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Study on Cultivation Path of Double-qualified Teachers for Landscape Architecture major in Artificial Intelligence Era

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Abstract: *With the rapid development of AI technology, the education field has gradually entered a new era. As a highly applied and skill demanding field, the cultivation path of Double qualified Teachers in landscape architecture major is particularly important. This article defines the connotation and the professional characteristics of Double qualified Teachers in landscape architecture major. It analyzes the current situation of landscape architecture teachers in combining artificial intelligence technology, especially the role and challenges of Double qualified Teachers, aiming to explore the training path of Double qualified Teachers in the landscape architecture industry in AI era. This article proposes a series of specific training strategies, especially the "three rings integration" training mode in order to open up new ideas for the training of vocational college teachers.*

Keywords: *AI, Landscape architecture, Double qualified Teachers, Three rings integration, Cultivation Path*

1. Introduction

Against the backdrop of the deep penetration of artificial intelligence technology into various fields of society, the landscape architecture industry is undergoing a profound reformation from traditional design to intelligent and ecological transformation. As the core carrier for cultivating composite talents such as landscape designers and ecological engineers, landscape education urgently needs to establish a teacher training system that adapts to technological evolution. As a key link between theoretical teaching and industrial practice, the ability structure of "Double qualified Teachers" needs to cover both professional theory, practical skills, and digital technology application abilities to meet the innovative and sustainable design needs of ecological landscape engineering[1].

The traditional training path for "Double qualified Teachers" has problems such as insufficient practical experience, lagging technology application, and a single evaluation system. For example, young teachers in newly established undergraduate colleges generally lack practical experience in enterprises, while technical experts in enterprises find it difficult to effectively participate in teaching due to weak teaching abilities. At the same time, the rise of artificial intelligence technology has put forward new requirements for landscape education: generative AI (e.g., GAN, Stable Diffusion, etc.) can assist in landscape scheme generation, and intelligent monitoring systems can optimize plant maintenance management[2].

However, the existing teacher team has obvious shortcomings in technology integration and teaching transformation capabilities. In this context, how to build an "AI+Double qualified Teachers" training system has become an urgent issue. Based on the theoretical framework of the integration of artificial intelligence technology and vocational education, and combined with typical cases at home and abroad, this article systematically explores the ability reconstruction path of "Double qualified Teachers" in landscape architecture in the AI era, aiming to provide theoretical support and practical reference for educational innovation.

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2. The connotation and professional characteristics of Double qualified Teachers in landscape architecture major

2.1 The connotation of Double qualified Teachers

The concept of Double qualified Teachers first appeared in the "Notice on Carrying out the Construction of Demonstration Vocational Universities" in 1995, and has frequently appeared in national policy documents since then. The definition of the professional titles, certificates, and practical experience required for Double qualified Teachers has become increasingly clear. Generally speaking, a "Double qualified Teachers" refers to a teacher who possesses both theoretical teaching ability and practical guidance ability. They not only need to have profound professional theoretical knowledge, but also rich practical experience, able to organically combine theory with practice, cultivate students' practical ability and innovative spirit.

2.2 Professional Characteristics of Double qualified Teachers in Landscape Architecture major

2.2.1 Dual Identity and Multiple Roles

The Double qualified Teachers in the field of landscape architecture have a dual identity, serving as both knowledge transmitters and skill guides. They need to play multiple roles in teaching, such as classroom instructors, practical training guider, project planners, etc. This multi role play requires them not only to possess solid professional knowledge, but also to have flexible teaching methods and rich practical experience[3].

2.2.2 Deep integration of theory and practice

Double qualified teachers in landscape architecture major need to possess a deep integration of theory and practice. They not only need to be able to systematically impart professional theoretical knowledge, but also guide students in practical operations, transforming theoretical knowledge into practical abilities. This deep integration ability is the key difference between them and ordinary teachers.

