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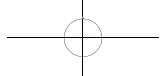
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Exploration of the Precision Identification and Support Mechanisms of High-Level Overseas Talents in Colleges and Universities

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Abstract: Talent is an important productive force for the competition and development of modern society, which is crucial to the future development of the country. As the main position of talent introduction and cultivation, colleges and universities still face many problems and challenges in attracting and supporting overseas high-level talents. This paper examines the policies and support services for recruiting overseas high-level talent in key domestic universities, specific regions, and representative first-class institutions. It explores innovative approaches for the precise recruitment of overseas talent and addresses shortcomings in the current talent recruitment policy framework. Focusing on three key aspects—"precise talent identification," "innovative talent recruitment models," and "comprehensive service guarantees"—the paper provides actionable policy recommendations and operational guidelines that are both replicable and scalable. These suggestions aim to support the implementation of a more proactive, open, and effective talent policy, enhancing universities' strategies for attracting and retaining top-tier international talent.

Keywords: Colleges and universities; Overseas talents; Precision identification; Support mechanisms

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1. Current situation of the introduction of overseas high-level talents in universities

Talent is the cornerstone of a nation's strength and development. "We need to emphasize that the Party should manage personnel, focus on the world's scientific and technological frontiers, the main economic battlefields, the major needs of the country, and the lives and health of the people; thoroughly implement the strategy of strengthening China through talent in the new era; comprehensively train, attract, and make good use of talent; accelerate the development of a major talent center and innovation hub in the world; and provide talent support for basically realizing socialist modernization by 2035," Xi said. He added that this would lay a solid human resource foundation for building China into a great modern socialist country by 2050^[1]. The report of the 20th National Congress of the CPC specifically addressed the strategic importance of talent development in education, science, and technology, emphasizing that talent is a critical resource for achieving national

rejuvenation and winning international competition. Currently, as the world undergoes profound changes unseen in a century, the great rejuvenation of the Chinese nation has entered a pivotal period. A new wave of scientific and technological revolution and industrial transformation is sweeping the globe, with countries vying to seize opportunities. This has intensified international competition for talent. In response, governments worldwide are vigorously seeking to attract high-level overseas talent, recognizing it as a key strategy for enhancing regional competitiveness and fostering innovation. In China, the steady progress in the construction of “double first-class” universities underscores the need for a teaching staff that is not only “internationalized” but also “globalized.” This involves cultivating globally minded educators and encouraging cross-border talent exchange.

Talent competition has entered a new phase, characterized by increasing mobility and unprecedented intensity. As the primary institutions for talent recruitment, universities face strategic challenges in attracting, utilizing, and retaining high-level talent ^[2]. However, there are significant obstacles in this process. From an international perspective, other governments have imposed pressures on China’s talent recruitment efforts, and the competition for global talent may escalate under new geopolitical conditions. Domestically, challenges include limited channels for identifying high-level talent and an over-reliance on single methods of recruitment. The rapid influx of overseas returnees also presents difficulties in verifying their qualifications and backgrounds, as mechanisms for conducting comprehensive checks are underdeveloped. Furthermore, universities need to enhance their career platforms for talent. This includes improving on-campus environments, fostering academic atmospheres, and promoting integration between domestic and international staff. Support services, such as healthcare, housing, education for children, and retirement policies for foreign professionals, require significant upgrades. In light of these challenges, it is evident that the mechanisms for recruiting overseas high-level talent must be innovated, and the systems supporting their integration and well-being need substantial improvement.

2. Special practices of major provinces and regions

2.1. Characteristic practices of major provinces and cities

In addressing the demand for overseas high-level talents, local requirements for education, overseas work experience, age, and service duration collectively reflect “high standards” and “precise differentiation.” For instance, Beijing emphasizes distinguishing among talent categories, further dividing entrepreneurial and research and development teams within broader team introductions ^[3]. Provinces such as Jilin, Fujian, and Guangdong, along with cities like Shenzhen, Shanghai, and Xi’an, have developed talent classification catalogs ^[4]. These catalogs tailor policies to specific talent categories, enabling more focused, calibrated, and effective implementation. Additionally, key industries and groups are prioritized, with a strong emphasis on attracting overseas talents in integrated circuits, new displays, artificial intelligence, biomedicine, and creative cultural industries.

Regarding mechanisms for introducing overseas high-level talents, provinces and regions leverage their unique strengths to innovate recruitment strategies. For example, Northeast China supports key industries and major projects by guiding universities, research institutes, and enterprises to attract and retain top-tier talents. Efforts include fostering cross-border and regional academic exchanges, co-developing projects, and building platforms for innovative talent development ^[5]. The Central region emphasizes utilizing overseas Chinese resources by establishing “overseas talent liaison stations,” providing industrial and policy information,

and introducing conducive talent development environments. Meanwhile, Jiangsu, Zhejiang, and Shanghai focus on coordinated efforts involving government platforms, organizational talent demands, overseas recommendations, and talent agencies, thereby advancing market-oriented mechanisms for talent recruitment.

In terms of service and support for overseas high-level talents, regions address practical concerns, investing resources in housing, family resettlement, children's education, medical care, and tax incentives. High-level talent service centers and digital platforms have been established, offering diverse benefits and fostering enthusiasm through robust support for career development, optimized housing environments, and comprehensive security measures.

2.2. Experience in domestic first-class universities

In advancing the accurate identification and recruitment of talent, many Chinese universities, particularly those engaged in “Double First-Class” initiatives, have undertaken significant personnel system reforms to build high-level faculty teams that meet world-class academic standards ^[6]. These reforms enable institutions to clearly define their specific needs, optimize their strategies, and introduce talent in a targeted manner. This demand-driven approach not only enhances the quality of recruitment but also aligns with global employment systems, making it easier to attract overseas talents returning to China. Moreover, such reforms streamline career development pathways, allowing talents to integrate into domestic academia more effectively and efficiently.

In the realm of overseas talent resource acquisition, key universities are increasingly focused on creating robust talent databases. For instance, Northwestern Polytechnical University leverages big data and artificial intelligence technologies to develop a “talent radar system” that identifies potential recruits at the international forefront ^[7]. In terms of recruitment strategies, many universities have formulated policies specifically targeting high-level overseas talents. These include establishing dedicated recruitment teams, collaborating with overseas talent liaison organizations, alumni associations, and regional hometown associations, and creating international talent communities or overseas recruitment stations. Such efforts strengthen alumni connections and facilitate the targeted dissemination of recruitment information to enhance accuracy and efficiency ^[8].

To broaden recruitment channels, universities are adopting a hybrid online-offline approach. Initiatives include hosting offline scholar forums, organizing international academic conferences, and conducting global cloud-based live recruitment events. Additionally, participation in international video-based recruitment fairs ensures seamless integration of virtual and physical outreach, continuously expanding recruitment networks to attract top global talent.

3. Suggestions for accurately recruiting and supporting overseas high-level talents

The Central Talent Work Conference systematically summarized the guiding principles for China's talent development with its “Eight Adherences.” It outlined a forward-looking mission and vision for national talent cultivation, providing a strategic direction for universities in recruiting overseas high-level talents. However, under current circumstances, both the quantity and quality of recruited overseas talents fall short of meeting the urgent demands of university reform and development aligned with international standards. Recruitment efforts lack sufficient focus, policies require further refinement, and the implementation of support measures needs to be significantly strengthened. Addressing these challenges is essential to better serve the evolving

needs of universities and align with global academic and institutional benchmarks.

3.1. Clear development orientation and precise talent identification

In addition to creating opportunities and providing services, colleges and universities must prioritize aligning individuals with appropriate roles to maximize their potential. Institutions should focus on their development goals, adjust teacher training plans at various stages, and adopt a long-term perspective. This includes proactively addressing the nation's strategic needs, basing efforts on disciplinary strengths, and scientifically planning talent team development in advance^[9]. Furthermore, accurately positioning and managing talent is crucial. As major cities compete in talent acquisition, universities must ensure their recruitment strategies align with local conditions to avoid wasting human resources^[10]. Some institutions overly emphasize attracting high-level overseas talent without considering the alignment with their cities' and schools' specific contexts, resulting in double waste of resources and time^[11]. To address this, universities should optimize their talent teams and allocate resources more strategically for talent acquisition. Finally, it is essential to oversee the entire talent selection process. Recruiting overseas talent requires overcoming challenges such as time, location, and cultural differences while ensuring comprehensive evaluation and supervision of potential hires. This process demands support from national and government entities as well as a robust institutional framework. Universities must strengthen their foundational strategies, emphasize thorough assessments, and aim to attract talent that truly contributes value and is effectively utilized.

3.2. Innovative talent acquisition channels and enriched talent recruitment platforms

Currently, domestic cities and universities are actively recruiting high-level overseas talent and aligning with international standards. To enhance overseas recruitment efforts, universities should leverage online resources to identify exceptional young talent through "cloud recruitment" and virtual forums. Establishing overseas talent bases is also essential. This involves collaborating with overseas talent liaison organizations, alumni associations, and hometown associations to integrate talents, projects, funding, and infrastructure into cohesive networks. Colleges and universities can capitalize on opportunities to engage with international frontiers, explore collaborations with overseas institutions, and recruit outstanding global talent to enhance their academic standing. Beyond market recruitment and external outreach, universities can adopt "talent-attracting-talent" strategies. For example, they can encourage provincial experts, entrepreneurs, overseas returnees, and domestic and international institutions to recommend candidates. This approach can gradually create a robust network of high-end talent, fostering sustainable talent acquisition and development. Expanding industry-academia platforms is another effective strategy. Universities should continue developing science and innovation bases, strengthen connections with government and research institutions, and enhance strategic scientific and technological capabilities. By doing so, they can stimulate talent vitality, unleash potential, and promote sustainable progress in talent recruitment and utilization.

3.3. Strengthening service guarantees and prioritizing people

After "planting the buttonwood tree and attracting the phoenix," ensuring that the "phoenix" lives and works in peace and contentment becomes a critical priority in talent attraction. This requires comprehensive support policies for landing and service guarantees. For talents, security policies addressing work and life after their introduction are paramount. While current security policies are largely similar across regions, timely responses to talent needs and improvements in service content and delivery are necessary^[12].

3.3.1. Strengthening supporting services and establishing a “one-stop” service system

For high-level overseas talents, the principle of “people-oriented” service must guide the communication and support efforts during their introduction process. Universities should designate specialized personnel and create dedicated service desks to oversee talent introduction services. For world-class talent teams and scientific researchers, expedited channels should be established to attract them, forming a “one-stop” service model that seamlessly integrates work, living, and development. This approach ensures the “seamless docking” of services for talents ^[11]. Moreover, introducing overseas high-level talents is both a protracted endeavor and a time-sensitive competition. Universities must prioritize strategies to secure talent promptly and gain a competitive edge ^[13]. Enhancing the professionalism of management service personnel is essential for successful talent recruitment. Staff should possess international standards of competence, strong communication skills, professional knowledge, and a comprehensive understanding of university, national, and regional talent policies. This ensures that talents are well-informed and prepared. Additionally, universities should explore online service systems to streamline processes, minimize service delays, and maintain transparency throughout the introduction process. Establishing efficient, open, and transparent systems will facilitate smoother talent integration and retention.

3.3.2. Coordinating resources and meeting talent needs

The primary concerns of high-level overseas talents often include medical care, housing, and children’s education. Local governments have introduced three types of housing support for such talents: relaxing restrictions on housing purchases in cities with regulations, constructing talent apartments, and providing housing subsidies ^[12]. In terms of medical security, designated hospitals often provide green channels for high-level talents, facilitating convenient medical consultations and treatment. Regarding children’s education, targeted lists of schools and coordinated communication efforts can ensure a smooth transition for the children of talented individuals. In the future, universities should collaborate with local governments and other stakeholders to establish human-centered management and comprehensive service standards. Efforts should focus on providing high-quality transportation, medical care, and everyday conveniences for high-level talents. Preparing talent apartments and ensuring smooth housing transitions for returning overseas talents is vital. Universities should also coordinate with local real estate management departments to clarify housing purchase policies for talents ^[14]. Equally important is the provision of medical and family support services. Universities should actively address the enrollment needs of talents’ children and ensure seamless integration into local education systems. This holistic approach will enhance the satisfaction and productivity of high-level talents, strengthening their contributions to the university and the broader community.

3.3.3. Building platforms to promote talent development

Beyond security service policies, the development and incentive policies available in China are another area of concern for high-level overseas talents. A conducive work environment is crucial for enhancing productivity and job satisfaction. Universities should prioritize investments in laboratory construction and scientific research teams, foster a robust academic atmosphere, and ensure the orderly and coordinated progress of scientific research. By providing state-of-the-art hardware and software conditions, institutions can build their reputation and establish a virtuous cycle of talent acquisition and development ^[15]. For high-level talents recruited from overseas, universities must enhance cultivation efforts tailored to their specific needs. This involves initiating diverse research projects, ensuring smooth communication channels, and facilitating the

integration of talents into local academic and professional communities. Universities should promote the integrated allocation of resources such as talent, projects, funding, and research bases. Furthermore, granting team leaders greater autonomy allows them to take on significant responsibilities, effectively fostering a robust mechanism for talent development and support.

4. Conclusion

The cornerstone of constructing world-class universities lies in developing first-class teaching faculties. The current global landscape presents both challenges and opportunities for talent acquisition. Universities, particularly “double first-class” institutions, must assume a leading role in cultivating talents for fundamental research. When recruiting high-level overseas talents, universities should adopt a comprehensive approach: coordinating personnel efforts, ensuring supervision throughout the process, and providing holistic training services. Such initiatives will lay a solid foundation for nurturing a vast pool of exceptional talents. By creating an environment where everyone aspires to excel, strives to develop their potential, and fully utilizes their skills, universities can contribute significantly to the nation’s strategic goal of becoming an innovative global leader and a strong talent-driven nation by 2035.

