

# *Thoughts on the Application-oriented Private Universities' Implementation of Practical Teaching through Industry-Education Integration*

Lingxian Liu

*Xi'an Mingde Institute of Technology, Xi'an, 710065, China*

**Keywords:** Practical teaching, industry-education integration, talent cultivation

**Abstract:** Industry-education integration is a crucial development strategy for promoting higher education and vocational education in China. It is also an important strategy for fostering new drivers of social development in the new era. Currently, the talents produced by application-oriented universities often do not match the needs of employers, making it difficult for companies to find suitable talents and leaving university graduates facing employment challenges. This paper intends to explore effective methods and measures for reforming the practical teaching model for cultivating innovative and entrepreneurial abilities in students from the perspective of industry-education integration, aiming to meet the market's urgent demand for innovative and entrepreneurial talents. This will help improve the teaching quality of universities and contribute to the development of practical teaching models for innovative talent cultivation in application-oriented universities.

## 1. Introduction

In today's rapidly developing higher education landscape, there is a growing demand for high-quality application-oriented talents, and the emphasis on talent quality is increasing. For private universities, the talent cultivation model of "industry-education integration and school-enterprise cooperation" can not only effectively enhance the quality of talent cultivation but also promote the high-quality development of private education. Due to differences in conditions, social recognition, and faculty between private and public universities, private universities should use industry-education integration as a medium to promote their own high-quality development. They should establish talent cultivation models that align with their own characteristics and educational positioning and adapt to regional economic development. Ultimately, this will achieve the goal of talent cultivation that integrates universities, enterprises, and local economic development.

## 2. Current Status and Issues in Practical Teaching at Private Application-Oriented Universities

Since the expansion of enrollment in higher education institutions, the talents produced by these institutions, although rich in theoretical knowledge, often lack practical skills and hands-on abilities. This has led to a situation where employers struggle to find the talents they urgently need, and a significant number of graduates are unable to secure jobs that align with their own expectations. To address this situation fundamentally, it is essential to transition from a closed to an open educational

philosophy. Higher education institutions should directly engage with the market, organically integrating the economic and social value of education with the value of talent.[1] Through proper guidance, universities should rigorously follow the objective laws of human production during the teaching process to cultivate students' innovative consciousness and entrepreneurial abilities, thereby realizing the true meaning and effectiveness of education. There are several issues in practical teaching at private application-oriented universities, as follows:

### **2.1. Lack of Targeted Practical Course Offerings**

While universities consider the requirements of employers when designing courses, they often fail to conduct in-depth investigations and timely adjustments based on market demand. Some universities even blindly follow trends, lacking research into the needs of specific industry positions and failing to establish distinctive professional programs. This trend of "going with the flow" in program offerings does not benefit the selection of talents by the labor market and hinders the long-term development of application-oriented universities themselves.

### **2.2. Outdated Practical Course Content**

The pace of updating course content often lags behind the changing demands of employers due to the rapidly evolving landscape of knowledge dissemination in the context of the "Internet Plus" era. Knowledge dissemination and updates occur at an unprecedented speed.[2] If course content fails to reflect modern scientific and technological advancements or becomes disconnected from actual work processes, students may lack essential professional skills. As a result, they may struggle to seamlessly integrate into the workforce and find themselves at a disadvantage when it comes to meeting the needs of modern enterprises.

### **2.3. Insufficient Integration and Interaction with Industries and Enterprises in Practical Teaching**

While many universities have established off-campus practice bases and engaged in collaborative efforts with enterprises to develop joint training facilities, order-based programs, and directed training initiatives, there are few instances where these practical projects engage in long-term, close cooperation with enterprises, fostering mutual growth and benefit. Many established practice bases remain underutilized, and universities lack mentors who can guide students in practical experiences and nurture their innovative and entrepreneurial abilities. Enterprise mentors also find it challenging to provide students with the same level of continuous guidance and instruction as university faculty, often leading to suboptimal outcomes in university-industry cooperation.[3]