2.3 AI endows dual qualified teachers in landscape architecture major with new connotations

In the wave of deep reconstruction of educational paradigms through artificial intelligence technology, landscape architecture education is facing a dual challenge of intelligent transformation: it needs to inherit the traditional garden art of "learning from nature" and integrate cutting-edge technologies such as digital twins and intelligent perception. As the core carrier for cultivating composite talents such as landscape designers and ecological engineers, the construction of a "Double qualified Teachers" teaching team has become a key hub for solving this educational contradiction. With the continuous development of AI technology, the teaching content and methods of landscape architecture are also constantly updated. Therefore, Double qualified Teachers in landscape architecture major need to possess the ability for continuous learning and self-improvement. They need to constantly monitor industry trends and technological developments, update their knowledge and skills to adapt to constantly changing teaching needs[4].

3. Analysis of the Current Situation of Double qualified Teachers in Landscape Architecture major

Double qualified teachers usually refer to teachers who possess both theoretical teaching abilities and practical skills. For example, in vocational education, teachers have both teaching qualifications and certificates or experience related industry. In the era of artificial intelligence, this means that teachers also need to master AI technology and integrate it into their teaching. The application of artificial intelligence in landscape architecture brings many challenges, such as relying on universal models, the need to build professional models, and the need to cultivate students' critical thinking in education. Dual qualified teachers can enhance their skills through school-enterprise cooperation.

At present, there are many difficulties in the construction of a Double qualified Teachers team, including insufficient investment, knowledge structure gaps, lack of practical ability, and lagging application of new technologies, etc. Regarding the application of AI in landscape design teaching, the emphasis is on the efficiency improvement brought by technology, but it does not directly involve the transformation of the teacher's role. At the same time, the participation of landscape architecture major teachers in social services is insufficient, resulting in a lack of case-based teaching, especially

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classroom cases combined with AI (Table 1).

Table 1. An Analysis of the Current Status of Teachers in Landscape Architecture major during AI Era.

Problem dimension	Embody	Data support
Knowledge structure gap	Only 38% of teachers have systematically studied AI related courses.	2023 Report of the Vocational Education Center of the Ministry of Education[5].
Lack of practical ability	Participation rate in school-enterprise cooperation projects is less than 45%.	The survey data from the research group.
Technology application lags behind	The classroom utilization rate of virtual simulation technology is only 29%	White Paper on the Development of Education in China[6].

Dual qualified teachers need to master both professional knowledge and AI technology. Currently, there are problems such as insufficient investment, deviation of school positioning from vocational education, and academic bias in assessment and evaluation. Some schools have improved teachers' practical abilities through the cooperation of school and enterprise and practical projects, which may partially solve the problem of practical skills, but the integration of AI technology is still far from enough. In addition to the existing difficulties, the AI era has brought new challenges for Double qualified Teachers, such as the need to update their technical abilities, adapt to the teaching application of AI tools, while maintaining critical thinking and avoiding excessive reliance on technology. In addition, the education system needs to adjust its curriculum and add AI related courses such as programming and generative design, but the existing assessment mechanism still relies mainly on traditional academic indicators, which hinders teachers' transformation.

4. The cultivation path of Double qualified Teachers in landscape architecture major in AI era

In the era of artificial intelligence, the cultivation of dual qualified teachers in landscape architecture major needs to focus on multiple dimensions such as AI empowerment, school-enterprise collaboration, intelligent evaluation, and interdisciplinary integration. By using AI technology to build a virtual real integration training system (e.g., virtual practice, data-driven teaching optimization, intelligent ability assessment, etc.). Schools and enterprises jointly develop practical training projects, and introduce industry experts and intelligent tools to jointly cultivate practical skills. At the same time, we should rely on AI to achieve personalized development of teachers, connect with the forefront of intelligent technology applications in landscape engineering, form a "technology industry education" closed-loop training model (Figure 1), and promote the continuous evolution of the Double qualified Teachers team in landscape architecture major[7].

