

Building Integrated Vocational Education Pathways in China: Policy Evolution, Structural Models, and Future Directions

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ABSTRACT

In recent years, the development of integrated vocational education pathways has emerged as a key direction in vocational education reform in China. Establishing coherent and flexible educational pathways is essential for enhancing the quality of vocational education and fostering highly skilled technical talent.

This study offers a theoretical examination of integrated vocational education pathways in China. Drawing on a comprehensive review of relevant literature and policy documents, it analyzes the evolution of policy frameworks, the main structural models, and the key challenges associated with the implementation of articulated vocational education systems.

The findings indicate that China has progressively developed multiple forms of integrated pathways, including secondary–higher vocational pathways, five-year integrated programs, and secondary–higher–undergraduate pathways. These models are designed to strengthen vertical articulation, enhance talent development mechanisms, and promote the upward mobility of vocational students. However, persistent challenges remain, particularly in terms of curriculum misalignment, institutional fragmentation, limited industry participation, and regional disparities in development.

Based on these findings, this study proposes several strategies to improve the effectiveness of integrated vocational education pathways, including advancing curriculum articulation, strengthening institutional coordination, deepening industry–education integration, and enhancing policy support mechanisms. Overall, the study contributes to a more nuanced understanding of vocational education reform in China and provides theoretical insights for the development of more coherent and responsive vocational education systems.

Keywords: Vocational education; Integrated education pathways; Vocational education reform; Talent cultivation;

INTRODUCTION

Global Transformation of Vocational Education

In the context of rapid technological development and economic restructuring, vocational education has become increasingly important for cultivating highly skilled and adaptable labor forces. The emergence of new technologies, digitalization, and industrial upgrading has significantly transformed labor market demands, requiring workers not only to possess practical skills but also to demonstrate higher levels of professional knowledge and continuous learning capacity. Consequently, many countries have sought to reform their vocational education systems in order to better align education with the evolving needs of industry and society.

One important trend in international vocational education reform is the development of coherent and flexible educational pathways that allow learners to progress across different levels of education. Such pathways are designed to reduce institutional fragmentation and provide learners with opportunities for lifelong learning and career advancement. In many developed countries, vocational education systems have established well-

structured articulation mechanisms that connect secondary vocational education, higher vocational education, and even university-level programs. For example, the German Dual System integrates school-based learning with workplace training and provides multiple progression routes for students to advance their qualifications. Similarly, the Swiss Vocational Education and Training System enables students to move from vocational education to higher education through well-defined articulation mechanisms. These systems demonstrate that effective vocational education requires not only high-quality training but also clear and accessible progression pathways.

As a result, the concept of integrated vocational education pathways has gained increasing attention in both policy and academic discussions. Integrated pathways refer to structured arrangements that connect different levels and types of vocational education, allowing learners to move smoothly between them without unnecessary repetition or barriers. By establishing coherent pathways, vocational education systems can improve educational efficiency, enhance social mobility, and support the development of high-level technical talent.

Development of Vocational Education in China

Over the past several decades, China has made significant efforts to expand and modernize its vocational education system. With the rapid development of the national economy and the continuous upgrading of industrial structures, the demand for skilled workers and technical professionals has grown substantially. In response, the Chinese government has recognized vocational education as a crucial component of national development and has implemented a series of reforms aimed at improving the quality and attractiveness of vocational education.

One major policy direction in China's vocational education reform is the construction of a modern vocational education system that emphasizes coordination between different educational levels. Traditionally, China's vocational education system has been characterized by a certain degree of separation between secondary vocational schools, higher vocational colleges, and universities. This separation has sometimes limited students' opportunities for further study and hindered the development of a continuous talent cultivation system.

To address these challenges, the Chinese government has introduced several policy initiatives aimed at strengthening the articulation between different levels of vocational education. A landmark policy in this regard is the National Vocational Education Reform Implementation Plan, which emphasizes the establishment of a modern vocational education system featuring vertical progression and horizontal integration. The policy encourages the development of articulated training programs that allow students to move smoothly from secondary vocational education to higher vocational education and further to undergraduate-level vocational education.

In addition, the revision of the Vocational Education Law of the People's Republic of China further strengthened the legal foundation for vocational education development in China. The revised law highlights the importance of improving educational pathways and expanding opportunities for vocational students to pursue higher-level education. These policy reforms indicate that the development of integrated vocational education pathways has become a central strategy in China's efforts to cultivate high-level technical and skilled talent.

Emergence of Integrated Vocational Education Pathways

Against this policy background, various forms of integrated vocational education pathways have gradually emerged in China. These pathways aim to establish closer connections between different educational stages and create more flexible learning opportunities for vocational students. In practice, several models of articulated training programs have been implemented across different regions and institutions.

One widely adopted model is the secondary–higher vocational pathway, often referred to as the “3+2” program, which allows students to progress from three years of secondary vocational education to two years of

higher vocational education. Another common model is the five-year integrated vocational program, in which students enroll directly in a five-year continuous program offered by higher vocational institutions. In recent years, some institutions have also explored pathways that connect secondary vocational education, higher vocational education, and vocational undergraduate programs, thereby further expanding students' opportunities for academic progression.

These integrated pathways are designed not only to improve the efficiency of vocational education but also to enhance the attractiveness of vocational education among students and their families. By providing clearer educational progression routes, integrated pathways can help address the long-standing issue of limited upward mobility in vocational education. Moreover, they play an important role in supporting the development of a diversified higher education system and promoting the cultivation of high-level technical professionals.

Research Objectives and Significance

Despite the growing importance of integrated vocational education pathways in China, existing research on this topic remains relatively fragmented. Many studies focus on specific institutional practices or policy interpretations, while systematic theoretical analyses of the structure and development of integrated vocational education pathways are still limited. In addition, the rapid expansion of vocational education reforms in China has created new challenges related to curriculum alignment, institutional coordination, and industry participation.

Therefore, it is necessary to conduct a comprehensive theoretical analysis of integrated vocational education pathways in China. This study aims to examine the policy evolution, structural models, and key challenges associated with the development of integrated vocational education pathways. By reviewing relevant policy documents and academic literature, the study seeks to provide a systematic understanding of how integrated pathways function within China's vocational education system.

The significance of this study can be understood from both theoretical and practical perspectives. From a theoretical perspective, the study contributes to the existing literature on vocational education articulation by providing a conceptual framework for understanding integrated vocational education pathways in the Chinese context. From a practical perspective, the findings of this study may offer valuable insights for policymakers, educational institutions, and industry partners seeking to further improve the effectiveness and sustainability of vocational education pathways.