Disclosure statement

The author declares no conflict of interest.

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Discussion on College Students' Innovation and Entrepreneurship Model Driven by Digital Innovation

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Abstract: With the rapid development of society and the continuous progress of science and technology, digital innovation has become one of the important engines for promoting economic growth. In this digital era, college students' innovation and entrepreneurship, as a key link to train innovative talents, also need to be closely combined with digital innovation drive to better adapt to and lead the development trend of the future society. This paper will deeply discuss the digital innovation-driven innovation and entrepreneurship mode of college students, analyze its definition and advantages, and put forward the key elements of building this mode, so as to provide references for cultivating more college students with innovative consciousness and entrepreneurial ability.

Keywords: Digital innovation; College students; Innovation and entrepreneurship model

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1. Definition of digital innovation-driven

Digital innovation-driven refers to the process of promoting social and economic development, improving industrial efficiency, and stimulating innovation and entrepreneurship by integrating, innovating, and applying existing knowledge and resources with the help of digital technology and information technology in the context of contemporary information society. This concept emphasizes the key role of digital technology in promoting innovation and entrepreneurship and highlights the importance of the digital era for college students' innovation and entrepreneurship. The digital innovation drive, which relies on advanced information technologies such as artificial intelligence, big data analysis, and the Internet of Things, provides a broad space of innovation for college students^[1]. Through digital technology, students can more easily access and share information and integrate knowledge across disciplines, thus stimulating more creativity and innovative thinking. The digital learning environment enables students to be more deeply involved in the solution of practical problems and develop comprehensive abilities across fields. At the same time, the digital innovation drive provides more flexible and efficient tools and platforms for college students to start their own

businesses. Emerging digital business models, such as cloud computing and blockchain, provide entrepreneurs with a lower threshold for starting a business and broader market opportunities. College students can more easily set up and operate their own entrepreneurial projects through digital platforms, achieving a rapid transformation from concept to practice. The popularity of digital technology also provides entrepreneurs with more convenient support in financing, marketing, and teamwork. In addition, the digital innovation drive emphasizes the cultivation of innovation culture and the stimulation of entrepreneurial consciousness. Through digital education, universities can better guide students to cultivate innovative thinking and teamwork spirit. The digital innovation-driven approach enables college students to more consciously apply what they have learned to practical problems and promote social progress through innovative solutions. The cultivation of such an innovative culture helps cultivate students' entrepreneurial awareness and makes them more entrepreneurial and creative ^[2].

2. Advantages of college students' innovation and entrepreneurship model driven by digital innovation

In the digital era, by making full use of the advantages brought by digital technology, the innovation and entrepreneurship mode of college students has shown remarkable innovation effects, providing them with a broader and more efficient development space. The advantages of this model are mainly reflected in three aspects: improving innovation efficiency and quality, expanding market and business opportunities, and enhancing competitiveness. First, the digital innovation-driven college student innovation and entrepreneurship model has significantly improved the efficiency and quality of innovation ^[3]. Through digital technology, entrepreneurs can acquire and integrate massive information more quickly for data analysis and mining, thus reducing blindness and contingency in the innovation process. College students can take advantage of advanced simulation and design tools to validate and iterate ideas at a faster rate, significantly shortening product development cycles. The digital collaboration platform also promotes real-time communication and collaborative work among teams, improving the collaborative efficiency of innovation teams. In general, the digital innovation model makes college students' innovation more accurate and efficient and provides a solid foundation for their entrepreneurship. Secondly, digital innovation-driven innovation brings the advantages of expanding market and business opportunities for college students' innovation and entrepreneurship model. The wide application of digital technology has made the market more global, and entrepreneurs can quickly reach the global market through digital channels. Digital tools such as online marketing, e-commerce, and social media provide more promotion and sales channels for college students to start their own businesses. Through big data analysis, entrepreneurs are able to gain a deeper understanding of target users and accurately position market demands, thus better meeting consumers' individual needs. Digital technology has also facilitated the emergence of new business models, such as the sharing economy and platform economy, providing more flexible and innovative business opportunities for college students ^[4]. Finally, college students' innovation and entrepreneurship models driven by digital innovation have significant advantages to enhance their competitiveness. The application of digital technology makes it easier for entrepreneurs to obtain market information, competitor dynamics, and industry trends and provides timely and accurate data support for them to formulate strategies and adjust business direction. Through digital market research and user feedback, entrepreneurs can quickly respond to market changes, flexibly adjust products and services, and maintain competitive advantages. At the same time, the high degree of replication and scalability of digital technology enables entrepreneurs to

expand their business scale more quickly and enter new market areas, thus occupying a favorable position in the highly competitive business environment ^[5].

3. Construction of college students' innovation and entrepreneurship model driven by digital innovation

3.1. Clear positioning and target market

In the digital age, clear positioning and target market are key steps for the success of the digital innovation-driven innovation and entrepreneurship model. This step involves entrepreneurs accurately defining the positioning of their products or services, as well as clarifying the target market, so as to carry out innovative activities and drive business development in a targeted manner. The following will explore this process in detail and illustrate it vividly and fully with concrete examples. First of all, clear positioning means that the entrepreneur clearly recognizes the position of his product or service in the market and clarifies the differentiating advantages between it and the competitors ^[6]. Taking a startup called "TechTrend Innovations" for example, which is clearly positioned in the field of providing smart home solutions, they have a deep understanding of the market demand for smart homes and have developed a smart home system with intelligent home security, energy management, and living convenience through digital technology. This clear positioning enables the company to carry out targeted product development and marketing, highlighting its professionalism and uniqueness in the smart home field. Secondly, to define the target market means that the entrepreneur defines the audience of his product or service and has a deep understanding of the needs and characteristics of the target market in order to better meet the market demand. With "TechTrend Innovations" as an example, through detailed market research and user analysis, the company clarifies its target market as mid - to high-end home users, who have urgent demand for smart homes and are willing to pay a higher price for high-quality intelligent solutions. As a result, the company introduced more high-end and intelligent products for the target market, which achieved better market response. In the process of clearly positioning and targeting the market, digital innovation has provided college entrepreneurs with rich tools and data support. Through big data analysis, entrepreneurs can gain a more comprehensive understanding of market trends and grasp the needs of potential users. For example, TechTrend Innovations analyzed big data and found that users in its target market are more concerned about smart home security, so it has added advanced security technologies to its product design to improve its market competitiveness. In general, clear positioning and target market are crucial parts of the construction of a digital innovation-driven innovation and entrepreneurship model. By clarifying their own position in the market and deeply understanding the needs of the target market, entrepreneurs can carry out innovation and promotion in a more targeted way and improve the success probability of entrepreneurship. The application of digital technology makes this process more accurate and efficient, providing strong support for college entrepreneurs to stand out in the highly competitive market ^[7].

3.2. Digital marketing strategy

The application of digital marketing strategy in college students' innovation and entrepreneurship model is an important link that cannot be ignored in the current college employment work. Digital innovation provides college students with a broader space for entrepreneurship, and digital marketing strategy has become a key link to promote their innovation and entrepreneurship. In the construction of college students' innovation

and entrepreneurship model driven by digital innovation, digital marketing strategy involves many aspects, including market positioning, online promotion, social media marketing, and so on. The following will be detailed from these aspects. First of all, in the formulation of digital marketing strategy, the accuracy of market positioning is particularly critical. Colleges and universities should deeply understand the market demand and trend of college students' innovation and entrepreneurship through big data analysis and other means, and find the right direction for entrepreneurship. For example, in the digital era, smart technology, ecological protection, and other fields have received much attention, so a green startup project with digital technology as its core may be more likely to attract college students' interest ^[8]. Through precise market positioning, it can not only enhance the attractiveness of entrepreneurial projects but also effectively reduce the pressure of market competition. Secondly, the application of online promotion in digital marketing strategy is crucial to the success of college students' innovation and entrepreneurship model. Through the construction of professional official websites, the use of search engine optimization (SEO) technology, and participation in various industry forums and social media platforms, entrepreneurial projects are promoted to more potential users. For example, a digitally innovative Internet education platform can attract the attention of more students and education practitioners by posting quality content on education-related social media, thus increasing the platform's visibility and user stickiness. In terms of social media marketing, a professional social media account can be set up to publish interesting and practical content, interact with users, and build a brand image. Taking a digitally innovative health management app as an example, content such as health knowledge and user success stories can be shared through social media to arouse users' interest in the product, thereby improving user stickiness and word-of-mouth. Finally, the application of data analysis is also a crucial part of the digital marketing strategy ^[9]. Through the collection of user behavior data, market feedback, and other information, the entrepreneurial project is finely managed and optimized. For example, a digitally innovative e-commerce platform can understand users' shopping habits through data analysis, launch personalized product recommendations, and improve user experience, thus boosting sales conversion rates. It is worth noting that the success of digital marketing strategies depends not only on superior technical means but also on a deep understanding of user psychology and market changes. Therefore, when formulating the digital marketing strategy, the employment staff of colleges and universities should cooperate closely with relevant professionals, fully tap the characteristics and advantages of entrepreneurial projects, and align the digital marketing strategy with actual needs.

3.3. Data analysis and decision support

Digital innovation plays a crucial role in college students' innovation and entrepreneurship, of which data analysis and decision support are indispensable. Through specific and vivid examples, the following deeply explores how digital innovation drives the construction of college students' innovation and entrepreneurship model. First of all, the role of data analysis in college students' job market cannot be ignored. Through in-depth analysis of employment data over the years, we can grasp the employment trends in different industries and provide students with targeted career advice. Taking a university as an example, through combing the employment data of graduates in the past five years, it is found that the demand of the Internet industry is increasing year by year, while the traditional manufacturing industry is relatively saturated. Based on this analysis, the university decided to increase the training of Internet-related majors and adjust the curriculum to ensure that students can better adapt to the needs of the job market. Second, data analysis provides college students with personalized career planning and employment counseling. Through comprehensive analysis

of each student's academic performance, internship experience, interests, and other multi-dimensional data, the university can tailor career planning for each student. For example, through in-depth analysis of a student who excels in computer science and participates in several open source projects in college, the school can recommend a position related to artificial intelligence and provide corresponding training and career guidance ^[10]. Finally, data analysis also plays an important role in decision-making support for college students in the process of starting a business ^[11]. Taking an entrepreneurial team as an example, through careful analysis of market research data, they found that the needs of a certain group in the current market have not been met. Based on this discovery, the team decided to develop an innovative product focused on this group. By digging deep into the behavioral data of potential users, they optimized the design and function of the product and finally achieved a good reputation and sales performance in the market ^[12].

3.4. Cloud computing and virtualization

In the construction of college students' innovation and entrepreneurship model driven by digital innovation, cloud computing and virtualization, as key technologies, provide abundant entrepreneurial opportunities and innovation space for college students. The following will discuss in detail the application of cloud computing and virtualization in college students' innovation and entrepreneurship, and demonstrate their importance and advantages through concrete and vivid examples. Cloud computing, as the core of digital innovation, provides college students with powerful computing and storage capabilities for innovation and entrepreneurship. For example, in the early stages of entrepreneurship, many college student entrepreneurs face the problem of limited funds for purchasing expensive server equipment. The emergence of cloud computing technology allows them to flexibly use cloud server resources through pay-as-you-go ^[13]. Taking a startup company as an example, they can use the cloud computing platform to build their own website and application, without investing a lot of money to buy the server, thus reducing the start-up cost. Additionally, virtualization technology provides flexibility and efficiency for college students to innovate and start their own businesses. Virtualization technology allows a physical server to be split into multiple virtual servers, each of which can independently run different applications and operating systems. This provides more options and configuration space for college entrepreneurs ^[14]. For example, a team can run development, test, and production environments on the same server through virtualization technology, improving development efficiency while reducing the waste of hardware resources. In practical application, there is an online education platform founded by college students who have built a flexible teaching environment using virtualization technology. Through the virtual server, they can flexibly adjust the configuration of the server according to different course needs, ensuring that every student can have a smooth online learning experience. This flexibility not only improves the teaching quality but also gives entrepreneurs an edge in the fierce market competition. In addition, cloud computing and virtualization technologies provide convenient data management and storage solutions for college students to innovate and start businesses. With powerful data analysis tools provided by cloud computing platforms, a start-up e-commerce company for example that uses cloud storage services to store a large amount of commodity information and user data is able to quickly analyze user behavior, optimize product recommendation algorithms, and improve sales conversion rates ^[15]. This data-driven model based on cloud computing offers entrepreneurs more opportunities to gain insight into the market.

4. Conclusion

As a product of adapting to the trend of the times, the digital innovation-driven innovation and

entrepreneurship model of college students not only has significant advantages in improving innovation efficiency and quality but also has achieved gratifying results in expanding market and business opportunities and enhancing competitiveness. Through clear positioning and target market, digital marketing strategy, data analysis and decision support as well as the construction of key elements such as cloud computing and virtualization, college students' innovation and entrepreneurship can better adapt to the rapidly changing market environment and meet future challenges. By cultivating entrepreneurs and innovators with a digital mindset, we can meet the various challenges of the future digital age and contribute to the sustainable development of society.

