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THE PATH OF SERVING LOCAL TECHNOLOGY ENTERPRISES IN THE CONTEXT OF INDUSTRY-EDUCATION INTEGRATION

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Abstract: This study employs a comprehensive approach combining empirical research and case analysis to delve into the essence of industry-education integration and the needs of local technology companies. Based on these insights, it proposes several strategies: establishing a joint research and development platform between universities and enterprises, optimizing professional training programs, strengthening mechanisms for the conversion of scientific research achievements, building a multi-level communication and cooperation network, and establishing a long-term mechanism for sustainable industry-education integration. These strategies aim to achieve resource sharing and complementary benefits, jointly driving local economic innovation and development. By implementing these strategies, universities can more effectively fulfill their roles in talent development, scientific research, and social services, providing robust intellectual and talent support to local technology companies. The study aims to build a strong communication bridge between universities and local technology enterprises, fostering deep cooperation between the two parties to jointly contribute to local economic prosperity and technological innovation, and injecting new vitality and momentum into local technology enterprises. These research findings hold significant theoretical and practical implications for deepening industry-education integration and promoting local economic development.
Keywords: Industry-education integration; Local technology enterprises; University-enterprise platform; Achievement transformation

1 INTRODUCTION

In the current era of economic globalization and the knowledge economy, industry-education integration has emerged as a paradigmatic model for deep cooperation between higher education and the industrial sector. As institutions of higher learning, universities not only bear the important tasks of talent cultivation and scientific research innovation but also shoulder the mission of serving technology enterprises and boosting local economic prosperity [1]. Especially with China's vigorous implementation of the innovation-driven development strategy, universities are even more tasked with providing excellent talents to local technology enterprises and facilitating efficient conversion of their scientific and technological achievements, which holds immeasurable value for the sustained prosperity of regional economies. The core of industry-education integration lies in closely integrating the actual needs of the industrial sector with the abundant resources of universities, and jointly cultivating high-quality technological talents that meet the demands of modern industrial development through diversified models such as university-enterprise joint research and development, project cooperation, etc. [2-3]. At the same time, universities, leveraging their profound scientific research accumulation and innovation capabilities, can provide solid intellectual support and talent guarantees for local technology enterprises through technology transfer, scientific and technological consultation, and other means. However, it cannot be ignored that universities and local technology enterprises still face numerous challenges in the process of industry-education integration, such as inefficient conversion of scientific research achievements, obstacles in information exchange, and imperfect cooperation mechanisms. These issues not only restrict universities' ability to serve local technology enterprises but also pose obstacles to the growth and expansion of these enterprises. Based on the spiral model theory of industry-university-research cooperation, universities and enterprises should establish a closely interactive and mutually promoting cooperative relationship to jointly drive the innovation of knowledge and technology and their conversion into actual productive forces [4-5]. Therefore, this study is dedicated to exploring how universities should construct and optimize paths to serve local technology enterprises in the context of industry-education integration. Through in-depth analysis of advanced experiences and typical cases of industry-education integration both domestically and internationally, combined with the actual needs and development characteristics of local technology enterprises, this study aims to construct a service model that aligns with local characteristics and effectively promotes university-enterprise cooperation. This will not only significantly enhance universities' ability to serve society and enterprises but also inject new vitality into the innovative development of regional technology enterprises, thereby promoting higher-quality development of the regional economy.

