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Exploration of the Construction and Practice of Landscape Plant Curriculum Group Under the Visual Threshold of Mass Innovation and Entrepreneurship

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Abstract Innovation and entrepreneurship education is a critical direction for deepening the teaching reform of colleges and universities in the contemporary era. As pivotal centers for talent development, colleges and universities should proactively investigate the construction and implementation of a comprehensive curriculum system dedicated to mass innovation and entrepreneurship education. This paper discusses the significance of establishing a curriculum group focused on landscape plants within the framework of mass innovation and entrepreneurship. The construction and implementation outcomes of this curriculum group are examined from five key aspects: the curriculum system and content, the faculty, the practical teaching platform, the teaching model, and the teaching evaluation system. The aim is to enhance the development of botany curricula within the landscape architecture discipline and to foster the cultivation of mass innovative and entrepreneurial talents equipped with a spirit of innovation and the capacity for entrepreneurship.

Keywords Mass innovation and entrepreneurship, Landscape plant curriculum group, Construction, Practice

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Innovation and entrepreneurship education serves as an enhancement of the quality education provided to high-level talents in institutions of higher learning. This educational approach is crucial in shaping the character of college students and in fostering the development of high-quality, innovative talents that are aligned with the economic advancement of China[1]. In October 2021, the General Office of the State Council released the *Guiding Opinions on Further Supporting College Students in Innovation and Entrepreneurship*. This document emphasized that college students represent a primary force in mass entrepreneurship and innovation, highlighting the importance of providing support for their innovative and entrepreneurial endeavors[2]. Since the comprehensive deepening of innovation and entrepreneurship education reform in higher education institutions in 2015, colleges and universities in China have consistently enhanced their mass innovation and entrepreneurship education initiatives, resulting in significant advancements. However, they continue to encounter challenges, including the overall inadequacy of the curriculum system designed for the training of professional talent with mass innovation and entrepreneurship skills, ambiguous carriers and pathways for the cultivation of mass innovation and entrepreneurship capabilities, and a limited capacity for synergistic development with regional enterprises[3]. The education reform of colleges and universities in the context of the new normal is encountering a novel pattern of innovation and entrepreneurship education reform. Consequently, the development of the curriculum system within this new framework is also confronted with significant challenges. Currently, the integration of mass innovation and entrepreneurship education with the construction of the curriculum system has emerged as an effective approach to curriculum and teaching reform in higher education institutions. The curriculum system serves as the foundation and support for talent cultivation in colleges and universities. It is of the utmost importance to establish a mass innovative and entrepreneurial talent cultivation model within professional curriculum groups. This will enhance the quality of talent development, facilitate the deep integration of production, education, and research, and promote both employment and entrepreneurship.

1 Significance of building landscape plant curriculum group in conjunction with mass innovation and entrepreneurship education

Domestic research on botany courses primarily concentrates on specific subjects, such as Landscape Dendrology, Plant Landscaping, and Cultivation, resulting in a substantial body of research findings. There exists a limited body of research concerning the curriculum system for landscape plants, and there is a notable deficiency in the comprehensive exploration of reforms pertaining to this type of course from the perspective of the curriculum system. A review of the relevant literature from recent years indicates that current studies primarily concentrate on the teaching models[4], practical teaching[5], assessment and evaluation[6], and curriculum ideology and politics of botany courses[7]. Landscape plant courses hold a central role in the curriculum of landscape architecture, characterized by its comprehensive nature. However, the diversity of instructors for each course frequently results in inadequate integration of the knowledge system across the courses, as well as redundant teaching content. Consequently, it is essential to establish a landscape plant curriculum group and to undertake a systematic reorganization and optimization of the teaching materials for each course.

