Exploration of a Instructional Model for Garden Planning that Integrates Traditional Wisdom with Modern Technology

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Abstract: This article aims to explore the application effect of integrating traditional wisdom and modern science and technology in landscape planning teaching, in order to improve the instructional quality and cultivate landscape planning talents with cross-cultural vision and innovative ability. Firstly, this article analyzes the challenges faced by the current landscape planning education, including the gap between traditional wisdom and modern science and technology, and the market demand for compound talents. Then, a series of integrated teaching strategies are designed and implemented, including the redesign of course content and system, the innovation of instructional methods and means, and the construction of assessment system. It is found that the integrated teaching strategy has significantly improved students' interest in learning and practical ability, enabling them to better understand and apply traditional wisdom and master the application of modern science and technology in landscape planning. The instructional mode combining traditional wisdom with modern science and technology not only improves the quality of landscape planning teaching, but also cultivates students' innovative thinking and interdisciplinary ability. It is concluded that this integrated teaching strategy is an effective way of landscape planning education reform, which is worth further promotion and application.

1. Introduction

In today's society, with the acceleration of urbanization and the improvement of people's quality of life, landscape planning, as an important part of urban construction and environmental beautification, has become increasingly important [1]. Traditional garden planning wisdom, which contains rich cultural connotation and ecological wisdom, is the treasure of the Millennium civilization of the Chinese nation [2]. However, in the rapidly developing modern society, traditional wisdom is facing the risk of being marginalized or even forgotten [3]. At the same time, the rapid development of modern science and technology, especially the breakthroughs in the fields of information technology, virtual reality and artificial intelligence, has brought unprecedented opportunities and challenges to landscape planning [4].

The main purpose of this study is to explore how to effectively integrate traditional wisdom with modern science and technology, innovate the instructional mode of landscape planning, and improve the instructional quality and students' comprehensive quality. The significance of this study is to explore a new instructional mode of landscape planning by digging deep into the combination of traditional wisdom and modern science and technology, which can not only inherit and carry forward the excellent traditional culture of the Chinese nation, but also keep pace with the times and improve the instructional quality and effect by means of modern science and technology. This is of great significance for cultivating landscape planning talents with innovative thinking, practical ability and cultural connotation, and promoting the sustainable development of landscape planning industry.

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2. Integration of traditional wisdom and landscape planning

2.1. The concept and connotation of traditional wisdom

Traditional wisdom, as the cultural essence accumulated in the long history, refers to those knowledge systems that have stood the test of time and contain profound cultural heritage and philosophy [5]. In the field of landscape planning, traditional wisdom is mainly reflected in the awe of nature, the pursuit of harmonious symbiosis, and the respect and inheritance of regional culture [6]. It is not only a design concept, but also a life attitude and philosophical thinking, emphasizing the harmonious coexistence between man and nature and the spatial function of gardens as spiritual sustenance and cultural display.

In modern landscape planning, the application of traditional wisdom is not only a review of history, but also an innovation for the future [7]. Many successful landscape design cases have skillfully integrated traditional wisdom and modern design concepts, creating a garden space with a sense of the times and without losing cultural heritage.

2.2. The necessity of integrating traditional wisdom into landscape planning education

Integrating traditional wisdom into landscape planning education is an important way to cultivate landscape planning talents with cultural heritage and innovative ability [8]. First of all, traditional wisdom is the historical foundation and cultural soul of landscape planning. Only by deeply understanding and mastering these wisdom can we reflect the unique cultural charm and profound historical details in the design. Secondly, the ecological concept and harmonious thought contained in traditional wisdom have important guiding significance for solving the ecological problems in current urban planning and promoting sustainable development. Thirdly, learning traditional wisdom can stimulate students' national pride and cultural self-confidence and enhance their sense of identity and belonging to local culture [9]. In addition, integrating traditional wisdom into landscape planning education will also help to cultivate students' innovative thinking and interdisciplinary ability. The combination of traditional wisdom and modern science and technology can stimulate students' imagination and encourage them to explore new design concepts and techniques on the basis of respecting tradition. This integrated education mode is also helpful to break down the discipline barriers, promote the cross-integration of landscape planning and other related disciplines, and cultivate landscape planning talents with broad vision and comprehensive quality.

3. Application of modern science and technology in landscape planning teaching

3.1. Overview of modern science and technology

Modern science and technology, especially information technology, virtual reality (VR), augmented reality (AR), artificial intelligence (AI) and big data analysis, are changing all walks of life at an unprecedented speed, and the field of landscape planning is no exception. These high-tech means have brought revolutionary changes to the design, teaching and management of landscape planning.

