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Construction and Implementation Path of Innovation and Entrepreneurship Practice Platform for Information Majors under the New Engineering Background

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ABSTRACT

With the "New Engineering" concept, information education faces new challenges and opportunities, requiring the cultivation of innovative and entrepreneurial talents. Traditional teaching methods and practice platforms no longer meet the needs of modern information students. Therefore, building an innovation and entrepreneurship platform that aligns with New Engineering is crucial for educational reform. This research explores the construction, evaluation, and interdisciplinary integration of such platforms.Using literature analysis, case studies, and relevant methods, the study examines the current state and challenges of practice platforms in information education under New Engineering. The findings suggest the need for a project-driven, industry-university-research integrated platform, supported by a scientific evaluation system emphasizing interdisciplinary resource integration.This study provides a theoretical framework and practical approach for building innovation and entrepreneurship platforms in information education, offering new insights for reforming the field.

KEYWORDS

New Engineering; Information Education; Innovation and Entrepreneurship Platform; Construction; Implementation.

1. INTRODUCTION

With the rapid development of global economy and technology, education faces challenges in cultivating innovative, interdisciplinary talents. In the field of information technology, the focus has shifted from traditional knowledge to fostering students with problem-solving, practical, and entrepreneurial skills. The "New Engineering" concept promotes interdisciplinary integration and innovation in education, urging information education to align more closely with industry needs. However, many information programs still focus on theory and lack strong ties to industry practice, failing to equip students with the necessary skills. Building innovation and entrepreneurship platforms that integrate real-world projects and interdisciplinary collaboration is crucial to addressing these gaps and meeting industry demands for versatile talents. This study explores the construction and implementation of such platforms in the context of New Engineering, offering practical solutions for improving information education.

2. DEMAND ANALYSIS OF INNOVATION AND ENTREPRENEURSHIP EDUCATION IN INFORMATION DISCIPLINES

2.1. Limitations of Traditional Education Models

Currently, information education is primarily focused on teaching technical knowledge and basic theories, which no longer meet the demands of a complex, technology-driven society. With the rapid development of AI, cloud computing, big data, and IoT, the education system needs to be more flexible and forward-thinking. However, the existing content is outdated, with rigid disciplinary boundaries that fail to integrate emerging fields or interdisciplinary knowledge. As a result, students often face outdated knowledge structures and insufficient adaptability after graduation, and the system does not effectively cultivate innovative thinking or problem-solving abilities[1].

2.2. Insufficient Practical Platforms

Many information programs in universities rely on basic experiments and simulated projects, which are not deeply integrated with real-world industry environments. Students typically only encounter abstract cases, lacking a comprehensive understanding of actual industry needs and solutions. This approach limits students' creativity and the development of industry-relevant experience, failing to prepare them for the rapidly changing demands of the job market.

2.3. Urgent Need for Innovation and Entrepreneurship Education

As information technology develops rapidly and society demands high-quality, innovative talent, the need for innovation and entrepreneurship education in information disciplines has become critical. Information professionals need not only core technical skills but also interdisciplinary perspectives and the ability to solve real-world problems[2]. To meet modern societal needs, information education must shift toward a student-centered approach, focusing on innovation, project-driven learning, and industry-academia collaboration. By participating in real-world projects, students can enhance their innovative thinking, gain interdisciplinary experience, and develop entrepreneurial skills.

2.4. Transformation and Development of Education Platforms

With the implementation of the national innovation-driven development strategy, information technology has become a key driver of national growth. In this context, innovation and entrepreneurship education in information disciplines is not just a component of technical training but an essential part of national talent strategy. By promoting deeper integration between universities and industries, and encouraging interdisciplinary collaboration and resource sharing, students' innovation and entrepreneurship capabilities can be effectively improved[3]. Particularly in the context of emerging industries like "Internet+" and rapid technological advancements, information technology provides innovative power to traditional industries and offers new opportunities and challenges for innovation and entrepreneurship in information professions.

