration between vocational education
and industries and markets, enhancing the quality, adaptability, and attractiveness of vocational
education.

3. Development of Modern Vocational Education System Construction in Anhui Province from
the Perspective of Integrated Education in the Yangtze River Delta

The development of the modern vocational education system in Anhui Province, viewed from the
perspective of integrated education in the Yangtze River Delta, has made certain advancements.
These include ongoing improvements in teaching facilities, enhancements in the faculty team, and an
increasing level of market orientation in vocational education. However, in comparison to the
provinces of Jiangsu, Zhejiang, and Shanghai, there are still areas that require further attention and
improvement.

3.1 Inadequate Adaptability of Vocational Education and Low Quality of Talent Cultivation

Firstly, the emergence of new industries, technologies, and positions, coupled with the absence of
effective regional talent development planning by various levels of government, has resulted in a
failure to timely, regularly, and effectively release information on the skills and talents required by
industries and enterprises. Many vocational colleges have been unable to adapt to changes in
industries and markets in a timely manner, and there is a significant homogenization phenomenon in
the specialization of most vocational colleges. As a result, there exists an information gap between
talent cultivation and market demand.

Secondly, the mechanism of school-enterprise cooperation is not sound, and enterprises have
insufficient motivation to participate in the development of vocational education. Most school-
enterprise cooperation is merely one of the channels for enterprises to select talents, with low attention
to the process of talent cultivation. Talent cultivation has not been fully integrated into the value chain
of enterprises, which means that the development of social abilities in talent cultivation has not been
deeply connected with corporate culture.
3.2 Low Level of Vocational Education Management

Firstly, vocational education as a whole has a weak overall strength. There are a total of 56 schools in the national "Double High Plan" high-level construction schools, including 7 in Jiangsu (2 in Class A, 3 in Class B, 2 in Class C), 6 in Zhejiang (2 in Class A, 3 in Class B, 1 in Class C), and only 1 in Anhui, which belongs to Class C.

Secondly, vocational education lacks hierarchical levels. As of the end of 2022, Anhui Province has 249 secondary vocational schools (excluding technical schools) and 75 higher vocational colleges. Compared with Jiangsu, Zhejiang, and Shanghai, Anhui Province has no undergraduate-level vocational colleges yet and vocational education is still in the process of transformation from a specialized level to undergraduate institutions. The articulation system between secondary vocational education and higher vocational education is not sound, and the vertical connection between different levels of vocational education has not been fully established. [1]

Thirdly, there is a gap in the student-to-teacher ratio. According to statistics [2], the student-to-teacher ratio in secondary vocational education in 2020, 2021, and 2022 was 27.4:1, 24.1:1, and 17.52:1, respectively, which shows a certain gap compared to the national requirement of 20:1 for the student-to-teacher ratio in secondary vocational education. The national requirement for the student-to-teacher ratio in higher vocational education is 18:1, which is basically met in Jiangsu, Zhejiang, and Shanghai, while Anhui Province has been around 22:1, indicating a certain gap as well. Therefore, both the quality of education and the ratio of teachers to students are clearly insufficient.

3.3 Relatively Passive Development of Vocational Education

From the perspectives of geographical location and economic development level, Anhui Province lags behind in the Yangtze River Delta, which also leads to the lag in the development of vocational education. On the one hand, Anhui Province actively integrates into the integrated education in the Yangtze River Delta, benchmarking and learning advanced education reform measures in Jiangsu, Zhejiang, and Shanghai, and improving its own educational level through the investment of educational resources such as funds and talents. On the other hand, the imbalance in educational development results in disparities in educational concepts, internal governance, and regional cooperation between Anhui Province and Jiangsu, Zhejiang, and Shanghai. As a result, the initiative and discourse power of vocational education in Anhui Province are insufficient, and it is in a relatively passive stage of development, becoming an "experimental field" for vocational education concepts and even high-quality skilled talents in the developed areas of the Yangtze River Delta [3].

3.4 Serious Talent Drain

Research on the pattern of mobile population in Anhui Province shows that the main destinations for out-of-province migration from Anhui Province are Jiangsu, Zhejiang, and Shanghai, accounting for a high proportion of the total mobile population at 84.5% [4]. This indicates that the strong economy and abundant educational resources in Jiangsu, Zhejiang, and Shanghai have a significant "siphoning effect" on Anhui Province, which has relatively lagged economic and educational development. The outflow of applied undergraduate talents, high-level talents, and highly skilled talents trained by Anhui Province's education system has led to a serious talent drain in vocational education, exacerbating the issue of quality in vocational education.
4. Promoting the Advancement Path of Modern Vocational Education System in Anhui Province from the Perspective of Integrated Education in the Yangtze River Delta

The development of modern vocational education in Anhui Province has gone through a process from pilot projects to rapid growth, gradually forming a well-established vocational education system. However, how to promote the high-quality development of vocational education and steer it towards deeper progress has become a new proposition for the advancement of the modern vocational education system in Anhui Province.