In light of the rapid advancement of science and technology, societal development necessitates a substantial pool of versatile talents who possess both an innovative spirit and entrepreneurial capabilities. Consequently, higher education institutions must persistently enhance educational and teaching reforms, improve the framework of mass innovation and entrepreneurship curricula, and foster students' innovative spirit and entrepreneurial skills[8]. Currently, universities and colleges in China are increasingly focused on addressing the multifaceted nature of talent development and the diverse needs of society. Throughout

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numerous revisions of their professional training programs, a general consensus has emerged regarding the establishment of training programs characterized by a solid foundational knowledge, robust practical experience, significant market relevance, and broad professional applicability. The integration of production, education, and research in the field of landscape plants is feasible and promotes the organic synthesis of botany courses with mass innovation and entrepreneurship education. Currently, there is a paucity of research addressing the integration of botany curricula with mass innovation and entrepreneurship. Therefore, it is imperative to further investigate strategies for enhancing curriculum development grounded in mass innovation and entrepreneurship education. The integration of mass innovation and entrepreneurship education into the curriculum of each course not only fosters the development of talents possessing an innovative spirit and entrepreneurial skills, but also serves to effectively mitigate the challenging employment situation faced by college graduates[9].

2 Construction strategies and implementation effects of landscape plant curriculum group

2.1 Integration and optimization of curriculum system and course content

The establishment of curriculum groups underscores the holistic and comprehensive nature of the disciplines involved, which are fundamentally logical. This approach necessitates the dismantling of boundaries between disciplines, thereby facilitating a close interconnection among related courses. Under the guidance of the teaching objective aimed at fostering innovative and application-oriented talents, the landscape plant curriculum system at Anhui Xinhua University employs a "4+3+2" curriculum model. This model comprises four foundational courses—Cultivation, Soil Science, Pest Control, and Landscape Ecology—alongside three core courses: Landscape Dendrology, Garden Flowers, and Landscape Plant Design. Additionally, the curriculum includes two professional extension courses, namely Flower Arrangement and Bonsai, as well as Garden Nursery Science (Fig.1). Given the significant overlap and redundancy among the landscape plant courses currently available, it is essential to implement necessary adjustments and reforms to streamline the interrelationships between these courses. For example, the General Theory of Landscape Dendrology encompasses chapters that address the ecological habits of landscape trees, their role in beautification, and the techniques for their planting. Notably, the section on the ecological habits of landscape trees overlaps with the curriculum of Landscape Ecology, while the discussions on the beautification function and planting of landscape trees are redundant with the content covered in Landscape Plant Design. Therefore, it is imperative that the teaching syllabus should be revised to effectively integrate and optimize these overlapping topics. Furthermore, course lectures should be closely aligned with practical applications, particularly highlighting the necessity of integrating teaching with components such as landscape nursery bases and landscaping companies. Concurrently, in accordance with the orientation for cultivating professional talents, it is essential to thoroughly explore the innovation and entrepreneurship educational resources associated with each course. This approach will enhance the integration of innovation and entrepreneurship education within the framework of imparting professional knowledge and expanding professional competencies.

2.2 Formation of mass innovation and entrepreneurship faculty

The faculty of mass innovation and entrepreneurship serves as a crucial pillar for colleges and universities in fostering the development of talent in these fields. In the context of professional development, the landscape architecture at Anhui Xinhua University places significant emphasis on the enhancement of its faculty. The faculty for the landscape plant curriculum group comprises eight members, which includes three associate professors, two senior engineers, and one doctoral student. The establishment of a teacher team focused on mass innovation and entrepreneurship for the landscape plant curriculum group necessitates the enhancement of both the mass innovation and entrepreneurship competencies and the practical experience of the curriculum group instructors, building upon the foundation of a teaching innovation team. By December 2023, all instructors of the landscape plant curriculum group were acknowledged as dual-qualified and dual-talented educators by Anhui Xinhua University. Additionally, two of these instructors were appointed as members of the expert bank of the Anhui Society of Landscape Architecture. To enhance the construction of the faculty, several instructors of the botany courses have utilized the summer season for four consecutive years to participate in comprehensive social practice. The practice units involved include landscaping companies, flower production bases, and similar entities. Engaging with enterprises enhances teachers' professional and technical knowledge and skill levels while also providing insight into the talent demands of these organizations. This interaction establishes a foundation for the development of mass innovative and entrepreneurial talent within the field of landscape architecture. To expand the academic horizons of instructors, comprehend the dynamics of cutting-edge academic developments, and improve scientific research capabilities, the instructors of the landscape plant curriculum group have engaged in over 20 national professional training sessions and learning opportunities in the past three years. Among the participants, three instructors enrolled in the vocational skills training course for flower border planners, which was organized by the Perennial Flowers Branch of the China Horticultural Association. These individuals successfully obtained the National Second Level