LITERATURE REVIEW

Conceptualizing Integrated Vocational Education Pathways

In recent decades, the concept of educational pathways has gained increasing attention in vocational education research. Educational pathways refer to structured routes that allow learners to move between different levels and types of education while accumulating qualifications and competencies. Within the context of vocational education, these pathways are often described as articulation mechanisms that connect secondary vocational education, higher vocational education, and tertiary-level programs.

Integrated vocational education pathways are designed to reduce fragmentation within education systems and provide learners with more flexible opportunities for educational progression. According to scholars in vocational education research, effective pathways enable students to transition smoothly between educational stages without unnecessary duplication of learning or institutional barriers. Such arrangements support lifelong learning and facilitate the continuous development of skills and knowledge required in modern economies.

The concept of articulation has been widely discussed in the literature on vocational education systems. Articulation refers to the formal arrangements that enable students to transfer credits, qualifications, or competencies from one educational level to another. When articulation mechanisms are well designed, they can create coherent educational systems in which learners have clear opportunities to advance their education and careers.

Scholars have emphasized that integrated pathways serve several important functions within vocational education systems. First, they improve the efficiency of educational systems by reducing redundancy in curricula and training programs. Second, they enhance social mobility by providing vocational students with opportunities to pursue higher levels of education. Third, integrated pathways support the development of highly skilled technical professionals by facilitating continuous learning and skill upgrading.

In addition, the development of integrated pathways reflects the broader transformation of vocational education from a terminal form of education to a component of lifelong learning systems. Traditionally, vocational education in many countries was designed primarily to prepare students for immediate entry into the labor market. However, with the increasing complexity of modern economies, workers are expected to continuously update their skills throughout their careers. As a result, vocational education systems are increasingly designed to allow students to re-enter education at different stages of their professional lives.

Therefore, integrated vocational education pathways have become an essential element in modern vocational education systems. They represent an important institutional mechanism for connecting different forms of education and ensuring that vocational learners have access to continuous educational opportunities.

International Research on Vocational Education Pathways

International research has extensively examined how different countries structure vocational education systems and create pathways for learners to progress across educational levels. Many developed countries have established comprehensive vocational education frameworks that combine school-based learning, workplace training, and opportunities for further study.

For example, the German Dual System is widely regarded as one of the most successful vocational education models in the world. In this system, students receive training both in vocational schools and in enterprises, allowing them to develop practical skills while also acquiring theoretical knowledge. Importantly, the German system provides multiple pathways for students to advance their education, including opportunities to pursue higher vocational qualifications and university-level programs.

Similarly, the Swiss Vocational Education and Training System offers a highly flexible structure that allows vocational students to move between different forms of education. In Switzerland, students who complete vocational training can continue their education through professional colleges or universities of applied sciences. This articulation mechanism ensures that vocational education is not a dead-end pathway but rather an integral part of the broader higher education system.

Another example can be found in Australia's vocational education system, particularly within the TAFE framework. Technical and Further Education institutions provide a wide range of vocational programs that are closely linked to industry needs. Importantly, TAFE qualifications are often recognized by universities, allowing students to transfer credits and continue their studies at higher education institutions.

These international experiences highlight several key characteristics of effective vocational education pathways. First, successful systems establish clear articulation mechanisms between vocational and academic education. Second, they ensure strong collaboration between educational institutions and industry partners. Third, they provide flexible learning opportunities that allow individuals to pursue further education throughout their careers.

Scholars have also emphasized the importance of policy coordination in the development of vocational education pathways. Government policies play a crucial role in establishing qualification frameworks, regulating credit transfer systems, and ensuring that educational institutions collaborate effectively. Without such policy support, articulation mechanisms may remain limited or inconsistent across institutions.

Overall, international research suggests that integrated vocational education pathways are essential for creating inclusive and flexible education systems. These pathways help bridge the traditional divide between vocational and academic education and support the development of highly skilled workforces in modern economies.

Research on Vocational Education Integration in China

In China, vocational education has undergone significant transformation over the past several decades. As the country's economy has shifted toward higher levels of technological development and industrial upgrading, the demand for skilled technical professionals has increased substantially. In response, the Chinese government has implemented a series of reforms aimed at strengthening vocational education and improving the articulation between different educational levels.

One major area of research focuses on the development of articulated training programs between secondary vocational schools and higher vocational colleges. These programs are often referred to as “3+2” models, in which students complete three years of secondary vocational education followed by two years of higher vocational education. Scholars have argued that such programs can enhance the continuity of vocational education and provide students with clearer opportunities for academic progression.

Another area of research concerns the implementation of five-year integrated vocational programs offered by higher vocational institutions. These programs allow students to enroll directly in a continuous five-year training program that integrates secondary and higher vocational education. Researchers suggest that this model can improve curriculum alignment and reduce the duplication of learning content.

In recent years, with the introduction of vocational undergraduate education in China, scholars have begun to explore pathways that connect secondary vocational education, higher vocational education, and vocational undergraduate programs. These pathways are intended to create a more comprehensive vocational education system that supports the cultivation of high-level technical talent.

Despite these developments, existing research has also identified several challenges in the implementation of integrated vocational education pathways in China. One major issue concerns the alignment of curricula between different educational levels. In many cases, secondary and higher vocational institutions operate under different administrative systems and educational standards, which can create difficulties in coordinating curricula and training programs.

Another challenge relates to the limited participation of industry partners in vocational education pathways. Although enterprises play an important role in vocational training, their involvement in curriculum design and educational planning is often insufficient. This may reduce the relevance of vocational programs to the needs of the labor market.

Furthermore, some scholars have pointed out that vocational education in China still faces issues related to social recognition and attractiveness. Compared with academic education, vocational education is sometimes perceived as a less desirable option by students and their families. This perception may influence students' willingness to pursue long-term vocational education pathways.

Overall, while existing studies provide valuable insights into specific aspects of vocational education integration in China, systematic theoretical analyses of integrated vocational education pathways remain relatively limited.

Research Gap

Based on the existing literature, it is evident that integrated vocational education pathways have become an important topic in both international and Chinese educational research. However, several gaps remain in the current body of literature.

First, many studies focus primarily on policy analysis or institutional case studies, while comprehensive theoretical frameworks for understanding integrated vocational education pathways are still underdeveloped. Second, although various articulated training models have been implemented in China, there is limited research that systematically examines the structural characteristics of these models within the broader vocational education system. Third, existing studies often analyze individual challenges in vocational

education reform but rarely integrate these issues into a holistic framework for evaluating pathway development.

