

## Original Paper

# Constructing Campus Sports Culture Ecosystem: An Educational Ecology Perspective

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### Abstract

*Under the perspective of educational ecology, this study systematically investigates the construction of a campus sports culture ecosystem, addressing its core values, existing challenges, and optimization strategies. As a critical component of school education ecosystems, campus sports culture plays a pivotal role in fostering students' physical and mental well-being, enriching campus cultural diversity, optimizing educational structures, and advancing societal sustainability. Through literature analysis and logical reasoning, the research identifies four key challenges: uneven resource distribution, insufficient cultural identity, technological integration gaps, and inadequate evaluation mechanisms. To address these issues, four optimization pathways are proposed: 1) Establishing a diversified resource supply and sharing mechanism; 2) Cultivating a multi-tiered sports culture identity system; 3) Accelerating digital and intelligent sports culture development; 4) Implementing scientific and sustainable evaluation frameworks. By integrating resources, fostering cultural synergy, leveraging technological innovations, and refining evaluation systems, this study provides a systematic solution for the sustainable development of campus sports culture ecosystems. The findings offer theoretical and practical insights for constructing ecologically balanced sports education models, aligning with global trends in holistic education and health promotion.*

### Keywords

*Educational ecology, Campus sports culture, Ecosystem, Construction*

### 1. Introduction

In recent years, the decline in students' physical health has emerged as a global concern. In China, despite national policies such as the Opinions on Strengthening School Sports in the New Era (2020) advocating a "health-first" philosophy, issues including rising obesity rates, myopia prevalence, and insufficient physical activity persist, as evidenced by the 2021 National Student Fitness and Health Report. Against this backdrop, campus sports culture—a vital subsystem of educational ecosystems—has gained prominence for its potential to cultivate lifelong exercise habits, enhance psychosocial resilience, and

foster sustainable societal development. Educational ecology, which examines the dynamic interactions within educational systems and their environments, provides a robust framework for analyzing campus sports culture ecosystems. These ecosystems encompass material environments, institutional norms, behavioral patterns, and cultural values, all interacting to shape sports participation and health outcomes. Previous studies have highlighted systemic barriers such as resource disparities (Wu et al., 2024), cultural fragmentation (Ouyang & Liu, 2021), and technological divides (Zhang et al., 2024), yet comprehensive solutions remain underexplored. This study bridges this gap by proposing an ecosystemic approach to campus sports culture construction. It addresses three core questions: 1) How can educational ecology principles optimize resource allocation and cultural integration in sports education? 2) What role does digital transformation play in enhancing ecosystem resilience? 3) How might adaptive evaluation mechanisms ensure long-term sustainability? By synthesizing ecological theories with empirical evidence, this research contributes to global discourses on educational equity, technological innovation in sports pedagogy, and holistic student development.

## 2. Conceptual Explanation of Educational Ecology

Educational ecology is an interdisciplinary research field that mainly draws on the theories and methods of ecology to explore the interactions, dynamic equilibria, and evolution laws among the various elements within the educational system and between the system and its external environment. Its core lies in regarding education as a complex ecological system, emphasizing the interrelationships and collaborative development among educational subjects, the educational environment, and educational resources. Educational ecology provides a theoretical framework and practical guidance for understanding the complexity of educational systems, optimizing the allocation of educational resources, and promoting educational equity and quality improvement. Wu Jianying, Wu Caibin, Zeng Bin, et al. (2024) stated that educational ecology mainly applies the theories and methods of ecology to explore educational phenomena, analyze educational problems, and further explore educational laws. From the perspective of ecology, educational problems can be better analyzed, systematic solutions can be proposed, and the sustainable development of educational systems can be promoted.

## 3. Values of Constructing the Campus Sports Culture Ecosystem

### 3.1 Promoting the Realization of the "Holistic Education" Goal for Students

The construction of the campus sports culture ecosystem breaks through the limitations of single - skill training in traditional physical education, combines sports with the cultivation of culture, psychology, and social abilities, and promotes the realization of the "holistic education" goal. For example, Yang Jianmei, Xu Yongqian, et al. (2024) stated that with the development and changes of society, only by breaking the traditional inheritance and development model, reconstructing the "new" national traditional sports culture, and basing it on the current society, while retaining the original ecological cultural connotation during the construction, can we jointly create a harmonious coexistence of humans and

nature, humans and society, humans and the country, and humans and civilization, and achieve ecological development under the optimal national traditional sports culture ecosystem. The campus sports culture ecosystem integrates the sports spirit into students' daily study and life, helping them form positive values and cultural identity. The strategic and creative thinking contained in sports activities can stimulate students' innovative potential and provide support for their overall development. Combining the sports culture ecosystem with the "holistic education" concept, this paper proposes the unique role of sports in the cultivation of psychology, culture, and innovative ability.