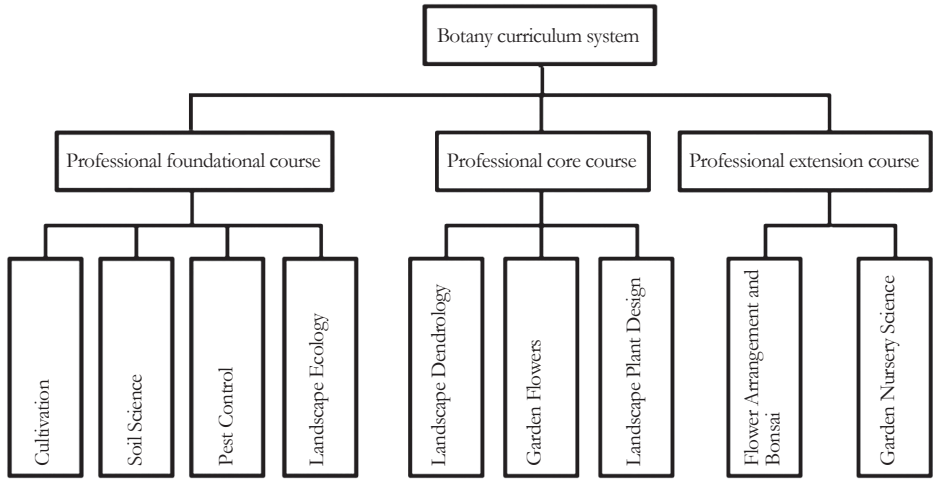

Fig.1 Botany curriculum system employing a "4+3+2" structure

Flower Border Planners Industry Qualification Certificate. Additionally, four instructors undertook a one-year study visit at Hefei University of Technology and Tongji University.

Furthermore, the botany curriculum group emphasizes innovation and entrepreneurship by engaging industry experts and entrepreneurs who possess relevant experience and ideas to contribute to the teaching process. This approach effectively enhances the mass innovation and entrepreneurship team while establishing a scientifically sound and balanced integration of full-time and part-time faculty members.

2.3 Adoption of a diversified teaching model

In the teaching framework of botany curricula, it is feasible to integrate curriculum ideology and politics with education in mass innovation and entrepreneurship. Through the acquisition of specialized knowledge and skills, students can simultaneously develop commendable professional qualities and enhance their innovative and entrepreneurial capabilities.

The curriculum group implements a diversified teaching model. Initially, a student-centered teaching framework is established, employing inspirational and guided instructional methods to facilitate in-depth interactions with students. This approach aims to encourage students to engage actively in the learning process and to foster their ability to identify and resolve problems independently. Secondly, course instructors may implement various teaching approaches, including on-site instruction, case study analysis, flipped classroom, and cooperative inquiry, tailored to the specific course content and learning objectives, to improve the effectiveness of botany courses. In the monographic component of the Landscape Dendrology course, following the explanation of each plant type, a dedicated lesson can be utilized to guide students around the campus. This practical session would involve elucidating the morphological characteristics and applications of the plants, as well as facilitating comparisons among similar tree species. Such an experiential approach enables students to gain a deeper understanding of the diverse tree varieties through direct engagement with the living specimens. Finally, the curriculum group emphasizes the integration of theoretical knowledge, innovative thinking, and practical skills. There is a strong focus on fostering innovative potential and entrepreneurial inspiration through practical engagement. Students are encouraged to undertake research studies, conduct innovative experiments, develop entrepreneurial plans, and participate in entrepreneurial simulation activities. This approach aims to cultivate students' creative thinking and promote the reform of the teaching model within the landscape curriculum group through task-led, project-driven, situational simulation, and cooperative learning methodologies.