Therefore, there is a need for further research that provides a systematic analysis of integrated vocational education pathways in China. By examining policy evolution, structural models, and implementation challenges, this study aims to contribute to a deeper theoretical understanding of vocational education articulation and offer insights for future policy development.

Policy Evolution of Integrated Vocational Education in China

The development of vocational education pathways in China has been shaped by several major policy initiatives over the past decades. Table 1 summarizes key policy milestones that have influenced the evolution of integrated vocational education pathways.

Table 1 Major Policy Milestones in the Development of Vocational Education in China

Year	Policy / Reform	Key Contribution
1996	Vocational Education Law	Established the legal framework for vocational education
2005	Expansion of higher vocational education	Strengthened the development of vocational colleges
2019	National Vocational Education Reform Implementation Plan	Promoted the construction of a modern vocational education system
2022	Revised Vocational Education Law	Strengthened the status and pathways of vocational education

The development of integrated vocational education pathways in China is closely related to broader reforms in the national education system and economic transformation. Over the past several decades, China has gradually shifted from a fragmented vocational education structure toward a more coordinated and articulated system. This transformation has been driven largely by national policies that emphasize the cultivation of highly skilled technical talent and the construction of a modern vocational education system. From a historical perspective, the evolution of integrated vocational education pathways in China can be divided into three major stages: the stage of initial exploration, the stage of system development, and the stage of modernization and integration.

Stage of Initial Exploration (1990s–2005)

During the 1990s and early 2000s, vocational education in China was primarily oriented toward preparing students for immediate employment after completing secondary vocational education. At that time, the overall structure of vocational education was relatively fragmented, and the connection between different levels of education was limited. Secondary vocational schools and higher vocational institutions operated largely independently, with few institutional mechanisms enabling students to progress from one level to another.

However, with the rapid development of China’s economy and the increasing demand for skilled labor, policymakers gradually recognized the limitations of this fragmented system. Many industries began to require workers with higher levels of technical expertise and more advanced professional knowledge. As a result, the traditional model of vocational education that ended at the secondary level became insufficient for meeting the needs of economic development.

In response to these challenges, the Chinese government began to explore ways to improve the articulation between different levels of vocational education. Early policy initiatives encouraged cooperation between secondary vocational schools and higher vocational colleges in order to provide students with opportunities for further education. Some regions started experimenting with articulated training programs that allowed

graduates of secondary vocational schools to enter higher vocational institutions through special admission channels.

Although these early efforts were relatively limited in scope, they laid the foundation for the later development of integrated vocational education pathways. More importantly, they marked a shift in policy thinking from viewing vocational education as a terminal educational track toward recognizing it as part of a continuous education system.

Stage of System Development (2005–2018)

The second stage in the evolution of integrated vocational education pathways occurred between the mid-2000s and the late 2010s. During this period, the Chinese government began to place greater emphasis on building a structured vocational education system that connects different educational levels. A series of policy initiatives were introduced to strengthen the articulation between secondary vocational education and higher vocational education.

One important development during this stage was the expansion of articulated training programs between secondary vocational schools and higher vocational colleges. Programs such as the “3+2” model became increasingly common across different regions of China. In this model, students first complete three years of secondary vocational education and then continue their studies for two additional years in higher vocational institutions. Upon completion of the program, students receive a higher vocational diploma.

Another important innovation during this stage was the development of five-year integrated vocational programs. These programs allow students to enroll directly in a five-year continuous training program offered by higher vocational institutions. Compared with the traditional “3+2” model, the five-year integrated program provides a more unified curriculum structure and reduces the administrative barriers between different educational stages.

During this period, policymakers also began to emphasize the importance of improving the quality of vocational education and strengthening its connection with industry. Vocational institutions were encouraged to collaborate with enterprises in designing curricula, developing training programs, and establishing internship opportunities. Such cooperation helped improve the relevance of vocational education to labor market needs.

Despite these achievements, the vocational education system during this stage still faced several structural challenges. In particular, the pathways connecting vocational education with undergraduate education remained limited. As a result, students who wished to continue their studies beyond higher vocational education often encountered significant institutional barriers.

Stage of Modernization and Integration (2019–Present)

Since 2019, China has entered a new stage in the development of its vocational education system. This stage is characterized by a stronger emphasis on integration, system coordination, and the cultivation of high-level technical talent. A key milestone in this process was the release of the National Vocational Education Reform Implementation Plan, which introduced comprehensive reforms aimed at improving the structure and quality of vocational education.

The policy document highlights the importance of constructing a modern vocational education system that features both vertical progression and horizontal integration. Vertical progression refers to the establishment of clear educational pathways that allow students to move from secondary vocational education to higher vocational education and further to vocational undergraduate programs. Horizontal integration, on the other hand, emphasizes cooperation between vocational education institutions, universities, and industry partners.

Another significant policy development was the revision of the Vocational Education Law of the People's Republic of China. The revised law further strengthened the legal framework for vocational education and explicitly emphasized the need to improve educational pathways for vocational students. The law also

encourages the development of vocational undergraduate programs and supports the integration of vocational education with other forms of higher education.

In recent years, several pilot programs have been launched to explore new models of integrated vocational education pathways. Some institutions have introduced “3+2+2” programs that connect secondary vocational education, higher vocational education, and vocational undergraduate education. These programs aim to provide students with continuous learning opportunities and create clearer career development pathways.

Moreover, policymakers have increasingly recognized the importance of industry participation in vocational education. Enterprises are encouraged to collaborate with educational institutions in developing training programs, establishing training bases, and participating in talent evaluation. Such cooperation helps ensure that vocational education pathways remain closely aligned with the evolving needs of industry.

Overall, the development of integrated vocational education pathways in China reflects a gradual transition from fragmented educational structures toward a more coordinated and flexible system. Through continuous policy reforms and institutional innovation, China is seeking to create a modern vocational education system that supports lifelong learning and provides diverse opportunities for students to develop advanced technical skills.

Models of Integrated Vocational Education Pathways in China

With the continuous reform of vocational education in China, various forms of integrated vocational education pathways have gradually emerged. These pathways are designed to improve the articulation between different levels of vocational education and provide students with clearer opportunities for educational progression. In practice, several models of integrated vocational education pathways have been implemented across different regions and institutions. Among them, three models have become the most representative in the current vocational education system: the secondary–higher vocational pathway, the five-year integrated vocational program, and the secondary–higher–undergraduate pathway. Each model reflects specific policy objectives and institutional arrangements aimed at improving the continuity and effectiveness of vocational education.