### **2.4. Shortage of Qualified Teaching Staff for Practical Education**

Most application-oriented universities are categorized as second or third-tier private institutions. Due to lower enrollment standards and various institutional and compensation-related factors, they struggle to attract high-caliber talents to guide students with practical experience. As a result, these universities often lack dual-qualified teachers who possess both theoretical and practical expertise. The integration of theory and practice in the teaching process is compromised. Additionally, teachers at these universities often exhibit varying levels of deficiency in information technology skills and research capabilities, making them less effective in guiding students. Moreover, due to restrictions in China's personnel system, outstanding technical personnel from enterprises cannot freely participate in on-campus instruction, resulting in a disconnect between theory and practice in the teaching

process.[4]

### **3. The Meaning and Characteristics of Industry-Education Integration**

#### **3.1. The Meaning of Industry-Education Integration**

"Industry-education integration," as the name suggests, refers to the deep cooperation between industry and vocational education. Its core concept involves the full integration and development of talent cultivation, technological services, and other processes between industry, sectors, enterprises, and vocational education. It transcends the boundaries of vocations and education, businesses and schools, and production and teaching, blending education, skills enhancement, production labor, social services, and technological research and development into a unified whole. Industry-education integration differs from conventional school-enterprise cooperation; it is a talent cultivation model aimed at producing high-quality applied and practical talents.[5] It is primarily achieved through practical teaching, with the collaborative and shared resources and elements of both schools and regional enterprises significantly improving resource utilization efficiency. This provides students with high-quality practical teaching resources for experiments, internships, and practical training, enhancing their hands-on and innovative abilities. Furthermore, it establishes an organic connection between the education chain, industry chain, and innovation chain.[6]

Different scholars have varying interpretations of industry-education integration. Chen Minwei, starting from the literal meanings of "industry" and "education," sees it as the organic integration of the education system and the industrial system, forming a holistic entity. Luo Ruzhen believes that industry-education integration is a unique organizational form distinct from pure education and industry, where vocational education collaborates with various industries, including material production and social services, to conduct educational, production, and service activities together. Yao Dongwei sees industry-education integration as a mutual utilization of advantages between schools and enterprises, where schools can introduce advanced technologies from enterprises, utilize their facilities for production, and enterprises can provide production workshops for students to learn through production. Through collaborative planning of teaching and production, it achieves the goal of shared resources and mutual benefits between schools and enterprises. Overall, it can be summarized as "production in teaching, teaching in production." [7] Through a review of existing literature, we believe that industry-education integration involves various participating entities mutually cooperating, leveraging their respective advantages and resources, and focusing on serving regional economic development. It is driven by cooperation in education, industry, and research and development, resulting in the high-level integration of various elements within education and industry, constituting a mutually beneficial practical model.

#### **3.2. Characteristics of Industry-Education Integration**

Industry-education integration primarily exhibits two prominent characteristics. First is cooperation and sharing. In the process of deepening industry-education integration, enterprises, as significant participants, play a crucial role by articulating talent cultivation needs and standards. They collaborate with local universities in various ways to jointly plan majors, develop teaching materials, design courses, set up internships and practical training, and propose task-based training models that reflect the real production environment of enterprises. The main function of local universities is to establish platforms for collaborative education between schools and enterprises. They integrate their resources for practical teaching, talent cultivation, and technological services into the development chain of the industry. Industry-education integration enhances the alignment between talent supply and industry demand, effectively reduces the cost of cultivating applied talents, and enables multiple

participants in industry-education integration to achieve mutual benefits. Second is collaborative innovation. Enterprises possess capital and technology, while local universities have human resources and intellectual capital. Deepening industry-education integration allows for efficient flow and deep integration of innovation factors, such as capital, technology, and talent. This leads to collaborative innovation and common development among all participants.