3. PATHWAYS FOR BUILDING INNOVATION AND ENTREPRENEURSHIP PRACTICE PLATFORMS IN INFORMATION DISCIPLINES

3.1. Demand-Driven and Project-Based Principles

The construction of innovation and entrepreneurship platforms must first focus on "demand-driven" and "project-based" principles. With the constant evolution of industries, information education must quickly adapt to technological advancements. For instance, the rapid growth of AI, big data, IoT, and

cloud computing requires technical talent to not only master fundamental knowledge but also possess strong innovation capabilities and the ability to solve practical engineering problems. Thus, the platform should focus on emerging technology fields, utilizing project-based, hands-on learning to ensure students gain practical experience[4]. This combination of theoretical learning and engineering practice enhances students' technical skills while fostering their innovation capabilities. The project-driven model strengthens problem-solving skills, teamwork, communication, and project management abilities, deepening students' understanding of innovation and entrepreneurship.

3.2. Industry-Academia Collaboration

Building the platform requires strong integration between academia, industry, and research. As information technology evolves rapidly, companies face increasing demands for talent with not only technical expertise but also interdisciplinary integration and innovation skills. Universities should establish stable industry-academia-research partnerships to provide students with real-world projects, allowing them to apply theoretical knowledge practically. Collaborating with industries and research institutions helps students engage in cutting-edge R&D and better understand industry trends through mentorship[5]. This collaboration ensures the platform aligns with industry standards and innovation needs, enhancing students' employability and career potential, while aligning education with societal needs.

3.3. Interdisciplinary Integration

A key element in building the innovation and entrepreneurship platform is interdisciplinary integration. In the New Engineering context, information technology is no longer isolated; it is closely linked with other fields, driving transformation and innovation across industries. Information students need not only technical knowledge in computer science but also an understanding of economics, management, and social sciences to address the integration of technology and business. Therefore, the platform should encourage interdisciplinary collaboration, allowing students to solve real-world problems from multiple perspectives[6]. This approach promotes critical thinking, innovation, and the ability to develop cross-disciplinary solutions to complex problems, enhancing students' practical skills and problem-solving abilities.

3.4. Resource Integration and Platform Construction

The success of the platform construction depends on the efficient integration and sharing of educational, social, and technological resources. Universities should actively integrate teaching, research, and social resources when designing the platform. This includes sharing course content, laboratory facilities, faculty expertise, and industry experience. Faculty members' research achievements and innovative technologies can provide theoretical and technical support for the platform, stimulating students' interest in research and innovation. Additionally, advanced digital technologies such as virtual simulation, AI, and big data should be leveraged to create interactive, immersive, and practical learning environments[7]. Universities should collaborate closely with enterprises, research institutions, and other universities to form a resource-sharing, mutually beneficial educational ecosystem, providing students with rigorous innovation practice opportunities.

3.5. Scientific Evaluation System

Finally, the platform must rely on a scientific evaluation system to continuously improve and adapt to the changing educational and industrial needs. The evaluation system should focus on multiple dimensions, including the educational effectiveness of the platform, students' innovation and entrepreneurship capabilities, the outcomes of project practices, and the alignment of the platform with industry needs. Through multi-level evaluations, universities can identify issues during implementation and adjust the platform based on feedback, ensuring that it meets its objectives[8].

The evaluation process should not only assess students' technical abilities but also their innovation, teamwork, and problem-solving skills in practical settings, ensuring they continue to innovate and progress in complex societal and industrial environments.

4. EVALUATION SYSTEM AND IMPLEMENTATION PATH FOR PLATFORM CONSTRUCTION

4.1. Strategic Alignment in Evaluation Design

The evaluation system should be closely aligned with the strategic objectives of the platform, ensuring that the evaluation covers all aspects of its operation. In the context of innovation and entrepreneurship practice platforms for information disciplines, evaluation indicators should cover core aspects such as teaching effectiveness, students' innovation abilities, industry relevance, interdisciplinary collaboration outcomes, and the platform's potential for sustainable development. Specifically, teaching effectiveness should focus on students' ability improvements, especially their innovation thinking, entrepreneurial skills, technical application, and problem-solving capabilities. These evaluations can be conducted through project-based outcomes, such as students' performance in real-world projects, teamwork, and technology transfer rates, combined with self-assessments and peer reviews to ensure comprehensive and accurate evaluation.

4.2. Enhancing Innovation Capability

The platform's innovation capability should focus on its impact on students' creative thinking and their ability to independently explore and solve problems during their participation in projects. Innovation education, especially in the context of New Engineering, emphasizes the integration of knowledge and technology across disciplines. The evaluation system should emphasize students' performance in interdisciplinary collaboration, particularly in the integration of knowledge from multiple fields, teamwork, and the innovative application of technology[9]. Innovation outcomes, such as product prototypes, technology development, research papers, and patent applications, can effectively demonstrate the platform's role in cultivating students' innovation abilities.