Secondary–Higher Vocational Pathway (3+2 Model)

The secondary–higher vocational pathway, commonly known as the “3+2 model,” is one of the earliest and most widely implemented forms of integrated vocational education in China. Under this model, students first complete three years of study in a secondary vocational school and then continue their education for an additional two years in a higher vocational college. After successfully completing the five-year program, students are awarded a higher vocational diploma.

The primary objective of the 3+2 model is to establish a smoother transition between secondary vocational education and higher vocational education. Traditionally, students graduating from secondary vocational schools had limited opportunities to pursue higher education due to restrictive admission policies and institutional barriers. The introduction of the 3+2 pathway helps address this issue by creating a stable and structured progression route for vocational students.

Another important feature of the 3+2 model is its emphasis on progressive skill development. During the first three years of study, students focus mainly on acquiring foundational vocational skills and basic theoretical knowledge. In the subsequent two years at higher vocational colleges, students receive more advanced technical training and specialized professional education. This staged training structure allows students to gradually develop higher levels of professional competence.

Despite its advantages, the implementation of the 3+2 model also faces several challenges. One common issue concerns the coordination of curricula between secondary vocational schools and higher vocational institutions. In some cases, differences in teaching objectives and educational standards may lead to duplication of learning content or inconsistencies in skill development. Therefore, effective coordination between institutions is essential for ensuring the success of this pathway model.

Five-Year Integrated Vocational Program

Another important model of integrated vocational education in China is the five-year integrated vocational program. In this model, students enroll directly in a five-year continuous program offered by higher vocational institutions after completing junior secondary education. Unlike the 3+2 pathway, which involves two different types of institutions, the five-year integrated program is typically administered by a single higher vocational college.

One major advantage of this model is the greater coherence in curriculum design and program management. Because the entire program is organized within a single institution, educators can design a more integrated curriculum that gradually develops students' knowledge and skills over the five-year period. This structure reduces the administrative and academic barriers that may arise when students transfer between different institutions.

Furthermore, the five-year integrated vocational program often places greater emphasis on the integration of theoretical learning and practical training. Many higher vocational institutions collaborate closely with enterprises to provide students with internship opportunities and hands-on training experiences. Such arrangements help students develop practical competencies that are directly relevant to the needs of industry.

Another benefit of the five-year integrated program is its potential to enhance the attractiveness of vocational education. By offering a stable and continuous educational pathway, this model provides students and their families with clearer expectations regarding educational outcomes and career prospects. As a result, it may encourage more students to choose vocational education as a viable alternative to traditional academic pathways.

However, the five-year integrated program also presents certain limitations. For example, because students commit to a specific vocational pathway at an early stage, some may find it difficult to change their educational direction later. In addition, the success of this model depends heavily on the institutional capacity of higher vocational colleges to provide high-quality education and training over an extended period.

Secondary–Higher–Undergraduate Pathway

In recent years, the Chinese government has introduced new initiatives aimed at expanding the upward mobility of vocational students. One of the most significant developments in this regard is the emergence of integrated pathways that connect secondary vocational education, higher vocational education, and vocational undergraduate programs. These pathways are often structured in formats such as “3+2+2,” allowing students to progress from secondary vocational schools to higher vocational colleges and eventually to vocational undergraduate institutions.

The introduction of vocational undergraduate education represents an important step in the modernization of China's vocational education system. By establishing pathways that extend beyond higher vocational education, policymakers aim to cultivate high-level technical professionals who possess both advanced technical skills and strong theoretical knowledge.

The secondary–higher–undergraduate pathway also helps address long-standing concerns regarding the limited social mobility associated with vocational education. In the past, vocational education was sometimes perceived as a terminal educational track with limited opportunities for further study. The development of pathways leading to vocational undergraduate degrees demonstrates that vocational education can provide students with long-term educational and career development opportunities.

From an institutional perspective, the implementation of these pathways requires close cooperation among different types of educational institutions. Secondary vocational schools, higher vocational colleges, and vocational universities must coordinate their curricula, admission policies, and training objectives to ensure the smooth progression of students through the pathway. Such coordination can be challenging but is essential for the success of integrated vocational education systems.

In addition, the secondary–higher–undergraduate pathway reflects the broader trend of integrating vocational education with the higher education system. By strengthening the connection between vocational institutions and universities, this model contributes to the diversification of higher education and supports the development of a more flexible and inclusive education system.

Case Study: Implementation of the “3+2+2” Pathway in Jilin Province

A representative example of the “3+2+2” integrated vocational education pathway in Northeast China can be observed in Jilin Province, where efforts have been made to align vocational education with regional industrial transformation. Compared with economically advanced eastern regions, Jilin faces structural challenges such as industrial upgrading pressures and talent outmigration, which makes the implementation of integrated pathways both necessary and complex.

One illustrative case involves the collaboration between Jilin Engineering Normal University and several regional secondary and higher vocational institutions specializing in mechanical engineering, automotive technology, and intelligent manufacturing. Under this model, students complete three years in secondary vocational schools, followed by two years in higher vocational colleges, and subsequently articulate into undergraduate programs through coordinated admission pathways.

Institutional coordination in Jilin is primarily achieved through government-led initiatives. The provincial education authority plays a central role in facilitating agreements between institutions, standardizing curriculum frameworks, and ensuring policy alignment. In addition, pilot programs have introduced modularized curricula based on occupational competency standards, particularly in emerging fields such as new energy vehicles and industrial automation.

However, unlike the Jiangsu model, the implementation in Jilin relies more heavily on public-sector coordination due to relatively weaker industry participation. Local enterprises, many of which are in the process of restructuring, provide limited but gradually increasing support through internship placements and cooperative training programs.

Despite these constraints, preliminary outcomes indicate positive trends. Pilot programs report improved student progression rates across educational levels, and graduates demonstrate stronger alignment with regional labor market needs, particularly in manufacturing and technical service sectors. These findings suggest that the “3+2+2” model is adaptable to less-developed regions, provided that strong policy support and targeted resource allocation are in place.

Overall, the Jilin case highlights both the opportunities and limitations of implementing integrated vocational education pathways in regions undergoing economic transition, emphasizing the importance of government coordination and strategic industry engagement.

Comparative Characteristics of the Pathway Models

Although the three models described above share the common objective of improving educational articulation, they differ in terms of institutional arrangements, curriculum structure, and educational objectives.

The 3+2 pathway emphasizes cooperation between secondary vocational schools and higher vocational colleges, making it particularly suitable for regions where vocational institutions operate independently. The five-year integrated vocational program, by contrast, focuses on providing a unified curriculum within a single institution, which can enhance program coherence and administrative efficiency. The secondary–higher–undergraduate pathway represents the most advanced stage of vocational education integration, as it creates opportunities for students to obtain higher-level academic qualifications.

