Research on Talent Cultivation in Local Applied Universities from the Perspective of Industry-Education Integration

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Abstract: With the rapid development of the socio-economic landscape and continuous technological innovation, the role of local applied universities in cultivating high-quality, technically skilled talents has become increasingly significant. This paper focuses on the integration of industry and education. It analyzes the opportunities and challenges faced by local universities in advancing this integration. On one hand, the demand for high-quality talents from industries provides universities with more collaboration opportunities. It also promotes the deep integration of education and industry. On the other hand, local universities still face challenges in resources, and school-enterprise collaboration. These challenges restrict the further development of industry-education integration. Therefore, improving cooperation with enterprises and research institutions while ensuring education quality has become an urgent issue for local universities. This paper explores how local applied universities can better align with local industry needs and academic strengths. It also examines how universities can closely collaborate with enterprises during talent development, innovate talent cultivation models, and improve students' overall quality and practical abilities.

Keywords: Industry-Education Integration; Local Application-Oriented Universities; Talent Development; Practical Ability; Educational Reform

1. Introduction

With the rapid development of the social economy and continuous adjustment of the industrial structure, the demand for talent has become increasingly diversified. However, the traditional education model is struggling to meet the urgent need for high-quality, interdisciplinary talent in modern society. Against this backdrop, the integration of industry and education, as an important direction for educational reform in the new era, is gradually showing its indispensable role. By strengthening the effective connection between educational resources and social demand, the integration of industry and education not only promotes the improvement of talent cultivation quality but also better serves the needs of various sectors of society, cultivating applied talents that meet the requirements of social development. Especially for local application-oriented universities, which are an important force in promoting local economic development, their unique role in the integration of industry and education is particularly prominent. Through active participation in this integration, they can effectively link local industries with educational resources and cultivate more high-quality skilled talents that meet the needs of local economic development. This study will focus on exploring how local application-oriented universities can enhance talent cultivation quality through the integration of industry and education, and further promote the sustainable development of the local economy and society.

2. The Theoretical Foundation and Development History of Industry-Education Integration

Industry-education integration is the process of mutual fusion and collaborative development between education and industry, aiming to promote the alignment of educational content with industry demands through close cooperation between the two. This process cultivates high-quality talent that meets the needs of socio-economic development. The integration is not only an interaction between education and industry but also an opportunity for both to advance and achieve win-win development. The development of industry-education integration has gone

through three main stages:

In the initial stage, China's industry-education integration started relatively late, with the earliest explorations focusing on some technical vocational colleges. During this period, attempts at integration were primarily seen in vocational and technical education, with an emphasis on cultivating technically skilled talent.

In the development stage, with the continuous changes in the socio-economic landscape, particularly the acceleration of informatization and globalization, industry-education integration gradually became an important component of higher education reform. In this stage, more and more higher education institutions began to focus on collaboration with industries, gradually expanding to various types of institutions and innovating curricula and talent cultivation models to adapt to the rapidly evolving economic environment.

In the deepening stage, in recent years, the government has introduced a series of policies to promote the in-depth integration of education and industry, especially in terms of teaching and industry cooperation in local applied universities, where significant achievements have been made. During this phase, the content of industry-education integration has deepened, extending beyond the alignment of courses and talent cultivation to include research and innovation, industry-university-research collaboration, and other areas, further facilitating the close integration of education and industry. The gradual development of industry-education integration has not only driven the modernization of the education system but also injected continuous momentum into the innovative development of industries.

3. Characteristics and Challenges of Local Application-Oriented Universities

3.1 The Positioning and Characteristics of Local Application-Oriented Universities

The main characteristics of local application-oriented universities are their close alignment with the demands of local economic and social development, with a focus on cultivating practical and innovative talents. The goal of these universities is to serve the local economy, which is why their teaching model emphasizes practicality and prioritizes the development of students' skills and comprehensive qualities. These institutions not only focus on imparting professional knowledge but also place significant importance on enhancing students' employability, aiming to improve their interdisciplinary knowledge integration, teamwork, communication skills, and innovative spirit.

