

Research on the Development of School-Enterprise Cooperation System in Chinese Vocational Education—Based on International Comparative Perspective

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Abstract: As an important pathway for the development of vocational education in a country, school-enterprise cooperation plays an irreplaceable role in the process of upgrading the quality of education, realizing resource sharing, and providing manpower support for social and economic development. Germany, Japan, the United States, and Australia started the practice of school-enterprise cooperation in vocational education earlier and accumulated rich experience. This paper explores the future development direction of China's school-enterprise cooperation system by sorting out the similarities and differences between China and the above four countries' school-enterprise cooperation systems.

1. Introduction

School-enterprise collaboration is a crucial pathway for the nation's vocational education growth and plays a critical role in raising educational standards, facilitating resource sharing, and supplying labor for social and economic advancement. Employment-oriented vocational education must be adapted to industrial development and market demand, and the participation of enterprises in personnel training is an inevitable path[1]. After years of active exploration, China's vocational education has refined many very distinctive vocational education school-enterprise cooperation models. However, it must also be recognized that the phenomenon of vocational education being divorced from industry and market is still prevalent. School-enterprise cooperation becomes a mere formality. There is still a huge gap between the quality of vocational education and the demand for human resources for the development of the national economy. For the cooperation between enterprises and vocational colleges and universities, how to effectively and sustainably promote school-enterprise cooperation in vocational education, as well as how to truly fulfill each other's roles, have become critical issues that require immediate attention.

2. Development history of school-enterprise cooperation system in vocational education in various countries

Germany, Japan, the United States, and Australia were the first countries to implement

school-enterprise cooperation in vocational education, and they have a wealth of experience in this area.

2.1 Germany

The "dual system" model of German vocational education has been developed through hundreds of years of industrial development and vocational education practice. It is now internationally recognized as a model of school-enterprise cooperation in personnel training[2]. The "dual system" model refers to the enterprise and the school jointly undertaking the task of vocational training, based on industry standards and market demand for talents, the implementation of theoretical and practical teaching of talents. The "dual system" originated from the apprenticeship system of medieval craft guilds. After the Industrial Revolution, further training schools were gradually established. In the middle of the 20th century, the "dual system" combining the apprenticeship system of enterprises and the training of vocational schools was further improved. 1969, the Federal Vocational Education Act, a programmatic document for vocational education in Germany, was enacted and implemented. The state intervened to clarify the important role of the "dual system" model of vocational education. Subsequently, according to the situation of the federal government and the states and the development of the industry, the policy guarantee system of the "dual system" has been continuously improved and refined layer by layer. In 2005, the relevant spirit and policies of the Federal Act on the Promotion of Occupation were integrated to form a brand-new Federal Act on Vocational Education, which has become the basic law guiding the cooperation between schools and enterprises in vocational education in Germany. Based on the Craft Industry Agreement (1965), the Regulation on the Qualification of Practical Training Teachers (1981), and the Regulation on the Examination for the Completion of Apprenticeships in the Craft Industry (1990), etc., each industry has formulated its specific measures and regulations for the implementation of vocational education in its own industry[3]. The "dual system" focuses not only on the combination of theory and practice but also on the balance between the two, to ensure that the training of talents is closely linked to market demand.

2.2 Japan

The school-enterprise cooperation system in Japan is a government-led mechanism for the development of science and technology with the in-depth participation of technical education institutions and is called "government-industry-academia" joint schooling in Japan. This system was gradually established and perfected with the reconstruction and rapid development of Japan's national economy after the World War II. In the meanwhile, Japan's economy was fully reconstructed, and the important role of school-enterprise cooperation in vocational education was emphasized by the Japanese government. The revision of the School Education Law in 1961 led to the mutual recognition of credits for nationally developed skills education institutions and high school courses, opening up a new period of institutionalization of government-industry-academia cooperation in schools. In the 1960s and 1970s, with the rapid development of the economy and the overall transformation of society, there was a growing call from the industrial sector for school-enterprise cooperation in vocational education, and Japan embarked on the systematic construction of a system of vocational education. In this process, the responsibility of vocational education was handed over to enterprises, and the government gradually changed from an operator to a supporter employing funds, policies, and information. In 1985, the Vocational Competency Development Promotion Law was promulgated as the basic law regulating school-enterprise cooperation in vocational education in Japan, which clarified the standards related to vocational training and the system of vocational competency development. In the 1990s, after clarifying the

national development strategy of "establishing a nation of science and technology" and "leading the world in high-tech industries", Japan increased its efforts in scientific and technological research and development, and the cooperation between schools and enterprises in running schools was further deepened. In 1999, the Employment-Capability Development Organization Law was enacted, which regulated the responsibilities of vocational education organizations with different functions, and in 2006, the Small and Medium-sized Enterprises Labor Enhancement Law was enacted, aiming at promoting a greater role of small and medium-sized enterprises in vocational education[4].