Disclosure statement

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Research on the Impact of Internship Models on Student Employment

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Abstract: In recent years, the employment prospects for students in higher vocational colleges have become increasingly challenging. Enhancing the quality of student internships has emerged as a critical priority for these institutions. To address this, vocational colleges should adhere to an employment-oriented approach by establishing diversified internship models, refining internship management systems, and aligning student majors with internship roles. Efforts should include strengthening the supervision of students' independent practice, with instructors closely monitoring and guiding them to ensure the completion of internship tasks. Innovative blended internship methods should be explored to expand students' employment opportunities. Additionally, career planning education must be reinforced to help students develop a correct perspective on employment. Improving the internship management framework is also essential to protect students' legitimate rights and interests during their internships. By enhancing the quality of internship guidance, higher vocational colleges can better prepare students for the workforce and improve their employability.

Keywords: Higher vocational colleges; Internship model; Student employment

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1. Introduction

Internships are a critical component of higher vocational education and serve as a stepping stone for college students to launch their careers. They enable students to familiarize themselves with job-related skills, enhance their practical abilities and employment competitiveness, and help them plan their careers effectively. Considering the unique characteristics of vocational education, colleges should enrich internship models by adopting unified, student-led, and blended internship approaches. Simultaneously, institutions must establish comprehensive internship management systems, refine career planning courses, guide students toward a proper understanding of internships, and develop robust mechanisms for evaluating internship outcomes^[1]. Linking internship performance to student credits, evaluations, and other academic requirements can stimulate students' enthusiasm during internships and improve the quality of vocational talent training.

2. The impact of internship models on the employment of students in higher vocational colleges

2.1. Improving professional skills

The academic duration for higher vocational colleges is typically three years. While students gain theoretical knowledge of their chosen fields during their coursework, they also need to consolidate this knowledge and develop practical skills through workplace experience. Although on-campus training programs are offered, they often differ significantly from real-world corporate environments. Vocational colleges, therefore, organize internships during the final semester or academic year, creating an integrated teaching model. This allows students to apply their theoretical knowledge in practical settings, bridge any gaps in their understanding, and enhance their professional competencies. These experiences lay a solid foundation for future employment ^[2,3].

2.2. Enhancing social adaptability

Internships act as a vital bridge between academic life and the professional world, marking students' first step into society. They offer college students opportunities to engage in job-related practices, help them develop a professional attitude, adapt to workplace rhythms, and gain insights into industry demands and employment conditions. Additionally, internships prepare students for workplace life by teaching them how to handle interpersonal relationships, foster teamwork, and cultivate effective communication skills. These experiences significantly improve students' adaptability and set a strong foundation for their professional lives post-graduation ^[4].

2.3. Cultivating a strong work ethic

Internships play a crucial role in fostering a spirit of diligence and resilience among students. By participating in workplace activities, students gain first-hand experience of the demands of the professional world, develop a greater appreciation for labor, and enhance their work capabilities. Such experiences instill values of hard work, dedication, and perseverance. Furthermore, rotational internships provided by schools help students better align their employment and career perspectives, ultimately strengthening their professional ethics.

2.4. Strengthening employment competitiveness

Internships offer students opportunities to learn directly from experienced professionals, equipping them with job-specific skills that boost their employability and enable them to stand out in a competitive job market. Through the social practice platforms created by internships, students can explore different roles, refine their career choices, and identify positions that best match their aspirations. This process not only helps them seize employment opportunities but also improves their employment quality and lays the groundwork for effective career planning ^[5].

3. Challenges in internship guidance in higher vocational colleges

3.1. Lack of student enthusiasm for unified internships

Many students exhibit low enthusiasm for participating in unified internships due to limited familiarity with societal norms, insufficient understanding of industry roles, and a lack of social experience ^[6]. Variations in students' acceptance of basic internship positions provided by enterprises are common, with some perceiving a poor alignment between their roles and academic majors. In some cases, internship placements arranged

by vocational colleges are unrelated to students' fields of study, leading to disinterest and even aversion toward such internships. This lack of enthusiasm manifests in passive participation, negatively impacting the effectiveness of school-organized internships and diminishing enterprises' satisfaction with vocational students. Additionally, some students lack perseverance and fail to integrate professional knowledge into practical work, missing opportunities to learn critical job skills, adopt new industry technologies, and enhance their practical capabilities. These issues undermine the intended benefits of unified internships and the schools' efforts to provide them ^[7].

3.2. Ineffectiveness of independent internships

A number of students prefer to secure internships independently rather than rely on school arrangements. However, due to their limited work and social experience, they often encounter labor disputes during their internships, leaving their legal rights and interests unprotected. Such challenges negatively affect the development of their employability. Moreover, since schools typically lack formal cooperative relationships with enterprises hosting independent internships, their ability to supervise students and provide effective guidance is significantly diminished. This leads to complacency among many students, who focus solely on obtaining internship certificates without proactively learning new industry technologies, engaging in research projects, or pursuing innovation and entrepreneurship opportunities. Consequently, these students fail to develop essential career skills, hindering their professional growth ^[8].

3.3. Incomplete mixed internship management system

A mixed internship model arises when students switch between unified and independent internships due to personal preferences or internship-related issues. Managing such transitions poses significant challenges for schools and internship supervisors, complicating efforts to support students' career development. Some higher vocational colleges do not adequately address the complexities of mixed internships, leaving gaps in the management framework. For instance, when students encounter labor disputes during independent internships, their placements may terminate prematurely, requiring schools to reassign them to new roles. This increases the administrative workload and places higher demands on internship management. The absence of a robust management system for mixed internships further exacerbates these issues.

3.4. Gaps in career education

While many higher vocational colleges offer courses on innovation, entrepreneurship, and career planning, these courses are often disconnected from internship guidance. This disconnect limits the effectiveness of career support during internships, creating challenges for students when seeking employment post-graduation ^[9]. Some schools prioritize evaluating students' performance during internships and gathering feedback from enterprises but neglect to leverage online teaching platforms for delivering legal and career education. As a result, students often lack knowledge of labor laws and remain unaware of their legal rights and protections. Additionally, internship instructors may focus on ensuring students complete their graduation theses and remain physically safe, but they frequently overlook students' mental health and career planning needs. This lack of comprehensive guidance can inadvertently hinder students' long-term employment prospects ^[10].

4. Effective strategies for vocational colleges to optimize students' internship models

4.1. Expanding internship partnerships and standardizing internship models

First, vocational colleges should align their programs with their unique institutional characteristics and specialty offerings by actively establishing cooperative relationships with enterprises nationwide. They should seek high-quality internship opportunities tailored to the specific majors of their students, ensuring a close alignment between internship positions and academic specializations. This approach can enhance students' motivation to participate in unified internships coordinated by the school. For example, leveraging the development opportunity of “cultural and tourism integration,” schools can expand the scope of their partnerships beyond traditional sectors like travel agencies, museums, and tourist attractions^[11]. By incorporating cultural and artistic enterprises, they can offer internship positions tailored to students majoring in tourism management, digital media, and art. Students might be placed in roles such as tour guides, assistants, village dormitory administrators, hotel receptionists, short video producers, or artistic performers at tourist sites. Such experiences can help students gain insights into professional employment landscapes, refine their career planning, and ultimately improve the quality of unified internships. Additionally, schools can maximize the utility of school-enterprise platforms to facilitate seamless alignment between enterprise needs and student internships. Schools should invite enterprises to engage in on-campus teaching, participate in the construction of practical training bases, and contribute to the design of talent training programs [12]. Aligning industrial developments with professional curriculum teaching can help secure more internship opportunities for students. For instance, schools could establish partnerships with enterprises in neighboring provinces to host online internship job fairs. Enterprises can present their internship recruitment needs, fostering direct communication between businesses and students. This approach can reduce students' reluctance to participate in unified internships, encourage active engagement, and improve internship quality, ultimately helping students secure desirable employment^[13].

4.2. Strengthening supervision of independent internships to improve quality

Vocational colleges should conduct regular follow-ups with students engaged in independent internships through internship supervisors and counselors. This ensures students are actively participating in meaningful internship activities and gaining practical vocational skills. First, colleges must provide comprehensive guidance before the start of independent internships. By organizing preparatory lectures, schools can educate students about common fraud tactics in online and offline recruitment processes. They should also introduce new methods of fraud prevention, assist students in verifying corporate credentials, and provide reliable internship information. Such measures enhance students' self-protection awareness and reduce the risk of deception during their independent internships. This preparation helps students secure internships that align with their career interests and improves the quality of internship guidance. Second, career education and legal awareness should be integrated into the independent internship process. Schools can use their online teaching platforms to conduct labor law seminars, covering topics such as worker rights, social security, and related legal protections. This knowledge empowers students to safeguard their rights and seek legal consultation when necessary, further enhancing the quality of their internship experiences. In addition, trainee instructors can share career-related resources with students via platforms like WeChat groups. These resources might include information on innovation and entrepreneurship policies or vocational skill level examinations. By encouraging students to adopt lifelong learning habits and actively learn from enterprise mentors, schools can help them improve their career planning abilities and employability.

4.3. Improving the mixed internship model to enhance students' employment competitiveness

With the continuous expansion of college and university enrollments in recent years, higher vocational colleges face significant challenges in student employment. The adoption of a mixed internship model has emerged as a developmental trend, offering a pathway to enhance students' employment competitiveness and overall job quality. Schools should embrace modern practices, move beyond traditional internship models, and establish a unified approach that combines structured and independent internships. By tailoring internship guidance to the unique characteristics of different majors, schools can provide students with more diverse internship options, sparking enthusiasm and genuinely improving the quality of internships. For instance, in tourism management and hotel management majors, schools can collaborate with local hotels, travel agencies, and tourist destinations to offer well-suited internship positions. Students might work as tour guide assistants at travel agencies during their studies, gaining familiarity with domestic travel routes, enhancing communication skills with tourists, and improving their ability to explain scenic spots and lead tour groups. Schools can further strengthen these efforts by introducing enterprises into the academic environment, selecting high-quality companies to provide targeted, industry-specific courses before internships. This helps students gain deeper insights into industry roles and positions and allows them to apply for internships with a clear understanding of professional expectations. Offering students the autonomy to choose their preferred internship methods encourages engagement, while properly implementing employment policies helps further develop their employability. Additionally, short-term internships during holidays can expand opportunities, providing students with mixed internship experiences that align with their career planning. This approach not only broadens internship channels but also enhances students' employment and entrepreneurial capabilities ^[14].

4.4. Strengthening career education to shape students' employment perspectives

Internships serve as a bridge for students to accumulate work and social experience, improve practical and communication skills, and cultivate professional ethics, which are vital for refining their employment outlook. To achieve this, schools should integrate career education with internship arrangements, emphasizing the unique aspects of vocational education. Career education should address emerging industries such as rural revitalization, cultural-tourism integration, and new media, promoting the alignment of job skills with internship and employment guidance. Schools should also analyze regional and industry-specific employment trends, discouraging an overreliance on first-tier city internships and encouraging active participation in rural revitalization initiatives. This not only enhances students' sense of social responsibility but also provides valuable talent for rural development. Career education should extend into the internship period through collaborative efforts between departments. A tripartite team comprising career planning teachers, internship instructors, and counselors can guide students on issues like salary negotiation, labor rights protection, and vocational skill assessments. Digital platforms such as WeChat public accounts, groups, and Weibo can facilitate internship services, helping students resolve challenges encountered during internships. By ensuring that students remain focused and confident in their roles, schools can help them gain enterprise recognition, leading to better job opportunities and improved employment outcomes.

4.5. Enhancing internship management systems to improve employment quality

To improve student employment outcomes, higher vocational colleges must establish a comprehensive internship management system. This involves clearly defining the roles and responsibilities of student

organizations, party organizations, counselors, and internship instructors in the guidance process. Effective top-level planning and implementation of internship guidance will better serve students and support them in securing ideal jobs. For example, schools can adopt a detailed internship management system by dividing students into smaller internship groups and assigning professional internship instructors to each group. This structure facilitates timely resolution of challenges in the professional field, ensuring students complete their internships successfully. By earning enterprise recognition and leaving a positive impression on their internship organizations, students can lay a strong foundation for future employment^[15]. Additionally, schools should conduct regular internship visits, involving staff from party branches, league branches, and various professional leaders. These visits should include research at both school-assigned and independently chosen internship enterprises to assess students' working conditions, remuneration, and job performance. Schools must promptly address challenges faced by students during internships and safeguard their legal rights, ensuring compliance with relevant laws. Such efforts demonstrate care from the school and teachers, fostering students' enthusiasm and enhancing their sense of social belonging. Higher vocational colleges should continuously refine their student internship management systems, progressing toward a "one-stop internship and employment" model. This includes regular follow-up visits to internship enterprises to ensure the protection of students' rights, advocating for better working conditions and securing formal job offers for students. These measures will ultimately improve the employment quality of graduates.

5. Conclusion

In short, internships play a vital role in enhancing vocational skills, employment competitiveness, and professional ethics among higher vocational students. They enable students to make a positive impression on enterprises, stand out among applicants, and secure ideal jobs. Strengthening the quality of internship and employment guidance in higher vocational colleges is essential. Schools should continuously optimize internship models, including unified internships, student-led internships, and mixed internship approaches. By rigorously implementing relevant policies and regulations, colleges can refine their internship management systems and provide students with more professional internship opportunities. Offering choices aligned with students' interests stimulates their enthusiasm, ultimately improving the overall employment quality of vocational students.

