

Research on the Path of High Quality Modern Vocational Education System Construction in Shaanxi Province from the Perspective of Multi-Dimensional Collaborative Governance

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Abstract: *This paper focuses on the construction path of high-quality modern higher vocational education system in Shaanxi Province from the perspective of diversified collaborative governance theory. Firstly, by reviewing the development overview of higher vocational education in Shaanxi Province, it was found that there are problems such as professional homogenization, disconnection from market demand, and insufficient practical ability of teachers. On this basis, the necessity of multi-dimensional collaborative governance to solve the above difficulties is analyzed, and the importance of collaboration among government, vocational colleges, enterprises, industry organizations and other entities is pointed out. Furthermore, specific construction paths are proposed from four dimensions: deepening the integration of industry and education, optimizing professional layout, strengthening teacher construction, and improving the quality assurance system. The research aims to provide practical guidance for the high-quality development of higher vocational education in Shaanxi Province, as well as reference for the construction of higher vocational education systems in other regions.*

Keywords: *Multi-Dimensional Collaborative Governance, Vocational Education, Integration of Industry and Education*

1. Introduction

In the context of rapid economic and social development, higher vocational education is crucial for cultivating high-quality technical and skilled talents and promoting industrial upgrading. As a major province in education and technology, Shaanxi Province has achieved remarkable results in vocational education in recent years. As of 2023, there are 52 vocational colleges with 508779 vocational (college) students. The scale of education has expanded, and the majors cover multiple fields, providing a large number of talents for the regional economy. However, with the adjustment of industrial structure and the transformation of economic development mode, vocational education in Shaanxi is facing challenges: some colleges have low matching and homogenization of professional settings with market demand, and talent is difficult to meet the needs of enterprises; The integration of industry and education, insufficient depth and breadth of school enterprise cooperation, insufficient mobilization of enterprise participation enthusiasm, and imperfect collaborative education mechanisms; The traditional governance model is single, difficult to integrate multiple resources, and restricts high-quality development.

Diversified collaborative governance emphasizes the participation, cooperation, and complementarity of multiple subjects. Introducing higher vocational education can break down traditional barriers, integrate resources, and form a joint force for educating people [1]. Through the collaboration of all parties, the adaptability and quality of education can be improved, and regional development can be served. Therefore, exploring relevant construction paths is of great significance. This study theoretically enriches the theory of higher vocational education, provides new perspectives and empirical evidence for the application of diversified collaborative governance, improves the theory of vocational education governance, and expands the scope of relevant theoretical practices; In practice, it can guide the high-quality development of higher vocational education in Shaanxi, assist the government in formulating scientific policies, strengthen the connotation construction of colleges, actively participate in enterprises, and play a link role in the industry. It can also provide reference for other regions and promote the overall improvement of higher vocational education in China.

2. Analysis of the current situation and problems of higher vocational education system in Shaanxi Province

2.1 Current situation of higher vocational education system in Shaanxi Province

The vocational education system in Shaanxi Province presents a diversified pattern, with 82 universities across the province involved in vocational education, covering independent vocational and technical colleges, higher vocational colleges, adult colleges, general undergraduate colleges, and private universities. Among them, 46 independent vocational and technical colleges and higher vocational colleges are the backbone, such as Shaanxi Industrial Vocational and Technical College (A level of the "Double High Plan"), which has significant advantages in the field of equipment manufacturing; Undergraduate secondary colleges rely on parent resources to improve teaching quality, such as the integration of cutting-edge theories into vocational majors at Xi'an Jiaotong University City College; Private universities are flexible in their operations, such as Xi'an Eurasia University, which has distinct characteristics in fields such as art and design; Adult colleges and universities serve the continuing education of in-service personnel, and complement each other to promote the development of higher vocational education.

At present, there are 52 vocational colleges in the province, with a scale that ranks at a certain level in the country. In 2023, there will be 73588 enrolled students and 508779 current students, with a large reserve of technical and skilled talents. Engineering majors account for about 40% of the enrollment majors (concentrated in fields such as mechanical manufacturing), which meets the needs of the industry; Humanities account for about 30% (covering finance, commerce, etc.), meeting the needs of the service industry. In terms of regional distribution, over 70% of colleges are concentrated in economically developed areas such as Xi'an and Baoji. The 25 colleges in Xi'an form a cluster of higher vocational education institutions, leveraging economies of scale.