4.1 Igniting Intrinsic Motivation - Sustaining Innovative High-Quality Development of Vocational Education

Intrinsic motivation refers to the developmental force driven by internal motives, including individuals' pursuit of personal values, desire for knowledge, self-fulfillment, and life ideals. Igniting intrinsic motivation is a necessary condition for the high-quality development of vocational education and a fundamental requirement for maintaining its sustainability and self-motivation.

4.1.1. Innovative Development Models

To seize the opportunity period for high-quality development, vocational education in Anhui Province should effectively implement the "Implementation Plan for Vocational Education Reform in Anhui Province" and the "Implementation Measures for the Vocational Education Law of the People's Republic of China in Anhui Province." It should continuously innovate development models and stimulate the inherent mission and objectives of educational institutions. On the one hand, in terms of the vocational education system, efforts should be made to actively establish undergraduate and higher-level vocational education, coordinate vocational education resources, streamline and promote the construction of a vocational education system encompassing secondary vocational education, specialized education, undergraduate and higher-level vocational education. On the other hand, promote the establishment of the vocational education entrance examination system. Advancing the vocational education entrance examination system is beneficial for expanding the choices for secondary vocational students, improving the source of vocational education students, and facilitating better connections among secondary vocational education, specialized education, undergraduate and higher-level vocational education. It serves as a driving mechanism for vertical integration and horizontal coordination [5].

4.1.2. Enhancing the Quality of Talent Development

Enhancing talent development is crucial for the high-quality advancement of vocational education. In Anhui Province, prioritizing students' growth, strengthening adaptability, and stimulating vocational orientation based on industry demand and intrinsic motivation are essential.

Firstly, it is important to clarify talent development positioning, establish a comprehensive talent development system, optimize vocational education programs, and adapt to the new economy's development. Aligning with Anhui Province's major strategies, vocational education should focus on ten emerging industries such as next-generation information technology, artificial intelligence, new materials, energy conservation and environmental protection, new energy vehicles, intelligent connected vehicles, high-end equipment manufacturing, smart home appliances, life and health. Priority should be given to cultivating talents relevant to these industries. Moreover, adjusting the professional layout based on the 2022 updated vocational classification, and establishing a mechanism for dynamic adjustment of programs according to industrial development, will strengthen the cultivation of vocational literacy and practical skills.
Secondly, the establishment of municipal industry-school alliances and industry-school integration communities is crucial. Building upon the "Opinions on Deepening the Construction and Reform of the Modern Vocational Education System" issued in December 2022, Anhui Province should capitalize on vocational education development opportunities and create industry-school alliances and cross-regional industry-school integration communities based on industrial parks. This will involve pooling resources such as funds, technologies, talents, and policies, actively promoting the participation of educational institutions in vocational education, and establishing education models aligned with production and industry collaboration. The aim is to develop nationally recognized demonstration bases for industry-school integration and vocational education brands. By adjusting curriculum and teaching content in response to market demands and industrial trends, integrating talent development into the value chain of enterprises, and aligning students' social skills with corporate culture, a "zero-distance" connection with production can be achieved. This will foster the cultivation of high-quality skilled talents that meet market and industry needs.

In conclusion, by focusing on talent development, aligning with industry demands, and fostering collaborations between education and industry, Anhui Province can enhance the quality of vocational education and contribute to the high-quality development of the economy.

4.1.3. Creating a Favorable Development Environment

The government should organize and coordinate efforts to facilitate resource matching and demand-supply alignment in school-enterprise cooperation, academic-practical integration, and industry-school integration. Policies supporting vocational education development, such as the establishment of vocational education industry alliances and vocational education science and technology innovation centers, should be introduced. Close integration between vocational education and technological innovation is essential, involving the adoption of advanced teaching methods and the establishment of effective mechanisms for vocational skills training and evaluation. Fostering an atmosphere of innovation and entrepreneurship is crucial, promoting students' autonomy, cultivating their innovation awareness and entrepreneurial abilities, and providing entrepreneurship support and services. Additionally, cultural construction in vocational education should be strengthened to promote vocational spirit, values, and the development of high-quality talents with professional ethics and vocational literacy.