#### **4. The Necessity of Promoting Industry-Education Integration in Private Application-Oriented Universities**

In recent years, the government has not only provided more financial support to public universities but also guided and policy-supported education management and quality. If private universities cannot identify their own development characteristics and advantages, and lack strategic planning for their future development, they may encounter developmental bottlenecks. Therefore, actively promoting industry-education integration based on societal needs, utilizing their own advantages for characteristic education, and propelling the educational work of private universities into a new stage is crucial.

##### **4.1. Promoting High-Quality Development of Private Universities**

Within the educational system of private universities, the existing knowledge system can be overly theoretical, emphasizing the study of students' theoretical knowledge in their major. Professional education mainly relies on fixed textbooks and theoretical course instruction. This approach neglects the synergy between students' theoretical and practical development, leading to a gap between their theoretical knowledge and practical skills. By incorporating practical teaching elements into the existing theoretical course system of private universities, such as internship bases, it is possible to effectively promote curriculum reform. This achieves the synergistic integration and development of theoretical and practical education, further enhancing the effectiveness of private universities' education and teaching, ultimately contributing to their high-quality development.

##### **4.2. Promoting Sustainable Regional Economic Development**

The primary goal of private universities is to provide society with highly qualified and skilled applied talents, who play a significant role in the development of regional economies. In the process of industry-education integration in private universities, cooperation with local enterprises and alignment with their development needs can lead to the establishment of tailored talent development models. These models produce high-quality applied talents that meet the demands of enterprises. This enables private universities to make significant contributions to the sustainable development of regional economies.

##### **4.3. Alleviating the Employment Pressure on Graduates**

In recent years, as the number of graduates from universities has steadily increased, the employment issues faced by university graduates have become a prominent social concern. Many university graduates encounter difficulties in finding suitable employment opportunities, leading to challenges such as "employment difficulties" and "immediate unemployment" after graduation. In this context, promoting industry-education integration in private universities can effectively enhance students' employability. On one hand, cooperation between private universities and enterprises allows students to engage in practical training, reinforcing their practical skills and abilities. On the other hand, enterprises collaborating with private universities can sign talent development agreements,

offering employment opportunities to graduates of private universities. This effectively enhances the competitiveness of private university graduates in the job market and alleviates their employment pressure.

#### **4.4. Industry-Education Integration as a Vital Strategy for Achieving High-Quality Development in China**

As a major national strategic initiative, industry-education integration is proposed to adapt to the rapid development of China's economy and society, as well as the transformation and upgrading of its industrial structure. Its main objective is to promote universities to cultivate better industrial talents for economic and social development and industrial transformation and upgrading. For applied undergraduate universities, industry-education integration is a requirement for practical education. For collaborating enterprises, industry-education integration is necessary for enhancing industrial competitiveness. Universities and enterprises have different educational resources, but they complement each other. Industry-education integration not only promotes employment and a virtuous cycle of industries but also resolves the supply and demand conflicts between education and industry. It effectively enhances the quality of education and industrial competitiveness, making it a crucial strategic initiative for China to achieve high-quality development.

Industry-education integration provides robust support for practical education in private application-oriented universities. It enables practical teaching in these universities to take place in a real production environment through collaboration with enterprises. Experiment and practical training content are integrated into real-world projects of enterprises, allowing students to conduct standardized operations in an environment closest to actual production practice. Students also gain exposure to advanced processes and technologies that enterprises have already applied in their production activities, giving them insights into the actual needs of the industry.

In the process of industry-education integration, enterprises propose talent cultivation needs and standards, collaborate with universities to plan majors, arrange courses, develop teaching materials, and design teaching, as well as propose training models that meet real production needs. Simultaneously, universities establish practical education bases, enabling students to engage in practical activities as closely as possible to the real production environment, fulfilling the needs of practical teaching.