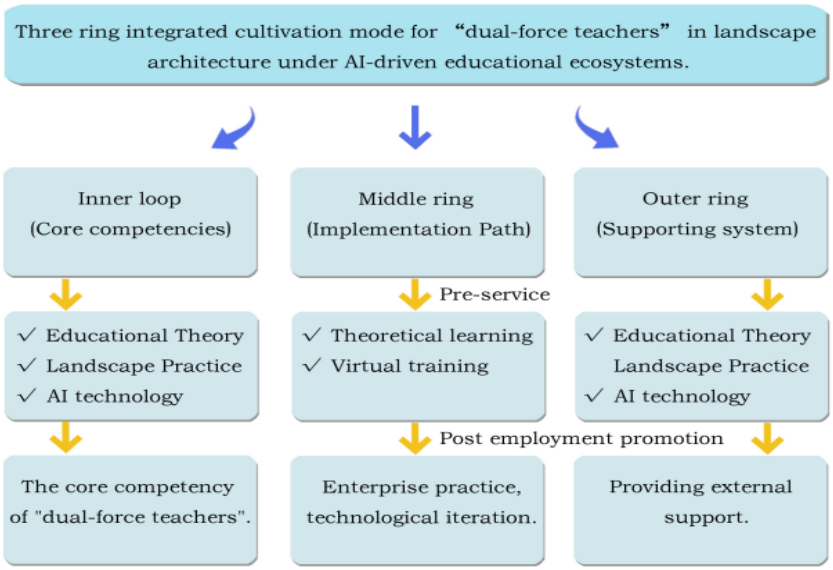

Figure 1. Three ring integrated cultivation mode for "dual-force teachers" in landscape architecture under AI-driven educational ecosystems.

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4.1 Building a multi-level and comprehensive training system

4.1.1 Layered design of training courses

A hierarchical training curriculum can be designed to meet the different needs of Double qualified Teachers in landscape architecture major. Junior courses can focus on the basic theories and knowledge of landscape architecture, intermediate courses delve into professional skills and practical operations, and advanced courses can explore cutting-edge technologies and innovative applications in the landscape industry. This course design can ensure that teachers can choose appropriate course content based on their actual situation and learning needs, achieving personalized learning and development.

4.1.2 The integrated online and offline teaching approach

With the help of AI technology, a blended learning model that combines online and offline teaching can be constructed. Online teaching can break through the limitations of time and space, providing teachers with flexible and diverse learning resources and methods. Offline teaching can enhance interaction and communication between teachers and students, and improve teaching effectiveness and learning quality. By combining online and offline teaching methods, it can ensure that teachers can receive high-quality education and training at any time and any place.

4.2 Promoting school-enterprise cooperation and deeper integration of industry and education

4.2.1 Establishing a training mechanism for school-enterprise cooperation

Strengthening school-enterprise cooperation is an important way to enhance the practical ability of Double qualified Teachers in landscape architecture major. By establishing cooperative relationships with landscaping enterprises, teachers can be organized to intern and exercise in the enterprises, so that they can understand the actual needs and technological development trends of the enterprises, and improve their practical abilities and professional qualities. Meanwhile, enterprises can provide practical bases and internship opportunities for teachers, and also offer more employment channels and opportunities for students.

4.2.2 Promoting the integration of industry and education

The integration of industry and education is an effective means to enhance the comprehensive quality of Double qualified Teachers in landscape architecture major. By promoting the integration of industry and education projects, theoretical knowledge can be organically combined with practical operations, improving the teaching level of teachers and the practical ability of students. For example, we can collaborate with enterprises to carry out projects such as landscape design and green engineering construction, allowing teachers to lead students to participate in the projects and achieving the transformation from theory to practice.

4.3 Strengthening the construction of teacher ethics and style and providing psychological health support

4.3.1 Strengthening ideological and political training and the construction of teacher ethics and style

Strengthening ideological and political training and the construction of teacher ethics and style are important ways to enhance the ideological and political qualities of Double qualified Teachers in landscape architecture major. By organizing ideological and political education and teacher ethics training activities, teachers can be guided to establish correct worldviews, outlooks on life and values, and improve their political consciousness and professional ethics. At the same time, we should establish a long-term supervision and cultivation mechanism for teachers' morality and style, combining thematic education, so as to lay the ideological and political foundation for the integration of ideological and political education and technical skills training for double qualified teachers in education and teaching.

