

Research on the Talent Training Path of "Special Creation and Integration" for Applied Undergraduate Students from the Perspective of New Engineering

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Abstract: Under the evolving landscape of new engineering, this paper undertakes a comprehensive discussion on the effective pathway for "special creation and integration" talent training within applied undergraduate universities. By deeply analyzing the core essence and paramount significance of innovation and integration education, it proposes a strategic framework aimed at enhancing the seamless integration of innovation and entrepreneurship education with professional education. This strategic alignment is crucial to fostering an environment where students can cultivate innovative thinking and entrepreneurial consciousness within their respective professional domains. Furthermore, by incorporating immersive integrated education scenarios and establishing a robust teaching evaluation system, the paper emphasizes the acceleration and achievement of the ultimate goal: nurturing a new generation of innovative talents equipped to thrive in the dynamic field of new engineering.

Keywords: New Engineering; Applied Undergraduate; Special Innovation and Integration; Talent Training; Innovation and Entrepreneurship Education

1. Introduction

With the swift evolution of science and technology and the relentless progression of society, the demand for talent is continually evolving and diversifying. In the realm of the new engineering paradigm, there is an escalating need for versatile and innovative talents capable of keeping abreast with the rapid transformations in the field. As vital centers for talent cultivation, application-

oriented undergraduate colleges and universities hold a pivotal role in addressing these evolving demands.

To adapt to this shifting landscape, these institutions must embrace innovation in both their educational methodologies and curriculum content. One innovative approach that stands out is the integration of innovation and entrepreneurship education with professional education, emerging as a crucial avenue for nurturing new engineering talents. By seamlessly merging these elements, colleges and universities can more effectively equip students with the skills, creativity, and entrepreneurial mindset required to excel in today's dynamic and fiercely competitive environment.

2. The Essence and Significance of Special Creation and Integration Education

2.1 The Essence of Specialized, Creative and Integrated Education

Professional innovation and integrated education entails the strategic incorporation of innovation and entrepreneurship education into the professional talent development programs and curriculum systems within the context of discipline construction and talent nurturing. This integration aims to seamlessly weave these elements throughout the entire professional training process, utilizing innovative or entrepreneurial teaching environments to enhance learning outcomes [1].

It's important to note that there isn't a one-size-fits-all approach when it comes to designing and implementing specialized, creative, and integrated educational models. Instead, these models need to be tailored with flexibility, taking into account the unique characteristics and specific requirements of various

disciplines. By doing so, educational institutions can ensure that their programs not only meet the current demands of the industry but also prepare students for the ever-evolving challenges of the future.

2.2 The Significance of Special Creation and Integrated Education

Improving students' comprehensive strength of employment and entrepreneurship: Combining innovation and entrepreneurship education closely with professional education, it provides a platform for students to transform theoretical knowledge into practical ability [2]. In this process, students can not only deepen their understanding of professional knowledge, but also learn how to use it to solve practical problems, especially in entrepreneurial practice. This education mode encourages students to jump out of the traditional framework and have the courage to try new ideas and new methods, so as to cultivate compound talents with profound professional knowledge and innovative spirit and practical ability [3]. Such students are undoubtedly more competitive in the job market. They can not only quickly adapt to the needs of the job, but also constantly innovate in the work, bringing new growth points for the enterprise.

To meet the increasingly diversified and high-end demands for talent in society, driven by rapid advancements in science and technology and continuous shifts in industrial structure, it is essential to broaden the approaches to talent training. By fostering collaborations between schools and enterprises, as well as integrating industry, academia, and research, specialized innovative and integrated education can be aligned closely with industry trends and corporate needs. This tailored approach to nurturing innovative talent with industry-specific characteristics effectively bridges the gap between traditional education and corporate demands, bringing college education closer to market realities and addressing the issue of talent supply and demand mismatches [4]. Furthermore, it offers students more opportunities for hands-on experience, practical training, and project collaborations, enabling them to gain insights into the workplace environment in advance and lay a solid foundation for their future careers [5].

Advancing teaching reform and enhancing educational quality involves embracing

creative and integrated education, which represents a significant shift from traditional teaching methods. This approach replaces monolithic instruction with diverse methodologies such as project-based learning, heuristic strategies, and case studies, placing students at the center and emphasizing the development of critical thinking, problem-solving skills, and teamwork. This teaching model not only boosts students' engagement and enthusiasm for learning but also fosters dynamic interactions between teachers and students, thereby enhancing the resilience and efficacy of the educational process [6].

Furthermore, creative and integrated education encourages interdisciplinary and cross-professional fusion, facilitating the comprehensive application and innovation of knowledge. This provides robust support for nurturing innovative talents with broad perspectives and deep backgrounds.

The innovative talents cultivated through this approach are pivotal in driving social progress and economic development. They contribute to technological and managerial innovations within their fields, generate employment through entrepreneurial endeavors, and catalyze industrial upgrading and the transformation of economic development models. Additionally, these talents constitute a vital component of the social innovation system. Their innovative thinking and entrepreneurial zest invigorate the innovative vitality of society at large, fostering the emergence of a modern economic system anchored by innovation.