Together, these models form the structural foundation of China’s integrated vocational education system. By providing multiple progression routes for students, they contribute to the development of a more flexible and diversified vocational education framework. However, the successful implementation of these pathways

depends not only on institutional design but also on effective policy coordination, curriculum alignment, and industry participation.

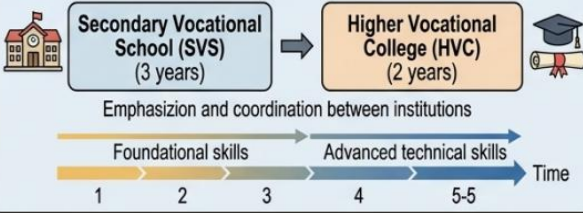
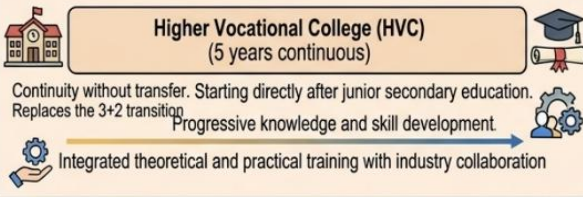

Model Name	Institutional Arrangement & Structure	Characteristics & Objectives	Outcome
1. Secondary–Higher Vocational Pathway (3+2 Model)	 <p>Secondary Vocational School (SVS) (3 years) → Higher Vocational College (HVC) (2 years)</p> <p>Emphasization and coordination between institutions</p> <p>Foundational skills (1-3) → Advanced technical skills (4-5)</p> <p>Time</p>	<ul style="list-style-type: none"> Establish smoother transition Structured progression Staged skill development (foundational → advanced technical) Coordination challenges (curricula, duplication) Suitable for independent operating institutions 	Higher Vocational Diploma
2. Five-Year Integrated Vocational Program	 <p>Higher Vocational College (HVC) (5 years continuous)</p> <p>Continuity without transfer. Starting directly after junior secondary education. Replaces the 3+2 transition</p> <p>Progressive knowledge and skill development</p> <p>Integrated theoretical and practical training with industry collaboration</p>	<ul style="list-style-type: none"> Greater coherence (curriculum/management) Integrated design Reduces administrative barriers Combines theory and practice (industry partnerships) Enhances attractiveness Limitations: Early commitment Depends on HVC capacity 	Higher Vocational Diploma
3. Secondary–Higher–Undergraduate Pathway (e.g., 3+2+2 Model)	 <p>Secondary Vocational School (3 years) → Higher Vocational College (HVC) (2 years) → Vocational Undergraduate Institution (2 years)</p> <p>Extending progression beyond HVE</p> <p>Cultivation of high-level technical professionals with advanced skills and strong theory</p> <p>Close cooperation among different institutions</p>	<ul style="list-style-type: none"> Expanding upward mobility Terminal track perception shift Cultivate high-level technical professionals Extensive multi-institutional cooperation (curricula, admission) Integrates VET with higher education Diversifies higher education Modernization 	Vocational Undergraduate Degree (Bachelor's)

Figure 1 Comparison of Integrated Vocational Education Pathway Models in China

Challenges in Implementing Integrated Vocational Education Pathways in China

Although China has made significant progress in developing integrated vocational education pathways, the implementation of these pathways still faces a number of structural and institutional challenges. These challenges arise from differences in institutional governance, curriculum design, industry participation, and social perceptions of vocational education. Understanding these issues is essential for improving the effectiveness and sustainability of integrated vocational education pathways.

Curriculum Misalignment Across Educational Levels

One of the most significant challenges in implementing integrated vocational education pathways in China is the lack of effective curriculum alignment across different educational levels. In many cases, secondary vocational schools, higher vocational colleges, and vocational undergraduate institutions operate under different administrative frameworks and educational standards. As a result, their curricula are often developed independently, leading to inconsistencies in course content and training objectives.

This lack of coordination may result in duplication of learning content or gaps in skill development. For example, students transitioning from secondary vocational schools to higher vocational institutions may encounter courses that repeat knowledge they have already acquired. Conversely, some advanced technical skills required at higher levels may not be sufficiently covered in earlier stages of vocational education. Such problems reduce the efficiency of integrated pathways and may affect students' learning experiences.

Furthermore, differences in teaching methodologies and assessment standards between institutions can also create difficulties for students moving between educational levels. Secondary vocational education often focuses on foundational technical skills, while higher vocational education emphasizes specialized knowledge and advanced professional competencies. Without clear curriculum articulation, students may struggle to adapt to these changes.

Therefore, improving curriculum alignment is essential for ensuring the effectiveness of integrated vocational education pathways. This requires closer cooperation between institutions and the establishment of unified curriculum frameworks that support progressive skill development.

Institutional Fragmentation and Administrative Barriers

Another major challenge is the institutional fragmentation that exists within China's vocational education system. Different types of educational institutions—such as secondary vocational schools, higher vocational colleges, and vocational universities—are often governed by different administrative bodies. For example, some institutions are managed by local education authorities, while others may be affiliated with specific industries or government departments.

This fragmented governance structure can create administrative barriers that hinder the smooth operation of integrated pathways. Differences in admission policies, funding mechanisms, and institutional priorities may complicate cooperation between institutions. In some cases, schools may have limited incentives to coordinate their programs with other institutions, which can weaken the effectiveness of articulated training models.

In addition, institutional fragmentation may affect the consistency of educational standards across different levels of vocational education. Without a unified framework for qualification recognition and credit transfer, students may face difficulties when attempting to move from one institution to another.

To address these challenges, it is necessary to strengthen policy coordination and establish mechanisms that facilitate collaboration among different types of vocational education institutions.

Limited Participation of Industry Partners

Industry participation plays a crucial role in the success of vocational education systems. Enterprises provide practical training environments, contribute to curriculum development, and help ensure that educational programs remain relevant to labor market needs. However, in the context of integrated vocational education pathways in China, the involvement of industry partners is still relatively limited in some regions and institutions.

Although many vocational institutions have established partnerships with enterprises, these collaborations often focus primarily on internship arrangements rather than deeper forms of cooperation. In many cases, enterprises are not actively involved in curriculum design, competency evaluation, or long-term educational planning. As a result, vocational education pathways may not fully reflect the rapidly changing skill requirements of modern industries.

Another factor influencing industry participation is the lack of effective incentive mechanisms. Enterprises may perceive limited benefits from participating in vocational education programs, particularly when such participation requires significant investments of time and resources. Without appropriate policy incentives or support mechanisms, enterprises may be reluctant to engage deeply in vocational education initiatives.