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Research on Enhancing Vocational College Students' Employment Competitiveness from the Perspective of Industry-Education Integration

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Abstract: In recent years, the integration of industry and education, along with school-enterprise cooperation, has garnered significant attention, prompting the state to issue a series of related policies. To effectively implement these policies, higher vocational colleges must adopt innovative approaches, foster robust school-enterprise collaboration, and position the integration of industry and education as a key driver of reform. In doing so, these colleges should focus on enhancing students' employability and addressing post-graduation unemployment challenges. The employment of college graduates has become a critical issue tied to public welfare, individual happiness, and national revitalization. Therefore, higher education institutions must proactively adjust teaching strategies and talent cultivation programs to improve training quality, ensuring that graduates are better equipped to meet societal needs. This paper explores strategies to enhance the employment competitiveness of vocational college students through the lens of industry-education integration, offering valuable insights for frontline educators.

Keywords: Industry-education integration; Vocational college students; Employment competitiveness

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1. Introduction

In April 2023, the Notice of The General Office of the State Council on Optimizing and Adjusting Policies and Measures to Stabilize Employment and Make Every Effort to Promote Development and Benefit People's Livelihood (Guo Changfa (2023) No. 11) emphasized the need to prioritize employment, adopting a multifaceted approach to create jobs, stabilize employment, and improve public well-being. Enhancing the employment competitiveness of higher vocational college students is vital for achieving full and high-quality employment, serving as a cornerstone for implementing this strategy. To this end, higher vocational colleges must remain attuned to advancements in science and technology, assess market demands, and address the

imbalance between talent supply and demand. Strengthening school-enterprise collaboration and deepening the integration of industry and education are essential to building a cooperative education mechanism. These efforts lay the groundwork for improving student employability and provide clear direction for achieving these goals.

2. Current situation of vocational college students' employment competitiveness from the perspective of industry-education integration

2.1. Poor curriculum systems

The talent training plans in higher vocational colleges divide courses into two categories: professional courses and public foundational courses. Professional courses are further classified into basic and advanced levels. However, due to shortages in faculty and practical training equipment, some institutions combine various professional courses to form new curriculum systems. This practice often undermines the scientific and targeted nature of these systems, leading to significant disparities in graduates' knowledge, professional skills, and qualities compared to the actual demands of vocational scenarios. Consequently, graduates lack competitiveness in the job market, forcing enterprises to invest substantial time and resources in retraining, which negatively impacts the depth of school-enterprise collaboration and hinders enterprises' operational efficiency ^[1]. Moreover, although curriculum adjustments are ongoing, their pace often lags behind industrial transformations and the emergence of multidisciplinary professions. Insufficient understanding and adaptation to these trends exacerbate the disconnect between vocational training and industry demands.

2.2. Insufficient practical opportunities in training bases

The practical training base plays a crucial role in integrating industry and education in higher vocational education and serves as a key indicator of the depth of such integration. A strong positive correlation exists between school-enterprise collaboration in building practical training bases and the enhancement of vocational students' employment competitiveness. This is because such bases reflect the characteristics of higher vocational education through school-enterprise cooperation and industry-education integration. Currently, constructing practical training bases has become an essential component of school-enterprise cooperation. On one hand, it fosters collaboration, supports cooperative education, and deepens industry-education integration. On the other hand, it motivates enterprises to actively participate in building practical training base teams, creating more opportunities for vocational students ^[2]. These bases enable students to engage with real-world enterprise production processes, understand frontline job responsibilities, and gain insights into workplace requirements. However, numerous obstacles hinder collaboration between schools and enterprises in constructing practical training bases. Significant disparities exist in teaching resources, practice methodologies, and the training focus of instructors provided by schools and enterprises, leading to limited opportunities for students. In today's complex employment environment, job seekers must possess core competencies and qualities that can be translated into practical value to secure long-term positions within enterprises—an inevitable trend in enterprise development.

Challenges such as insufficient internship and training equipment, inadequate funding, and personnel shortages in practical training bases built through school-enterprise cooperation prevent vocational college students from accessing high-quality internship platforms ^[3]. Building these bases is a systematic project requiring substantial investment in material, human, and financial resources. Although these bases provide

students with a deeper understanding of enterprise production processes, bottlenecks such as a lack of practical training instructors and inadequate equipment hinder further development.

2.3. Misalignment between curriculum setting of school-enterprise cooperation and job market needs

In school-enterprise cooperative education, enterprises should actively reference the “Three-Education Reform,” which vocational colleges must consider when designing their curricula. These curricula should closely align with enterprise development needs, be market-driven, and aim to enhance students’ employment quality and vocational skills. Despite some vocational colleges offering employment guidance courses, many students find these courses monotonous, overly focused on traditional employment knowledge, and neglecting the exploration of the relationship between students, the job market, and enterprise development ^[4]. As a result, school-enterprise cooperative curricula often fail to meet job market demands, leaving significant gaps in effectively guiding students toward successful employment. Several factors contribute to this mismatch: (1) Outdated teaching methods: Employment-related courses, such as those on entrepreneurship and innovation, often fail to integrate theory with practical application. Additionally, poorly planned schedules for employment guidance courses negatively affect students’ competitiveness. (2) Timing issues: There is often a disconnect between the timing and duration of these courses and the actual employment timelines of vocational students, leading to insufficient timeliness. Furthermore, outdated guidance materials, limited enterprise participation, and a lack of practical guidance further weaken these courses. (3) Short-term focus: Many such courses involve superficial activities, such as organizing visits to enterprises or incorporating talent training concepts through “order classes” in school-enterprise cooperation. However, the curriculum design lacks long-term, systematic planning ^[5]. To better serve students, vocational colleges must bridge the gap between curricula and market demands, ensuring alignment with enterprise needs and fostering students’ vocational development.

3. Enhancing vocational college students’ employment competitiveness from the perspective of integration of industry and education

3.1. Improving the curriculum system

For industrial enterprises seeking to successfully transform and upgrade, embracing high-end and green development is essential, with high-quality, skilled talent as the cornerstone of this transition. To achieve this, enterprises must translate their demand for talent into strategic human capital investment by deepening the integration of industry and education. Active participation in talent training processes and collaboration with schools to update and refine the curriculum system is crucial ^[6]. Firstly, industrial enterprises should proactively establish cooperative relationships with higher vocational colleges, collaborating on enrollment and professional learning. This partnership involves engaging in the entire talent development process, embedding enterprise-specific requirements and standards, and involving industry experts to guide students. This approach equips vocational students with the necessary professional knowledge, skills, and an understanding of job-specific requirements, thereby enhancing their employability. Secondly, enterprises must adopt innovative approaches such as “school-in-factory” and “factory-in-school” models. By co-creating integrated industry-education centers with higher vocational colleges, they can facilitate teaching practices that expose students to real-world production environments and operations. This hands-on approach enriches students’ practical training while allowing enterprises to leverage the research and development (R&D)

resources of colleges for staff training, technology innovation, and cost reduction in labor, operations, and training. Such initiatives not only support enterprise talent pipeline development but also promote high-quality growth and operational efficiency ^[7].

3.2. Promoting effective alignment of base construction and internship employment

The construction of training bases should align closely with students' internship practices and employment preparation to enhance their competitiveness. Firstly, schools and enterprises should strengthen their collaboration by forming a dedicated base construction team, comprising enterprise experts, renowned teachers, and specialists from vocational colleges. This team can examine employment and entrepreneurship challenges for vocational students from diverse perspectives ^[8]. Secondly, effective management collaboration between universities and enterprises is essential for fostering students' self-management skills. Vocational colleges should empower student leaders and form organized groups to mitigate issues like lax oversight during internships. Career guidance teachers from both enterprises and colleges can establish a joint mentorship team, leveraging information management tools to facilitate real-time reporting, feedback, and monitoring of students' internship progress. Thirdly, employment situations must be thoroughly analyzed to arrange students' internships and subsequent employment opportunities strategically. Enhancing students' employment competitiveness extends beyond employment guidance courses—it requires showcasing personal strengths during internships. Finally, students should be guided in summarizing their internship experiences. Inviting enterprise experts to deliver lectures, share real-world case studies, and conduct practical demonstrations, if needed, can inspire students to clarify their learning and career goals. This approach not only boosts their motivation for professional learning but also sets a clear direction for their future development ^[9].

3.3. Promoting the curriculum to meet market demand

To better implement the concept of the integration of industry and education, the curriculum should be adapted to align with market demands. Specifically, this can be achieved through the following three strategies: First, we should integrate theoretical teaching with practical teaching in entrepreneurship and innovation guidance courses, ensuring that the employment and entrepreneurship knowledge acquired during school can guide students in their own ventures. Additionally, professional qualification certificate courses should be fully incorporated into the curriculum ^[10]. Second, the talent training program should be enhanced by strategically arranging employment guidance courses, ideally in the second semester of the sophomore year and the first semester of the junior year. These courses should be updated regularly to address current job search challenges. Vocational students who have already graduated could be invited to return to campus to share relevant experiences, thereby addressing the issue of low timeliness in career preparation. Finally, such curricula should emphasize work processes and tasks. Recently, China has issued a series of guidance documents on higher vocational education, highlighting the importance of training students' vocational skills and employment competitiveness. These aspects should be integrated into the core curriculum, reflecting the real processes of enterprises, helping students quickly adapt to job market demands.

3.4. Strengthening the role of leading enterprises and leveraging employment competitiveness training

The integration of industry and education requires the joint efforts of the government, schools, and industry

enterprises. The question of “who to train for” can be addressed through genuine cooperation among these parties ^[11]. One key strategy for achieving these goals is to strengthen the role of leading enterprises and leverage their advantages in enhancing employment competitiveness. Leading enterprises, representing industry authority, provide technical support, teacher expertise, and equipment resources that contribute to effective talent development. When vocational college students intern at enterprises, they gain exposure to real working environments, understand employment needs and requirements, and receive training that helps them quickly adapt to job demands, thereby improving their employment competitiveness.

To further this goal, leading enterprises at the forefront of their industries should engage in in-depth research and discussions on issues related to profit distribution in the integration of industry and education, as well as cooperation between schools and enterprises. These discussions can focus on the quality of employment training for students who intern at these enterprises, laying the foundation for future safeguards. Additionally, leading enterprises should actively explore vocational skills assessments in collaboration with local human resources and social affairs bureaus, as well as relevant industries, to develop appropriate models that continuously improve vocational training quality. This approach ensures that students gain the corporate literacy and characteristics required by leading enterprises. For students who have interned with enterprises for more than a year and show a strong willingness to stay, management training programs can be implemented for outstanding young individuals, helping to highlight their work characteristics and competitive advantages.

3.5. Focusing on the digitization of employment and strengthening students’ employability

A key indicator of the success of higher vocational colleges is whether their students can secure employment smoothly. To achieve this, these institutions should focus on strengthening digital infrastructure. By leveraging big data, the Internet of Things, cloud computing, and other related technologies, vocational colleges can develop a service system for student employment guidance ^[12].

First, a sharing mechanism for employment should be established, enabling the collection and integration of information from multiple sources. Recruitment resources should be pooled, and up-to-date job demand data, categorized by region and industry, can be released according to students’ school records, employment destinations, and internship experiences ^[13]. This ensures students have access to targeted job search information. Second, for students facing employment challenges, a comprehensive employment guidance service system should be created. This system could assign a personalized file for each student, with a multi-party support organization overseeing their progress ^[14]. The support group could include employment guidance staff, counselors, and other personnel. The system would track students’ job search efforts, provide psychological support and employment skills training, and push the latest recruitment information based on students’ job search goals. Moreover, the support group could leverage its resources to forward students’ resumes to human resources departments and talent markets of school-enterprise partnership companies, offering both students and companies opportunities to choose from each other. Third, vocational colleges can offer career planning services, lectures, consultations, and guidance throughout students’ education. Through career planning and guidance courses, colleges can gather students’ career interests, habits, and ideals, and use data analytics to create a comprehensive profile that includes dimensions such as personality and career aspirations. Based on this, colleges can provide one-on-one, targeted career guidance, fully integrating actual student employment data. In addition, the composition of guidance teachers can be diversified by including professional course instructors and counselors. External technical experts or specialists from partnering companies can also be invited to deliver lectures, helping students gain a deeper understanding of industry

demands and the skills required for various positions ^[15]. Ultimately, this approach creates conditions for students' high-quality employment and entrepreneurship.

4. Conclusion

To sum up, improving vocational students' employment competitiveness through the integration of industry and education is a long-term effort that requires continuous improvement of the vocational education system. Therefore, higher vocational colleges must continue to deepen the integration of industry and education, fostering strong collaborations among government bodies, schools, and industry enterprises. By building a collaborative education mechanism, colleges can focus on improving students' professional skills and literacy, aiming to enhance their employment competitiveness and cultivate high-quality, skilled talent.

Disclosure statement

The author declares no conflict of interest.

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Research on Talent Cultivation in Polymer Materials and Engineering under the Background of Industry-Education Integration

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Abstract: With the rapid development of the social economy, universities are placing increasing emphasis on cultivating highly skilled and competent professionals in polymer materials and engineering. To meet societal needs and enhance the core competitiveness of professionals, universities are focusing on integrating production and education, refining talent cultivation directions, and improving professional teaching systems. Leveraging the advantages of industry-education integration can enhance students' professional abilities, improve their adaptability to job roles, and significantly elevate the quality of talent training. This paper examines the cultivation of polymer materials and engineering professionals within the context of industry-education integration and offers corresponding insights on this topic.