2 DIFFICULTIES FACED BY UNIVERSITIES IN SERVING LOCAL TECHNOLOGY ENTERPRISES UNDER THE BACKGROUND OF INDUSTRY-EDUCATION INTEGRATION

2.1 Insufficient Consideration of Regional Industrial Characteristics

When universities serve local technology enterprises, they may face the problem of inadequate understanding of regional industrial characteristics. This deficiency includes a lack of deep knowledge about pillar industries, special industries, and emerging industries, as well as an insufficient grasp of the upstream and downstream connections within the industrial chain. This lack of understanding makes it difficult for universities to precisely grasp the development needs of enterprises and industry trends when supporting local technological development. The alignment between university majors and the demands of key regional industries needs to be improved. The updating of course content lags behind the pace of industrial development, resulting in a significant disconnect. This disconnect not only affects the employment competitiveness of university graduates but also makes it difficult for research achievements to be directly applied to local industries, thereby reducing their practicality and relevance [6]. Furthermore, universities do not adequately consider regional industrial characteristics in practical teaching, further exacerbating the mismatch between university research achievements and the development needs of local industries. At the same time, the application and conversion of research achievements also fail to fully consider the characteristics of regional enterprises, which to some extent limits the contribution of university technological achievements to local technology enterprises [7].

2.2 Insufficient Consideration of Regional Industrial Characteristics

The demand for different goals between universities and technology enterprises is an important factor affecting their cooperation. In summary, the main task of universities is to cultivate talents and impart knowledge, with a focus on basic theoretical disciplines and academic research, but limited by funding and equipment. In contrast, technology companies prioritize economic benefits and place greater emphasis on product efficiency and technological advancement, investing more in product applications and market development. From the perspective of the interests of local technology enterprises, there is a certain degree of skepticism towards the market prospects and service capabilities of universities in terms of scientific research achievements [8-9]. Enterprises believe that the scientific research achievements of universities do not fully match the market demand for products, or that the research and development progress of university products cannot meet their requirements for research and development time in the face of fierce competition. The administrative approval process within universities is relatively complex, and there are also certain difficulties in initiating cooperative projects, which further weakens the willingness of enterprises to cooperate. The cumbersome procedures of fund disbursement and equipment procurement can hinder the progress of project cooperation, thereby increasing the difficulty and uncertainty of cooperation between both parties.

2.3 The Disconnect between Talent Cultivation and Enterprise Needs

The problem of universities being disconnected from the needs of enterprises in talent cultivation lies in the fact that their professional settings and course content focus too much on the theoretical system of disciplines, and fail to closely follow the development pace of actual work content in enterprises. The slow pace of updating course content results in graduates' knowledge and skills not being able to reflect the latest developments in the industry in a timely manner. Due to students' lack of hands-on ability and problem-solving skills, companies need to invest additional costs in secondary training after accepting new employees. In addition, universities have insufficient investment in practical teaching, and the construction of off campus internship practice bases lags behind, which limits students' internship opportunities and lacks necessary work experience. The disconnect between practical teaching content and actual work further exacerbates this problem, leading companies to prefer job seekers with relevant work experience when recruiting, which puts many fresh graduates at a disadvantage in the job market. Insufficient communication between universities and enterprises is also one of the important reasons for the disconnect between talent cultivation and enterprise needs. The willingness of enterprises to participate in curriculum construction and talent development plans is not strong, and universities often lack effective information exchange mechanisms and awareness of actively seeking teaching resources, making it difficult to accurately grasp changes in enterprise talent demand and adjust subject talent development plans in a timely manner. This information asymmetry and lack of effective communication further exacerbate the disconnect between talent cultivation in universities and the needs of enterprises.

3 THE PATH OF UNIVERSITIES SERVING LOCAL TECHNOLOGY ENTERPRISES UNDER THE BACKGROUND OF INDUSTRY EDUCATION INTEGRATION

3.1 Collaboration between Schools and Enterprises for Scientific Research and Technological Innovation

In order to deepen cooperation between schools and enterprises, promote scientific research cooperation and technological innovation, joint research and development centers or laboratories between schools and enterprises can be established. The center or laboratory will be responsible for integrating the advantageous resources of universities and enterprises, developing research and development cooperation plans and goals for cutting-edge technologies and key common technologies, and clarifying the responsibilities and obligations of both parties. By building a joint research and development platform that integrates industry, academia, and research, and establishing mechanisms such as regular cooperation meetings and contact windows, we ensure that both parties can exchange information in a timely manner and jointly solve problems. According to the actual needs of enterprises, universities can be commissioned to carry out technological research and development to solve technical problems in production and operation. Both parties can jointly apply for national, local, and industry technology projects, covering areas such as new technology development,