The professional settings cover 19 major categories and 468 majors, forming a regional dislocation development pattern: universities in northern Shaanxi focus on energy and chemical engineering related majors (such as Yulin Vocational and Technical College, where the local employment rate of chemical engineering graduates exceeds 80%), while universities in Guanzhong focus on high-end equipment manufacturing and other industries (such as Shaanxi Western Defense Industry Vocational and Technical College closely cooperating with enterprises). However, there are problems such as homogenization in professional settings (such as the popularization of accounting and computer application technology) and disconnection from the market (lagging behind in emerging technology fields).

In terms of teaching staff, there will be 560900 full-time teachers in 2023 (a year-on-year increase of 49700). Colleges and universities improve the quality of their teaching staff through training and further education (such as Shaanxi Railway Engineering Vocational and Technical College sending more than 50 teachers annually for training), introducing part-time teachers from enterprises (the proportion needs to be increased), and establishing teacher teaching development centers. However, it still faces challenges such as insufficient practical experience among teachers, low proportion of "dual teacher" teachers, and shortage of teachers in emerging majors.

2.2 Problems in the higher vocational education system of Shaanxi Province

2.2.1 Imperfect collaborative governance mechanism

In the vocational education system of Shaanxi Province, the problem of insufficient collaboration among government, schools, enterprises and other entities is particularly prominent [2]. The government has failed to fully consider the actual needs of schools and enterprises in policy formulation and resource allocation, resulting in weak targeting and effectiveness of some policies. For example, in the implementation of the policy of integrating industry and education, although the government has introduced a series of policies to encourage enterprises to participate in higher vocational education, there is a lack of clear operational rules and effective supervision mechanisms in the specific implementation process, resulting in low enthusiasm for enterprise participation.

There is a lack of effective communication and cooperation mechanisms between schools and enterprises, resulting in poor information exchange. Schools have insufficient understanding of the talent and technical needs of enterprises, resulting in a disconnect between professional settings and talent training programs and the actual needs of enterprises. Enterprises lack understanding of the teaching situation and student training quality of schools, and have a low willingness to participate in school

teaching and talent development. At the same time, the cooperation between schools and enterprises often lacks long-term planning and stable cooperation models, mostly short-term and scattered cooperation, making it difficult to form a long-term collaborative education mechanism.

In addition, the role of industry associations, social organizations, etc. in the governance of higher vocational education has not been fully utilized. Industry associations have professional advantages in industry standard setting, talent demand forecasting, vocational skill appraisal, etc. However, currently, the participation of industry associations in higher vocational education in Shaanxi Province is relatively low, and they have not been able to provide effective guidance and services for schools and enterprises.

2.2.2 Insufficient depth of integration between industry and education

There are many problems in school enterprise cooperation in Shaanxi Province, which seriously restrict the deep development of industry education integration. Firstly, the low enthusiasm of enterprises to participate is a prominent issue. Due to the high cost of participating in vocational education and the difficulty of obtaining significant economic benefits in the short term, many enterprises adopt a wait-and-see attitude towards school enterprise cooperation. According to the survey, only about 30% of enterprises in Shaanxi Province are willing to actively participate in the process of vocational education talent cultivation. Most enterprises only provide certain support during the student internship stage, and participate less in key links such as curriculum development and talent cultivation plan formulation.

Secondly, the form of cooperation is single, mainly relying on traditional models such as student internships and order based training, lacking innovation and depth. In the internship process, some companies view interns as cheap labor and fail to provide students with systematic practical training and guidance, making it difficult for students to truly improve their vocational skills during internships. Although the order based training model meets the talent needs of enterprises to some extent, the limited participation of enterprises in the training process of order based students makes it difficult for the quality of talent training to fully meet the requirements of enterprises.

In addition, the guarantee mechanism for school enterprise cooperation is not sound, lacking clear legal regulations and policy support, and the protection of the rights and interests of enterprises participating in higher vocational education is insufficient, which also affects the enthusiasm of enterprises to participate. At the same time, the profit distribution mechanism in school enterprise cooperation is unreasonable, and the interests and demands of schools and enterprises in cooperation are difficult to effectively balance, further restricting the in-depth development of industry education integration.