Keywords: Industry-education integration; Polymer materials and engineering; Talent training; Research

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1. Introduction

In recent years, the Ministry of Education has issued Several Opinions on Deepening the Integration of Production and Education, explicitly advocating for schools to reform professional teaching in alignment with emerging technologies, industries, and models. The goal is to ensure the comprehensive development of professional talents through collaborative education and school-enterprise cooperation. Students majoring in polymer materials and engineering benefit from a wide range of employment opportunities, with a growing demand for professionals in this field during the country's current developmental stage. To address this, universities must thoroughly explore how professional teaching can be optimized under the framework of industry-education integration. This involves understanding the essence of integrating industry and education in talent cultivation while addressing the constraints present in existing teaching practices. Efforts should focus on improving the teaching system, enhancing faculty competencies, and innovating teaching methodologies to establish a robust professional teaching framework under the industry-education integration model ^[1].

2. Analysis of the connotation of industry-education integration

Industry-education integration refers to the collaboration between schools and enterprises during their development processes to effectively align school teaching with the actual production practices of enterprises. This creates a cohesive teaching process encompassing skill enhancement, integrated education, and social services. Specifically, “production” pertains to “industry,” while “teacher education” refers primarily to vocational education in this context. The relationship between industry and education is thus the connection between vocational education and industries outside of education. From the perspective of industry-education integration, enterprises are the primary stakeholders, with education serving the needs of enterprises. In vocational education, schools adopt employment-oriented approaches and implement teaching reforms centered on the comprehensive and diversified development of students. This ensures that the knowledge and skills students acquire align with society’s demand for frontline production technicians, thereby achieving mutually beneficial outcomes^[2]. Vocational education and industry are integral components of the societal reproduction chain, each fulfilling distinct responsibilities and functions while collaborating to foster coordinated and orderly social development. In some foreign countries, industry-education integration emphasizes the joint training of students by schools and enterprises through course projects and enterprise internships. This allows students to engage in real-world engineering projects, study practical production challenges in-depth, and develop solutions, ultimately enhancing their comprehensive abilities^[3].

3. Necessity of teaching reform for polymer materials and engineering majors in colleges and universities under industry-education integration

3.1. Enhancing the social relevance of professional teaching

Reforming professional teaching under the framework of industry-education integration enriches the teaching content and strengthens its social relevance. This integration involves multiple stakeholders, such as enterprise professionals and school instructors, working collaboratively to develop a new talent cultivation structure by exploring existing vocational education policies, measures, and characteristics. The integration of production and education is characterized by mechanisms that foster collaboration and development across various domains. Among these, the design of integrated mechanisms combines production practices, practical education, and training through the macro-level framework of industry-education integration^[4]. Guided by this new educational philosophy, schools focus on enhancing teachers’ instructional capabilities, equipping them with the latest teaching methodologies and concepts to ensure the seamless implementation of subsequent teaching activities. Professional instructors actively collaborate with enterprise personnel to incorporate cutting-edge practical teaching projects and innovative methods. This addresses existing issues such as students’ lack of engagement and limited improvement in their comprehensive abilities. Such efforts promote the development of students’ multifaceted skills. To further enhance the quality of talent cultivation, schools and enterprises jointly establish practical teaching bases under the industry-education integration model. These bases help improve students’ overall competency and job adaptability, bolstering their core competitiveness in the labor market and laying a strong foundation for their future careers.

3.2. Improving the quality of professional personnel training

Under the integration of industry and education, universities, based on their unique circumstances, implement talent cultivation initiatives for polymer materials and engineering majors in line with new strategies. This

approach aims to enhance training programs and deepen the reform of professional teaching. Simultaneously, the theoretical and practical collaboration between schools and enterprises serves as a guiding framework for teaching and a resource for educational tools. It encourages schools and educators to optimize talent training programs aligned with the integration of production and education, establish a scientific framework for talent cultivation, and refine the concepts and methodologies involved. These efforts aim to drive further optimization and reform of talent cultivation in polymer materials and engineering, leveraging advancements in the integration of industry and education. Furthermore, during the talent cultivation process, schools actively coordinate educational resources among themselves, enterprises, and educators to establish a “three-in-one education” model. Teachers are encouraged to collaborate with relevant enterprises to create a modern education system. This approach enhances the quality of talent cultivation, ensuring it meets the demands of social development and equips students with professional skills, an understanding of work processes, and strong professional qualities ^[5].

4. Current problems in the teaching of polymer materials and engineering in colleges and universities

Since entering the new era, the integration of industry and education has become a critical pathway for many colleges and universities to cultivate high-quality talent and advance professional teaching reform. Although many institutions have actively implemented reforms in teaching polymer materials and engineering, there are still significant challenges that hinder the achievement of established educational goals and the improvement of students' comprehensive abilities. The primary issues are as follows ^[6]: (1) Incomplete professional teaching system: Many universities have an overly segmented approach to the major, leading to duplication of content across courses. The integration of industry and education often remains superficial, causing a mismatch between the professional teaching content and actual job market demands. Additionally, the failure to update professional teaching materials in a timely manner is a widespread issue. (2) Limited teaching methods: On the one hand, most educators rely heavily on traditional teaching methods, directly explaining knowledge based on course content and objectives, followed by practical exercises for students. This approach does not ensure a deep understanding of knowledge, hindering students' comprehensive development. On the other hand, teaching activities are often confined to classroom instruction. Schools fail to actively collaborate with relevant enterprises to establish practical training bases, which adversely affects the smooth progression of subsequent teaching activities and reduces the effectiveness of talent cultivation. (3) Insufficient teaching competence of professional teachers: Many educators lack a thorough understanding of the integration of industry and education and fail to incorporate new educational concepts into their teaching practices. This limitation negatively impacts the quality of talent cultivation and prevents the effective application of innovative teaching models ^[7].

5. Training strategies for polymer materials and engineering professionals under the background of industry-education integration

5.1. Continuously improving the professional teaching system aligned with social needs

In the teaching of polymer materials and engineering in colleges and universities, a disconnect often exists between the teaching content and societal development needs. Therefore, schools should refine the

professional teaching system to align with social demands.

First, when establishing the polymer materials and engineering major, schools must fully consider the needs of society, industries, and enterprises as the guiding development direction, thereby improving the accuracy of talent cultivation^[8]. Additionally, schools should conduct in-depth studies on industry demands, enterprise needs, employment rates of graduates, and other relevant authoritative data. These findings should serve as a basis for timely updates to talent cultivation standards, ensuring that professional settings and training programs remain dynamic and adaptable.

Second, targeted and practical teaching projects should be introduced. Analysis reveals that the polymer materials and engineering major encompasses positions in areas such as scientific research and teaching, technology development, process and equipment design, technical transformation, and operation management related to material preparation, processing, and molding, as well as material structure and properties. Schools should deeply explore the demand for talent in these positions and incorporate classic and practical teaching projects into their curriculum. By aligning with enterprise production standards, schools can continuously optimize their teaching systems^[9]. Teachers should design course systems around typical enterprise work tasks, using workflows and task categories as a foundation. This approach fosters close collaboration between teaching activities and enterprise operations, enabling students to integrate their learning into real-world job tasks. As students engage in solving practical problems, they enhance their comprehensive abilities and professional quality.

Third, the design of the practical teaching system should be continually optimized. For instance, schools can establish courses like “Polymer Materials and Engineering Practice,” which integrate content from “Innovation and Entrepreneurship Education” and “Polymer Materials and Engineering Management.” To develop students’ comprehensive abilities, schools can guide students to participate in regular internships. Teachers, in collaboration with enterprise staff, can design practical training positions tailored to enterprise workflows, facilitating the holistic development of professional students.

5.2. Strengthening school-enterprise cooperation and innovating teaching modes

To fully leverage the value of industry-education integration, schools must enhance school-enterprise cooperation and innovate teaching models, breaking free from traditional teaching constraints^[10]. For example, colleges and universities can adopt advanced mechanisms and methods for integrating industry and education. They should clearly define the responsibilities and roles of colleges and enterprises under regulatory and legal frameworks, encouraging enterprises to actively participate in cooperative educational efforts. Additionally, government policies such as financial support and tax incentives can stimulate enterprise engagement in school-enterprise collaboration, embedding new educational concepts into every aspect of teaching.

Teachers specializing in polymer materials and engineering should actively innovate their teaching methods to avoid stagnation or misalignment with educational goals. By focusing on industry-education integration, professional teachers can incorporate case-based teaching methods to enhance student engagement. For example, through the introduction of real-world enterprise projects, teachers can cultivate students’ teamwork and innovation abilities while enhancing their problem-solving skills using acquired knowledge. This approach helps foster professional competencies and promotes holistic development.

Moreover, teachers can construct immersive teaching environments that replicate real-world working conditions. For example, situational teaching activities can be organized around trending topics such as “functional polymer materials.” Students, working in groups, can explore and discuss questions with their

teachers. This method not only deepens students' understanding of workflows but also helps them master proper practice standards, ultimately enhancing their job adaptability.

5.3. Building a professional training base based on industry-education integration

Establishing a professional training base is a crucial step to fully implement the integration of industry and education. Schools should deepen their cooperation with local enterprises, combine resources from both institutions, and jointly develop high-quality training bases that simulate real workplace environments to foster students' comprehensive development.

First, schools should build a platform integrating online teaching, student simulations, practical training, and virtual simulation practice^[11]. This platform should categorize information from enterprises and schools according to standardized criteria and undergo regular maintenance to meet the needs of students' internships and enterprises' recruitment requirements. The platform should also include simulation practice functions where students can engage in virtual learning experiences. Additionally, this module should support teacher-student and peer communication, enabling teachers to promptly address learning challenges and students to seek guidance. Teachers can collaborate with enterprise engineers to refine teaching plans and methods effectively.

Second, in constructing specific training bases, attention should be given to enhancing teaching, production, research and development, and social service functionalities. Efforts should focus on updating management mechanisms, scientific planning, sustainable development, improving teacher capabilities, and prioritizing students' holistic development. This approach will effectively integrate educational resources and foster a resource-sharing mechanism for the modern era, ultimately advancing professional teaching standards^[12].

Third, with government leadership and participation from schools and enterprises, offline practical training bases should be developed, including facilities such as new energy vehicle engine laboratories and virtual reality laboratories. These facilities will enable teachers to conduct targeted teaching activities. During practical training, enterprises can sign agreements with students, facilitating direct employment opportunities post-graduation. This strategy ensures a steady supply of high-quality, skilled talent for enterprises, achieving a win-win scenario for schools and businesses.

5.4. Building a double-qualified teaching team

The teaching abilities of educators significantly impact the quality of talent cultivation. Within the framework of industry-education integration, schools must prioritize the enhancement of teaching capabilities and the development of double-qualified teaching teams suited for the modern era.

First, schools should prioritize building dual-teacher teams, emphasizing the formation and growth of these teams based on talent training needs. The integration of industry and education places higher demands on teachers' innovation, educational expertise, and operational abilities. To help teachers master the principles of industry-education integration and acquire advanced teaching methods, schools can invite professional experts to provide regular guidance and organize opportunities for teachers lacking practical experience to work on the frontlines. This approach enhances teachers' innovation and teaching management capabilities.

Second, schools should conduct in-house training. Regular education and research activities can be organized to analyze employer requirements and key areas for student development, aligning with the latest education reform directions to ensure quality talent training^[13]. For preschool education teachers facing high workloads, implementing a reward mechanism can encourage active participation in training programs.

Third, schools must continuously optimize the teaching staff structure during their development. Following a principle of “letting go and bringing in,” schools should encourage teachers to visit partner enterprises to learn about the latest practical projects and employment standards. Professionals and managers from partner enterprises can be invited to participate in student education and implement a modern apprenticeship system ^[14]. Furthermore, schools should actively collect feedback from teachers to identify challenges in professional teaching within the industry-education integration framework. This feedback will inform the development of effective teaching reform strategies, allowing modern educational concepts to become the institution’s hallmark.

5.5. Building a comprehensive teaching evaluation system based on industry-education integration

First, the teaching methodology should align with the theme of industry-education integration and extend beyond the classroom. This involves incorporating second-classroom education ^[15], such as enterprise internships, practical training assessments, and project completions, to reflect the synergy between industry and teaching rather than focusing solely on traditional instruction. The completion of specific tasks serves as a tangible representation of students’ learning objectives and acts as a motivator. Second, professional competency evaluations and case analyses should be included in the assessment criteria. These additions encourage students to develop comprehensive abilities while aiding schools in achieving their goal of fostering talent with strong moral and professional qualities. Furthermore, after conducting teaching evaluations, teachers should refine the teaching content and methodologies. This adjustment ensures a deeper integration of the industry-education concept with professional instruction, effectively advancing the reform of professional teaching and ultimately enhancing the quality of talent cultivation.

6. Conclusion

To sum up, integrating industry and education into the teaching of polymer materials and engineering in colleges and universities can significantly improve the quality of talent training and support the holistic development of students. In the new era, colleges and professional educators must deeply analyze the essence of industry-education integration and recognize its necessity in professional teaching. By addressing existing challenges in current teaching practices, it is essential to construct a modern professional teaching model. This includes optimizing the teaching system, innovating instructional methods, and building a new team of educators, ultimately cultivating more high-quality talents for the future.

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A Study on the Value of Vocational Education in the New Era

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Abstract: In the context of the new era, vocational education has become an increasingly important topic. It is not only closely tied to individual career development but also significantly impacts the growth of enterprises and society, providing critical talent, technology, and intellectual support for China's modernization. This paper analyzes the characteristics of vocational education in the new era and examines its value to individuals, enterprises, and society based on the current state of vocational education. The aim is to offer valuable insights for related efforts and decision-making.

