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Research on the Talent Training Orientation of Environmental Design Major in Response to the Demand of New-Quality Productive Forces

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Abstract: With the development of society, China has entered the "digital era." However, there are still many problems in the traditional teaching models and processes of the environmental design major. The development of this major needs to keep pace with the times. We attempt to use the demands of new-quality productive forces as the training objective for talents in the environmental design major and the ability of composite talents as the focus of talent training in this major. This is intended to improve the quality of teaching in this major and motivate students' enthusiasm for learning. Meanwhile, we hope that this talent training model can be more widely promoted and applied.

Keywords: Environmental design major; Demands of new-quality productive forces; Talent training orientation

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1. Introduction

With the entry of Chinese society into an era of high-quality development, the concept of new-quality productive forces has been proposed in China. This concept serves as the theoretical basis for guiding various industries towards new development and has a unique theoretical system and characteristic demands. The demands of new-quality productive forces provide overall guiding opinions and suggestions for the training objectives of environmental design talents and also play a guiding role in the training process of environmental design talents. How to respond to the demands of new-quality productive forces in the new round of talent training objective positioning and training models of environmental design major, and to have foresight, is a thought-provoking issue for practitioners on the front line of the environmental design major.

2. Characteristics of new-quality productive forces

In March 2024, Premier Li Qiang of the State Council proposed in the Government Work Report that the government should vigorously promote the construction of a modern industrial system and accelerate the development of new-quality productive forces. New-quality productive forces serve as a guiding force for the

development of undergraduate education in higher education institutions. The core essence of new-quality productive forces is "improving quality through innovation," and they are characterized by high technology, high efficiency, and high quality [1].

The characteristics of new-quality productive forces need to be safeguarded by corresponding mechanisms. To cultivate talents with the characteristics of new-quality productive forces, it is necessary to optimize the talent training model. Higher education institutions should upgrade the talent training model of local universities according to the characteristics of new-quality productive forces and the development advantages of various places. In terms of undergraduate education talent training, this "promoting quality through innovation" is mainly manifested in promoting the quality of undergraduate talents through a new type of talent training method. New-quality productive forces have promoted the energy level leap of undergraduate education talent skill structure, opened up a new track for the development of education, and led the new trend of education talent training [2].

3. Development needs of environmental design major under the perspective of new-quality productive forces

In an era of continuous upheaval in productivity and industrial structure, talents with single skills are increasingly unable to meet the practical demands of the new era's industrial structure upgrading and transformation [3]. The accelerated advancement of traditional industries towards high-end industries urgently requires a large number of high-level technical and skilled talents. With the rapid pace of social development in China, new demands have also been placed on environmental design talents. We categorize these demands into two major types: policy demands and market demands. Through research and surveys, feedback has been done on these demands to the training units of environmental design majors in universities, so as to facilitate the timely and accurate adjustment of the talent training model for environmental design majors in universities.

3.1. Market demand

Analysis of information gathered from surveys and interviews with front-line enterprises and industry associations reveals that the environmental design industry market is in pursuit of quality and efficiency. Firstly, many front-line design companies are open to embracing emerging new technologies. At the same time, businesses also need to consider reducing the trial-and-error costs associated with the introduction of new technologies, and the most direct method is to recruit talents who have already mastered these new technologies. Secondly, the criteria for excellent engineering design selection and corporate design works have shifted from quantity to high-quality development. The capabilities of environmental design talents need to transform towards being multi-skilled in one specialty and innovative. By injecting a certain number of environmental design professionals who can participate in the entire industry chain, are multi-skilled in one specialty, and are good at innovation into the industry, the industry can be propelled towards high-quality development and ultimately complete the entire industry transformation. Lastly, in the development process of design companies within the province, they all hope to maintain close contact and cooperation with universities. By recruiting outstanding environmental design talents from universities to enhance their core competitiveness, they also hope to establish cooperative training platforms with universities to continuously provide a reserve of high-quality environmental design talents for the companies.