2.2.3 The quality of education needs to be improved

Some vocational colleges in Shaanxi Province have the problem of insufficient teaching resources, especially in some newly established and popular majors, where there is a shortage of experimental and practical training equipment, making it difficult to meet teaching needs. According to statistics, about 20% of vocational colleges have an update rate of less than 10% for experimental training equipment, and some equipment is severely aging, which affects the quality of practical teaching [3]. At the same time, the teaching methods are outdated and still mainly rely on traditional classroom lectures, lacking the application of modern teaching methods such as practical teaching, project-based teaching, and case teaching, which makes it difficult to stimulate students' learning interest and initiative, and is not conducive to cultivating students' practical ability and innovative spirit.

In terms of the quality of talent cultivation, the problem of detachment from market demand is quite obvious. The talent training objectives of some vocational colleges are not clear enough, and the curriculum design lacks specificity, failing to closely design around market demand and vocational job requirements. For example, in some computer related majors, the course content fails to keep up with the development of industry technology in a timely manner, resulting in a gap between the knowledge and skills learned by students and the actual needs of enterprises, leading to insufficient competitiveness of graduates in employment. In addition, some vocational colleges do not attach enough importance to the comprehensive quality cultivation of students, and their education in professional ethics, teamwork, communication skills, and other aspects is relatively weak, making it difficult to meet the comprehensive needs of enterprises for high-quality technical and skilled talents.

2.2.4 Low social recognition

Due to the influence of traditional concepts, there is a certain bias towards vocational education in society. It is generally believed that vocational education is a low-level education, and the employment prospects and career development space of vocational college graduates are not as good as those of ordinary undergraduate graduates. This bias leads to significant pressure on vocational education in terms of enrollment, employment, and other aspects. In the enrollment process, high scoring candidates have a lower willingness to apply to vocational colleges, which has a certain impact on the quality of students in vocational colleges. In terms of employment, some employers discriminate against vocational college graduates by setting high educational requirements during the recruitment process, which limits their employment opportunities.

The lack of recognition of vocational education by society also affects the choices of parents and students towards vocational education. Many parents prefer their children to receive regular undergraduate education, believing that this is the only way to achieve better development. This concept restricts the development scale and quality improvement of higher vocational education, which is not conducive to attracting outstanding talents to apply for higher vocational colleges, nor is it conducive to attracting high-quality teachers and social resources, further affecting the sustainable development of higher vocational education.

3. Opportunities and challenges for the construction of higher vocational education system in Shaanxi Province from the perspective of diversified collaborative governance

In the construction of the higher vocational education system in Shaanxi Province, the diversified collaborative governance model revolves around clarifying the main responsibilities and establishing governance mechanisms, forming a pattern of multi-party linkage and collaborative efforts.

From the perspective of main responsibilities, the government undertakes policy-making, resource allocation, and supervision and management responsibilities, formulates vocational education policies based on the characteristics of Shaanxi's industries, increases financial investment and guides social capital participation, while ensuring the quality of education through a quality supervision system; As the core body, vocational colleges focus on talent cultivation, formulate plans based on market demand, build a "dual teacher" team, promote teaching reform and innovative methods and curriculum systems, and also leverage professional advantages to provide social services such as technology research and development and vocational training; Enterprises provide timely feedback on talent needs, jointly establish internship and training bases with universities and provide positions, and select key personnel to participate in teaching; Industry organizations establish industry and vocational skill standards, build talent supply and demand docking platforms, and provide guidance for the construction of majors in colleges and universities.

In terms of governance mechanisms, the communication and coordination mechanism achieves regular communication and real-time information sharing among all parties through the government led joint conference system and online information management system, clarifies responsibilities and processes, and supervises and evaluates them; The benefit sharing mechanism takes into account the demands of all parties, balances the interests of the government, universities, enterprises, and industry organizations through tax incentives, priority selection, resource support, and other means, and resolves distribution differences through negotiation; We establish a supervision and evaluation mechanism that involves multiple stakeholders, determine evaluation indicators covering multiple dimensions such as talent cultivation and industry education integration, and use the evaluation results for policy adjustments, resource optimization, and reward and punishment accountability to ensure the effectiveness of collaborative governance.