Keywords: New era; Vocational education; Value

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1. Introduction

Vocational education focuses on cultivating professionals with specialized skills and qualifications. Its implementation equips students with practical working abilities and experience to meet the diverse needs of enterprises and society. This broad scope encompasses vocational skills training, professional certification, higher education, and more. Whether from the perspective of individual growth or the broader objectives of enterprise and societal development, vocational education holds undeniable value.

2. Characteristics of vocational education in the new era

With societal advancement, the role and importance of vocational education have grown significantly. In the new era, vocational education exhibits distinct characteristics that reflect both societal needs and its evolving trajectory. First of all, vocational education in the new era is more targeted^[1]. It goes beyond general skill development, offering specialized training tailored to specific professions and positions. From artificial intelligence to biotechnology, new energy to e-commerce, vocational education equips individuals with in-depth knowledge and skills in trending and emerging fields. Such targeted training enables graduates to seamlessly transition into the workforce, meeting the demand for specialized professionals in various

industries. Secondly, vocational education in the new era emphasizes practicality and innovation. Practical application and innovation are central to vocational education in the new era. While theoretical knowledge serves as a foundation, practical engagement—through experiments, internships, and project execution—enables true mastery. Furthermore, vocational education encourages students to harness their innovative potential, empowering them to enhance personal growth and drive industrial progress through creative practices. Moreover, vocational education in the new era advocates lifelong learning. The rapid evolution of science and technology, coupled with societal changes, underscores the need for continuous learning. Vocational education in the new era promotes the concept of lifelong learning, encouraging individuals to regularly update their knowledge and skills. Through ongoing education and professional development, individuals can enhance their value and adapt to the dynamic demands of the workplace. Finally, vocational education in the new era pays attention to the cultivation of international vision. Globalization has heightened the significance of cross-cultural communication and international collaboration ^[2]. Vocational education in the new era emphasizes cultivating students' international awareness. By offering international courses and exposing students to global trends, it equips them with the skills needed for effective cross-cultural communication and prepares them for participation in the global economy.

3. Values of vocational education in the new era

3.1. The value of vocational education for personal development

3.1.1. Improving vocational skills and employment competitiveness

In the new era, the value of vocational education for personal development extends far beyond mere skills training. It has become a pivotal approach to improving students' vocational skills and employability, enabling them to adapt more effectively to the evolving social and economic environment. First, vocational education emphasizes the integration of practical application and theoretical knowledge, fostering holistic student development. Through hands-on practice, students gain a deeper understanding of theoretical concepts and learn to apply them to real-world scenarios ^[3]. This dual-focused learning method not only enhances students' skill levels but also strengthens their practical abilities, making them more competitive in the workforce.

Second, vocational education offers abundant internship opportunities, allowing students to engage in real-world work environments where they can apply their knowledge and gain valuable work experience. This practical exposure provides a solid foundation for students to excel in their future careers. Lastly, vocational education increases students' employment opportunities. With a focus on employment, vocational education integrates job-oriented guidance with talent training. Through platforms such as school-enterprise cooperation, vocational institutions actively secure job prospects for students. Employers often show a strong preference for vocational graduates because of their practical abilities and comprehensive qualities, which allow them to adapt quickly to workplace demands. In summary, vocational education plays a vital role in enhancing students' vocational skills and employment competitiveness. By combining practical experience with theoretical learning, offering extensive internships, and expanding job opportunities, vocational education paves the way for students to secure a brighter future ^[4].

3.1.2. Enhancing personal comprehensive quality and innovation ability

In the face of rapid technological advancements and intense market competition, vocational education continues to emphasize the development of students' comprehensive qualities and innovation abilities, making

it increasingly significant in these areas. Vocational education not only equips students with practical skills but also focuses on cultivating their independent thinking, innovative capacities, and problem-solving skills to enhance their competitiveness in future careers.

First, vocational education improves students' overall quality through diverse curricula and varied learning experiences. It aims to develop well-rounded individuals by integrating professional knowledge, practical skills, and teamwork into the learning process. This holistic approach enables students to acquire critical skills such as communication, coordination, and leadership through hands-on projects and collaborative activities. Second, vocational education fosters innovative thinking by encouraging students to embrace challenges and explore new ideas. By promoting independent thought and inquiry, it stimulates students' creativity and prepares them to navigate complex and dynamic societal challenges.

Additionally, vocational education provides abundant opportunities for practical application through the integration of production, learning, and research, as well as through collaborations between schools and enterprises. These initiatives enable students to apply their knowledge to real-world tasks, cultivate professional qualities, and gain early insights into industry trends and occupational demands, effectively preparing them for their future careers. In short, vocational education holds significant value in improving students' comprehensive qualities and innovation abilities. By mastering practical skills, developing independent thinking, fostering creativity, and enhancing problem-solving abilities ^[5], students are better equipped to face future societal challenges and opportunities with confidence and competence.

3.1.3. Strengthening social adaptability and responsibility

Vocational education not only imparts professional skills to students but also emphasizes the cultivation of their social adaptability and sense of responsibility to help them tackle workplace challenges effectively.

First, vocational education focuses on societal needs, aiming to develop adaptable talent. With its distinctive teaching methods, it revolves around real-world demands and offers students a series of practical, targeted courses. Through deep collaboration with enterprises and industries, schools create realistic practice environments where students can gain early exposure to the workplace and enhance their problem-solving abilities ^[6]. This training model allows students to integrate seamlessly into society upon graduation and meet the demands of enterprises effectively. Second, vocational education encourages students to participate in social activities, fostering teamwork and social responsibility. Engaging in these activities enables students to understand societal challenges, develop a sense of responsibility, and cultivate leadership and innovation skills. These qualities not only enhance their future career success but also improve their overall quality of life. Lastly, vocational education prioritizes the development of students' work ethics and professional qualities. This includes instilling values such as integrity, responsibility, justice, and sustainability, helping students establish a solid foundation of professional ethics and improving their overall professionalism. These qualities play a critical role in students' careers and are fundamental attributes for active and responsible members of society.

By addressing these three aspects, vocational education not only prepares students for their future careers but also actively fosters their social adaptability and responsibility, equipping them to become outstanding talents for the modern era ^[7]. Teachers must therefore place greater emphasis on vocational education, recognizing it as a vital pathway for nurturing future talent.

3.2. The value of vocational education to enterprise development

In today's highly competitive market environment, talent is essential for enterprises to achieve sustainable

growth. As an educational approach focused on technical skills, vocational education provides significant value to enterprise development in several key areas.

First, vocational education supports enterprise talent development^[8]. By offering employee training programs, vocational education produces a pool of highly skilled professionals with specialized knowledge for enterprises. These talents quickly adapt to their roles, maximize their expertise, and generate substantial value for their organizations. Additionally, vocational education enhances the overall quality of employees, strengthens teamwork capabilities, and helps build an efficient and professional workforce.

Second, vocational education boosts innovation within enterprises. Innovation is the cornerstone of business success, and only innovative companies can maintain a competitive edge in the market. Vocational education nurtures employees' creativity, innovation skills, and innovative mindsets, all of which are critical for enhancing an enterprise's core competitiveness^[9].

Finally, vocational education reduces operating costs for enterprises. For instance, it improves employees' professional skills and overall quality, enabling them to perform their tasks more efficiently and effectively, which in turn lowers operational costs. Furthermore, vocational education facilitates scientific research activities that help optimize workflows and improve productivity. Through the integration of production and education, enterprises can achieve industrial upgrades and transformation, further enhancing their economic performance.

3.3. The value of vocational education to social development

3.3.1. Meeting talent demand for economic development

Vocational education aims to cultivate professionals equipped with specialized skills and knowledge, thereby providing a steady supply of human resources to support economic development. As economic globalization deepens, the demand for diverse talents continues to grow, and vocational education plays a crucial role in addressing these needs.

Firstly, vocational education aligns closely with market demands, ensuring a strong connection between talent cultivation and industrial development. By deeply understanding industry trends, vocational education programs can adapt their curricula flexibly to train outstanding talents who meet the requirements of economic growth^[10]. Through models such as school-enterprise cooperation, internships, and hands-on training, students gain valuable practical experience in real-world working environments, enabling them to adapt better to the economic landscape.

Secondly, vocational education emphasizes optimizing talent structures. Based on the specific needs of different regions and industries, vocational education develops targeted training plans. Colleges collaborate with local enterprises to stay updated on technological advancements and industry trends, adjusting training programs to maintain a balance between the supply and demand of talent.

To sustain high-quality regional economic development and maximize the social value of vocational education, the following measures should be implemented: (1) Policy level: Governments should increase investments in vocational education, enhancing its quality and standards. Policies should encourage enterprises to actively participate in vocational education, promoting the integration of production and education. (2) Industry level: Industry associations and enterprises should engage actively in vocational education, providing practical opportunities and teaching resources. Through school-enterprise cooperation, high-quality skilled professionals with practical abilities and innovative spirits can be cultivated. (3) Individual level: Students and parents need to fully recognize the importance of vocational education, selecting appropriate majors and

courses. Students should also focus on developing their practical skills and comprehensive competencies to enhance their employability and competitiveness.

3.3.2. Promoting industrial upgrading and economic structure optimization

In the modern era, industrial upgrading and economic structure optimization have become inevitable trends in economic and social development. Vocational education, as a key avenue for training highly skilled personnel, plays a vital role in these processes.

Firstly, vocational education provides critical talent support for industrial upgrading. As technological advancements increase the demands placed on talent, vocational education trains professionals with the skills and expertise needed for industrial transformation. By aligning talent cultivation with industrial development, vocational education enhances the practicality and adaptability of the workforce, meeting the demands of industrial upgrading.

Secondly, vocational education enhances the overall quality of the labor force. It equips workers with the knowledge and skills necessary to adapt to emerging industries and new roles^[11]. Through vocational education, workers can better meet the needs of industrial restructuring and economic adjustments, improving their employability and income levels. This, in turn, raises the quality of the workforce across society.

Thirdly, vocational education fosters innovation-driven development. Innovation is a key driver of industrial upgrading and economic restructuring. Vocational education supports innovation by nurturing students' creativity and practical skills^[12]. For example, through research projects and experiential teaching, vocational education helps transform scientific achievements into practical productivity, promoting both scientific and industrial innovation while injecting new vitality into economic growth.

3.3.3. Aligning with national development strategies

In recent years, with the advancement of national development strategies, vocational education has continuously adjusted and optimized its school operation models, professional structures, and curriculum designs to better adapt to and support these strategies^[13]. For instance, following the introduction of the rural revitalization strategy, vocational colleges actively restructured their talent cultivation approaches to align more closely with the development needs of rural industries.

Rural areas are a vital component of China's economic development and a key factor in achieving the goal of building a moderately prosperous society in all respects. However, due to historical and geographical constraints, rural development has long faced challenges such as talent shortages and outdated technology. Vocational education plays a pivotal role in supporting the rural revitalization strategy, offering a comprehensive guarantee for rural progress in multiple aspects.

First, vocational education provides talent support for upgrading rural industries^[14]. By offering courses on agricultural science, technology, and agricultural product processing, it enhances students' professional skills and practical abilities. This, in turn, boosts farmers' production efficiency and quality, promoting the transformation and modernization of rural industries. Second, vocational education contributes to the strengthening of rural infrastructure. Through courses in architecture, electrical engineering, and machinery, it enhances students' engineering practice skills and supplies essential talent for infrastructure development in rural areas. Finally, vocational education improves the quality of life for rural residents. Programs in health management and family education improve residents' overall health and living standards, further enhancing their well-being^[15].

Vocational education thus plays a critical role in the rural revitalization strategy. It not only provides skilled talent for rural economic development but also enhances the quality of life and happiness of rural residents. As such, relevant educational authorities should prioritize the status and role of vocational education, increase investment, and continually refine the vocational education system and mechanisms. This will ensure that more students have access to high-quality vocational education.

4. Conclusion

In summary, vocational education in the new era is increasingly targeted, practical, and innovative, emphasizing lifelong learning and the cultivation of an international perspective. These characteristics reflect societal expectations for vocational education and align with its developmental trends, underscoring its relevance not only to individual career growth but also to enterprise and societal development. Vocational education serves as a critical source of talent, technology, and intellectual support for China's modernization. In the advancement of education, greater emphasis should be placed on vocational education to fully realize its value across all dimensions.

Disclosure statement

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Research on Teaching Reform Strategies for the Architectural Interior Design Major Driven by Design Competitions

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Abstract: Design competitions in architectural interior design serve as an effective catalyst for innovation and rapid advancement in the field, increasingly becoming a vital component of teaching outcome showcases within the discipline. By participating in these competitions, teachers and students engage with real-world design challenges, honing their problem-solving abilities. Competitions not only provide students with a platform to showcase their talents but also offer teachers opportunities to reflect on the curriculum and update their teaching philosophies. Guiding students in professional design competitions allows teachers to gain deeper insights into industry trends and market demands, enabling them to refine teaching content and methodologies, thereby enhancing teaching quality. This paper explores the impact of integrating design competitions into the classroom teaching system for architectural interior design majors, aiming to develop professional talent and elevate the quality of education.

Keywords: Architectural interior design; Design competition; Teaching reform

Online publication: October 24, 2025

1. Introduction

On April 13, 2021, significant instructions were issued regarding vocational education, highlighting its pivotal role in the new journey of comprehensively building a modern socialist country. These instructions emphasized the promising future and immense potential of vocational education, calling for the establishment of high-level vocational colleges and programs, promoting vocational integration, enhancing the adaptability of vocational education, and accelerating the development of a modern vocational education system. The aim is to cultivate a greater number of high-quality technical professionals, skilled craftsmen, and artisans for major industries^[1]. Higher vocational education is employment-oriented, driven by market demands for skilled social talent. It focuses on cultivating highly skilled individuals for enterprises, emphasizing job-specific competencies and practical vocational abilities. Its mission is to align education with production and learning, training high-level talent for frontline roles in production, construction, management, and service

sectors, while prioritizing employment as its primary goal and service as its fundamental purpose.