### *3.2 Promoting the Diversification and Innovative Development of Campus Culture*

The construction of the campus sports culture ecosystem has injected new vitality into campus culture and promoted its diversification and innovative development. Sports culture integrates with academic culture, art culture, and others to form a diversified campus cultural ecosystem. For example, through the combination of sports events and art performances, unique campus cultural activities can be created. By constructing a sports culture ecosystem, sports cultural symbols with school characteristics can be formed, enhancing the recognition and influence of campus culture. Using new media technology to spread campus sports culture can expand its influence, attract more students to participate, and form cultural identity. This paper proposes the core role of sports culture in the diversification and innovative development of campus culture and explores its dissemination path combined with new media technology. For example, Meng Yabiao (2012) stated that various colleges and universities can hold unique sports culture festivals to create a unique campus cultural ecological sports culture festival, thereby promoting the development of campus sports culture and the construction of a harmonious campus in colleges and universities.

### *3.3 Optimizing the Educational Ecological Structure and Promoting Educational Equity and Quality Improvement*

The construction of the campus sports culture ecosystem helps optimize the educational ecological structure and promote educational equity and quality improvement. Through systematic construction, resources such as sports facilities and teaching staff are reasonably allocated to narrow the gap in sports resources between urban and rural areas and among different schools, promoting educational equity. The diversity of the sports culture ecosystem can meet the personalized needs of students, enhancing the adaptability and resilience of the educational ecosystem. Incorporating sports culture into the comprehensive quality evaluation system for students promotes the transformation of educational evaluation from a single academic performance - based evaluation to a multi - ability - based evaluation, thereby promoting the overall improvement of educational quality. For example, Shi Jihai, Shi Qian, et al. (2024) pointed out that standardizing educational behavior, optimizing the educational ecology, and promoting educational equity are of great theoretical and practical significance.

### *3.4 Serving Social Sustainable Development and Supporting the "Healthy China" Strategy*

The construction of the campus sports culture ecosystem not only serves school education but also provides important support for social sustainable development. Through the influence of campus sports

culture, students are helped to form a lifelong sports consciousness and a healthy lifestyle, laying the foundation for the implementation of the "Healthy China" strategy. The campus sports culture ecosystem can combine with social sports resources to form a school - family - community - linked sports ecological network, promoting the development of social sports undertakings. Through sports cultural activities, students' sense of social responsibility and civic awareness are cultivated, contributing to the harmonious development of society.

#### **4. Challenges in Constructing the Campus Sports Culture Ecosystem**

##### *4.1 Uneven Resource Allocation and Low - Efficiency Resource Allocation*

Currently, there are common problems in campus physical education teaching, such as uneven resource allocation, single - teaching methods, and backward student physical fitness monitoring and evaluation mechanisms, which seriously restrict the improvement of physical education quality. The construction of the campus sports culture ecosystem requires sufficient resource support, but in reality, uneven resource allocation and low - efficiency resource allocation have become the main challenges. Regional and inter - school differences: There are significant gaps in sports resources between urban and rural areas and among different schools, making it difficult for some schools to construct a complete sports culture ecosystem. Low - efficiency resource allocation: The utilization efficiency of existing sports resources is relatively low, with some facilities lying idle or not being fully utilized, and a benign mechanism for resource flow and sharing has not been formed. Insufficient capital investment: The construction of campus sports culture requires continuous capital support, but in the case of limited educational funds, sports culture construction is often marginalized.

##### *4.2 Lack of Cultural Identity and Value Conflicts*

The construction of the campus sports culture ecosystem requires the wide - ranging recognition of teachers, students, and society. However, in practice, the problems of lack of cultural identity and value conflicts are prominent. Some students, parents, and teachers have an insufficient understanding of the value of sports culture, believing that sports activities conflict with academic performance, resulting in low enthusiasm for participation. In some areas, there are contradictions between traditional cultural concepts and modern sports spirits, affecting the popularization and promotion of sports culture. Campus sports culture needs to be integrated with multiple cultures such as academic culture and art culture, but cultural conflicts or imbalances are prone to occur during the integration process. From the perspective of cultural identity and value conflicts, this paper analyzes the deep - seated problems in the construction of the campus sports culture ecosystem. For example, Ouyang Xiujun and Liu Yanqun (2021) stated that currently, the "individualism" trend in the campus culture construction of some schools is severe. Managers are strict controllers, ignoring the initiative and creativity of teachers and students as co - participants, resulting in the "homogenization" of campus culture construction and the lack of campus culture identity among teachers and students.

#### *4.3 Insufficient Technology Integration and the Digital Divide*

In the digital age, technology integration is an important driving force for the construction of the campus sports culture ecosystem, but the problems of insufficient technology integration and the digital divide need to be urgently addressed. Some schools have not made full use of modern technology in physical education teaching, resulting in a lack of innovation and attractiveness in sports cultural activities. Some schools lack digital sports resources and thus have difficulty meeting the diverse needs of students. Some teachers and students lack the ability to use modern technology, resulting in a discounted effect of technology integration. For example, Zhang Xueyan, Gao Qingzhong, Guo Rui, Liu Shu, Gao Wei, et al. (2024) stated that the insufficient integration of digital technology leads to low student interest in learning and difficulty in combining theoretical knowledge with practice.