3.1 Opportunities

The country and Shaanxi Province attach great importance to vocational education and have introduced a series of policies to provide guarantees for its system construction. At the national level, the Implementation Plan for National Vocational Education Reform emphasizes the important position of vocational education and proposes to deepen the integration of industry and education and school enterprise cooperation; The Opinion on Promoting the High Quality Development of Modern Vocational Education clarifies the goal of establishing a basic modern vocational education system by 2025, providing macro guidance for vocational education in Shaanxi. Shaanxi Province has revised the

"Implementation Measures of the Vocational Education Law of the People's Republic of China" to establish a "three-dimensional cross type" vocational education system and a multi-party collaborative education pattern, strengthen the role of enterprises, promote the synergy between vocational education and regional economy, and ensure the coordinated development of multiple parties.

The economic development and industrial upgrading in Shaanxi bring opportunities for higher vocational education. As an industrial and technological research and development center, Shaanxi has industrial advantages in multiple fields and promotes the upgrading of industries towards high-end, intelligent, and green development. There is a strong demand for high-quality technical skills and versatile talents. Vocational education can adjust majors and talent training programs to meet industry needs, such as Shaanxi Aviation Vocational and Technical College offering a major in additive manufacturing technology; At the same time, industrial upgrading provides more practical platforms for school enterprise cooperation, such as Shaanxi Vocational and Technical College of Finance and Economics jointly building an industrial college with Huawei.

New technologies such as artificial intelligence bring innovative opportunities to higher vocational education. It provides technical support for innovative teaching modes, such as online education and enriching teaching methods with VR/AR technology; We encourage vocational colleges to adjust their majors and curriculum systems, cultivate talents adapted to new technologies, and place greater emphasis on cultivating students' comprehensive qualities; It also provides new opportunities for school enterprise cooperation, such as co building laboratories and research and development centers, and promoting the integration of industry, academia, research and application.

3.2 Challenge

Although the country and Shaanxi strongly support vocational education, traditional concepts lead to low social recognition and hinder the promotion of diversified collaborative governance. The society generally regards ordinary undergraduate education as the mainstream of higher education, believing that the level of higher vocational education is low and the development space for graduates is limited, which affects the quality of enrollment in higher vocational education and restricts employment by educational qualifications. Parents and students have a low willingness to choose vocational education, which hinders its scale and quality improvement, and is not conducive to sustainable development. At the same time, due to high participation costs and unclear short-term benefits, enterprises adopt a wait-and-see attitude, and industry associations lack awareness of participation, all of which reduce their collaborative enthusiasm.

The integration of vocational education resources in Shaanxi Province faces institutional and mechanism barriers. One is the lack of effective communication and coordination mechanisms between government, enterprises, and schools, resulting in low cooperation efficiency due to information asymmetry, such as the difficulty in reaching consensus on industry education integration projects; Secondly, there is an imbalance in resource allocation, with a shortage of teaching resources in newly established or remote universities, and a lack of scientific standards for resource allocation resulting in waste and idleness; The third issue is incomplete policies and regulations, lack of clear guidance and detailed rules for resource integration, insufficient protection of enterprise rights and tax incentives, which affects their participation enthusiasm.

In the competition for talent, Shaanxi vocational education faces significant challenges. Compared with developed regions, Shaanxi has weaker economic and industrial advantages, insufficient attraction to high-quality technical and skilled talents, and intensified competition pressure due to the loss of outstanding graduates and the gap in teaching resources; At the same time, the popularization of undergraduate and graduate education has weakened the employment competitiveness of vocational college graduates, and vocational colleges lack the ability to cultivate composite talents, making it difficult to meet the diverse needs of the market.

4. Path to building a high quality modern vocational education system in Shaanxi Province from the perspective of multi-dimensional collaborative governance

4.1 Deepen the integration of industry and education, promote collaborative education between schools and enterprises

There are various modes of school enterprise cooperation in higher vocational education, each with

its own characteristics and effectiveness. Order based training is guided by the needs of enterprises, with universities and enterprises signing training orders to jointly determine the plan. Enterprises participate in teaching, provide practical training and part-time teachers, and students enter enterprises for employment after graduation. Shaanxi Industrial Vocational and Technical College has partnered with BYD to establish a new energy vehicle technology order class, which aims to connect talent cultivation with enterprise needs and reduce enterprise costs.