2.3 United States

School-enterprise cooperation is generally referred to as cooperative education in the United States. Cooperative education in the United States began in the late 19th century. Due to the urgent need for industrialized mass production, cooperative education in the United States is different from Germany, the earliest from the field of higher education engineering. 1906, the University of Cincinnati College of Engineering Herman Schneider formulated and successfully implemented the first cooperative education program, marking the United States of America's vocational education school-enterprise cooperation. Subsequently, Northeastern University College of Engineering, Massachusetts Institute of Technology Engineering Department, Antioch College, and other successive developments and implementations of cooperative education, have achieved success. 1957, by the Edison Foundation, chairman of the General Motors Corporation, Charles Caitlin, director of research advocated by the success of the Cooperative Education Conference, with a total of 80 schools and 101 enterprises to participate. In the 1990s, school-enterprise cooperation in vocational education developed rapidly in the U.S. To cultivate comprehensive talents, the U.S. introduced the Perkins Vocational Education Act, which encourages cooperation between enterprises and educational institutions and promotes school-enterprise cooperation in the field of vocational education through financial support. In 1994, the School-to-Work Opportunity Act was enacted, stipulating that schools and enterprises must build a platform for communication from school to employment by creating partnerships. In 2006, the Carl D. Perkins Career and Technical Improvement Act stipulated that schools, degree-granting institutions, human resource markets, and enterprises should all be included in vocational education partnerships, to open up various channels for individuals to receive education and re-education. School-enterprise cooperation in vocational education in the United States has entered a benign track of government support and multi-party participation.

2.4 Australia

Vocational education in Australia began in the 19th century. In 1827, the first mechanical school in Australia was founded in Hobart. By 1840, similar schools had been established in Melbourne, Newcastle, Brisbane, and Adelaide, and thus formed the birthplace of Australian technology and continuing education. These were the first vocational and technical schools established before the founding of Australia. During this period, vocational education school-enterprise cooperation was carried out in the context of a country that had not yet been independent, and it was mainly the early apprenticeship system, limited to the scattered and unorganized primitive cooperation between handicrafts businessmen and vocational institutions, and school-enterprise cooperation did not receive any official attention and support, and its development was slow. In 1927, the Australian Government passed legislation to establish the apprenticeship system, and apprentice enterprises were legally driven to undertake vocational education and training. Traditional industries were no longer dominant in the Australian economy in the 1970s, and the emergence of new industries such

as communications and finance made the federal government recognize the important role of vocational education in economic development. The 1974 Cangan Report proposed the establishment of a new Technical and Further Education Institute, the TAFE, which required the participation of enterprises in vocational education cooperation. Thanks to the attention and support of the government, the TAFE model has entered a period of rapid growth and prosperity. In the 1980s, the number of TAFE colleges increased dramatically to more than 1,000, far exceeding universities and higher education colleges combined. Since the 1990s, a series of laws and policies to safeguard vocational education, such as the Training Guarantee Act, Shaping Our Future-Australia's National Strategy for Vocational Education and Training 2004-2010, and others, have been introduced, enabling the collaboration of vocational schools to move forward in an orderly manner. The content and requirements of the "National Qualification Framework", "Quality Training Framework" and "Training Package" provide guarantees for successful cooperation between TAFE College and enterprises[5]. As a result, Australia has successfully developed the TAFE model of vocational education with its national characteristics.

2.5 China

Before reform and opening up, China's school and enterprise cooperation was a planned economic model under the leadership of the government. Schools implemented the production internship teaching program, and enterprises accepted the government's order to provide production internship places for college students. In the 1970s, junior colleges and technical schools became the main carriers of vocational education, and apprenticeship was the main mode of school-enterprise cooperation, i.e., students learned the skills and knowledge in schools, and went to factories to do internships and work as apprentices. In the 1980s, the introduction of an advanced school-enterprise cooperation model abroad became an important part of vocational education reform. In the 1990s, the government conducted in-depth research on the school-enterprise cooperation system, and subsequently, pilot schools were established. Entering the new century, China's vocational education has refined many distinctive models of school-enterprise cooperation through years of active exploration. In 2006, the Opinion on the combination of experimental engineering and semi-training in vocational schools marked the entry into the implementation phase of cooperation between schools and enterprises. In 2014, the Decision of the State Council on Accelerating the Development of Modern Vocational Education put forward the basic principles of integration of maternal education and co-education of schools and enterprises. However, we must also see that at present, the phenomenon of vocational education being detached from the industry and the market still prevails in China, and school-enterprise cooperation has become a mere formality, and there is still a huge gap between the quality of vocational education and the demand for talents arising from the development of the national economy.