Strengthening industry participation is therefore essential for improving the quality and relevance of integrated vocational education pathways.

Social Perceptions and the Attractiveness of Vocational Education

In addition to institutional and structural challenges, social perceptions of vocational education also influence the development of integrated vocational education pathways. In many societies, vocational education has historically been viewed as less prestigious than academic education. Although this perception has gradually changed in recent years, it still affects students' educational choices and career expectations.

In China, many students and their families continue to prioritize academic education as the primary pathway to social mobility. As a result, vocational education is sometimes perceived as an alternative option for students

who do not enter general academic high schools or universities. This perception can reduce the attractiveness of vocational education pathways and discourage talented students from pursuing vocational careers.

The limited social recognition of vocational education may also influence institutional development. Vocational institutions may face challenges in attracting high-quality students, qualified teachers, and sufficient funding. These factors can affect the overall effectiveness of vocational education pathways.

Improving the social status and public perception of vocational education is therefore an important aspect of vocational education reform. This requires not only policy support but also broader cultural and societal changes that recognize the value of technical and skilled professions.

Uneven Regional Development

Another important challenge in the implementation of integrated vocational education pathways is the uneven development of vocational education across different regions in China. Due to differences in economic development, educational resources, and industrial structures, vocational education systems vary significantly between regions.

In economically developed regions, vocational institutions often have better facilities, stronger connections with industry, and more opportunities to implement innovative educational programs. By contrast, institutions in less developed regions may face shortages of funding, qualified teachers, and training resources. These disparities can affect the implementation of integrated vocational education pathways and create inequalities in educational opportunities for students.

Addressing regional disparities requires targeted policy interventions and increased investment in vocational education infrastructure. Strengthening cooperation between institutions in different regions may also help promote the sharing of resources and best practices.

Regional Disparities in Vocational Education Development: Evidence from Jilin Province

Significant regional disparities remain a defining feature of vocational education development in China, and Jilin Province provides a representative case of challenges faced by traditional industrial regions in Northeast China. Compared with national averages, Jilin exhibits constraints in institutional capacity, funding levels, and industry participation, all of which influence the effectiveness of integrated pathways such as the “3+2+2” model.

Table 2 Comparative Indicators of Vocational Education Development

Region / Case	Number of Vocational Institutions	Enrollment Rate (%)	Per-Student Funding (RMB)	Industry Participation Level
National Benchmark (Eastern)	High	55–60	12,000–15,000	Strong
National (Central Average)	Medium	45–50	8,000–10,000	Moderate
National (Western Baseline)	Relatively Low	35–45	5,000–8,000	Weak
Jilin Province	Medium–Low	40–48	6,000–9,000	Relatively Weak

As illustrated in Table X, Jilin Province aligns more closely with the lower end of the national spectrum. While the province maintains a moderate number of vocational institutions, enrollment rates remain below the eastern benchmark, and per-student funding is comparatively limited. More importantly, industry participation is relatively weak due to the ongoing restructuring of traditional manufacturing sectors and the limited presence of high-growth private enterprises.

These structural constraints have direct implications for the implementation of integrated vocational education pathways. For instance, weaker industry engagement limits opportunities for work-based learning, while funding constraints affect the development of advanced training facilities and digital infrastructure.

Nevertheless, Jilin also demonstrates emerging strengths. Government-led coordination mechanisms have partially compensated for market limitations, and recent policy initiatives have prioritized the integration of vocational education with regional industrial revitalization strategies, particularly in sectors such as equipment manufacturing and new energy vehicles.

Addressing these disparities requires targeted and region-specific policy interventions. In the case of Jilin, priority should be given to increasing fiscal investment, strengthening school-enterprise cooperation through policy incentives, and leveraging digital technologies to overcome geographical and resource constraints. Such measures are essential for ensuring that integrated models like the “3+2+2” pathway can be effectively implemented in less-developed regions.

Strategies for Improving Integrated Vocational Education Pathways in China

Given the challenges identified in the implementation of integrated vocational education pathways, it is necessary to develop systematic strategies that strengthen coordination among institutions, improve curriculum design, and enhance industry participation. The continuous development of integrated vocational education pathways requires not only policy support but also institutional innovation and collaboration between educational institutions and industry partners. Based on the analysis presented in the previous sections, several key strategies can be proposed to improve the effectiveness and sustainability of integrated vocational education pathways in China.

Developing Competency-Based Integrated Curriculum Systems

One of the most important strategies for improving integrated vocational education pathways is the development of competency-based curriculum systems that align learning objectives across different educational levels. A well-designed curriculum framework should clearly define the progression of skills and knowledge from secondary vocational education to higher vocational education and further to vocational undergraduate programs.

Competency-based curriculum design focuses on the development of practical abilities and professional competencies that are required in specific occupational fields. By identifying the core competencies required at different stages of vocational education, educators can design training programs that support the gradual development of students’ professional skills. Such an approach helps ensure that students acquire increasingly advanced competencies as they progress through different educational levels.

In addition, integrated curriculum systems should emphasize the connection between theoretical learning and practical training. Vocational education institutions should incorporate project-based learning, workplace simulations, and industry-oriented training activities into their curricula. These teaching methods help students apply theoretical knowledge in practical contexts and enhance their problem-solving abilities.

Establishing unified curriculum standards is also important for improving curriculum articulation. Educational authorities can develop national or regional curriculum guidelines that provide a common framework for vocational institutions. These guidelines should outline the key competencies, learning outcomes, and training objectives expected at each level of vocational education. By adopting such frameworks, institutions can reduce curriculum duplication and ensure smoother transitions for students moving between educational levels.

Strengthening Institutional Coordination and Policy Support

Effective institutional coordination is essential for the successful implementation of integrated vocational education pathways. Given the diverse range of institutions involved in vocational education, including secondary vocational schools, higher vocational colleges, and vocational universities, it is necessary to establish mechanisms that facilitate cooperation among these institutions.

One possible approach is the establishment of vocational education alliances or collaborative networks. These alliances can bring together different types of educational institutions within a region to coordinate their training programs, share educational resources, and jointly develop articulated curricula. Through such cooperation, institutions can better align their educational objectives and create more coherent vocational education pathways.

Policy support also plays a crucial role in strengthening institutional coordination. Governments can introduce policies that encourage collaboration between institutions, such as funding programs for joint training initiatives or incentives for institutions that successfully implement integrated educational programs. In addition, the development of standardized credit transfer systems and qualification frameworks can facilitate the recognition of learning outcomes across different institutions.