In order to meet the diverse needs of society and industry, local application-oriented universities adopt flexible and varied teaching methods, combining classroom instruction, corporate internships, and project-based practice to ensure that students gain sufficient practical experience in real work environments. The curriculum is closely aligned with market demand, striving to ensure that the knowledge and skills students acquire are highly relevant to actual work scenarios.

Furthermore, these universities emphasize promoting industry-university-research cooperation and adopt a strong employment-oriented approach, aiming to cultivate application-oriented talents who can quickly adapt to the evolving demands of society and industry. In this educational model, local application-oriented universities help students accumulate experience and enhance their ability to solve real-world problems through various practical methods, such as internships, training, and project-based learning, thereby laying a solid foundation for their future careers.

3.2 Challenges Faced by Local Application-Oriented Universities

3.2.1 Monotonous talent training models

Local application-oriented universities face numerous challenges in talent cultivation, with the most prominent being the issue of a monotonous talent training model. The root of this problem often lies in the constraints imposed by traditional teaching methods, curriculum design, faculty resources, and societal demands. These factors, to some extent, limit the flexibility and innovation of universities in the talent development process, resulting in students who struggle to meet the demands of rapidly evolving society and industry. Therefore, in response to this situation, local application-oriented universities must urgently strengthen reform efforts, innovate educational models, and

enhance in-depth collaboration with industries and enterprises, promoting interdisciplinary integration and cooperation, and cultivating more high-quality talents with comprehensive abilities, innovative spirit, and practical skills.

3.2.2 Lack of in-depth university-enterprise cooperation

The inadequacy of university-enterprise cooperation is also a key issue faced by local application-oriented universities. The primary cause of this phenomenon is the insufficient alignment between the needs of universities and enterprises. Many local application-oriented universities focus more on the teaching of academic theory and basic knowledge during talent cultivation, while enterprises place greater emphasis on students' practical work abilities and innovation capabilities. This results in a mismatch between the cultivation goals of universities and the needs of enterprises, with the university training model failing to adjust in a timely manner to meet the evolving demands of industries and enterprises. As a result, university-enterprise cooperation often lacks depth and fails to fully meet the practical needs of both parties.

3.2.3 The mechanisms and models of university-enterprise cooperation are underdeveloped

Currently, many local application-oriented universities' cooperation with enterprises remains at a relatively superficial level, primarily focusing on recruitment and internships. Although such cooperation provides students with practical opportunities to some extent, it lacks systematic planning and long-term vision, especially in terms of aligning with deeper areas such as curriculum design, research collaboration, and technology transfer. This loose cooperation model not only fails to meet the growing technological and talent needs of enterprises but also struggles to provide students with sufficient skill development and practical training, thus failing to effectively realize the true value of industry-education integration.

3.2.4 The level of enterprise participation is low

The relatively low level of participation by local enterprises is also an important factor restricting the in-depth development of university-enterprise cooperation. Many local enterprises are small in scale, have limited resources, and lack sufficient training and research support, which results in relatively limited investment of resources and effort in university-enterprise cooperation. Additionally, some enterprises do not have an urgent demand for the talent cultivated by universities and even believe that these students possess only basic skills, which are insufficient to meet the technological and management needs of the enterprises. This phenomenon leads to low enthusiasm for enterprise participation in university-enterprise cooperation, further deepening the superficial nature of such cooperation and affecting its effectiveness and depth.

3.2.5 Uneven resource allocation

The issue of resource allocation in local application-oriented universities is also a major challenge in their development. The geographical location of the university and the economic development level of the surrounding area directly impact the allocation and utilization of resources. Universities located in economically developed regions are generally able to secure more social funding and enterprise collaboration opportunities, whereas universities in relatively underdeveloped areas often face problems such as insufficient funding, limited enterprise cooperation opportunities, and difficulties in attracting talent. This regional disparity in resources not only leads to significant gaps in educational quality, teaching conditions, and faculty-student development among universities in different regions, but also exacerbates the bottleneck in the integration of industry and education. Compared to universities in developed areas, local universities face shortages in funding, technology, and faculty, which restricts their educational innovation and the depth of industry-education integration.

