



A Review of the current Status of Vocational Education Research Abroad

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ABSTRACT:

Because school-enterprise cooperation originated abroad, research on many aspects of school-enterprise cooperation is more common than at the domestic level, especially research on the integration of industry and education, mechanism guarantees, influencing factors, existing problems, functions, and countermeasures. This paper mainly conducts research from four aspects: the connotation of school-enterprise cooperation and the relationship between education and industry, the role and problems faced by the integration of industry and education, the governance and framework of school-enterprise cooperation in vocational education, and the mechanisms and paths of school-enterprise cooperation in vocational education. It is hoped that this study can provide a reference for the development of vocational education.

Keywords: vocational education; integration of industry and education; literature review

1. The connotation of school-enterprise cooperation and the relationship between education and industry research

School-enterprise cooperation originated in Germany in the 19th century. The earliest form of expression was the “dual system”, which became popular in Europe and the United States in the mid-20th century^[1-2]. At that time, school-enterprise cooperation was called the sandwich system in the United Kingdom, cooperative education in the United States, and industry-university cooperation in Japan. Regardless of what the names are, the initial starting point is the same, that is, to cultivate more and better students. Enterprise-needs talent^[3-4]. The forms of school-enterprise cooperation in other countries are not uniform; some are centered on universities, some develop as industries, and some advocate equal emphasis by enterprises and institutions^[5]. At the end of the last century, economists provided detailed mathematical descriptions of the cooperation and interaction between universities and enterprises^[6], and some scholars discussed their cooperation motivations and believed that there was good cooperation between industry and academia. cooperation motivation, which benefits both parties^[7-8]. Some scholars have given rise to three reasons for their cooperation. First, the market is changing too quickly, and competition for the market is becoming increasingly fierce. Shortening of the R&D cycle, followed by the fact that some government-supported projects have the characteristics of a high degree of spillover and diffusion and generally have higher returns, and the third is a good channel for institutions to seek cooperation^[9-10]. The implications of school-enterprise cooperation are shown in Table 1.

Table 1 The connotations of the development of school-enterprise cooperation

Development connotation	Literature source
The earliest manifestation was the “dual system”	[1]、 [2]
Sandwich system, cooperative education, and industry-university cooperation	[3]、 [4]
Focus on colleges and universities, with equal emphasis on enterprises and colleges	[5]
Detailed mathematical description	[6]
Cooperation motivations were explored	[7]、 [8]
Three reasons for school-enterprise cooperation	[9]、 [10]

Regarding the relationship between education and industry, foreign scholars have conducted research in two main areas: higher education and vocational education. The main contents of the study are the relationships between economic development and education and between the education system and the population system. relationships and the interaction mechanism between the employment structure and the education structure. In terms of research on economic growth and educational development, Menon believes that there is a positive correlation between economic growth and the cost of educational development. Economic growth will increase the capital invested in education^[11]. A similar conclusion was reached in Card’s study. He noted that the

development of education will promote economic growth, and there is a certain linear relationship between the two ^[12]. Krueger et al. believed that education investment did not promote economic growth indefinitely; there was a peak in the middle. Our research revealed that this value was 7.5. A long duration of education may have a negative effect ^[13]. Blaug M also concluded that education has a significant impact on economic growth ^[14]. Scholars such as Hongerholt et al., Rucker et al., and Dension investigated the relationship between economic growth and education investment from a quantitative point of view and conducted many empirical studies on the contribution rate ^[15-16].

2. The role, problems and measures of the integration of industry and education

Allan Klingstrom noted that the integration of industry and education is a good way of cultivating talent. Through the integration of industry and education, education theory and social practice can be well combined, which has the obvious characteristics of work-study integration, joint participation and contribution to society ^[17-18]. The market economy has a great influence on the promotion of industry-education integration. The players involved in the integration of industry and education include institutions, industrial enterprises, governments, intermediary departments, etc., which are diverse ^[19-20]. Jon Whittle & John Hutchinson believe that full attention should be given to the coordination and unity of social development and educational development; vocational colleges should design curriculum systems at different levels, adopt reasonable assessment methods for on-the-job internships, and stimulate the enthusiasm of students to participate. The relevant interests of cooperative enterprises should be protected, and the motivation of cooperative enterprises should be stimulated ^[21-22].