The architectural interior design major is a key discipline within China's vocational education system. However, traditional teaching methods often remain confined to theoretical instruction, leaving students with limited opportunities for practical application^[2]. As the design industry evolves rapidly, design competitions have emerged as a critical platform for fostering and enhancing students' professional skills, innovation, and teamwork. Increasingly, students and educators are engaging in design competitions, recognizing their importance. Design, as a field rooted in creativity and practice, benefits significantly from students' participation in competitions, which serve as a valuable avenue for developing innovative thinking and hands-on abilities. Teachers also play a crucial role, as their guidance and teaching methods are influenced by the process of preparing students for competitions. Introducing design competitions into the classroom as a teaching method provides students with opportunities to engage in practical work and gain real-world experience^[3].

2. Current situation of the development of architectural interior design courses

With the continued growth of the market economy, public expectations for both material living standards and spiritual enrichment have risen. This has created higher demands for the architectural interior design profession. In response, designers have integrated diverse elements and innovative concepts into their work, resulting in unique design styles and driving the rapid advancement of China's architectural interior design field.

However, several challenges persist in this field. Issues such as outdated design concepts, a lack of innovation awareness, and insufficient professional knowledge reserves have significantly constrained the development of the architectural interior design profession^[4]. Addressing these issues is essential for the sustained growth and evolution of this discipline.

2.1. Low students' quality and weak learning awareness

Most students majoring in architectural interior design in higher vocational colleges come from technical secondary schools or are non-art majors admitted through the general college entrance examination. These students often have a weak cultural foundation, lack formal art training, and demonstrate limited independent learning and innovation abilities in the art field. These shortcomings result in poor teaching outcomes in the classroom.

2.2. Pseudo-propositional project-guided teaching process

Currently, the teaching of interior design in higher vocational colleges primarily adopts a project-based approach, focusing on guiding students through the entire process of project design from start to finish, driven by assignment briefs. While this method aims to cultivate students' comprehensive design skills, it tends to emphasize theoretical knowledge in the classroom, offering limited practical opportunities^[5].

3. Application effect of design competitions in teaching architectural interior design

Practice shows that introducing design competitions into the teaching process can effectively address the aforementioned issues. Participating in competitions enhances students' learning interests and supports their

future development. Achieving good results in competitions boosts students' self-confidence, which helps them face future challenges with resilience and improved psychological quality. This positive influence extends to their peers, encouraging a shift in poor learning attitudes and significantly improving the overall classroom atmosphere ^[6].

3.1. Stimulating creativity, improving practical skills, and fostering teamwork

For instance, in the "Interior Design of Public Buildings" course, a practical project focusing on the renovation design of a campus library is incorporated into the classroom. Students are provided with the assignment brief at the beginning of the course and encouraged to conduct field surveys based on the actual project. By analyzing tangible spatial objects, students develop both rational analytical skills and creative intuition.

During the initial design phase, students engage in drawing and field comparisons to establish a sense of human spatial scale. In later stages, they learn to adjust their plans and align them with real-world conditions, gaining insights into the strengths and weaknesses of various spatial design techniques. Throughout the course, teamwork is emphasized as students collaborate to address challenges. This experience is especially critical for architectural interior design majors, as it mirrors real-world professional scenarios.

This teaching method integrates classroom theoretical knowledge with hands-on project implementation. By deriving knowledge points from practical challenges, students actively participate in the learning process, moving beyond passive knowledge absorption to active problem-solving and critical thinking. Such an approach fosters students' innovative thinking and equips them with the skills to tackle real-world problems ^[7].

3.2. Sparking innovation and enthusiasm

Initially, many students are unaware of relevant competition opportunities. However, when teachers guide outstanding students to participate in competitions using course projects and achieve success, it creates a visible impact. Witnessing these tangible results motivates other students to get involved. Design competitions require participants to use innovative thinking to solve practical problems, providing a challenging environment that stimulates students' creativity and practical abilities. This process not only enhances their skills but also prepares them to better meet the demands of their future careers ^[8].

4. Design competitions as classroom strategies in teaching architectural interior design majors

4.1. Defining teaching objectives

Firstly, based on the needs of application-oriented training, teaching in architectural interior design should prioritize practicality. The teaching objectives should aim to develop students' ability to independently execute architectural interior design projects and collaboratively complete comprehensive line design tasks. Secondly, real-world projects should be incorporated into the classroom, with teaching organized around actual environmental design projects. Students should complete project tasks step by step, adhering to the requirements outlined in the project brief. Design competitions often involve cutting-edge ideas and technologies, providing educators with opportunities to update course content and revise the syllabus. By referencing competition themes, teachers can align course content with market demands, drive curriculum optimization, and enhance both the practical relevance of the course and its forward-looking teaching goals ^[9].

4.2. Integrating competitions into the teaching content system

The learning of design knowledge is a progressive process. In traditional teaching approaches, students often forget previously learned material due to the segmented nature of instruction. To address this, future teaching reforms should encourage teachers to organize student participation in relevant competitions in alignment with the course's phased teaching content. This approach allows competitions to be seamlessly incorporated into the curriculum, fostering the consolidation and practical application of students' design knowledge ^[10].

4.3. Emphasizing investigative learning in the curriculum

Unlike universities, vocational colleges focus more on cultivating practical skills. A well-structured and detailed arrangement of investigative courses is a key trend in the development of vocational education. For example, arranging practical inspections of material courses can provide students with direct exposure to authentic architectural decoration materials, enabling them to understand the application of new materials and technologies in interior design. Organizing field visits to furniture-related courses, such as trips to IKEA, Red Star Macalline, and other home retail enterprises, is another important strategy. These visits allow students to explore market trends, determine furniture pairings, gather inspiration, and build partnerships. This hands-on experience equips students with essential practical knowledge, enhances their design skills, and boosts their professionalism. Consequently, investigative courses should be integrated into the interior design curriculum of higher vocational colleges, establishing an investigative course system as a hallmark of vocational interior design education ^[11].

4.4. Establishing training rooms and studio systems

The studio-based teaching model operates independently of the basic courses taught in schools. For example, the environmental art design studio at Guangzhou Urban Construction Vocational College adopts a student-centered, practice-oriented approach. To meet the demands of practical teaching, the college has built an interior design training center spanning over 3,200 square meters ^[12]. This center includes facilities such as an interior design studio, design drawing room, model-making room, decorative materials exhibition room, woodworking room, and clay craft room. Each training room can accommodate up to 45 students, effectively meeting the professional training requirements for existing teaching tasks.

Similarly, the environmental art design studio of the School of Architecture and Art at Zhejiang Industry and Commerce Vocational and Technical College integrates a talent training model of "post-course competition and creation." This includes professional foundational teaching in the first year, professional skill courses and studio teaching in the second year, and specialized employment-oriented classes in the third year (such as professional courses or apprenticeship classes). In recent years, increasing emphasis has been placed on the quality of students' design drawings and professional education. Core courses and studio projects are closely linked with enterprise collaboration, significantly enhancing students' employability and securing a high-quality employment rate. Students benefit from studio participation in two key ways: They engage in teachers' social practice projects, which strengthen their professional skills through hands-on experience; for competition projects, they receive tailored guidance, fostering continuous learning and communication. Additionally, teachers can provide timely feedback during course instruction, improving both student outcomes and professional recognition. This process encourages teachers to reflect on and refine their teaching practices, optimizing the teaching structure. Thus, combining classroom instruction with studio practice not only strengthens students' comprehensive practical abilities but also provides valuable feedback

and adjustment directions for existing classroom teaching^[13].

5. The influence and implications of incorporating design competitions into classroom teaching reform

5.1. Enhancing teaching quality, teacher development, teacher-student interaction, and institutional reputation

Guiding students to participate in professional design competitions allows teachers to gain deeper insights into industry trends and market demands. This knowledge enables them to update teaching content and methodologies, ultimately improving teaching quality. For instance, teachers can adjust the curriculum and introduce practical components aligned with competition requirements, cultivating students' innovative and practical abilities. Participation in design competitions also demands high professional expertise and guidance skills from teachers. In preparing students for competitions, teachers must continually enhance their own professional knowledge and skills, improving their comprehensive abilities in the process. Furthermore, the joint problem-solving required during competition preparation fosters frequent and in-depth teacher-student interactions, helping to build strong relationships and improve teaching outcomes^[14]. When students achieve excellent results in design competitions, the school's reputation and visibility are enhanced. Schools can leverage these achievements to showcase their professional standards and teaching strengths, attracting more talented students to enroll. Additionally, organizing student participation in competitions highlights the institution's commitment to professional excellence, reinforcing its influence in the field.

5.2. Promoting the integration and sharing of teaching resources

Design competitions involve a wide range of knowledge and resources, requiring collaboration among teachers, students, and enterprises. After students participate in these competitions and achieve results, schools should prioritize the transformation and application of these outcomes. For instance, winning works can be displayed in school exhibition halls or showcased in relevant exhibitions. Additionally, schools can collaborate with enterprises to transform these award-winning works into actual products or services, thereby enhancing the school's visibility and influence. This integration and sharing of resources and cooperation can facilitate the efficient utilization and optimization of teaching resources, ultimately improving teaching quality.

5.3. Strengthening the evaluation and feedback mechanism for design competitions

Throughout the design competition process, teachers should closely monitor students' practice and provide guidance on their thought processes, offering timely evaluations and feedback to help refine their design proposals. Regularly tracking students' progress during training and competitions is essential to identify problems and areas for improvement, enabling timely adjustments. Furthermore, recognizing and rewarding winning students can encourage broader student participation and foster enthusiasm for design competitions.

5.4. Establishing a sustainable mechanism for design competitions

To ensure that design competitions continuously drive teaching reform, it is necessary to establish a sustainable mechanism. A dedicated competition research group should be formed within the Teaching and Research Department to monitor relevant design competitions throughout the year and develop detailed time plans. For instance, competitions such as the National Vocational College Skills Competition, the 10th Zijin Award for

Architectural and Environmental Design, the 14th Jiangsu Interior Design Grand Prix hosted by the Jiangsu Interior Design Society in 2023, and the Jiangsu Young Students Interior Design Grand Prix emphasize themes like ecology and environmental protection, energy efficiency, health, cultural heritage, and innovation. These competitions encourage originality and diversity in submissions, fostering designs that envision a new way of living^[15].

6. Conclusion

In conclusion, participating in design competitions holds significant value for students by enhancing their professional skills, innovative thinking, practical abilities, teamwork, and self-confidence. Schools should create an environment that supports student growth through effective publicity, training guidance, competition organization, detailed training plans, systematic evaluations, and the establishment of long-term mechanisms. Moreover, exploring curriculum reform and teaching methodologies inspired by discipline-specific competitions is highly relevant. Considering issues such as students' weak foundational knowledge, limited theoretical understanding, inadequate practical skills, unfamiliarity with construction technologies, and insufficient integration of theory and practice, this paper proposes an employment-oriented reform strategy for teaching architectural interior design. This strategy, driven by design competitions, aims to strengthen the integration of professional courses with competitions; focus on competency standards by enhancing comprehensive practical training; and utilize a project-driven approach to reinforce the connection between theory and practice. These reforms will better prepare students for real-world challenges and align their skills with industry needs.

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Research on Strategies for Constructing a Teaching System for Higher Vocational Nursing Majors from the Perspective of School-Enterprise Cooperation

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Abstract: With the rapid development of modern medicine and the growing emphasis on public health, higher demands are being placed on the quality of nursing education and personnel training. To align with current trends in talent needs, higher vocational colleges must actively reform their nursing education training models to cultivate nursing professionals who meet societal demands. This paper explores strategies for constructing a nursing teaching system in higher vocational colleges from the perspective of school-enterprise cooperation, offering insights for reference.

Keywords: School-enterprise cooperation; Higher vocational nursing; Teaching system; Construction strategy

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1. Introduction

The teaching system serves as the foundation for training nursing professionals in higher vocational colleges. Its construction must address the practical needs of nursing talent cultivation while continuously optimizing the curriculum system to enhance teaching quality. School-enterprise cooperation is a vital approach to cultivating skilled professionals in higher vocational education, as it contributes to the improvement of students' professional skills and overall competencies. Therefore, in the context of nursing education in higher vocational colleges, it is essential to enhance school-enterprise cooperation, actively develop a teaching system that integrates this collaboration, and improve the quality of nursing education and talent cultivation. By building a curriculum system that emphasizes school-enterprise cooperation and collaborative education, these institutions can elevate the teaching standards and outcomes for nursing programs ^[1].

2. Significance of constructing a teaching system for higher vocational nursing majors from the perspective of school-enterprise cooperation

School-enterprise cooperation represents a model where enterprises actively participate in higher vocational nursing education. This collaboration requires aligning production services with educational processes, enabling students to acquire practical job skills and address the shortcomings of traditional education methods.

2.1. Improving the quality of nursing education

With the continuous improvement of public health awareness, expectations for medical standards and nursing service quality are rising. However, there are notable shortcomings in the current training of nursing talent in higher vocational colleges. For instance, the reliance on traditional, single-dimensional training approaches results in graduates with limited practical abilities, making it difficult for them to meet industry demands. The optimization and reform of nursing education training models through school-enterprise cooperation can diversify talent cultivation methods. This approach allows higher vocational colleges to train nursing professionals with a clear focus on industry needs, producing high-quality graduates who possess both theoretical knowledge and practical skills ^[2]. Consequently, these reforms not only improve the professional competency of nursing teams but also enhance the overall quality of nursing education in vocational colleges.