3. From the Perspective of New Engineering, the "Special Creation and Integration" Main Title

3.1 Reasonable Connection of Special, Creative and Integrated Education Content

In the process of integrating professional education and innovation and entrepreneurship education, it is most important to study how to skillfully integrate the teaching content of the two. Grasp the characteristics of disciplines and promote the integration of specialized and innovation: according to the characteristics of disciplines, integrate the frontier discipline knowledge, interdisciplinary knowledge and subject cases into the curriculum system, so that they have the characteristics of

hierarchical and advanced [7]. The flipped classroom is adopted to highlight the student main body: integrate the related courses of innovation and entrepreneurship education and professional education, implement project-based, heuristic, diversified and mixed teaching methods, and form a "specialized and creative integration" practical teaching mode combining online and offline [8]. Encourage students to carry out innovation and entrepreneurship practice projects in their professional fields, and stimulate innovation awareness and entrepreneurial passion through practical operation understanding and application of professional knowledge.

3.2 Establish a Sound Organization Mechanism for Specialized, Creative and Integrated Education

The objective of merging innovation and entrepreneurship education with professional education in higher learning institutions should be clearly defined, with corresponding instructional plans being developed to ignite the passion of both educators and students. Develop comprehensive instructional blueprints: Integrate innovation and entrepreneurship education into the curriculum for nurturing professional talents, crafting detailed, integrated instructional blueprints to guarantee the achievement of educational objectives. Enhance teacher capacity: Through training programs and recruitment, elevate their proficiency in innovation and entrepreneurship education and teaching, fostering a highly skilled faculty. Establish a resource-sharing hub: Create a platform for sharing resources between innovation and entrepreneurship education and professional education within colleges and universities, fostering interactions and collaborations, and providing students with expanded access to resources and support [9].

3.3 Building a Campus Culture Conducive to the Integration of Special Innovation and Innovation

By organizing a diverse array of innovation and entrepreneurship activities, such as competitions, lectures, exhibitions, and more, universities can foster a vibrant and dynamic atmosphere conducive to fostering innovation and entrepreneurship among students. Regularly held innovation and

entrepreneurship competitions serve as a platform for students to showcase their ideas and talents, thereby igniting their passion and enthusiasm for these endeavors. Lectures and exhibitions, on the other hand, provide students with valuable insights and knowledge, broadening their horizons and encouraging them to think critically and creatively [10]. Moreover, strengthening school-enterprise cooperation is crucial in providing students with more hands-on opportunities to apply theoretical knowledge in practical scenarios, thereby enhancing their operational skills and understanding of the industry. Encouraging students to work in teams is also vital, as innovation and entrepreneurship projects often require collaborative efforts. Through teamwork, students can develop essential communication and collaboration skills, which are indispensable for success in any entrepreneurial venture.

4. Case Analysis

4.1 Liuzhou Institute of Technology Innovation and Integrated Education Overview

As a highly esteemed application-oriented undergraduate university in the Guangxi region, Liuzhou Institute of Technology actively embraces and fulfills the national imperative for fostering innovation and entrepreneurship education. The institution has embarked on a profound journey into the realm of specialized innovation and integration education, dedicated to nurturing a new generation of talented individuals equipped with the skills and mindset needed to thrive in today's rapidly evolving world.

Liuzhou Institute of Technology has meticulously optimized its curriculum to ensure that students receive a holistic education that balances theoretical knowledge with practical skills. This approach not only equips students with a solid foundation in their chosen fields but also prepares them to apply their knowledge effectively in real-world scenarios.

Moreover, the school has forged strong and enduring partnerships with numerous enterprises, providing students with abundant opportunities to gain hands-on experience and refine their operational capabilities. Through these collaborations, students have the chance

to engage in practical projects, internships, and other forms of professional development, enabling them to bridge the gap between academic theory and practical application.

In addition to its curriculum and partnerships, Liuzhou Institute of Technology has established robust innovation and entrepreneurship platforms. These platforms serve as incubators for creative ideas and entrepreneurial ventures, fostering an environment where students can explore, innovate, and launch their own projects. By integrating innovation and entrepreneurship education seamlessly with professional education, the school has created a seamless bridge between learning and action, enabling students to develop both an innovative spirit and practical abilities.

These initiatives have laid a solid foundation for nurturing high-quality talents who possess not only a deep understanding of their fields but also the creativity and resilience needed to make significant contributions to the societal and economic landscape. As the world continues to evolve, Liuzhou Institute of Technology remains committed to staying at the forefront of educational innovation, ensuring that its students are well-prepared to meet the challenges and opportunities of the future.