To create a conducive development environment and ecosystem for high-quality vocational education, comprehensive support is needed in terms of policies, resources, systems, and culture. The government should play a coordinating role in resource matching and demand-supply alignment, reduce information asymmetry through collaboration with educational entities, and introduce policies supporting vocational education, such as vocational education development funds and tax reductions. Platforms like vocational education industry alliances and vocational education science and technology innovation centers should be established to facilitate the integration of vocational education with industry, market, and society. Furthermore, vocational education should closely integrate with technological innovation, employ advanced teaching methods, and establish effective mechanisms for vocational skills training and evaluation. Creating an atmosphere of innovation and entrepreneurship, nurturing students' autonomy, and emphasizing the cultivation of their innovation awareness and entrepreneurial abilities are crucial. The cultural construction of vocational education should be strengthened to promote vocational spirit, values, and the long-term development of vocational education.

In conclusion, by igniting intrinsic motivation and receiving comprehensive support, Anhui Province's modern vocational education system can achieve sustained development, promote innovative high-quality vocational education, and possess stronger self-motivation.
4.2 Enhancing Adaptability—Creating Strategic Value for Regional Development

4.2.1. Strengthening Interregional Communication and Cooperation

Based on the new development pattern, the "Opinions" emphasizes the exploration of new models for constructing provincial modern vocational education systems and forming modern vocational education structures and regional layouts. Taking this as an opportunity, Anhui Province should focus on regional coordinated development strategies, the integrated development strategy of the Yangtze River Delta, and further promote communication and cooperation with Jiangsu, Zhejiang, and Shanghai. It should draw on their advanced vocational education development concepts, models, and teacher training models, and engage in cross-regional and cross-industry cooperation in vocational education talent development and other areas. It should promote the construction of cross-regional vocational education synergy platforms with Jiangsu, Zhejiang, and Shanghai, creating an ecosystem conducive to the development of vocational education in Anhui Province and enhancing its adaptability.

4.2.2. Serving Regional Economic Development

Currently, regional coordinated development strategies have become a focal point for high-quality economic development. As a type of education closely linked to industries and directly serving the economy, vocational education can provide professional and talent support for regional economic integration and industrial transformation and upgrading [7].

Therefore, vocational education in Anhui Province should actively integrate into the overall situation of regional economic and social development, leveraging its comparative advantages in the integrated development strategy of the Yangtze River Delta. For example, it can focus on the key development of modern agriculture, cultural tourism, healthcare, pharmaceutical industries, and agricultural product processing in the revolutionary old areas of northern and western Anhui Province, as well as supporting industries. It should actively promote strategic cooperation agreements between vocational education institutions in Anhui Province and vocational colleges, research institutions, and upstream and downstream industries in Jiangsu, Zhejiang, and Shanghai. Barriers to cooperation should be removed, and a cross-regional community of industry-education integration should be jointly created. It is necessary to establish and improve mechanisms for collaborative linkage in vocational education, promote the formation of modern vocational education structures and regional layouts that are in line with market demand and industrial structure, and improve the quality of talent development in the Yangtze River Delta, thereby promoting high-quality regional economic development.

4.2.3. Embracing an International Perspective in Education

With the continuous advancement of opening up in the Yangtze River Delta region, the modern vocational education system in Anhui Province should actively engage in international cooperation and exchanges. It should attract internationally high-level educational resources and advanced educational concepts, cultivate vocational professionals with international perspectives and cross-cultural communication abilities, and enhance the international competitiveness of modern vocational education in Anhui Province. Efforts should be made to attract international high-level educational institutions, teachers, and experts to conduct teaching and research cooperation in Anhui Province, introduce international advanced educational concepts, curriculum, and teaching methods, and improve the quality of education and talent development. International exchanges and cooperation should be conducted by establishing cooperative relationships with vocational education institutions abroad, facilitating exchanges and cooperation through activities such as teacher and student visits.
Through cross-cultural exchanges, students’ international perspectives, language abilities, and cross-cultural communication skills should be cultivated to enhance their competitiveness in the context of globalization. International certification and mutual recognition should be promoted by cooperating with international educational organizations, advancing international certification and mutual recognition of modern vocational education in Anhui Province. By obtaining internationally recognized educational standards and qualifications, the international reputation and competitiveness of modern vocational education in Anhui Province can be enhanced, providing broader international employment opportunities for graduates.

5. Conclusions

The construction and development of a modern vocational education system in Anhui Province hold significant importance in the context of the integration of education in the Yangtze River Delta. To achieve this, it is essential to not only stimulate the continuous development of high-quality vocational education within the system but also enhance the strategic value of vocational education in serving regional development, thus strengthening its external adaptability and making positive contributions to high-quality economic development and regional integration in the Yangtze River Delta. However, to realize this goal, it requires collaborative efforts from governments at all levels, educational institutions, and enterprises to form a joint force and promote greater achievements in the construction of a modern vocational education system.

References