Information technology, especially geographic information system (GIS), enables landscape planners to more accurately analyze natural factors such as topography, vegetation and hydrology, as well as socio-economic factors such as population distribution and traffic streamline, thus providing scientific basis for planning and decision-making. VR and AR technologies provide students with an immersive learning experience, which enables them to practice landscape design in a virtual environment, greatly improving the interactivity and interest of teaching. The application of artificial intelligence in landscape planning is mainly reflected in intelligent design, intelligent monitoring and intelligent management. Through algorithm optimization, AI can quickly analyze a large number of data and generate a variety of design schemes for planners to choose from; At the same time, it can also monitor the growth and environmental changes of the garden in real time, and provide accurate guidance for the maintenance and management of the garden. Big data analysis

helps planners better understand users' needs and behavior patterns, so as to design garden spaces that are more in line with people's lifestyles and aesthetic preferences.

3.2. The innovation of modern science and technology on instructional mode

Modern science and technology have brought remarkable innovation to the instructional mode of landscape planning. First of all, it greatly enriches the teaching means and resources, and enables students to gain more diverse and intuitive learning experiences through online course platforms, VR and AR technologies, which are no longer limited to traditional paper textbooks and field trips. Secondly, modern science and technology have improved the interactivity and participation of teaching. Students can communicate with others in real time and complete projects together through online discussion forums and collaborative learning platforms, thus cultivating teamwork and communication skills. In addition, modern science and technology also promote personalized learning and autonomous learning. Students can obtain teaching resources that meet their own needs through intelligent recommendation system and adaptive learning platform according to their own learning progress and interests. Finally, the application of modern science and technology has significantly improved the teaching efficiency and assessment accuracy. Computer-aided design and three-dimensional modeling software enable drawing and model making to be completed quickly, while the big data analysis and learning management system helps teachers to assess students' learning achievements more accurately, which provides a scientific basis for teaching improvement.

4. Integration strategy and construction of instructional mode

4.1. Principles and objectives of integration

The principles to be followed when constructing a instructional model of landscape planning that integrates traditional wisdom and modern science and technology are shown in Figure 1:

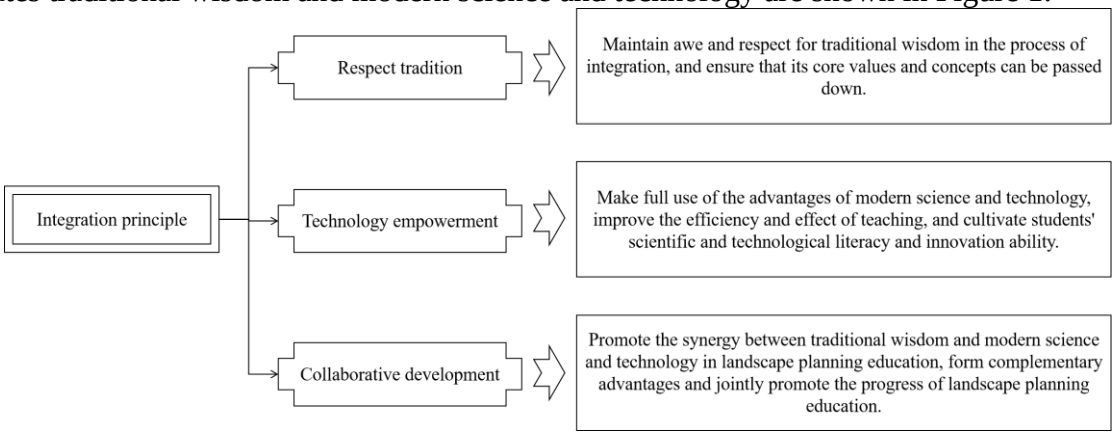

Figure 1 Fusion principle

The goal of integration is to cultivate landscape planning talents with profound cultural background, mastery of modern scientific and technological means, innovative thinking and practical ability. Through integrated teaching, students can not only understand and use traditional wisdom, but also master the application of modern science and technology in landscape planning, so as to better serve the development of landscape planning industry in their future career.

4.2. Course content and system design

In the course content and system design, we should carefully plan around the principle and goal of integration. First of all, set up traditional culture courses to inherit and carry forward traditional wisdom. Secondly, modern science and technology courses are offered to improve students' scientific and technological literacy and innovation ability.

In order to promote the integration of traditional wisdom and modern science and technology, we can design interdisciplinary comprehensive courses, such as "Landscape Design Practice of

Integration of Traditional Wisdom and Modern Science and Technology" and "Landscape Planning and Management Based on Big Data". These courses should pay attention to the combination of theory and practice, and enable students to use what they have learned in solving practical problems through case analysis and project practice.

In the course system, modular design can be adopted to organically combine traditional wisdom, modern science and technology, landscape planning theory and practice to form a complete teaching system. At the same time, according to students' learning progress and interest, personalized learning paths and elective courses are provided to meet the needs of different students.

4.3. Innovation of instructional methods and means

In instructional methods and means, we should actively explore and innovate to stimulate students' interest in learning and creativity. Teachers can combine online and offline instructional methods, use online course platform for theoretical teaching, and conduct practical teaching through field trips and virtual reality experiences. At the same time, teachers can introduce instructional modes such as flip classroom and collaborative learning to encourage students to actively participate in classroom discussion and project practice.