In terms of the problems facing and the measures taken in the integration of industry and education, Terri Seddon & Stephen Billett believe that there are large problems in the curriculum system design of many colleges and universities. A considerable number of courses do not meet the needs of enterprises, largely because the enthusiasm of enterprises is not high and the cooperation between colleges and universities is not well connected. Therefore, an industry-enterprise steering committee should be established to help enterprises and colleges achieve seamless connections on major decision-making issues ^[22-23]. We should combine our own advantages and characteristic resources to develop a talent training curriculum system and establish a teaching system suitable for our own characteristic majors. We should constantly enrich the teaching modes and adopt different teaching methods so that more students can benefit from them. We can rely on school-run enterprises to provide students with training bases ^[24-29]. The role, problems and measures of the integration of industry and education are shown in Table 2.

Table 2 Role, problems and measures of the integration of industry and education

Specific content reflects	Literature source
A good way of cultivating talents	[11]、 [12]、 [12]
conducive to the development of a market economy	[13]、 [14]
Pay full attention to the coordination and unity of social development and educational development	[15]、 [16]、 [17]
There are big problems in the design of the curriculum system in colleges and universities.	[18]、 [19]、 [20]
Formulation of talent training curriculum system and innovation of teaching models	[21]、 [22]、 [23]、 [24]、 [25]

Different scholars have reached different conclusions about the influencing factors of the integration of industry and education, and the study results are quite different. Siegel & Waldman and Brodkey agreed that the greatest factor affecting the integration of production and education is the enterprise itself. A considerable number of enterprises are pursuing short-term interests and profit maximization, but it is difficult for enterprises to obtain short-term benefits after cooperating with institutions, which has led to the enthusiasm of enterprises to participate. Very low, even unwilling to cooperate ^[26-28]. Santoro & Chakrabarti, Y. Austin Chang believe that the most fundamental factor affecting the integration of production and education is not the enterprise but the conditions and resources of the institution itself, the level of the teaching team, the curriculum design system, the characteristics of the profession, and the execution ability of relevant systems. Sensitivity to external information affects the driving force of industry-education integration ^[29]. Lindelof & Lofsten felt that the ultimate effect of industry-education integration depends on the degree of government intervention and support. At a certain level, the government needs to provide strong policy guarantees; otherwise, industry-education integration will have difficulty progressing smoothly ^[30]. Frank Reier Knudsen believes that industry-education integration does not depend on a single factor. The influencing factors show a diversity of characteristics, with the main influencing factors being the institution itself, government intervention, and cooperative enterprises ^[31].

3. Governance and framework of vocational education school-enterprise cooperation research

One of the key points of school-enterprise cooperation in vocational education is the establishment of a governance model. This model covers the goals of cooperation, implementation, supervision and control, etc. In the cooperation process, transparency should be enhanced as much as possible to ensure the participation of stakeholders. Only in this way can the governance benefits be improved, and the enthusiasm of relevant subjects can be stimulated ^[32-34]. In the school-enterprise cooperative governance system, attention must be given to the application of synergies. It is necessary to be aware that the subjects involved in school-enterprise cooperation are diversified and to connect the various subjects as much as possible, especially given the close cooperation among colleges, enterprises and the government. cooperation to integrate various elements ^[35-39]. The governance of school-enterprise cooperation should focus on four aspects. The first is skill needs and the use of funds. The second is to clarify the development path while establishing

national standards. The third is how to increase the enthusiasm of the participants to achieve seamless standardized management. One approach is to make full use of modern information technology to search for relevant data and establish a data monitoring system ^[40-41].

4. Mechanism and paths of school-enterprise cooperation in vocational education

The mechanisms and paths of school-enterprise cooperation in vocational education On the one hand, some scholars have pointed out that the key indicator that determines the final result of governance capacity is the operational efficiency of the established system. When studying the operational efficiency of the governance system in some countries, it has been found that Germany, Japan, and Switzerland are in the leading positions ^[42]. The operational efficiency of the governance system depends on four factors. First, the feedback mechanism established by each participant; second, the competition mechanism among the institutions; third, the degree of participation of enterprises in the curriculum development of the institutions; and finally, promotion and transformation. pathways and quality assurance systems ^[43-44]. In the design of governance indicators, two main aspects are considered. The first is rule-based governance indicators, and the other is result-based governance indicators. The two should be considered in the design; otherwise, bias will occur ^[45]. Regarding the development path of school-enterprise cooperation in vocational education, the focus was mainly on the establishment of leading organizations, flexible entry and exit systems, and the management methods of stakeholders ^[46]. Others believe that the governance path includes four aspects. The first is how to build a platform for stakeholders to communicate with each other and how to use this platform to communicate the educational philosophy of the institution. Second, the government should introduce corresponding incentive measures, especially economic subsidies, and call on institutions and enterprises to cooperate. To build a flexible and dynamic system through joint action, the third is to establish relevant standards that all participating subjects can recognize. The fourth is to identify the shortcomings of students, to help them identify their own deficiencies, and to issue corresponding guiding policies ^[47-51].