### **5. Strategies and Recommendations for Developing a Practical Teaching System in Private Application-Oriented Universities Based on Industry-Education Integration**

#### **5.1. The Concept of Industry-Education Integration and Collaborative University-Enterprise Partnerships in Building Practical Teaching Systems**

In the context of industry-education integration, "industry provides support, and teaching is the core," while in university-enterprise collaboration, "the university leads, and enterprises form the foundation." Implementing deep industry-education integration and university-enterprise collaboration can further strengthen the connection between universities and the industrial sector. It promotes collaborative efforts in "cultivating talents, conducting educational programs, and fostering innovation." This approach broadens the scope and depth of industry-education integration. In practice, it involves combining local industry requirements for students' innovation and practical abilities with reforms in teaching plans, the development of practical teaching systems, the establishment of a practical teaching faculty, and the enhancement of laboratory management systems. Regarding hardware improvements in laboratories, it's essential to allocate institutional resources effectively, procure modern experimental instruments and equipment, and restructure and expand

existing laboratories to meet the needs of industry-education integration and university-enterprise collaboration. Based on the school's educational positioning and the characteristics of specific majors, it explore cooperative education models, jointly build practical teaching systems with the support of corporate resources, strengthen on-campus training center construction, and expand off-campus internship and training bases. These series of reforms contribute to the enhancement of our university's practical teaching system.

## **5.2. Reforming Practical Teaching Planning**

To ensure effective practical teaching, comprehensive planning and development should be jointly undertaken by the university and enterprises. Laboratory construction planning should consider the broader context of industry-education integration and university-enterprise collaboration. It should be based on industry demands, academic disciplines, and specific program characteristics. Furthermore, detailed plans should be formulated for industry-education integration and university-enterprise collaboration, considering the distinctive features of each program. Collaborative discussions with industry associations and relevant enterprises, along with corporate involvement on campus and the establishment of specialized classes, are essential. Universities and their partner enterprises, along with industry associations, should collectively determine the goals, content, teaching methods, and assessment methods for practical teaching. Joint lectures both on and off-campus should be offered, fostering collaboration between students, enterprises, and universities. This approach should aim to explore new models for student development through practical teaching and continuously refine the practical teaching system.

## **5.3. Constructing a New Practical Teaching System**

The practical teaching system should be oriented toward societal needs, aiming to nurture highly competent and innovative applied talents who can serve the local industry effectively. The practical teaching system should undergo reforms in hardware conditions, faculty, teaching content, teaching methods, teaching processes, assessment methods, and laboratory management systems. Expanding the scope of industry-education integration and university-enterprise collaboration should be prioritized to enhance the quality of teaching and meet the expectations of society regarding university graduates' capabilities.

## **5.4. Scientifically Feasible Curriculum Development**

Curriculum objectives should be formulated based on program-specific characteristics, the demands of local industries, and students' individual traits. After comprehensive evaluations by internal university experts, industry professionals, and experts from sister universities, curriculum plans should be systematically and scientifically designed. Based on the curriculum objectives, universities and partner enterprises should collaboratively develop feasible teaching plans, syllabi, and practical course content. These plans should be both scientific and practicable.

## **5.5. Improving Practical Teaching: From Passive to Active Learning**

Effective communication between colleges and enterprises should guide the development of practical course content based on program characteristics and enterprise needs. It is crucial to ensure that students not only acquire basic practical skills required by their major but also excel in specialized practical tasks requested by the industry or specific companies. To better cultivate students' practical innovation abilities, the proportion of experiments and practical training in the overall credits should



be increased as needed. The focus should be on practical skill development. In terms of experiment management, the transition from traditional single and closed practices to diversified and open ones should be pursued. Laboratories should be open throughout the day, and students should be able to make online reservations for equipment usage during their training.