The modern apprenticeship system integrates school education and enterprise practice, with both schools and enterprises as the main sports personnel. Students have both student and apprentice identities, and the school teaches theory while the enterprise sends masters to guide practice. As Shaanxi Railway Engineering Vocational and Technical College collaborates with enterprises to promote this model in the railway engineering technology major, students participate in practical projects to enhance their vocational skills and employment competitiveness.

We establish industry colleges, integrate school enterprise resources, build colleges and industry leading enterprises, and carry out talent training, research and development, and services around specific industries. Shaanxi Energy Vocational and Technical College and Shaanxi Coal Group jointly establish a coal industry college, share resources, carry out order training, and assist enterprises in technological innovation and regional economic development.

Building a high-quality internship and training base is the key to enhancing students' practical abilities. The government has introduced tax incentives and set up special funds to guide school enterprise cooperation; We joint investment of resources and planning by schools and enterprises, such as the joint construction of a base between Xi'an Aviation Vocational and Technical College and AVIC West Fly; At the same time, establish sound management systems and evaluation mechanisms to ensure the quality of practical training.

Enterprises also participate in curriculum development, teaching evaluation, and teacher training. In course development, enterprises provide suggestions and materials, and integrate them into actual projects and technical standards; We will introduce the enterprise dimension into teaching evaluation, evaluate students based on their professional abilities, and help universities improve teaching; In terms of teacher training, universities send teachers to practice in enterprises, and enterprise experts provide on-site training to help build a "dual teacher" team.

4.2 Optimize professional layout and enhance the compatibility between education and industry

The industries in Shaanxi Province are characterized by diversification, with energy and chemical industry (traditional advantageous industries, upgrading to green and intelligent), equipment manufacturing (including aerospace, etc., with significant progress in high-end development), electronic information (semiconductor and other fields have become large-scale, with increasing demand for talents), and cultural tourism (relying on resources to become new growth points, requiring talents in tourism management, etc.) as the economic pillars.

Vocational colleges need to deepen market research, collaborate with industry associations and enterprises to collect industry trends and talent demands, and provide a basis for professional adjustments. After conducting research, Shaanxi Vocational and Technical College of Finance and Economics has established a major in financial technology applications to meet the needs of financial digital transformation.

Colleges will dynamically adjust majors based on research: eliminate disconnected and low employment majors, and add new majors related to emerging and pillar industries (such as new energy vehicle technology); Upgrade traditional majors (such as mechanical manufacturing to intelligent manufacturing, adding industrial robot courses).

Shaanxi Province is guided by industrial clusters and building characteristic professional groups: constructing core professional groups in the fields of energy, chemical engineering, petrochemical technology, etc., to achieve resource sharing; Build a professional team in the field of mechanical design and equipment manufacturing, and connect with the industry chain. At the same time, it establishes a dynamic adjustment mechanism for professional groups, optimizes the structure according to industry changes (such as adding artificial intelligence related content to the equipment manufacturing professional group), promotes professional integration, and cultivates comprehensive talents.

4.3 Strengthen the construction of the teaching staff and improve the quality of education and teaching

Vocational colleges in Shaanxi Province have taken multiple measures to strengthen the construction of their teaching staff, with a focus on promoting the training and introduction of "dual qualified" teachers. In terms of training, policies have been introduced to require teachers to participate in corporate practice. For example, the Provincial Department of Education stipulates that teachers must accumulate more than 6 months of corporate practice every 5 years, and this will be used as a key indicator for professional title evaluation and performance assessment; At the same time, special training funds will be set up to support teachers' participation in skills training and professional qualification certification, in order to enhance their professional skills.

When Shaanxi Province introduces "dual teacher" teachers, it broadens the channels to attract enterprise technical backbone and industry experts, supplemented by providing competitive salary, career development space, housing subsidies and other preferential policies. For example, Shaanxi Vocational and Technical College recruits practical talents from enterprises, provides equal treatment and offers teaching and training, and attracts key personnel from enterprises to join.

In addition, universities enhance the quality of teachers through systematic training, covering professional knowledge updates, innovative teaching methods, etc., such as inviting experts to give lectures and organizing teaching skills training; We regularly hold teaching competitions (classroom teaching, practical teaching, etc.), establish recognition and rewards, and combine them with assessment and professional title evaluation to stimulate teachers' enthusiasm; Establish special funds for teaching reform projects, such as Shaanxi Vocational and Technical College of National Defense Industry, which has about 50 projects per year to promote teaching reform and achievement promotion, and improve overall teaching quality.

