



The Exploration of Practical Teaching in Village & Town Planning and Design Courses under the Background of Territorial Spatial Planning

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Abstract. Based on the ongoing enhancement of the national spatial planning system, this paper proposes practical teaching reform ideas for the curriculum of Village & Town planning and design. It outlines the new requirements posed by the national spatial planning system for the curriculum of Village & Town planning and design, and conducts an in-depth analysis of the existing issues and deficiencies in the current curriculum teaching. Subsequently, Specific teaching reform strategies are suggested from four aspects: practical teaching sessions, university-industry-local government collaboration, case study database construction, And a multi-faceted evaluation system. The implementation of these strategies aims to enhance the level of practical teaching in the curriculum of Village & Town planning and design, And foster more versatile talents that satisfy the requirements of the new era.

Keywords: National spatial planning; Village & Town planning and design; Practical teaching.

1 Introduction

China officially implemented reforms in national spatial planning in 2018, which had a significant impact on the development of urban and rural planning disciplines and posed new demands for talent cultivation. As the basic unit of national spatial planning, villages and towns play a direct role in the quality and efficiency of urban-rural integrated development. Therefore, how to optimize the teaching system of the curriculum of Village & Town planning and design and strengthen practical teaching in the context of national spatial planning has become an urgent issue in the field of urban and rural planning education.

2 Limitations of Traditional Teaching of Village & Town Planning and Design Courses

2.1 Lagging Teaching Content

Related application-oriented undergraduate colleges have offered village planning and design courses for a long time, with its teaching content closely aligned with industry demands. Prior to 2018, the course primarily focused on the traditional content of village and town planning. Since the Fifth Plenary Session of the 16th Central Committee articulated specific requirements for constructing a "beautiful countryside," the curriculum focus has primarily shifted towards village construction planning and environmental remediation planning. However, with the advent of spatial planning, various types of planning, including urban and rural planning, land use planning, and environmental protection planning, have been consolidated into a unified "single blueprint." The traditional course content has not fully incorporated this new concept, resulting in students lacking an understanding of the holistic nature of spatial planning and being unable to consider Village & Town planning issues from a global perspective, lacking a multi-plan integration perspective. Additionally, spatial planning emphasizes the equal importance of spatial resource development and protection, with a particular emphasis on ecological environment protection. Nonetheless, the traditional course content tends to concentrate more on the economic and social development of villages and towns, while assigning lesser importance to the significance of ecological environment protection, leading students to neglect or underestimate ecological factors in their planning and design^[1].

2.2 Lack of Information Technology Application

Information technologies, including Geographic Information Systems (GIS), Remote Sensing (RS), Global Positioning Systems (GPS), big data analytics, cloud computing, etc., play a crucial role in spatial planning^[2]. These technologies provide precise spatial data, real-time environmental monitoring, efficient data analysis and processing capabilities, as well as simulation and prediction functions, which help enhance the scientific nature, forward-looking perspective, and sustainability of planning and design. With the swift advancements in information technologies, new Village & Town development models such as smart villages and digital villages have become future trends. However, the teaching content of Village & Town Planning and Design has not fully incorporated GIS, big data, and other information technologies, and the application of information technologies cannot be fully developed in a single course but must be advanced through a scientific and reasonable curriculum system. This leads to students being unable to fully utilize these advanced tools in their planning and design, affecting the scientific nature and precision of the planning and hindering effective alignment with the spatial planning market.

2.3 Lack of Industry Collaboration and Practical Opportunities

With the ongoing enhancement of the spatial planning system and the evolving demands of the industry, students majoring in urban and rural planning need to possess more comprehensive and profound professional knowledge and skills. However, traditional teaching modes often lack collaboration opportunities with industries such as businesses and governments, making it difficult for students to gain real planning project experience and affecting their employ ability and practical working abilities. Although Heilongjiang University of Science and Technology has emphasized the practical teaching aspects of the Village & Town Planning and Design course, there are still numerous issues in actual operation. Firstly, the establishment and maintenance of practice bases require significant human, material, and financial resources, which are difficult for universities to bear due to limited funding. Secondly, the number and quality of practice instructors are also insufficient to meet actual demands, leading to inadequate guidance and poor outcomes in practical activities. Additionally, the disconnection between practical content and real projects is one of the prevalent issues in current practical teaching. Many practical projects lack authenticity and challenge, making it difficult for students to gain valuable practical experience and skill enhancement from them.

3 Analysis of Knowledge and Skill Reserves for Village Planning and Design Courses in the Context of Territorial Spatial Planning

3.1 Comprehensive Theoretical Knowledge Reserves from Multiple Disciplines

Foundation in Natural Resources and Environmental Science. With the emphasis on natural ecology and agricultural land protection in territorial spatial planning, village planning and design courses need to enhance students' knowledge reserves in physical geography, environmental science, and ecological restoration^[3]. This requires students to not only understand natural factors such as terrain, landforms, hydrology, and climate, but also grasp the basic composition and operational mechanisms of ecosystems, in order to effectively incorporate ecological protection and restoration strategies into planning.