Another important aspect of policy support is the establishment of clear governance structures for integrated vocational education pathways. By defining the roles and responsibilities of different stakeholders, policymakers can ensure that educational institutions, industry partners, and government agencies work together effectively to support vocational education reform.

Enhancing Industry–Education Integration

Deepening the integration between vocational education and industry is another key strategy for improving integrated vocational education pathways. Industry participation is essential for ensuring that vocational training remains closely aligned with labor market needs and technological developments.

Vocational education institutions should strengthen partnerships with enterprises in order to provide students with more opportunities for practical training and workplace learning. Enterprises can contribute to vocational education in several ways, including participating in curriculum development, providing internship placements, and offering training equipment and technical expertise.

Furthermore, cooperative training models can be developed to strengthen the connection between schools and enterprises. For example, dual training programs can combine classroom learning with structured workplace training, allowing students to gain practical experience while completing their academic studies. Such programs can help students develop the professional competencies required by employers and improve their employment prospects after graduation.

Governments can also play an important role in promoting industry participation by providing incentives for enterprises that actively engage in vocational education. These incentives may include tax benefits, financial subsidies, or recognition programs that acknowledge enterprises' contributions to talent development.

By strengthening collaboration between educational institutions and industry partners, vocational education pathways can become more responsive to the evolving needs of modern industries.

Improving the Social Recognition of Vocational Education

Enhancing the social recognition and attractiveness of vocational education is another crucial factor in the successful development of integrated vocational education pathways. Public perceptions of vocational education can significantly influence students' educational choices and the overall status of vocational institutions within the education system.

To improve the social image of vocational education, governments and educational institutions should promote greater public awareness of the importance of technical and skilled professions. Public communication campaigns, media coverage, and national skills competitions can help highlight the achievements of skilled workers and demonstrate the value of vocational education in economic development.

Another important measure is to create clearer career development pathways for vocational graduates. When students and their families can see that vocational education provides opportunities for further study and long-term career advancement, they may be more willing to choose vocational pathways. The expansion of

vocational undergraduate programs and the establishment of integrated education pathways can therefore play an important role in enhancing the attractiveness of vocational education.

In addition, improving the quality of vocational education institutions is essential for strengthening their reputation. Investments in teaching facilities, teacher training, and industry partnerships can help ensure that vocational programs provide high-quality education and training experiences. As the quality of vocational education improves, public confidence in vocational pathways is likely to increase.

Promoting Balanced Regional Development

Finally, promoting balanced regional development is important for ensuring equal access to integrated vocational education pathways across China. Given the significant differences in economic development and educational resources among regions, targeted policy interventions are needed to support vocational education in less developed areas.

Governments can increase funding for vocational education infrastructure in underdeveloped regions and support the development of modern training facilities and laboratories. In addition, programs that encourage collaboration between institutions in developed and less developed regions can help facilitate the sharing of educational resources and expertise.

The use of digital technologies and online learning platforms may also help reduce regional disparities in vocational education. By providing access to high-quality digital learning resources, vocational institutions in different regions can improve their teaching capacity and expand educational opportunities for students.

Through these efforts, China can develop a more equitable vocational education system in which integrated education pathways are accessible to students regardless of their regional background.

Policy Incentive Mechanisms for Industry Participation: A Jilin-Oriented Approach

To improve the effectiveness of integrated vocational education pathways in regions such as Jilin Province, it is necessary to design targeted and context-sensitive policy incentive mechanisms that address local structural constraints.

First, differentiated tax incentive policies should be introduced to stimulate enterprise participation in vocational education. Given the relatively limited engagement of private enterprises in Jilin, tax reductions and credits should prioritize small- and medium-sized manufacturing firms that participate in training programs, provide internships, or collaborate in curriculum development. A regionally adjusted tax credit scheme could offer higher incentive rates in economically revitalizing areas to offset participation costs.

Second, a flexible and standardized credit transfer system should be established to support vertical mobility across institutions within the “3+2+2” framework. In the context of Jilin, this system should emphasize compatibility between secondary vocational, higher vocational, and applied undergraduate programs, particularly in key regional industries such as automotive engineering and equipment manufacturing.

Third, targeted financial subsidies and government-backed funding programs are essential. Local governments could provide matching grants to enterprises that co-invest in training centers or participate in long-term school-enterprise partnerships. These subsidies should be performance-based, linked to indicators such as student employment outcomes, certification rates, and alignment with regional industrial needs.

Fourth, the development of regional industry-education integration platforms should be strengthened. In Jilin, such platforms should be government-led and focus on coordinating resources among educational institutions, state-owned enterprises, and emerging industries. These platforms can facilitate information sharing, joint curriculum design, and labor market alignment.

Overall, policy mechanisms in Jilin must go beyond generic national frameworks and adopt a differentiated approach that reflects the province’s economic transition stage and industrial structure.

CONCLUSION

The development of integrated vocational education pathways has become a central component of contemporary vocational education reform, driven by increasing demand for highly skilled technical professionals in rapidly evolving economies. In this context, vocational systems must move beyond isolated training provision toward more coherent and flexible structures that support continuous skill development and lifelong learning.

This study contributes to understanding the evolution of vocational education pathways in China by examining key structural models and their underlying policy logic. The analysis highlights the emergence of articulated pathway models—such as secondary–higher vocational, five-year integrated programs, and secondary–higher–undergraduate pathways—as important institutional innovations that enhance vertical articulation and system coherence. These models have improved access and continuity within vocational education, supporting the cultivation of higher-level technical talent.

Despite these advancements, persistent challenges remain, including curriculum misalignment, institutional fragmentation, limited industry participation, and uneven social recognition of vocational education. Moreover, regional disparities in resource allocation—particularly in less-developed provinces such as Jilin—continue to affect the effectiveness and equity of pathway implementation.

In addressing these challenges, digital technologies emerge as a critical enabling mechanism. By supporting virtual training environments, resource sharing, and digital credentialing systems, they reduce dependence on localized infrastructure and enhance the scalability and portability of vocational education. As such, digitalization should be regarded as a strategic tool for promoting more balanced and integrated system development.

Building on these findings, this study underscores the need for competency-based curriculum integration, stronger institutional coordination, deeper industry–education collaboration, and targeted regional support policies. Together, these measures can improve pathway permeability and strengthen the overall effectiveness of vocational education systems.

Finally, this study is limited by its reliance on policy analysis and literature review. Future research should incorporate empirical approaches, including institutional case studies and outcome-based analyses, to further examine the implementation and impact of integrated vocational education pathways in practice.