4.4 Improve the quality assurance system and enhance the social recognition of higher vocational education

Shaanxi higher vocational education builds a multi coordinated quality assurance system and breaks the single mode of school self-evaluation. The government plays a role in macro management and supervision, formulates evaluation policies and standards, and organizes comprehensive evaluations. As the Provincial Department of Education has issued the "Evaluation Plan for Talent Cultivation in Vocational Colleges in Shaanxi Province", the evaluation will be conducted from multiple dimensions such as school conditions and faculty, and the results will be publicly announced and used as the basis for financial appropriations and enrollment plans.

As stakeholders, enterprises evaluate the quality of talents from the dimensions of vocational skills, literacy, etc. By evaluating the performance of internship students, tracking the employment of graduates, and providing feedback on the results, they help colleges improve teaching. Third party organizations in society conduct objective evaluations based on their professionalism and independence, such as universities introducing institutions like Masters to conduct professional certification and talent development quality assessments, optimizing education quality based on the results.

At the same time, we have established a quality monitoring mechanism for the entire process, covering enrollment (monitoring plan execution, student quality), teaching (classroom inspection, quality evaluation), internships (tracking management, unit evaluation), and employment (tracking employment, collecting feedback). We have also improved the quality feedback and improvement mechanism. The teaching management department regularly releases quality reports, provides improvement suggestions, and each unit carries out rectification; We will also facilitate feedback channels from students, parents, and others, collect opinions to continuously optimize teaching, and enhance the social recognition of vocational education.

5. Conclusion

This study focuses on the construction path of high-quality modern higher vocational education system in Shaanxi Province from the perspective of diversified collaborative governance. It deeply analyzes the current situation and problems of the higher vocational education system in Shaanxi Province, and proposes corresponding governance models and construction paths.

Through research and analysis of the current situation of vocational education system in Shaanxi

Province, this article finds that vocational education in Shaanxi Province has achieved certain results in terms of school system, number and scale of colleges, professional setting and layout, and teacher team construction. However, there are also problems such as imperfect collaborative governance mechanism, insufficient depth of industry education integration, need to improve education quality, and low social recognition. These issues have hindered the high-quality development of vocational education in Shaanxi Province and urgently need to be addressed.

Under the perspective of diversified collaborative governance, the construction of higher vocational education system in Shaanxi Province faces opportunities such as policy support, industrial upgrading needs, and technological innovation promotion. At the same time, it also faces challenges such as difficulties in concept transformation, resource integration, and talent competition pressure. To address these challenges and fully seize opportunities, a diversified collaborative governance model for the construction of vocational education system in Shaanxi Province has been established. The responsibilities of diverse collaborative governance entities such as the government, vocational colleges, enterprises, and industry organizations have been clarified, and the government should play a leading role in policy formulation, resource allocation, and supervision and management; Vocational colleges should focus on talent cultivation, teaching reform, and social services; Enterprises need to provide feedback on talent demand, establish internship and training bases, and participate in teaching work; Industry organizations should make efforts in standard setting, talent supply and demand matching, and industry guidance. We have established communication and coordination mechanisms, benefit sharing mechanisms, and supervision and evaluation mechanisms to promote effective cooperation among all parties, achieve mutual benefit and win-win results, and ensure the effectiveness of diversified collaborative governance.

Based on the diversified collaborative governance model, a path for the construction of a high-quality modern vocational education system in Shaanxi Province has been proposed. In terms of deepening the integration of industry and education, we will innovate the mode of school enterprise cooperation, strengthen the construction of internship and training bases, promote the deep participation of enterprises in teaching, and improve the quality of talent cultivation and employment competitiveness. We are optimizing the professional layout, adjusting the professional settings to meet industry needs, strengthening the construction of professional groups, and enhancing the compatibility between education and the industry. In terms of teacher team construction, we aim to create a "dual teacher" teaching team, enhance teachers' professional competence and teaching ability, and provide strong guarantees for the improvement of education and teaching quality. We are improving our quality assurance system, establishing a diversified quality evaluation system, strengthening quality monitoring and feedback, and increasing social recognition of higher vocational education.

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