In order to promote students' autonomous learning and personalized development, teachers can use intelligent recommendation system and learning management system to provide students with personalized learning resources and schedule. In instructional methods, teachers should make full use of the advantages of modern science and technology, such as using three-dimensional modeling software for landscape design and using big data analysis for planning and decision-making. These means can not only improve the efficiency and effect of teaching, but also cultivate students' scientific and technological literacy and practical ability.

4.4. Construction of assessment system

In the construction of assessment system, we should pay attention to comprehensiveness, science and justice. First of all, we should establish diversified assessment indicators, including students' knowledge mastery, practical ability, innovative thinking, teamwork ability and so on. Secondly, various assessment methods should be adopted, such as closed-book examination, open-book examination, project practice, oral report, etc., to comprehensively assess students' learning achievements and progress. The key elements of the assessment system construction are shown in Figure 2:

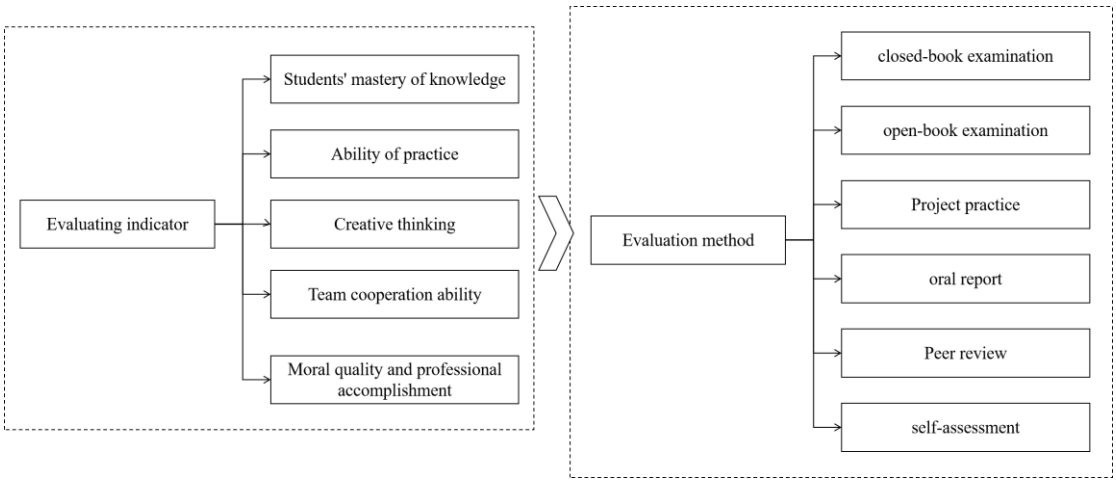

Figure 2 Key elements of assessment system construction

In order to promote the individualized development of students, teachers can combine formative assessment with summative assessment. Formative assessment pays attention to students' performance and progress in the learning process, and can find and correct students' problems in time; Summative assessment focuses on the overall performance of students at the end of the course, which can be used as an important basis for course performance and degree awarding.

5. Implementation challenges and countermeasures

In the process of promoting the instructional mode of landscape planning with the integration of traditional wisdom and modern science and technology, we will inevitably encounter a series of challenges. These challenges mainly come from the following aspects: (1) The challenge of changing ideas. (2) The challenge of technology and resource integration. (3) The challenge of teaching staff construction. (4) The challenge of perfecting the assessment system.

In view of the above challenges, this article puts forward the following countermeasures and suggestions: (1) Strengthen publicity and training to promote the change of ideas. (2) Increase investment and improve the ability of integrating technology and resources. (3) Strengthen the construction of teaching staff and improve the instructional quality. (4) Improve the assessment system and scientifically assess the learning achievements.

6. Conclusions

After in-depth research and discussion, this article fully expounds the application value of integrating traditional wisdom and modern science and technology in landscape planning teaching and its important significance in improving instructional quality and cultivating high-quality landscape planning talents.

The research results clearly point out the necessity and feasibility of the integration of traditional wisdom and modern science and technology. As the historical accumulation and cultural essence of landscape planning, traditional wisdom provides rich design concepts and techniques for modern landscape planning; Modern science and technology have brought brand-new design tools and technical means for landscape planning, which greatly improved the efficiency and accuracy of design. The integration of the two not only helps to inherit and carry forward the traditional garden culture, but also promotes the innovation and development of garden planning technology. At the same time, the integrated instructional mode can stimulate students' learning interest and creativity, cultivate their interdisciplinary thinking and practical ability, and make them better adapt to the needs of the future landscape planning industry.

In addition, the research results also emphasize the significance of integrating traditional wisdom with modern science and technology for cultivating high-quality landscape planning talents. Under the integrated instructional mode, students can fully grasp the theoretical knowledge and practical skills of landscape planning, have profound cultural background and scientific and technological literacy, as well as innovative thinking and problem-solving ability. These abilities and qualities will enable them to become the leading talents in the future landscape planning industry and contribute wisdom to the prosperity and development of landscape architecture.

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