Theory and Methods of Urban and Rural Planning. Traditional theories and methods of urban and rural planning remain foundational, but they ought to place greater emphasis on integrating the concepts of territorial spatial planning. Students need to gain a profound understanding of planning principles pertaining to spatial layout, functional zoning, and traffic organization for village development, while also mastering the integrated thinking of "multiple plans integration" to ensure coordination between village planning and urban master planning, land use planning, etc.

Understanding of Socioeconomic and Historical Cultural Factors. Village planning is not just about the design of spatial layout; it also needs to consider socioeconomic factors and historical cultural heritage. Students should have basic knowledge of socioeconomics, understanding the impact of population structure, industrial layout, economic development trends, etc., on village planning; at the same time, they need to enhance their awareness and protection of local historical cultural resources to ensure that planning schemes can reflect local characteristics and cultural heritage.

3.2 Reserve of Information Technology Application Capabilities

Comprehensive Utilization of Professional Software. Geographic Information Systems (GIS) are increasingly widely used in territorial spatial planning, serving as a core technical platform supporting planning and compilation. Village planning and design courses should strengthen the teaching of GIS technology, enabling students to proficiently master basic GIS software operations, spatial analysis, data visualization, and other functions, and to utilize GIS for tasks such as base map drawing, spatial analysis, and delineation of three lines in planning.

Apart from GIS, traditional planning software such as CAD, Photoshop, and Sketchup also play important roles in village planning. Students need to master the comprehensive application techniques of these software to efficiently complete the drawing, editing, and rendering of planning drawings. Meanwhile, with the development of technology, attention should also be given to the study and application of emerging planning software^[4].

Strengthening Public Policy and Management Capabilities.

(1) Understanding and Application of Urban and Rural Planning Public Policies

Urban and rural planning serves as a crucial means of coordinating public interests, allocating resources, and ensuring social equity. It is increasingly highlighting its public policy attributes. Village planning and design courses should strengthen students' understanding and application capabilities of urban and rural planning public policies, including knowledge of policy regulations in planning formulation, approval, implementation, and supervision, as well as how to promote sustainable development and social equity and justice in villages through planning means^[5].

(2) Cultivation of Modern Spatial Governance Concepts

Within the framework of territorial spatial planning, village planning necessitates the integration of modern spatial governance concepts. Students must comprehend the fundamental concepts, principles, and objectives of spatial governance, while also grasping the policy tools and implementation pathways associated with it. By utilizing case analysis, simulation exercises, and other methodologies, it is imperative to nurture students' spatial governance thinking and practical abilities, ultimately laying the groundwork for advancing the modernization of China's spatial governance system and capabilities in the field of urban and rural planning.

4 Reform Strategies for Teaching Practice in Rural Planning and Design

4.1 Renovating the Teaching Syllabus

The traditional teaching syllabus primarily focuses on skills and methods in rural planning and design, neglecting the new requirements of territorial spatial planning. Therefore, it is necessary to renovate the teaching syllabus so that students not only grasp the fundamental skills of rural planning and design but also possess the awareness and ability in territorial spatial planning. The new teaching syllabus should emphasize: gaining a comprehensive understanding and mastery of the theory and practice of territorial spatial planning; having the ability to integrate territorial spatial planning concepts into rural planning and design; establishing the concept of coordinating territorial spatial planning with rural development; cultivating a scientific attitude and academic ethos in rural planning and design within the context of territorial spatial planning; and simultaneously strengthening comprehensive abilities such as logical thinking analysis, spatial data analysis, and advanced technology application.

4.2 Innovating Teaching Methods

Situational Simulation. By simulating real territorial spatial planning projects, students are assigned roles such as planners, government officials, community residents, etc., to experience the entire process of territorial spatial planning. This approach helps students deeply understand the diverse interests and complex issues in territorial spatial planning and enhances their ability to solve practical problems.

Field Trips. In alignment with the practical demands of territorial spatial planning, arrange for students to undertake field trips to various types of villages and towns, including historical and cultural towns, eco-tourism villages and towns, etc., to gain a deep understanding of their positioning and development strategies in territorial spatial planning. At the same time, encourage students to combine field trip findings with planning and design practice, closely integrating theoretical knowledge with practical operations.

4.3 Deeply Integrating Advanced Planning Concepts

In the context of territorial spatial planning, the rural planning and design curriculum should place greater emphasis on the introduction and integration of advanced planning concepts. During assessments, apart from evaluating students' planning and design skills, there should also be a focus on examining whether they can embody cutting-edge concepts and technologies of territorial spatial planning in their designs. Encourage students to actively attempt to apply new policies, concepts, and technologies in rural planning and design, enhancing their overall quality and innovation capabilities through continuous practical exploration.