4.3. Alignment with Industry Demands

Evaluation of the platform's alignment with industry demands should focus on whether the platform can respond effectively and in a timely manner to industry trends and whether its innovation practices align with actual industry needs. Through deep collaboration with industry, the platform can provide students with cutting-edge technical backgrounds and real-world practice scenarios. In addition, by involving enterprise mentors and industry experts, the platform can ensure that its teaching content, project design, and market needs are highly aligned. The deep integration between industry and education is key to ensuring the long-term vitality and competitiveness of the platform. Evaluation of the alignment with industry needs can be conducted through indicators such as the number of industry-participated projects, the quality and quantity of industry innovation practice projects students are involved in, and the practical relevance of these projects.

4.4. Interdisciplinary Collaboration

In the New Engineering education model, interdisciplinary knowledge integration and collaboration are core requirements for training innovative talent. The platform's ability to facilitate collaboration between information students and those from other disciplines (such as engineering, management, and arts) directly impacts the holistic development of students' competencies. Evaluation indicators should include the implementation of interdisciplinary projects, students' ability to apply knowledge from multiple disciplines, and the innovativeness and receptivity of the project outcomes. The success

of interdisciplinary collaboration can also be assessed through the achievements of enterprise cooperation projects, particularly in technology innovation and product development.

4.5. Platform Sustainability

Sustainability is a crucial aspect of the evaluation system. The platform should not only focus on its current operation but also anticipate its capacity for long-term development in the evolving educational landscape. This includes the platform's ability to manage resource allocation, build a strong teaching workforce, establish industry collaborations, and integrate new technologies. The evaluation system should incorporate regular assessments and feedback mechanisms to identify bottlenecks in platform operation and provide insights for improvement. Over time, the platform's sustainability is closely tied to its dynamic resource integration, the optimization of its faculty team, and the depth of its interdisciplinary collaborations.

4.6. Implementation Path for Platform Construction

The platform's implementation requires a set of strategies to ensure effective operation, guided by a theoretical framework. Initially, focus on resource integration and the rational design of the platform structure to ensure efficient coordination among stakeholders from both industry and academia. This involves creating a flexible, scalable educational model that adapts to evolving educational goals[10]. As the platform becomes operational, the focus should shift to dynamically adjusting teaching content and projects in response to technological and industry changes, with regular reviews from enterprise mentors and industry experts to maintain alignment with current technologies. The platform should also promote interdisciplinary collaboration among faculty, researchers, and students, enhancing educational quality and fostering innovation.

4.7. Continuous Improvement and Feedback Mechanism

The platform's implementation path should include a scientific feedback mechanism. This core mechanism is designed to establish a continuous improvement cycle, allowing the platform to adjust in real-time based on feedback from students, faculty, industry partners, and society. By gathering and responding to feedback, the platform can address issues promptly, making adjustments to stay aligned with industry changes and educational demands. The continuous development and optimization of the platform will drive the deepening reform of information disciplines' innovation and entrepreneurship education, ultimately fostering the growth of versatile, innovative talent suited to meet the demands of future society.

5. CONCLUSION

This study focuses on the construction and implementation of innovation and entrepreneurship practice platforms for information disciplines under the New Engineering framework. It analyzes the challenges and demands of innovation education in these fields and proposes innovative construction paths, evaluation systems, and strategies. The findings suggest that these platforms should be project-driven, integrate industry, academia, and research, and promote interdisciplinary collaboration. Through cooperation and resource integration, the platforms aim to meet both industry needs and student development goals. The design should balance theory and practice, providing opportunities for students to solve real-world problems and develop innovation and comprehensive skills. A scientific evaluation system is essential for ensuring the platform's sustainability and optimization. This research provides a theoretical framework and practical pathway for innovation and entrepreneurship education in the context of New Engineering, contributing to educational reform and industry collaboration. The practical value lies in cultivating versatile, innovative talents for future industry needs. Future research could explore the effectiveness of these platforms in different

universities, assess the impact of various teaching models, and focus on resource allocation, enterprise collaboration, and interdisciplinary cooperation to address rapid industry changes. This study offers valuable guidance for the reform of information education under the New Engineering framework, promoting further innovation and entrepreneurship development.

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