4. Innovation in Talent Cultivation Models of Local Application-Oriented Universities

From the perspective of industry-education integration, the innovative talent cultivation models of local application-oriented universities encompass multiple aspects. These innovations are not only reflected in the reform of curriculum design and teaching methods but also extend to areas such as deep cooperation between universities and enterprises, the construction of practical

training bases, support for innovation and entrepreneurship, and the expansion of social services. The core of this model lies in closely linking education with industry needs. Through multi-dimensional collaborative innovation, it promotes the dual enhancement of students' practical abilities and innovative thinking, thus better aligning them with societal and market demands.

4.1 Deep Integration of Industry, Academia, and Research, Promoting Collaborative Talent Development

4.1.1 Innovation in cooperation mechanisms

Local application-oriented universities actively promote the integration of industry, academia, and research by establishing long-term cooperative relationships with local enterprises, industry associations, and research institutions. To ensure that the content and forms of teaching align closely with market demands, universities collaborate with their partners to build training bases, jointly undertake research and development projects, and offer industry-academia-research cooperative courses. This innovative cooperation mechanism not only provides students with more practical opportunities but also helps enterprises and research institutions obtain talent support and technological innovation, forming a virtuous cycle.

4.1.2 Co-building curriculum systems

The core of co-building a curriculum system lies in jointly formulating course outlines and teaching plans with enterprises. Through this collaboration, the content and structure of courses are better aligned with actual work requirements, ensuring that students acquire the latest and most practical industry knowledge and skills. In this process, the involvement of enterprise experts is crucial. They not only provide professional guidance for the courses but also directly participate in the teaching process, bringing students the most up-to-date industry trends and real-world experience. [1] This university-enterprise cooperation model allows students to directly connect with industry practices during their learning process, thereby enhancing their employability and competitiveness in the job market.

4.2 Diversification and Flexibility of Training Models

4.2.1 University-Enterprise joint training

University-enterprise joint training adopts various forms such as "order-based" education, internships, s and enterprise mentorship programs, aiming to provide students with opportunities closely linked to real work environments and projects. During their time at university, students will have the chance to experience and engage in actual work, which not only enhances their operational skills but also improves their ability to solve practical problems. [2] This collaborative model ensures the all-round development of students' professional qualities and practical abilities, laying a solid foundation for their future careers.

4.2.2 Apprenticeship and industry-academia integration

The introduction of apprenticeship systems or industry-academia integration models allows students to rotate between schools and enterprises. This approach not only enables students to systematically learn theoretical knowledge in the classroom but also provides valuable practical experience in the corporate environment, thus achieving an organic integration of theory and practice. It enhances students' comprehensive abilities and professional qualities.

4.2.3 Dual mentorship system

In order to help students better integrate into practical work and enhance their overall abilities, the "dual mentorship system" has been implemented. Under this model, each student receives guidance from both a university mentor and a corporate mentor during their academic tenure. The university mentor is responsible for academic counseling and development, while the corporate mentor helps students hone their skills and grow through practical experience in real-world work settings. [3] This diversified mentorship approach not only strengthens students' practical abilities but also lays a solid foundation for their future career development.

4.3 Reform of Teaching Content and Methods

4.3.1 Interdisciplinary integration

Local application-oriented universities should promote interdisciplinary education and research based on the characteristics and development needs of local industries, aiming to cultivate application-oriented talents with

composite skills. With the rise of emerging fields such as information technology, smart manufacturing, and big data, interdisciplinary integration has become an important trend in modern education. [4] For example, in cultivating students in information technology and engineering fields, course designs can incorporate artificial intelligence, machine learning, and other areas, enabling students to master core knowledge in their major while also fostering their interdisciplinary thinking and comprehensive application abilities.

4.3.2 Project-Based teaching

Project-based learning (PBL) emphasizes using real projects to enhance student learning. This approach enables students to apply the knowledge they have learned to solve real-world problems, improving their practical abilities, innovative thinking, and teamwork spirit. By introducing real business or societal projects, students not only enhance their professional skills but also learn how to deal with complex work environments.