3.2. Development trends of talent training in environmental design majors at universities

In recent years, the need for high-level and high-standard environmental design talents has become essential for industry development [4]. To meet the societal demand for such talents, domestic universities have conducted extensive explorations and practices around the training objectives of environmental design majors. Leveraging the disciplinary background and strengths of our university, our department has considered formulating training objectives for environmental design talents that align with local development characteristics and has carried out numerous visits and surveys.

In accordance with the research plan, the research team has held multiple seminars and experience-sharing sessions with sister institutions both within and outside the province, as well as with outstanding alumni. The results of these discussions suggest that the training of environmental design talents should be reformed towards the cultivation of composite talents. Firstly, environmental design majors in domestic universities mostly rely on the school's advantageous disciplines to form diverse educational characteristics such as industry-education integration, art-technology combination, and rural revitalization. Secondly, the continuing education outcomes of alumni after graduation show that they have become "multi-skilled workers" and "key business pillars" in their respective companies, that is, composite talents.

Overall, composite environmental design talents should possess capabilities in three aspects: knowledge, skills, and thinking. Composite environmental design talents should have a knowledge structure characterized by multidisciplinary intersection and integration. This means they need to understand not only the core concepts and theories of environmental design but also related fields such as architecture, urban planning, materials science, and even social sciences. For example, understanding the principles of sustainable development from environmental science can help them design more eco-friendly spaces. In terms of skills, composite environmental design talents must not only master mainstream professional skills such as computer-aided design (CAD), 3D modeling, and project management but also have the ability to learn cutting-edge professional technologies. As technology advances rapidly, new tools and techniques such as virtual reality (VR) in design visualization and advanced materials in construction are constantly emerging. Being able to quickly adapt and learn these new technologies is crucial for staying competitive in the industry. Composite environmental design talents should be able to innovate design concepts and integrate knowledge from other disciplines into their field to generate innovative thinking. For instance, they can draw inspiration from biology to create biophilic designs that mimic natural forms and processes, or apply principles from psychology to design spaces that enhance human well-being. This interdisciplinary approach allows them to think beyond traditional boundaries and come up with more creative and effective solutions. It is precisely because composite talents aim to cultivate individuals with strong abilities to learn new knowledge and skills that they are considered a new direction for the training of environmental design professionals.

4. Precision alignment between composite talent training in environmental design and new-quality productive forces

Based on the organized information from the preliminary research, the research team has analyzed the characteristics of new-quality productive forces and the features of the environmental design major. It is concluded that composite talents can serve as the integration point between the two. Composite talents encompass knowledge integration, skill integration, and thinking integration, with an emphasis on interdisciplinary approaches and technological integration. These characteristics not only comprehensively meet the development needs of

the environmental design major but also align well with the characteristics of new-quality productive forces. The alignment points are elaborated as follows.

4.1. Precision alignment between the high-efficiency characteristic of new-quality productive forces and the interdisciplinary transformation of composite environmental design major

The high-efficiency characteristic of new-quality productive forces aligns with the knowledge aspect of the environmental design major to form a composite knowledge system for environmental design talents. First, based on the university's disciplinary strengths and local development characteristics, we determine which disciplines should be integrated into the environmental design curriculum. Our university's environmental design major is based on the school's architectural background and integrates multiple disciplines such as architecture, art, and design. Therefore, we should select courses from architectural, artistic, and management disciplines to form an interdisciplinary knowledge system. Given that our province is vigorously developing and promoting green building systems and green urban renewal, it is necessary to incorporate knowledge from green construction disciplines. Additionally, to align with the characteristics of new-quality productive forces, the curriculum should also include knowledge from artificial intelligence applications. Second, in the process of training composite talents in the environmental design major, we transform interdisciplinary knowledge into a way of thinking that can guide the solution of practical problems, which is reflected in both the design approach and the teaching process. Third, in terms of teaching methods, we gather ideas widely and conduct more classes in the form of discussions with students. Only by combining these three aspects can we integrate and teach multidisciplinary knowledge to students in a coherent manner, enabling its application in practice.