4.3.2 Providing psychological health support services

Faced with increasing work pressure and professional competition, Double qualified Teachers of landscape architecture major need to receive psychological support and attention. Universities should establish a mental health support service system to provide psychological counseling and counseling services for teachers. At the same time, we should organize psychological quality training activities, such as group psychological training, psychological adaptability training, etc., to improve teachers' psychological quality and stress resistance.

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4.4 Establishing scientific evaluation and incentive mechanisms

4.4.1 Establishing a scientific evaluation mechanism

Establishing a scientific evaluation mechanism is an important guarantee for ensuring the quality of Double qualified Teachers training in landscape architecture ma. It is possible to comprehensively evaluate teachers' teaching level, practical ability, scientific research ability, and other aspects by establishing teacher evaluation standards and evaluation systems. At the same time, utilizing big data and AI technology, real-time monitoring and data analysis of teachers' learning and development situations are carried out, providing personalized learning suggestions and development plans for teachers[8].

4.4.2 Establishing incentive mechanisms.

Establishing incentive mechanisms can stimulate the enthusiasm and creativity of Double qualified Teachers in landscape architecture major. Encouraging teachers to actively participate in teaching and research work can be achieved through the establishment of incentive measures such as teaching rewards and research achievement rewards. At the same time, the channels for professional title promotion and career development should be established to provide teachers with more opportunities for promotion and development.

4.5 Promoting technological innovation and industrial upgrading

4.5.1 Strengthening technical research and application capabilities

With the continuous development of AI technology, the landscaping industry is also constantly exploring and innovating. The Double qualified Teachers in landscape architecture major need to strengthen their technical research and application abilities, and master the latest technological trends and application methods. By establishing cooperative relationships with technology companies and universities, they can jointly carry out technology research and application projects to promote technological innovation and industrial upgrading.

4.5.2 Promoting interdisciplinary communication and cooperation

Landscape architecture is a comprehensive field that involves multiple disciplines. Therefore, strengthening interdisciplinary communication and cooperation is of great significance for enhancing the comprehensive quality of Double qualified Teachers in landscape architecture major. Cross disciplinary seminars, academic exchange activities, and other means can be organized to promote communication and cooperation between different disciplines, so as to broaden teachers' academic horizons and knowledge.

5. Conclusion and Prospect

With the continuous development of AI technology, the training path for Double qualified Teachers in landscape architecture major is also constantly innovating and developing. By building a multi-level and comprehensive training system, strengthening school-enterprise cooperation and industry education integration, enhancing teacher ethics and style construction and psychological health support, establishing scientific evaluation and incentive mechanisms, and promoting technological innovation and industrial upgrading, the comprehensive quality and practical ability of Double qualified Teachers in landscape architecture major can be effectively improved.

In the future, AI technology will deeply reconstruct the training model of Double qualified Teachers in landscape architecture major, promoting the intelligent integration of teaching and practice. The specific prospects are reflected in the following aspects: firstly, the improvement of AI driven precision capabilities. By building a virtual practice platform based on AI technology, teachers can simulate the entire process of landscape design and construction through VR/AR to enhance their engineering thinking and technical application abilities. At the same time, Intelligent algorithms analyze industry trends and teaching data, accurately identify teacher knowledge blind spots, and dynamically adjust training content. For example, Utilizing AI to simulate plant growth models can assist teachers in mastering intelligent maintenance techniques. On the other hand, in the future, we also need to be vigilant about the risks of technological alienation, balance the roles of intelligent tools and teachers, ensure that Double qualified Teachers continue to play their core educational value in technological iteration, and ensure that AI serves the improvement of teachers' core abilities rather than replacement. Through the dual wheel drive of "intelligence + practice", we aim to create an innovative force in landscape architecture major education that meets the needs of the intelligent era[9]. In short, with the

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continuous advancement of educational technology and innovation of educational concepts, the training path for Double qualified Teachers in landscape architecture major will become more diversified and personalized in the future, cultivating more excellent teachers and talents for the development of the landscape industry.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

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