research and development of new products and processes, and tackling technical difficulties. When formulating a detailed research plan, it should be guided by the needs of the enterprise and focus on conducting applied and developmental research.Universities can actively build innovation carriers such as technology centers and engineering technology research centers for enterprises, while leveraging the innovation support role of science and technology parks, innovation and entrepreneurship parks, etc. in incubating enterprises to assist them in solving technical problems. Both parties can also jointly establish a research instrument and equipment sharing platform and R&D team, with the participation of university researchers and enterprise technicians, to promote the construction of a technology innovation platform for school enterprise sharing. In order to strengthen scientific research cooperation, attention should be paid to the construction and management of platforms such as university laboratories and enterprise R&D centers, and necessary funding, venue, and equipment support should be provided for cooperative projects. At the same time, universities and enterprises are encouraged to guide researchers to participate in the transformation of achievements in various ways, in order to maximize the value of knowledge for both parties. By strengthening the transfer and transformation of scientific and technological achievements from universities in enterprises, transforming research results into products or services with independent intellectual property rights, and promoting the industrialization of key technological equipment that meets industry development needs. In addition, in order to safeguard the interests of both parties, a reasonable mechanism for distributing benefits should be established. Both parties can also jointly establish a training base for enterprise employees to cultivate and enhance their professional and technical skills. Supporting two-way learning and exchange between university teachers and enterprise technical personnel, providing opportunities for enterprises to select teachers and students to carry out product research and development, thereby helping teachers and students accumulate practical product research and development experience and enhance work experience. Universities and enterprises can form cross industry and interdisciplinary collaborative R&D alliances to strengthen technology sharing, knowledge sharing, and R&D inheritance, laying a solid foundation for further development of school enterprise cooperation.

3.2 Construction of School Enterprise Cooperation Innovation and Entrepreneurship Platform

The construction of a school enterprise cooperation innovation and entrepreneurship platform is to jointly build an ecosystem that promotes technological innovation and commercialization. Establish a management organization composed of representatives from universities and enterprises to operate and supervise the daily activities of the platform,Responsible for the execution and management of specific projects. Establish a dedicated daily operation organization, responsible for inviting industry experts, investors, and other consultants to form a team to provide service support for the platform, formulate project management methods, fund utilization regulations, and intellectual property protection management systems. Universities provide resources such as office space, conference facilities, and experimental equipment to support product innovation and technology research and development for enterprises. Enterprises provide project funding, internship bases, and other resources to assist universities in transforming promising scientific research achievements and providing market promotion support. Through school enterprise cooperation projects, we jointly provide entrepreneurship training, technical seminars, business plan guidance and other services to promote industrial upgrading and transformation. Establish an online information service platform that provides functions such as seminars, research forums, and project docking to facilitate cooperation between universities and enterprises. Establish a special fund or guide venture capital to provide entrepreneurial training, physical space, technical seminars, business plan guidance and other service support for cooperative projects. Offering educational courses in universities to cultivate students' innovative consciousness, entrepreneurial spirit, and practical abilities, combining entrepreneurial theory, case analysis, and practical activities. Covering knowledge from multiple disciplines such as engineering technology, finance, law, economics, and marketing. Adopting diverse teaching methods such as project-based teaching, group discussions, entrepreneurial role-playing, and lecture presentations to stimulate students' enthusiasm and interest in learning. Invite industry experts and investment advisory teams to campus to hold innovation and entrepreneurship lectures and other activities, sharing entrepreneurial experiences and business plans. Regularly organize innovation and entrepreneurship competitions, roadshows, and other activities that involve both schools and enterprises, implement a two-way guidance mechanism between university and enterprise mentors, cultivate excellent entrepreneurial projects, and provide opportunities for career development and lifelong learning for students and enterprise employees. Establish a feedback mechanism to regularly provide feedback and evaluation on school enterprise innovation and entrepreneurship projects, service platform operations, etc. Based on the feedback results, provide incentives such as equity and stock options for teachers and students participating in the project, reward and support outstanding projects and teams, and motivate more universities and enterprises to actively participate in collaboration. Make full use of various channels to promote successful cases and achievements on the platform, organize universities and enterprises to participate in various industry demand releases and technology roadshows, and promote the integration of university research achievements with enterprise needs. Actively communicate and collaborate with innovation and entrepreneurship platforms of other universities and enterprises, sharing experiences and resources.