2.2. Laying the foundation for the development of nursing majors

In the current context of societal development, nursing is not only a crucial component of medical and healthcare education but also a rapidly evolving professional field in higher vocational education. Compared to more established disciplines, the training objectives and directions for nursing education remain somewhat ambiguous. By adopting school-enterprise cooperation as a reform pathway, vocational colleges can refine and optimize their talent training models, clarifying the objectives and directions of nursing education programs. This clarity improves the overall quality of nursing education and lays a solid foundation for the future development of nursing as a professional discipline.

2.3. Aligning education with job market needs

Currently, the supply of nursing professionals in China falls short of industry requirements. The talent structure lacks balance, and the graduates produced by vocational colleges do not fully meet market demands. Through strengthened school-enterprise cooperation, diverse organizations, including large and small hospitals, can integrate their talent requirements into educational planning. This collaboration helps vocational colleges adjust their training programs, develop specialized courses, and organize practical training and internship activities. As a result, nursing graduates are better equipped to meet industry and job-specific needs, addressing the current gap between education and employment ^[3].

3. Construction of a nursing teaching system in higher vocational colleges

3.1. Lagging educational resources

With the widespread application of modern educational technology, higher vocational colleges need to utilize such technologies to gather cutting-edge knowledge and innovations, organize and curate educational resources, and promptly share the latest nursing information with students. This approach can effectively enhance students' comprehensive skills and contribute to the sustainable development of the healthcare

industry ^[4]. However, in practice, many higher vocational colleges, despite advocating the use of modern technology, are constrained by traditional educational concepts. Consequently, the textbooks and nursing teaching cases they use are often outdated, making it difficult for students to update their knowledge systems in a timely manner. This situation hampers the improvement of the quality of nursing education and talent cultivation.

3.2. Traditional and unitary teaching modes

At present, some higher vocational colleges still adhere to conventional, single-mode approaches to talent cultivation. These rely heavily on theoretical instruction while neglecting the development of students' comprehensive practical skills. Not only are the teaching methods insufficiently innovative, but they also fail to integrate theoretical and practical teaching organically. Students often have to wait until after graduation to begin hospital internships, missing opportunities for early practical experience ^[5]. The absence of modern teaching methods results in a monotonous training atmosphere, making it difficult to fully engage students and stimulate their enthusiasm. This limitation adversely affects the development of their skills and restricts improvements in the quality of nursing talent training.

3.3. Insufficient modern experimental and practical training equipment

Experimental and practical training is a crucial component in nursing education, enabling students to internalize professional knowledge and significantly enhance their nursing skills. However, the upgrading of experimental and practical training equipment in many higher vocational colleges is insufficient, with the renewal of large-scale modern equipment lagging behind. Furthermore, existing campus networks are often inadequate to meet the computational demands of modern equipment ^[6]. These shortcomings hinder the quality of practical training and experimental teaching, making it difficult to cultivate the high-quality talents required by the healthcare industry.

3.4. Failure to build a school-enterprise cooperative education model

At present, school-enterprise cooperation in higher vocational education is primarily reflected in practical teaching. The typical approach involves schools and enterprises signing agreements to jointly establish training bases with clear divisions of responsibilities: enterprises provide training venues for students, while schools supply enterprises with human resources. However, this fixed and traditional cooperation model often limits enterprises from fully engaging in talent cultivation alongside vocational colleges. Even when collaboration exists, it is generally restricted to talent selection, with enterprises rarely taking the initiative to participate in educational activities. Such superficial cooperation fails to promote the sustainable development of enterprises and does little to enhance the quality of talent cultivation in schools, hindering the long-term growth of students ^[7]. To address these issues, higher vocational colleges and enterprises need to develop a robust school-enterprise cooperative education model that deepens collaboration and establishes a strong foundation for improving the quality of nursing talent cultivation in higher vocational education.

4. Types of school-enterprise cooperation in higher vocational nursing education

4.1. School-enterprise cooperation based on “2+1” model

The “2+1” model represents a school-enterprise cooperation framework where students spend two years in

school and one year in hospitals. This approach emphasizes practical teaching activities, with both schools and enterprises organizing hands-on training and experimental activities. During their hospital internships, students follow instructors and participate in clinical practice tasks. Under this model, the curriculum integrates work and study by aligning in-school and on-site teaching content ^[8]. Currently, many higher vocational colleges in China have established stable partnerships with local hospitals. These collaborations provide opportunities for faculty to receive clinical training and for students to gain practical experience in real-world settings.

4.2. University-enterprise co-construction of specialties

In this model, schools and enterprises collaborate to create an environment conducive to talent development. First, schools can establish partnerships with various medical service institutions based on different career development needs. Students may be organized to train in hospital departments such as emergency rooms and intensive care units. By aligning with the vocational characteristics of nursing roles, schools can work with nursing services and medical institutions to design tailored talent training and output programs. Second, schools and enterprise personnel can jointly conduct comprehensive assessments of students' performance during their institutional practice. These assessments evaluate students' skill levels, and those who meet the required standards receive certification provided by the school. This co-construction approach enables students to acquire practical skills and professional certifications, fostering well-rounded nursing professionals ready for the workforce ^[9].

4.3. School-enterprise deep cooperation model

In-depth cooperation between schools and enterprises involves multiple levels. First, there is joint training, where schools send nursing students to various medical institutions, and enterprises organize students' practical activities in line with curriculum requirements. Second, there is discipline integration, where, based on the duration and nature of higher vocational education, schools and enterprises collaboratively plan professional disciplines, develop teaching materials, assign instructors, and innovate teaching models ^[10]. Third, school-enterprise technology exchange and sharing take place, where personnel from medical institutions and school teachers communicate, jointly guide students, and offer training services for both students and faculty. Fourth, students enter medical institutions for internships.

4.4. Order-type training model

Based on the actual demands of the job, the enterprise provides training quotas and standards to the school, defining the obligations and rights of both parties through a signed agreement. In terms of cooperation, both parties jointly develop the personnel training plan, design professional course content, and plan the teaching syllabus. In terms of assessment and employment, the school and enterprise will establish assessment standards, and students who meet the criteria can receive job recommendations from the enterprise.

5. Strategies for constructing the vocational nursing teaching system from the perspective of school-enterprise cooperation

5.1. Establishing an in-depth school-enterprise cooperation mechanism and reconstructing the talent training program

School-enterprise cooperation is a deep educational model that integrates work and study. Schools and

enterprises collaborate to establish industrial colleges, where school teachers and enterprise personnel guide students through learning and practical experience in a modern apprenticeship format. In nursing education, schools should create a school-enterprise cooperation platform with enterprises, holding regular discussions and meetings to synchronize nursing job needs, post standards, and work content in each enterprise. Together, they will formulate modern apprenticeship training programs and produce diverse apprentices according to the characteristics of the medical industry, while developing a unified training plan.

Initially, based on local community medical service needs, schools can collaborate with community medical institutions, sign agreements with multiple (chain) community institutions, and flexibly adopt talent training models such as 4+1 or 3+2. This allows students to complete school learning tasks for 3–4 days while spending 1–2 days in enterprise work. Additionally, based on the needs of cross-regional medical service institutions, schools and institutions can implement a work-study alternating model, where students engage in practical activities for 2–3 months during winter and summer vacations. Furthermore, to strengthen students' vocational abilities, schools and enterprises should clarify the core competencies required in the nursing profession and incorporate them into the talent training program, laying a solid foundation for students' future professional development and job placement ^[11].

5.2. Comprehensively coordinating school-enterprise resources for joint construction and sharing

In-depth cooperation between schools and enterprises should extend beyond agreements and personnel training programs to encompass tangible collaboration in training facilities, equipment, and teaching staff. First, schools and enterprises can utilize holidays to provide students with practical opportunities, allowing them to engage in typical nursing tasks and participate in treatment, rehabilitation, and nursing activities. This enables students to gain expertise in integrated treatment and nursing practices combining Chinese and Western medicine, psychology, nutrition, and other areas, making the practical content more multidimensional. Furthermore, teaching reforms emphasizing “curriculum integration” should be conducted in alignment with nursing job requirements.

Second, emphasis should be placed on the sharing of equipment resources between schools and enterprises. Both parties can introduce advanced nursing technologies from home and abroad, establish relevant professional disciplines, and define rules and schedules for the use of enterprise equipment. Adjusting the ratio of productive practice teaching can also promote the integration of practical learning and teaching while aligning instruction with research.

Additionally, schools and enterprises should establish an exchange system for expert instructors. This system would provide school teachers with opportunities for temporary training and allow enterprise technical experts to mentor students. At the implementation level, schools and enterprises can collaborate on teaching facilities and materials, assigning school teachers and enterprise experts to jointly guide students in an apprenticeship model ^[12]. During this guidance process, mentors can create loose-leaf teaching materials tailored to real job scenarios, with a focus on local practices, emergency care, safety education, and vocational skills. These materials help students quickly grasp job standards and practical skills, enhancing their readiness for the workplace.

5.3. Deepening school-enterprise cooperative teaching with multi-scenario methods

Given the unique characteristics of nursing programs, schools and enterprises can break away from traditional

classroom teaching methods by prioritizing practical skill development. Through team-based approaches, they can group students according to their learning habits and foundational knowledge and implement multi-scenario teaching activities tailored to each team.

Case scenario teaching method: This method involves integrating nursing course content with enterprise case scenarios provided through the school-enterprise cooperation platform. Using online teaching platforms, teachers can assign scenario-setting tasks to teams, who then collect materials and prepare role-specific items. During classroom activities, teams simulate their assigned roles based on their preparation, while other students ask questions, summarize key points, and evaluate the presented knowledge.

Scenario inquiry method: Teachers design teaching cases aligned with instructional objectives, integrating theoretical knowledge with practical tasks. Pre-class activities require students to explore and prepare, while in-class activities involve random group presentations, case analyses, and peer questioning to foster an inquiry-based environment. Teachers can address differing interpretations, providing targeted explanations and encouraging students to relate their learning to practical work. Enterprise practice sessions allow students to complete hands-on tasks by referencing these cases, further solidifying their understanding.

Online and offline multi-scenario activities: Schools can invite enterprise personnel to record nursing and rehabilitation videos, transforming them into clinical practice materials for students to study online. Additionally, the “Internet + Education” model can be used to conduct live-streamed and remote training sessions facilitated by school and enterprise mentors. These activities not only develop students’ vocational competencies but also bridge the gap between theoretical learning and practical application ^[13].

5.4. Promoting comprehensive school-enterprise integration to enhance students’ employment competitiveness

With the steady progress of vocational education reform, higher vocational colleges should proactively innovate their educational philosophies, recognize the critical role of school-enterprise cooperation in student development, and actively establish partnerships with relevant enterprises. By building a coordinated talent training model with multi-party participation, they can ensure collaborative efforts in talent cultivation and effectively enhance the quality of nursing education programs.

In the traditional approach to nursing education, the training methods were often singular and outdated, with limited involvement from other stakeholders. Additionally, the curriculum content was relatively backward, failing to reflect cutting-edge knowledge and skills in the nursing industry. Under such a system, graduates of higher vocational colleges struggled to gain a competitive edge in the job market.

To address these challenges, higher vocational colleges must actively foster school-enterprise cooperation by developing robust partnerships with local nursing institutions and enterprises. This involves integrating and utilizing high-quality resources from these enterprises and actively involving them in defining talent training objectives and content. Collaboratively, schools and enterprises can establish nursing professional standards, study innovative talent cultivation models, and align training programs with clinical post-competency requirements.

By implementing collaborative education through “school-enterprise cooperation,” colleges can incorporate clinical knowledge into curriculum design and strengthen teaching teams with clinical expertise. This alignment ensures that the interests of schools, hospitals, and enterprises remain consistent throughout the talent training process—from enrollment and training to employment placement. This comprehensive integration improves students’ overall quality and nurtures the high-caliber nursing professionals required by

the industry, ultimately driving the development of the nursing field ^[14].

6. Conclusion

To sum up, the school-enterprise cooperation model offers a robust platform for the professional growth and development of nursing talents. By deepening this model, higher vocational colleges can align with the needs of medical service enterprises and the nursing industry, stay abreast of industry trends, and promptly optimize educational programs. Specifically, through establishing comprehensive cooperation mechanisms, coordinating school-enterprise resources, implementing cooperative teaching models, and creating shared evaluation platforms, schools and enterprises can facilitate the seamless integration of theoretical learning and practical application for students ^[15]. This approach enhances students' professional competencies, social adaptability, and overall learning quality, ultimately cultivating nursing talents who meet societal and market demands.

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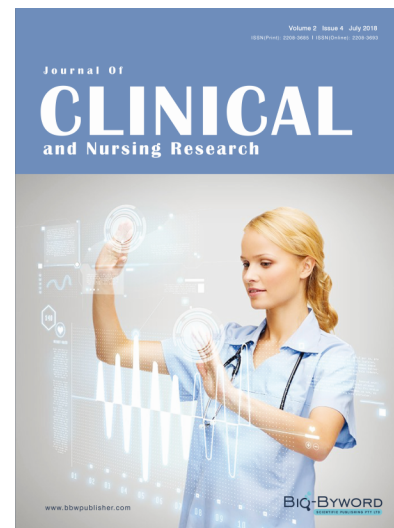
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