### **5.6. Industry-Education Integration and University-Enterprise Collaboration for Specialized Programs**

Bringing enterprises into universities through industry-education integration allows for the establishment of innovative collaborative educational models, such as specialized programs based on university-enterprise partnerships. For example, our university offers a logistics major in collaboration with Alibaba Group, known as a specialized program. Students are selected from the second year and begin taking specialized courses from the third year. The program's development plan, textbook selection, practical training, internships, and graduation theses or projects are jointly negotiated and supervised by both the university and the partner enterprise. At the end of the third year, students can apply to the enterprise to participate in the next academic year's practical training segment. The list of students entering practical training is determined through mutual selection. In the fourth year, students undergo one year of training and internships, meeting the requirements of the enterprise. Students who successfully complete the program receive formal employment offers from the enterprise based on their performance. This educational model has been highly satisfactory for both the university, the enterprise, and society, yielding significant innovative outcomes.

### **5.7. Supporting Innovation, Entrepreneurship, and Academic Competitions Through Practical Teaching**

Practical teaching under industry-education integration emphasizes the cultivation of students' practical innovation abilities, enhancing their capabilities to participate in various academic competitions. Policymakers can provide credit recognition for students who achieve provincial-level or higher innovation, entrepreneurship, and academic competition awards, thus encouraging and guiding students to participate actively. The university can support the practical training center by offering financial assistance, laboratory supplies, equipment, dedicated teaching personnel, and other resources for research training, open experiments, innovation and entrepreneurship projects, academic competitions, and patent development.

### **5.8. Strengthening the Construction of Practical Teaching Faculty**

The instability of practical teaching faculty and a lack of talent are common issues in contemporary universities. Establishing a highly ethical and proficient practical teaching faculty is an urgent need for universities. For instance, appropriate policies for training "dual-skilled" teachers can be developed. This can be accomplished through funding support, incentives, and tie-ins with title evaluations. Such policies should encourage teachers to undergo corporate training to acquire specialized technical and practical skills, thereby transforming them into "dual-skilled" teachers with both "professional knowledge" and "technical skills" as well as "teaching ability" and "practical competence." Additionally, universities and enterprises can jointly form practical teaching teams. Combining on-campus faculty with external technical experts can help promote practical teaching while exploring new university-enterprise cooperation models. Involving enterprises in the entire student development process enables universities to accurately grasp the direction of teaching and ensure that the talents they nurture meet the demands of society.

## Acknowledgement

This paper is the phased research result of the 2021 Higher Education Scientific Research Project of Shaanxi Institute of Higher Education, the Reform and Practical Research on the Training of Shaanxi Applied Universities from the Integration of Industry and Education (Project No.: XGH21301); This paper is the phased research result of the Training of Innovative and Entrepreneurial Talents in Shaanxi Applied Private Universities of Xi'an Mingde Institute of Technology (Project No.: JG2021YB04).

## References

- [1] Wang Tiejun, "Reforming the Practical Education Teaching System Based on the Cultivation of Innovation and Entrepreneurship Abilities," *China Extracurricular Education*, 2018,12 (38): 40.
- [2] Xue Yonggang, "Research on the Three-Dimensional Structural System Construction of Excellent Accounting Talents' Practical Teaching," *China Management Informatization*, 2018,10 (215): 90.
- [3] Li Bobo, "Research on the Path to Enhance Innovative Employment Abilities of Undergraduates in Applied Undergraduate Universities," *China Management Informatization*, 2018,7 (225).
- [4] Li Shaochun, "Research on the Current Situation and Countermeasures of Industry-Education Integration in Applied Undergraduate Universities," *Advanced Journal*, 2020, (32): 56-57.
- [5] Yang Ziyin, "Exploration of Curriculum Reform in Applied Universities Based on Industry-Education Integration," *Advanced Journal*, 2020, (1): 60-62.
- [6] Yan Weidong, "Research on the Path of Educational Reform in Local Universities under the Background of Industry-Education Integration," *Journal of Shenyang Jianzhu University*, 2020, 22 (4): 423-427.
- [7] Li Xiaoxu, "Exploration of the Path to High-Quality Development of Private Colleges and Universities under the Background of Industry-Education Integration: A Case Analysis Based on Survey Data from Five Private Colleges and Universities in Yunnan Province," *Journal of Wuhan Transportation Vocational College*, 2023, 25(02): 97-102.