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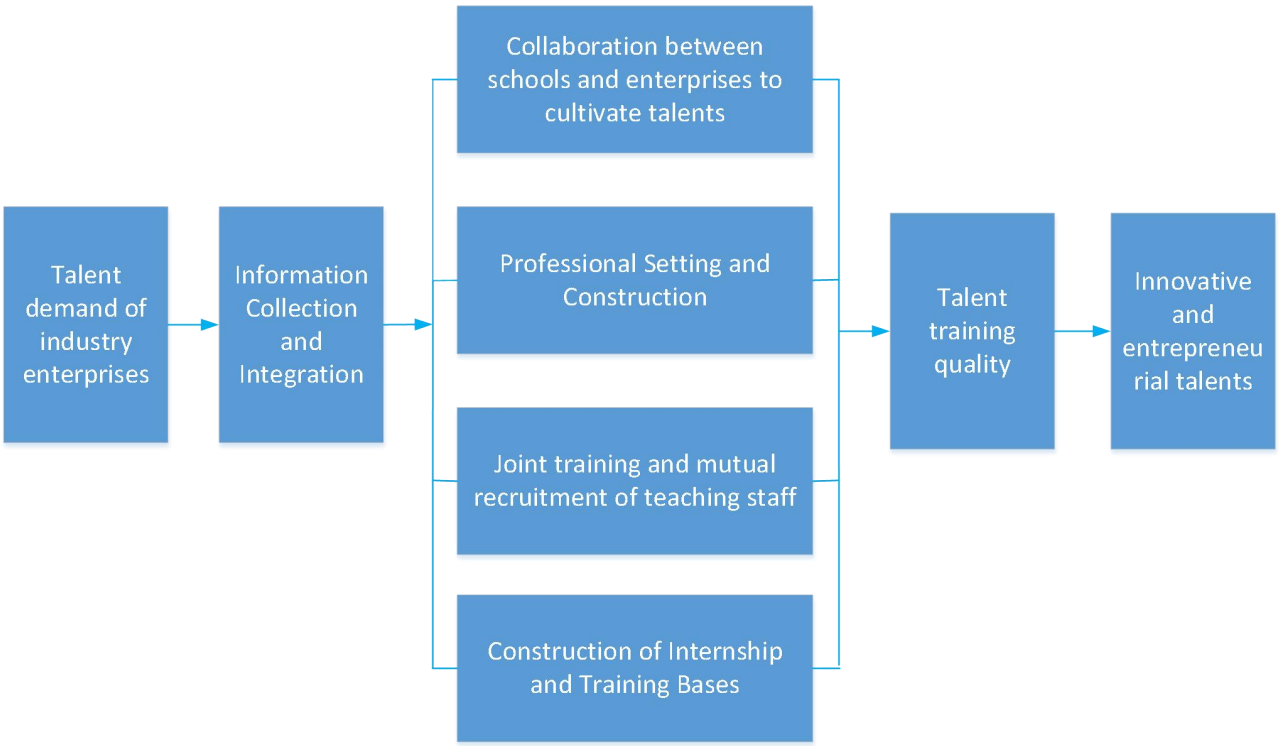

Figure 1 School Enterprise Cooperation Training Model

COMPETING INTERESTS

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