4.4 Dynamically Adjusting the Teaching Process

Adjusting the Course Structure. Adjust and optimize the existing course structure based on the revised course syllabus, forming a modular teaching system for practical instruction. Each module includes corresponding theoretical lectures and practical operation sessions, enabling students to promptly apply their learned knowledge to practice for verification and reinforcement.

Introducing Real Projects. To enhance the authenticity and challenge of practical instruction, actively introduce real projects into the classroom. Establish stable cooperative relationships with local governments and design enterprises to acquire real rural planning and design projects as course design projects. These projects not only have practical significance and challenges but also stimulate students' interest and initiative in learning, enabling them to gain a deeper understanding of industry demands and standard orientations. Meanwhile, the introduction of real projects also helps enhance students' team collaboration abilities and problem-solving skills, laying a solid foundation for their future career development^[6].

Establishing Off-Campus Practice Bases. To compensate for the lack of practical resources on campus, actively establish cooperative relationships with rural areas to create off-campus practice bases. These bases can provide students with abundant practical resources and real practice scenarios, allowing them to continuously accumulate experience and enhance abilities through practice. At the same time, the establishment of off-campus practice bases also facilitates urban-rural exchanges and cooperation, promoting the deep implementation of the rural revitalization strategy. By regularly organizing students to conduct field research and planning and design practice at off-campus practice bases, they can gain a deeper understanding of the actual situations and development needs of rural areas, providing more scientific and reasonable plans and suggestions for future planning and design work.

Constructing a Multi-Dimensional Evaluation System.

(1) Combining Process Evaluation with Outcome Evaluation

To comprehensively and objectively evaluate students' learning outcomes, it is necessary to construct a multi-dimensional evaluation system that combines process evaluation with outcome evaluation. Process evaluation focuses on students' learning processes and practical performance, aiming to promptly identify and correct existing issues through continuous tracking and feedback, helping them continuously improve and enhance. Outcome evaluation, on the other hand, emphasizes students' learning outcomes and overall quality, conducting a comprehensive evaluation through methods such as examination scores, design works, and project reports to ensure the comprehensiveness and objectivity of the evaluation. Combining these two evaluation methods can more comprehensively reflect students' learning situations and development potential, providing more scientific and reasonable guidance and suggestions for their future development.

(2) Introducing Industry Standards and Expert Reviews

To ensure the authority and fairness of evaluation results, industry standards and expert review processes can be introduced. Collaborate with industry associations and design enterprises to establish an expert database, inviting experts with rich practical experience and industry insight to participate in the review and defense of students' practical projects. These experts can provide objective and fair evaluations of students' practical projects based on industry standards and actual demands, offering targeted suggestions for improvement to help them better adapt to market demands and development trends. Simultaneously, introducing industry standards and expert reviews also contributes to enhancing students' professional qualities and competitiveness, laying a solid foundation for their future career development.

4.5 Improving the Construction of Course Case Libraries

Collecting and Organizing Excellent Cases. To enrich teaching content and formats, widely collect excellent domestic and international rural planning and design cases to establish a systematic case library. These cases should possess representativeness, typicality, and timeliness, reflecting the development trends and hot-button issues in the current rural planning and design field. Through the construction of case libraries, students can be provided with abundant learning resources and references, helping them better understand and grasp relevant knowledge and skills.

Regular Updates and Maintenance. To maintain the timeliness and pertinence of the case library, regular updates and maintenance work are necessary. Pay attention to industry dynamics and development trends, promptly collect and organize new excellent cases, replace or supplement old cases, and ensure the updating and improvement of case library content. Meanwhile, establish a case discussion mechanism, regularly organize students to conduct case analysis and discussion activities, guide them to deeply ponder the successful experiences and existing issues in the cases, and cultivate their abilities to analyze and solve problems.

5 Conclusion

This paper provides an in-depth analysis of the current status and challenges faced by the practical teaching segment of the village and town planning and design curriculum in the context of the development of territorial spatial planning. It proposes that curriculum development should integrate advanced concepts, dynamic teaching segments, and innovative teaching methods, employing multiple measures simultaneously. In the future, with the continuous improvement of the territorial spatial planning system and the evolving industry demands, the education and teaching of urban and rural planning will encounter more challenges and opportunities. Relying solely on the practical teaching reform of the village and town planning and design curriculum is not sufficient to comprehensively meet the diverse needs of society for talents in the field of territorial spatial planning, nor can it independently establish a compre-

hensive village and town planning and design system. Therefore, the future direction of effort should focus on deepening the integration of professional theory and practical techniques in village and town planning teaching, exploring interdisciplinary cooperation mechanisms, and reinforcing the infiltration of territorial spatial planning concepts into the village and town planning and design curriculum, with the aim of cultivating talents in territorial spatial planning and design who possess a solid theoretical foundation and rich practical experience.

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