2.4 Establishment of a multi–channel practical teaching platform

Both mass innovation and entrepreneurship education and course teaching underscore the importance of the close integration of theory and practice. The practical teaching platform for botany courses at Anhui Xinhua University primarily comprises a comprehensive landscape laboratory, a creator laboratory, and a landscape planting base. These facilities facilitate the experimental and practical teaching components of courses such as Landscape Dendrology, Garden Flowers, Cultivation, Pest Control, etc. The primary off-campus practical teaching platforms consist of the Hefei Botanical Garden and the Nangang Nursery Base operated by Anhui Dadi Landscape Co., Ltd. Through collaboration with enterprises, they jointly develop talent cultivation programs, delineate the framework for collaborative education, and specify the primary components of cooperation. This initiative emphasizes the development of mass innovation and entrepreneurship skills, enhances school-enterprise partnerships, and seeks to reform teaching and training models. The experimental section of certain courses, such as Garden Flowers and Cultivation, involve collaboration with industry enterprises. Technical personnel from these enterprises provide experimental guidance to students, enabling them to comprehend the scientific and technological advancements as well as the practical outcomes associated with cutting-edge developments in the industry. This approach enhances students' practical skills and vocational literacy. In alignment with the evolution of academic disciplines and the requirements of serving local industries, the curriculum group aims to enhance students' practical skills as well as their mass innovative and entrepreneurial spirit through a multifaceted approach. Concurrently, the curriculum group is establishing a comprehensive and multidimensional system for innovation and entrepreneurship practice. This includes the creation of an extensive platform for innovation and entrepreneurship events and projects, which encourages students to engage actively in various disciplinary competitions and initiatives. Additionally, the curriculum group is implementing targeted incentives and management strategies to support these endeavors.

Over the past three years, the landscape plant curriculum group at Anhui Xinhua University has established 18 national and 62 provincial projects under the Undergraduate Innovation and Entrepreneurship Training Plan. In the Anhui Province Internet + Undergraduate Innovation and Entrepreneurship Competition, the group achieved notable success, securing 2 silver medals and 3 bronze medals in the creativity category. Additionally, it received 2 second prizes and 3 third prizes in the Anhui Rural Revitalization Innovation and Entrepreneurship Competition. Through these projects and events, students' theoretical knowledge and experimental skills acquired in their courses are both assessed and reinforced. Additionally, these activities provide opportunities for students to cultivate their innovative and entrepreneurial thinking and abilities.

2.5 Formulation of a scientific teaching evaluation system

The instructors of the landscape plant curriculum group have developed a comprehensive and multi-faceted teaching evaluation system, which is informed by the objectives of the curriculum group and the distinct characteristics of each individual course. The evaluation index system encompasses three dimensions: knowledge mastery, practical ability, and innovation and entrepreneurship. The evaluation methods employed consist of both quantitative and qualitative assessments. Specifically, quantitative evaluation is conducted through examinations and tests, which provide a clear representation of students' learning outcomes in the form of scores. Qualitative evaluations, including laboratory training reports, project designs, and classroom performance assessments, are employed to conduct a comprehensive assessment of students' learning and practical skills through detailed textual descriptions and grading evaluations. Simultaneously, based on the distinct characteristics of various evaluation indicators, an appropriate weighting ratio is established to ensure the fairness and rationality of the evaluation outcomes. For example, traditional assessment methods employed in the courses of Landscape Dendrology and Garden Flowers, such as examinations, laboratory reports, and classroom performance evaluations, present challenges in effectively measuring students' understanding of plant cognition. The landscape plant curriculum group has been restructured to address this deficiency by incorporating process evaluation into the conventional assessment form. At the conclusion of each type of plant

study, a brief assessment of plant cognition is administered. The instructor selects 20 plant specimens in advance and presents them in a slideshow format. Students are required to respond on paper based on the images displayed, providing the names of the species and their respective families. Each plant is assigned a total of 5 points, with 3 points allocated for the correct identification of the species name and 2 points for the family name. The duration of each assessment is approximately 10 min. Through this form, students are afforded the opportunity to consolidate their knowledge of the plants they have studied in a timely manner, while the teacher is enabled to evaluate the students' understanding in a more comprehensive manner. In summary, the curriculum group employs the principles of comprehensive quality management to establish a comprehensive quality evaluation system for plant curriculum groups. This system prioritizes both process and management, incorporating dynamic and static elements. It is characterized by a thorough assessment of course achievements, which is guided by process evaluation, diagnostic evaluation, and innovation evaluation.