4.2 Liuzhou Institute of Technology Specially Creates the Concrete Practice of Integrated Education

Optimize the curriculum by embedding innovation and entrepreneurship elements: Liuzhou Institute of Technology emphasizes the integration of innovation and entrepreneurship education with professional education in its curriculum. The institution introduces elective courses related to innovation and entrepreneurship, such as Entrepreneurship Fundamentals and Innovative Thinking Techniques, for all students. Additionally, it incorporates innovation and entrepreneurship concepts into professional courses, guiding students to merge their professional knowledge with innovation and entrepreneurship practices through case studies and project-based learning.

Enhance school-enterprise collaboration to establish innovation and entrepreneurship practice hubs: Liuzhou Institute of Technology actively partners with enterprises to build

innovation and entrepreneurship practice hubs. These hubs serve as both practical training grounds for students and incubators for their innovation and entrepreneurship projects. Through school-enterprise collaboration, students gain deep insights into enterprise operations and engage in real-world projects, thereby enhancing their innovation and entrepreneurship skills through practical experience.

Develop innovation and entrepreneurship platforms to foster vibrant entrepreneurship: Liuzhou Institute of Technology has established various innovation and entrepreneurship platforms, including the Innovation and Entrepreneurship College and the Innovation and Entrepreneurship Incubation Center. These platforms offer students one-stop services, including innovation and entrepreneurship consulting, project incubation, and financial assistance. These platforms not only provide a showcase for students' innovation and entrepreneurship achievements but also facilitate communication and collaboration among students, igniting a vibrant entrepreneurship culture on campus.

Host innovation and entrepreneurship contests to cultivate an innovative atmosphere: The school regularly organizes innovation and entrepreneurship contests to encourage student participation. These contests provide students with an opportunity to showcase their innovation and entrepreneurship projects, receive expert evaluations and guidance, and potentially secure financial support and entrepreneurial mentorship. These contests not only hone students' innovation and entrepreneurship skills but also foster a strong culture of innovation on campus.

4.3 Achievements and Enlightenment of Liuzhou Institute of Technology

After several years of dedicated practice and exploration, Liuzhou Institute of Technology has achieved remarkable accomplishments in its specialized, creative, and integrated educational approach. This commitment to fostering innovation and entrepreneurship has led to a significant transformation in the abilities of its students. A multitude of exceptional projects have emerged from their ranks, showcasing not only their creativity and ingenuity but also their potential to make

tangible and meaningful impacts on society and the economy.

These projects range from cutting-edge technological innovations to socially impactful ventures, each demonstrating the diverse range of talents and interests among the student body. They have been recognized not only within the school but also in broader academic and industry circles, earning accolades and attracting attention from potential investors and partners.

Furthermore, the school's innovation and entrepreneurship atmosphere has become increasingly vibrant and dynamic. More and more students are actively engaging in these activities, driven by a genuine passion for innovation and a strong desire to turn their ideas into reality. This surge in participation has had a profound impact on the school's cultural landscape, fostering a sense of community and collaboration among students that goes beyond the classroom.

The school has also taken steps to further support and nurture this growing enthusiasm for innovation and entrepreneurship. It has expanded its resources and facilities, providing students with access to state-of-the-art labs, workshops, and collaboration spaces. Additionally, it has organized a series of events, workshops, and seminars aimed at inspiring and educating students on the latest trends and best practices in innovation and entrepreneurship.

Overall, the dedication and hard work of both the students and faculty at Liuzhou Institute of Technology have led to a thriving innovation and entrepreneurship ecosystem. This vibrant atmosphere has not only enriched the educational experience of the students but also positioned the school as a leader in the field of application-oriented education, ready to produce a new generation of talented individuals poised to make significant contributions to the societal and economic landscape.

5. Conclusion

In the context of new engineering, application-oriented undergraduate institutions are actively embracing the "specialized innovation and integration" talent cultivation approach. This not only aligns with the demands of societal development but also serves as a pivotal path to nurturing the versatile talents required by

future societies. Through meticulous analysis and hands-on exploration, we have uncovered that adopting this educational model notably enhances students' innovative and entrepreneurial skills, as well as their overall competence. To fulfill the objective of "specialized innovation and integration," application-oriented undergraduate institutions must undertake a series of initiatives. Foremost, it is crucial to seamlessly integrate specialized creative and integrative educational content, blending entrepreneurial and innovative concepts with professional knowledge. This allows students to hone their professional expertise while fostering innovative thinking and entrepreneurial prowess. Additionally, institutions must establish and refine the educational organizational framework to guarantee the seamless execution and enduring progress of "specialized, innovative, and integrative" education. This encompasses refining the curriculum, bolstering teaching staff development, and enhancing teaching facilities. Simultaneously, attention must be given to campus culture, fostering an environment that encourages specialized innovation and integration, thereby igniting students' passion for innovation and entrepreneurship.

Promoting "specialized innovation and integration" talent cultivation within the ambit of new engineering is a critical mission for application-oriented undergraduate institutions. Through persistent exploration and practice, we can continually refine this educational paradigm, thereby nurturing a plethora of outstanding, versatile, and innovative talents for society.

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