4.2. Precision alignment between the high-quality characteristic of new-quality productive forces and the green transformation of composite environmental design major

The high-quality characteristic of new-quality productive forces, when aligned with the quality of the human living environment, is mainly reflected in ecological development and green sustainable development, thereby achieving a deep transformation and upgrading of the human living environment. One of the characteristics of the environmental design major is to pursue ecological and green sustainable development. Moreover, cultivating an ecological design philosophy and a green design concept in environmental design talents is also one of the thinking abilities of composite environmental design professionals.

To cultivate composite thinking oriented towards green and ecological development, relevant content should be integrated into the curriculum system for training talents in the environmental design major [5]. The curriculum system should encompass three main components: theory, design, and practice. Firstly, theoretical courses should provide a comprehensive and multi-faceted explanation of green and ecological design concepts, as well as examples of how green and ecological theories are applied in practical projects. This enables students to intuitively understand the green and ecological knowledge system, from basic to advanced levels. Secondly, design courses should not only emphasize traditional design theories and techniques but also rely on green and ecological knowledge to instill a green and ecological mindset in students during the design process. This involves transforming green and ecological knowledge into green and ecological thinking. Lastly, the development of green and ecological composite thinking should be solidified through practical projects. It is essential to create opportunities for students to participate in practical projects and to leverage the university's unique practical design resources to build an innovative practice platform. This platform should focus on green

and ecological themed practical projects.

Only by combining these three aspects and leveraging their respective strengths can we enable environmental design talents to achieve multiple practical applications, reinforce their green and ecological concepts, and refine their green and ecological thinking [6].

4.3. Precision alignment between the high-tech characteristic of new-quality productive forces and the digital transformation of composite environmental design major

The high-tech characteristic of new-quality productive forces, when aligned with the capabilities in environmental design, is primarily reflected in digital design techniques. From the perspective of industry development trends, the application of digital technology is a necessary skill for environmental designers and is also one of the main reform directions for composite talents in the environmental design major. The cultivation of digital capabilities for environmental design talents is mainly reflected in two aspects: first, explaining the underlying logic of digital technology, and second, leading and guiding students to use AI tools during the teaching process.

When explaining the underlying logic of digital technology, first of all, it is necessary to clarify the construction logic of digital software in the course, and to understand the scope and skills of the application of digital software in the design courses and practical projects of the environmental design major. In the process of talent training, it is necessary to invite teachers from computer science to participate in the digital transformation courses and to fully utilize the strength of the teaching team to enable students to master the application of digital software. Secondly, with the emergence of a large number of digital software in China, it often happens that students have just learned the software in the lower grades and then after working for about two years, more advantageous technological software is updated. Therefore, it is necessary to understand and apply the practical content of digital technology in multiple grades to adapt to the pace of the digital transformation era. Finally, in order to master digital software proficiently, it is necessary to strengthen the proficiency of using digital software and create opportunities for repeated use in both on-campus design practice and off-campus practical projects.

Overall, under the perspective of new-quality productive forces, relying on composite talents is an effective approach to reforming the training of professionals in the environmental design major. The characteristics of new-quality productive forces and the capabilities of composite talents have been precisely aligned through multidisciplinary integration, digital teaching, and green transformation. This precise alignment not only fully leverages the strengths of our university's distinctive disciplines but also highlights the feature of our environmental design major in training composite talents.

5. Conclusion

To sum up, the training objective of composite talents in the environmental design major aligns with the main characteristics of new-quality productive forces. The characteristics of new-quality productive forces can also be precisely matched with the training direction of composite talents in the environmental design major, forming a mutually reinforcing relationship. Therefore, under the perspective of new-quality productive forces, it is reasonable for the environmental design major to set composite talents as the training objective. Meanwhile, the characteristics of new-quality productive forces also provide guidance, policy basis, and theoretical support for the training of composite talents in the environmental design major. In future research, it is necessary to develop a more comprehensive reform plan in terms of curriculum system construction and teaching methods, and actively carry out practical work.

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Disclosure statement

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