REFERENCES

1. Albashiry, N. M., Voogt, J. M., & Pieters, J. M. (2015). Curriculum design practices of a vocational community college in a developing context: challenges and needs. *Community College Journal of Research and Practice*, 39(12), 1137–1152. <https://doi.org/10.1080/10668926.2014.942894>
2. Bank, W. (2019). *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. In Washington, DC: World Bank eBooks. <https://doi.org/10.1596/978-1-4648-1457-0>
3. Billett, S. (2011). *Vocational education: Purposes, traditions and prospects*. Springer Science & Business Media
4. Billett, S. (2015). Integrating Practice-based Experiences into Higher Education. In *Professional and practice-based learning*. <https://doi.org/10.1007/978-94-017-7230-3>
5. Bodewig, C., & Badiani-Magnusson, R. (2014). *Skilling Up Vietnam: Preparing the workforce for a modern market economy*. In The World Bank eBooks. <https://doi.org/10.1596/978-1-4648-0231-7>
6. Brockmann, M., Clarke, L., & Winch, C. (2011). Knowledge, skills and competence in the European labour market. <https://doi.org/10.4324/9780203814796>
7. Chen, J., Lin, L., Gai, X., & Zhang, Y. (2025). Bridging the gap: an empirical study on learning motivation, pathways, and outcomes in China's 3+ 4 integrated vocational-bachelor education program. *Frontiers in Psychology*, 16, 1565323.

8. CEDEFOP. (2017). The changing nature and role of vocational education and training in Europe. Publications Office of the European Union.
9. Chen, Z., Pei, W., Zhang, J., & Wu, X. (2025). The transformation of Chinese vocational education in the era of globalization. *Vocation Technology & Education*, 2(3). <https://doi.org/10.54844/vte.2025.1023>
10. Cheng, S., & Lu, Y. (2024). The Historical Process and Experience of the Development of Vocational Undergraduate Education in China since the 18th National Congress of the Communist Party of China. *Journal of Education Humanities and Social Sciences*, 27, 543–550. <https://doi.org/10.54097/nwxhx016>
11. Evans, T. L. (2019). Global trends in TVET: A framework for social justice. *Australian TAFE Teacher*, 53(3), 8. <https://search.informit.com.au/documentSummary;dn=729151135626807;res=IELAPA>
12. Guo, Z., & Lamb, S. (2010). International comparisons of China’s technical and vocational education and training system. In *Technical and vocational education and training*. <https://doi.org/10.1007/978-90-481-8743-0>
13. Lam, T., & Xiao, H. (2000). Challenges and constraints of hospitality and tourism education in China. *International Journal of Contemporary Hospitality Management*, 12(5), 291–295. <https://doi.org/10.1108/09596110010339643>
14. Liu, S., & Hardy, I. (2021). Understanding Chinese national vocational education reform: a critical policy analysis. *Journal of Vocational Education and Training*, 75(5), 1055–1077. <https://doi.org/10.1080/13636820.2021.1998195>
15. McGrath, S., & Yamada, S. (2023). Skills for development and vocational education and training: Current and emergent trends. *International Journal of Educational Development*, 102, 102853. <https://doi.org/10.1016/j.ijedudev.2023.102853>
16. Ministry of Education of the People’s Republic of China. (2019). National vocational education reform implementation plan. Ministry of Education.
17. Ministry of Education of the People’s Republic of China. (2022). Vocational Education Law of the People’s Republic of China . Ministry of Education.
18. Moodie, G. (2008). From Vocational to Higher Education: an international perspective. <http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=265870>
19. Oecd. (2010). Learning for jobs. In *OECD reviews of vocational education and training*. <https://doi.org/10.1787/9789264087460-en>
20. Oecd. (2021). *OECD Skills Studies OECD Skills Strategy Implementation Guidance for Korea Strengthening the governance of Adult learning*. OECD Publishing.
21. Rauner, F., & Maclean, R. (2008). *Handbook of Technical and Vocational Education and Training Research*. Springer Science & Business Media.
22. Rojewski, J. W. (2009). A conceptual framework for technical and vocational education and training. In *International handbook of education for the changing world of work: Bridging academic and vocational learning* (pp. 19-39). Dordrecht: Springer Netherlands.
23. Roscigno, V. J., Shavit, Y., & Muller, W. (1999). From School to Work: A Comparative study of educational Qualifications and occupational Destinations. *Contemporary Sociology a Journal of Reviews*, 28(3), 294. <https://doi.org/10.2307/2654149>
24. Ryan, P. (2012). Apprenticeship: between theory and practice, school and workplace. In *VS Verlag für Sozialwissenschaften eBooks* (pp. 402–432). https://doi.org/10.1007/978-3-531-18757-0_23
25. Salleh, K. M., & Sulaiman, N. L. (2020). Reforming Technical and Vocational Education and Training (TVET) on workplace learning and skills development. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(5), 2964–2967. <https://doi.org/10.35940/ijrte.e6553.018520>
26. Shegelman, I., Shchukin, P., & Vasilev, A. (2015). Integration of universities and industrial enterprises as a factor of higher vocational education development. *Procedia - Social and Behavioral Sciences*, 214, 112–118. <https://doi.org/10.1016/j.sbspro.2015.11.601>
27. Sun, Z. (2025). The role of ‘1+X’ certification in curriculum Reform and Competency-Based Education in China’s vocational colleges. *Journal of Advanced Research in Education*, 4(2), 49–55. <https://doi.org/10.56397/jare.2025.03.07>
28. Training, U. I. C. F. T. a. V. E. A. (2016). *UNESCO TVET Strategy, 2016-2021: Report of the UNESCO-UNEVOC Virtual Conference. 28 September to 3 October 2015.*

29. Unesco. (2020). Global Education Monitoring Report 2020: Inclusion and education: All means all. Paris. In UNESCO eBooks. <https://doi.org/10.54676/jjnk6989>
30. Wang, L., & Jiang, D. (2013). Chinese Vocational Education: borrowing and reforming. *Chinese Education & Society*, 46(4), 92–99. <https://doi.org/10.2753/ced1061-1932460409>
31. Wheelahan, L. (2010). Why Knowledge Matters in Curriculum: A social realist argument. <https://doi.org/10.4324/9780203860236>
32. Wheelahan, L. (2015). Not just skills: what a focus on knowledge means for vocational education. *Journal of Curriculum Studies*, 47(6), 750–762. <https://doi.org/10.1080/00220272.2015.1089942>
33. Xue, E., & Li, J. (2022). *China's vocational education reform: Explorations and Analysis*. Springer Nature.
34. Yu, T., Yan, X., & Jin, Y. (2024). Vocational education in China. *Education in China and the World: National Development and Global Benchmarking*, 361-418.