Simultaneously, the plant curriculum group has developed a comprehensive evaluation index system for assessing teachers' instructional practices. This system encompasses various dimensions, including the delivery of professional content, the integration of ideological and political education within the curriculum, and the design and innovation of teaching link. Furthermore, the evaluation framework incorporates the innovation and entrepreneurship projects, as well as other related competitions in which teachers guide their students. The assessment criteria emphasize the teachers' ability to effectively stimulate students' innovative thinking and to encourage their participation in innovation and entrepreneurship activities. Additionally, it evaluates whether teachers can integrate practical elements into their instruction to enhance students' practical skills. This approach aims to provide a more scientific evaluation of the effectiveness of innovation and entrepreneurship education. Consequently, it is anticipated that teachers will be motivated to incorporate the principles of mass innovation and entrepreneurship into their teaching practices, thereby improving the quality of talent cultivation.

3 Conclusions

In the context of innovation and entrepreneurship, the development of a curriculum system focused on these themes has emerged as a significant area of research within higher education institutions. This study examines the construction and practice of a curriculum group centered on landscape plant courses, situated within the broader framework of mass innovation and entrepreneurship. Through the establishment of a plant curriculum group, we have integrated and optimized the landscape plant course system and its content, formed a mass innovation and entrepreneurship faculty, adopted diverse teaching methods, and created a multi-channel practical teaching platform. Concurrently, we have developed a scientific teaching evaluation system. Although the establishment of the plant curriculum group is still in its nascent stages and requires further refinement, it has significantly fostered collaboration and communication among faculty members. This initiative not only propels the development of the college's academic disciplines, but also stimulates and enhances students' innovative thinking and entrepreneurial skills.

References

[1] Fan, Y. R. (2022). Comprehensive experimental curriculum system for agricultural science majors in colleges and universities in the context of mass innovation and entrepreneurship education. *Journal of Party School of CPC Taiyuan Municipal Committee*, (2), 76-78.

[2] General Office of the State Council of China. (2021). Guiding opinions of the General Office of the State Council on further supporting college students in innovation and entrepreneurship. *Gazette of the State Council of the People's Republic of China*, (11), 5.

[3] Liu, H. M., Xie, J. & Chen, R. H. et al. (2023). Exploration and practice of the curriculum system for cultivating professional talents with mass innovation and entrepreneurship skills: A case study of Food Inspection and Testing major. *Journal of Tonghua Normal University*, (8), 133-138.

[4] Yan, L., Yang, Y. S. (2020). Exploration and practice of online teaching mode of plant courses for Landscape Architectures in the context of epidemic: A case study of Jishou University. *Anhui Agricultural Science Bulletin*, *26*(20), 164-169.

[5] Pei, Z. F., Zhou, F. X. & Yan, X. M. (2018). Reflections and explorations on practical teaching of plant courses in Landscape Architecture in higher vocational colleges and universities. *Journal of Yangtze University* (*Natural Science Edition*), *15*(14), 81-84.

[6] Ren, Y. P., Zhou, B. (2021). Research and practice on teaching and evaluation reform of plant courses in landscape architecture specialty under the background of engineering. *Anhui Agricultural Science Bulletin*, *27*(18), 200-207.

[7] Ouyang, Y. D., Tang, T. J. & Zhao, Y. et al. (2021). Reform and exploration of thought and politics of "Trinity" curriculum group of botany curriculum. J*ournal of Hubei Normal University* (*Philosophy and Social Science*), (3), 111-114.

[8] Zhao, H. L. (2016). Construction of innovation and entrepreneurship education curriculum system in colleges and universities under the background of mass innovation and entrepreneurship. *China Adult Education*, (22), 100-103.

[9] Zhao, H. P., Zhang, W. M. & Zheng, W. Y. et al. (2017). Exploration of seed testing teaching reform under the background of "mass entrepreneurship and innovation". *Journal of Biology*, (6), 110-112.