5. Review of the Current Research Status

After entering the 21st century, scholars' enthusiasm for studying school-enterprise cooperation in vocational education has increased. As a result, many research results have been produced that provide a theoretical basis for follow-up research on school-enterprise cooperation in vocational education. The depth and breadth of research are constantly improving; in the past, the main focus was on the study of models, but now there is much research on institutional mechanisms. Many articles with practical experience emerged, which enhanced the theoretical nature of the research to a certain extent. At the same time, the foreign research results on school-enterprise cooperation in vocational education provide more research perspectives and a research basis for Chinese scholars. However, in general, there are still some deficiencies, which are mainly reflected in the following aspects.

1. The research was not sufficiently systematic or comprehensive. School-enterprise cooperation in vocational education needs to be studied extensively and on a wide scale. At present, there are more studies on models, while there are fewer studies on the systems and mechanisms of school-enterprise cooperation in vocational education. In terms of the exploration of models, colleges and universities, such as postinternship internships and the work-study integration model, are still the main bodies of research. When research on institutions and mechanisms is involved, the main research object is basically the school level; that is, the research is concentrated mainly on school-centered research. at the microscopic level. Moreover, these studies at the microscopic level are not in-depth enough and are merely superficial analyses, and the theoretical rise is not high enough. Therefore, research at the macro level is lacking. The information that can be searched is now limited to some policy texts, and there are very few relevant journal papers and doctoral and master's theses. First, the policy text lacks a top-level design for school-enterprise cooperation in vocational education and fails to indicate the direction for the development of school-enterprise cooperation in vocational education. Second, it fails to provide a clear definition of school-enterprise cooperation in vocational education. However, no specific study has been conducted. Finally, some measures are designed to address specific issues and have no universal applicability.

2. Limitations of research methods and narrow research perspective. Current research on school-enterprise cooperation in vocational education lacks inductive analysis, is theoretical, normative and systematic, and is mainly descriptive. It is rare to study school-enterprise cooperation in vocational education from the perspective of management and economics; the vast majority of studies are conducted from the perspective of pedagogy, and interdisciplinary research is lacking. Many studies are limited in terms of their theoretical aspects and lack comparative analysis of data; moreover, there are more qualitative studies than quantitative studies, and the results are difficult to convincing.

3. Less attention has been given to the integration of industry and education in vocational education. Practice research on vocational education is still in its infancy. Much research on vocational education is still focused on transformation and reform. Issues such as the adjustment of disciplines and majors and the integration of production and education have not attracted enough attention, which is conducive to the transformation of the education structure. Therefore, the understanding of the integration of industry and education in vocational education needs to be further deepened. To analyze the reasons behind the problem of industry-education integration from a scientific point of view, we should not simply jump from the problem to countermeasures. This is not conducive to finding the root causes of the occurrence of things, and the most important thing is to find the causes of things.

4. The depth of research on the effectiveness of school-enterprise cooperation in vocational education is insufficient. Although the number of research papers on the effectiveness of school-enterprise cooperation in vocational education has increased in recent years, they still cannot meet the needs of current theoretical research. Research perspectives and research theories need to be continuously deepened and improved, and new scientific research must be constantly applied. To conduct research on the effectiveness of school-enterprise cooperation in vocational education. School-enterprise cooperation in vocational education plays an important role in modern talent training reform methods, but there are few special studies on its effectiveness.

Most of the studies focus on models, influencing factors, policies and regulations, etc. The internal and external factors of effectiveness should be investigated. In addition, empirical research on the effectiveness of these methods is scarce. School-enterprise cooperation in vocational education faces many difficulties. One of the main reasons is that the nature of the school-enterprise cooperation problem has not been identified, and many of the proposed measures cannot be implemented. Therefore, it is necessary to construct an indicator system for school-enterprise cooperation in vocational education to conduct relevant empirical research and provide suggestions from a quantitative perspective.

In summary, there is still much room for research on school-enterprise cooperation on the integration of vocational education and industry. Based on this, the research deficiencies in the literature were partially improved. For example, the existing problems, cooperation models, development paths, institutional mechanisms, and other aspects of school-enterprise cooperation related to the integration of vocational education were described. In terms of research methods, the effectiveness of school-enterprise cooperation in vocational education has mainly been assessed through the combination of qualitative analysis, quantitative analysis, and case analysis.

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