3. Comparative Analysis of School-Enterprise Cooperation Systems in Vocational Education

3.1 Success factors of typical vocational education school-enterprise cooperation system

First, school-enterprise cooperation in vocational education has adapted to the needs of social and economic development. School-enterprise cooperation is a product of social and economic development. The development history of school-enterprise cooperation in vocational education varies from country to country, but all of them are created and developed in response to the needs of social and economic development and industrial development. In the process of rapid social and economic development, the urgent demand for technical talents is unprecedentedly high, and the fulfillment of this demand, no matter led by the government, spontaneously by enterprises, or on the

initiative of schools, has prompted schools and enterprises to closely combine, oriented by market demand, to jointly implement vocational education and to meet the urgent demand for technical talents in economic development. The development of vocational education must be based on national and regional economic, social, cultural, and traditional conditions and the inherent requirements of vocational education, and the establishment of appropriate forms of cooperation, distribution of authority and responsibility, and operational mechanisms.

Second, the flexible and diverse cooperation model has expanded the scope and depth of cooperation between schools and enterprises. In the practice of cooperation between vocational education schools and enterprises, countries have created a variety of different forms of collaboration. For example, school-enterprise cooperation in vocational education in the United States has various modes of cooperation, such as cooperative education plans, technology preparation education, youth apprenticeship, school-enterprise contracts, and advanced technology education, etc. Japan's government-industry-academia joint schooling has also adopted a diverse cooperation mode: joint research and commissioned research cooperation modes of school-enterprise, school-enterprise cooperation in formulating education plans and developing education programs through internships, and research and technological achievements through direct purchase or intermediary agencies. Employing technical guidance and counseling, providing infrastructure, technical bases, courses for enterprises and schools, and collaboratively promoting entrepreneurship based on school research or technological innovation are some examples of how schools can use internships as a means of working together to develop educational programs and develop educational processes, research, or technical achievements. China's "order-type" training of talents, the transformation of scientific and technological achievements, and the implementation of "three-party" talent training and internships by vocational schools, enterprises, and social professional training institutions.

Third, a clear subject relationship promotes the sustainable development of school-enterprise cooperation. For example, the German Federal Law on Vocational Education clearly defines the responsibilities of the federal government, the federal states, and the trade associations as the main members of the vocational education management system. Industry associations are competent organizations for enterprise vocational education. The competent bodies of the various industries have vocational education committees. The vocational education committees consist of six employer representatives, six school representatives, and six vocational school teachers.

3.2 The Difference between Chinese and Foreign Vocational Education School-Enterprise Cooperation Systems

First, the background difference. School-enterprise cooperation in vocational education in developed countries is based on the background of a capitalist market economy, and each interested party carries out school-enterprise cooperation from the perspective of its own economic and social value interests. In this vocational education system, schools participate in vocational education as economic subjects, and their behavior and decision-making also follow the law of the market, therefore, school-enterprise cooperation is a partnership of mutual benefit. China's vocational education school-enterprise cooperation system construction and development is based on the socialist market economy, the government carries out macro-control, the school ignores the market demand, the lack of interaction with the enterprise, the resulting market information asymmetry and supply-demand imbalance problem is prominent.

Second, the evaluation criteria difference. Vocational education in developed countries is an employment-oriented education model. The government promotes school-enterprise cooperation with the aim of promoting employment, and enterprises participate in vocational education with the

aim of solving the demand for human resources positions. Therefore, the value criterion for talent development is to be able to qualify for the duties of the future job, Vocational education is a kind of practical education. For a long time, China's education has been heavy on theory, light on practice. The proportion of ideological education and knowledge and skills education is not coordinated, the talent is often focused on theoretical knowledge, afraid of skill working, and the practical work skills must be re-learned after graduation[6].

Third, there is a difference in the relationship between stakeholders. School-enterprise cooperation in vocational education in developed countries has essentially formed a mechanism of synergy between governments, enterprises, schools, industry institutions, and intermediary institutions, interlinking and influencing each other and mutually beneficial synergies. The government provides platforms and services, and schools and enterprises collaborate to undertake educational tasks. This collaborative education mechanism has not yet been formed in China. The government in the process of formulating policies and guiding cooperation mostly from the administrative functions, lacks research on the market needs; schools in the school-enterprise cooperation from the perspective of teaching and employment, lacking consideration for the interests of enterprises. Enterprises are mostly passive in school-enterprise cooperation. Under this mechanism, the needs of certain stakeholders cannot be fully considered and reflected, making it difficult to win-win. This has led to the lack of form and efficiency of school-enterprise cooperation in our country.