4.3.3 Application of virtual simulation technology

Virtual simulation technology, by simulating real work environments and processes, provides students with a risk-free platform for practice. This not only reduces the cost of practical teaching but also allows students to experience real work scenarios even without actual corporate resources. [5] Virtual simulation technology is widely used in fields such as medicine, engineering, and aerospace, and effectively improves students' practical and problem-solving abilities.

4.4 Enterprise Involvement in the Talent Evaluation System

4.4.1 Dynamic evaluation mechanism

Establishing a dynamic talent evaluation mechanism based on industry demand and enterprise standards can effectively promote continuous updates to school curriculum content and training programs, ensuring that the educational system adapts to changes in society and industry development. At the same time, enterprises not only serve as practical bases but also actively participate in the student evaluation system, providing certification of students' abilities and ensuring that the talents cultivated align closely with industry needs.

4.4.2 Industry certification

By closely cooperating with enterprises or industry associations, universities can launch career skill certifications that align with industry standards. This enables students to obtain widely recognized market certificates upon graduation, significantly enhancing their competitiveness in the job market. [6] This initiative not only helps students transition smoothly into the workforce but also ensures that their skills are recognized by the industry, laying a solid foundation for their future career development.

4.5 Focus on Innovation and Entrepreneurship Capability Development

4.5.1 Innovation and entrepreneurship education system

Local application-oriented universities provide an excellent environment for independent innovation and entrepreneurial practice by establishing innovation and entrepreneurship laboratories, incubators, and maker spaces. These platforms not only offer students opportunities for hands-on experience but also encourage them to take bold risks and innovate. Additionally, the universities actively organize innovation and entrepreneurship competitions in collaboration with enterprises, providing a stage for students to showcase and stimulate their innovative potential. These activities not only enhance students' practical abilities but also provide valuable experience and resources for their entrepreneurial journey.

4.5.2 Integration of enterprise internships and innovation projects

During internships at enterprises, students not only improve themselves by completing tasks and accumulating experience but also have the opportunity to participate in innovation projects within the company [7]. This involvement allows students to apply their knowledge in practice and stimulates their innovative consciousness, developing their hands-on skills and problem-solving abilities, thus laying a solid foundation for their future careers.

4.6 Expansion of Social Service Functions

4.6.1 Serving local economic and industrial development

Local application-oriented universities collaborate with local governments and enterprises to provide customized training tailored to local industrial needs, helping local

enterprises improve their technical levels and innovation capabilities, thereby promoting regional economic development.

4.6.2 Echnology research and development and transformation

Universities can partner with enterprises to engage in technology research and development and the transformation of research outcomes, providing technical support and solutions to local industries. By participating in these projects, students not only improve their practical skills but also contribute to the technological innovation of local enterprises.

4.6.3 Socially demand-oriented precision talent cultivation

Precise alignment with Industry demand, through close collaboration with local enterprises and industries, universities are able to gain in-depth insight into industry development trends and labor market demands. This allows for timely adjustments to curriculum content and training directions, ensuring that the students cultivated meet market needs.

4.6.4 Customized talent training programs

Based on the characteristics of the local economy and industrial structure, universities develop personalized and tailored talent training programs that emphasize regional characteristic and cultivate talents with industry competitiveness.

5. Policy Support and Safeguard Measures in Industry-Education Integration

In the context of industry-education integration, government policy support and safeguard measures play a crucial role. The government not only provides support in resource allocation, policy formulation, and legal guarantees but also promotes cooperation between schools and enterprises, driving the alignment of the educational system with industry needs.