4. Development direction of school-enterprise cooperation in vocational education in China

4.1 Improving the legal and regulatory safeguards system

From the successful experience of Germany, Japan, and the United States, the successful development of vocational education school-enterprise cooperation and its full role in economic development depend on a viable, effective, and systematic system of laws and regulations. This legal system is the fundamental guarantee that the long-term mechanism of cooperation between schools and enterprises can operate efficiently so that the implementation of vocational education is lawful and the interests of all parties can be protected by law. In China, the duties, rights, and obligations of the main stakeholders in school-enterprise cooperation have not been bound by practical laws, regulations, and guarantees, and the construction of long-term mechanisms of school-enterprise cooperation lacks legal guarantee. In addition, based on the special characteristics of different regions and industries, the local and industrial laws and regulations that match the basic law on school-enterprise cooperation cannot meet the needs of the current national economic development. Many of the problems that exist in vocational education school-enterprise cooperation in our country may appear to be due to poor support of the state, social prejudice, lack of market-driven awareness lack of market-driven school-enterprise cooperation, and low enthusiasm for enterprise participation. The existing Law on Vocational Education of the People's Republic of China is lagging in the construction of the relevant individual law. There is an urgent need for legislation as soon as possible on a single law concerning school-enterprise cooperation.

4.2 Establishment of a win-win mechanism for multi-stakeholder collaboration

Profit is the driving force of cooperation. School-enterprise cooperation should fully reflect and meet the interests of the various relevant subjects. The government can achieve the goals of improving the quality of workers, improving employment, and promoting the development of local economy in the multi-faceted collaborative win-win mechanism; industrial organizations can cultivate various kinds of talents needed by the industry through school-enterprise cooperation and

promote the development of the industry; enterprise development needs talents, and the participation of enterprises in vocational education is the objective demand for their survival and development, and the essence of the economic entity also determines the genetic characteristics of enterprises pursue profit maximization. Therefore, school-enterprise cooperation must be able to make profits or compensate for the input costs of enterprises; the school's demand in this mechanism is to solve the problem of practical teaching places, complete the task of practical teaching, improve the conditions of schooling, improve the reputation, and ultimately to complete the goal of cultivating the talents needed for economic and social development. If the school-enterprise cooperation can realize a win-win situation for all parties and meet the interests of each subject mentioned above, it is necessary for each subject to express its own demands and bear the corresponding responsibilities at the same time. The government should support the establishment of school-enterprise cooperation mechanisms in terms of legislation, financial support, information service, and platform; enterprises need to pay attention to and take the initiative to assume their social responsibility and actively participate in school-enterprise cooperation; industrial organizations play a guiding role and provide services for school-enterprise cooperation; and schools need to enhance the sense of responsibility and sense of mission for educating people and cultivate various talents in line with the needs of the development of economy and industry[7].

4.3 Building a governance structure for school-enterprise cooperation

The council or board of directors system of German vocational education absorbs the participation of industrial enterprises in decision-making and management, so that school-enterprise cooperation absorbs the opinions of all parties in decision-making, establishes a more open pattern of school running, and keeps up with the needs of social and economic development. The structure and institutional arrangements of school-enterprise cooperation in China can be constructed from both external governance structures and internal governance structures. The construction of an external governance structure is centered on the relationship between the interested parties in school-enterprise cooperation, and through the transformation of government functions and the role of industry organizations as a bridge for school-enterprise cooperation, the government's macro-control, the deep participation of the society and the school's autonomy in running the school should be established as a situation of co-governance. The construction of an internal governance structure should start from the establishment of an interest-driven mechanism and contract mechanism of school-enterprise cooperation to stipulate and constrain the responsibilities and rights of both schools and enterprises.

4.4 Promoting synergy between professional layout and industrial structure

Vocational education specialties serve industrial development, and their professional layout must be dynamically adapted to the industrial structure. To promote the synergy between the professional layout of vocational education and the industrial structure, the first is to optimize the current professional layout of vocational education, build a dynamic adjustment mechanism of professional settings between vocational education and industry, and adjust the list of vocational education professions according to the industrial layout in the region. The second is to promote the synergy between vocational education specialty settings and the future direction of industrial development. The technical and skilled talents cultivated by each major of vocational education should not only meet the current industrial development demand, but also pay attention to the future industrial development trend, and the new generation of information technology, integrated circuits, artificial intelligence, and other strategic emerging industries, as well as the pension, child care, housekeeping, and other life service industries, etc., to deepen the integration of industry and

education, and to cultivate skilled and technical talents who can serve to support the major needs of industries, to maintain the superiority of vocational education specialties.

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