5.1 Policy Support

Government policy support is the foundation for promoting industry-education integration. By formulating relevant policies, the government can guide and regulate the development of industry-education integration, encourage universities and enterprises to strengthen cooperation, and provide support in areas such as funding, tax incentives, and talent recruitment. Additionally, policies should encourage universities and enterprises to jointly develop cooperation agreements, ensuring that both parties can enjoy legal rights and interests in the collaboration, thereby promoting resource sharing and complementing each other's advantages. [8] Furthermore, the government can introduce educational policies related to industry-education integration, encouraging universities and enterprises to collaborate, and advancing adjustments in professional programs, curriculum reform, and teaching methods to better align with societal needs and industrial development trends.

5.2 Shared Responsibility between Universities and Enterprises

Both universities and enterprises bear social responsibilities in the process of industry-education integration, driving educational equity and societal development. Universities are responsible for cultivating talent with a sense of social responsibility and innovative ability, while enterprises need to fulfill their social responsibilities and support sustainable societal development. Furthermore, universities and enterprises should jointly develop talent training plans, designing reasonable curricula and practical components that align with industry demands and societal changes, ensuring graduates possess the skills and competencies required in actual work environments. [9] Universities provide theoretical education, while enterprises offer practical operations and hands-on experience, and through their collaboration, the high quality and efficiency of talent cultivation are ensured.

5.3 Establishment of Long-term Cooperation Mechanisms between Universities and Enterprises

Research Cooperation: Universities and enterprises should cooperate in research projects and technological innovation. Universities can provide theoretical support and research talents, while enterprises can offer practical market demands and application scenarios. Through industry-university-research cooperation, technological innovation and the transformation of research results can be promoted, achieving mutual benefits for both

parties. Universities and enterprises should strengthen resource sharing, especially in areas such as experimental facilities, technological platforms, and training bases. [10] Enterprises can offer universities internship, training, and research bases to help students gain exposure to cutting-edge industry technologies, while universities can provide innovative ideas and high-level research outcomes to foster technological advancements in enterprises.

5.4 Encouraging Enterprises' Deep Involvement in Educational Reform

Encouraging Enterprises to Provide Practical Opportunities: Policies should encourage and support enterprises in offering internships and training positions for students and provide policy rewards or support to enterprises that offer high-quality practical positions. Strengthening Enterprises' Role in Curriculum Design: Through cooperation, enterprises can provide universities with advice on professional directions or course content, ensuring that the knowledge acquired aligns with actual job requirements.

5.5 Strengthening the Construction of Industry-Education Integration Demonstration Bases

Building Demonstration Zones and Pilot Projects: By selecting specific regions, schools, or industries as industry-education integration demonstration zones, the government can pilot and explore industry-education integration models that adapt to local economic and industrial development. Optimizing Practical Platforms: Shared practical platforms, such as industrial parks and technology innovation centers, can be provided to schools and enterprises, offering technical support and operational space for industry-education cooperation.

5.6 Promoting Regional Coordination and Cooperation

Promoting Regional Cooperation: Industry-education integration policies should be coordinated across different regions, and through cross-regional educational and industrial cooperation, diverse cooperation models can be formed, breaking the problem of regional development imbalances.

5.7 Promoting Innovation and Entrepreneurship Education

Policies should encourage universities and enterprises to develop innovation and entrepreneurship courses and activities to foster students' innovative spirit and entrepreneurial abilities. [11] Measures such as providing entrepreneurship funding and technical support can promote further development of industry-academia-research collaboration. Innovation Project Incubation: Promoting cooperation between the government and enterprises to establish innovation incubators, providing project incubation services to students, and helping them transform academic research results into actual productivity.

6. Conclusion

In the context of industry-education integration, local applied universities can effectively enhance students' employment and innovation abilities and provide strong support for local economic development by fully leveraging the advantages of local industries and innovating talent cultivation models. Through the formulation of effective policy measures, the development of industry-education integration can be significantly promoted, breaking down barriers between education and industry, ensuring that the talents cultivated are more closely aligned with societal and market demands, and driving high-quality economic development.

Acknowledgements

This study was supported by the 2024 Key Teaching Reform Research Project of Tianjin University of Finance and Economics Pearl River College: Research on the Talent Cultivation Mechanism for Application-oriented Students in Local Universities Based on Industry- Education Integration (Project No.: ZJJG24- 01Z).

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