#### *4.4 Imperfect Evaluation Mechanism and Lack of Incentive Mechanism*

Currently, in campus culture construction, there are mainly problems such as the relatively weak cultural heritage and cultural atmosphere in higher vocational colleges, the imperfect evaluation mechanism for campus culture construction, and the fact that the characteristic campus culture consistent with the educational goal is still under construction and formation, which restricts the function of campus culture. The construction of the campus sports culture ecosystem requires a scientific evaluation mechanism and an effective incentive mechanism, but there are currently deficiencies in these two aspects. Single - evaluation criteria: The existing sports evaluation system overly focuses on competitive performance, ignoring the evaluation of comprehensive qualities such as sports culture, teamwork, and innovative ability. Incomplete incentive mechanism: There is a lack of effective incentive measures for teachers and students participating in sports cultural activities, resulting in insufficient enthusiasm and initiative. Lack of long - term evaluation mechanism: The construction of campus sports culture requires long - term investment and continuous evaluation, but currently, there is a lack of a long - term evaluation and feedback mechanism, making it difficult to achieve sustainable development. From the perspective of the evaluation mechanism and incentive mechanism, this paper analyzes the institutional obstacles in the construction of the campus sports culture ecosystem.

### **5. Optimization Paths for Constructing the Campus Sports Culture Ecosystem**

#### *5.1 Constructing a Diversified Resource Supply and Sharing Mechanism*

The primary path to optimize the campus sports culture ecosystem is to integrate resources and construct a diversified resource supply and sharing mechanism to solve the problems of uneven resource allocation and low - efficiency resource allocation. We propose the following strategies: (1) Strengthen the linkage between internal and external school resources. Through the cooperation between schools and communities, enterprises, and sports clubs, social resources are integrated to make up for the shortage of school sports resources. For example, social funds are introduced to build sports facilities, or sports venues are shared with the community. (2) Strengthen regional resource sharing. Establish a regional sports resource alliance to promote the sharing and flow of resources among schools. For example,

through a digital platform, the cross - school allocation of sports facilities and teaching staff is realized. (3) Strengthen the improvement of resource utilization efficiency. Optimize the allocation and management of sports resources to improve the utilization rate of facilities. For example, through reservation systems and time - segmented opening, the existing resources are maximally utilized.

### *5.2 Creating a Multi - Level Sports Cultural Identity System*

The construction of the campus sports culture ecosystem requires enhancing cultural identity and creating a multi - level sports cultural identity system to solve the problems of lack of cultural identity and value conflicts. (1) Strengthen the deep integration of sports spirit and campus culture. Integrate the sports spirit into all aspects of campus culture to form unique campus sports cultural symbols. For example, through sports stories in school history and sports celebrity walls, students' cultural identity is enhanced. (2) Strengthen the coordinated development of multiple cultures. Through promoting the integration of sports culture with academic culture, art culture, and others, a diversified campus cultural ecosystem is formed. For example, by holding "sports + art" themed activities, the attractiveness of sports culture is enhanced. (3) Promote the collaborative education of family, school, and society. Through the collaborative cooperation of parents, schools, and communities, a social atmosphere that supports the development of sports culture is created. For example, by carrying out family sports days, community sports events, and other activities, social recognition of sports culture is enhanced.

### *5.3 Promoting the Construction of Digital and Intelligent Sports Culture*

In the digital age, technology - enabled is an important path to optimize the campus sports culture ecosystem, which can solve the problems of insufficient technology integration and the digital divide. (1) Construct intelligent sports facilities. Introduce intelligent equipment (such as intelligent running tracks and wearable devices) and virtual reality technology to enhance the fun and scientific nature of sports teaching. For example, through VR technology, sports scenes are simulated to enhance students' immersive experience. (2) Build a digital resource platform. Construct a digital sports resource platform to provide services such as online courses and sports data analysis to meet the personalized needs of students. For example, through big data analysis of students' sports habits, personalized exercise plans are customized for them. (3) Improve the digital literacy of teachers and students. Strengthen the digital literacy training of teachers and students to improve their ability to use modern technology. For example, carry out digital sports teaching training to improve teachers' technology application level.

### *5.4 Establishing a Scientific and Long - Term Evaluation and Incentive Mechanism*

Optimizing the campus sports culture ecosystem requires establishing a scientific and long - term evaluation and incentive mechanism to solve the problems of imperfect evaluation mechanism and lack of incentive mechanism. (1) Construct a diversified evaluation standard. Establish a diversified evaluation system covering sports skills, cultural literacy, teamwork, innovative ability, and others to comprehensively reflect students' participation in sports culture. For example, the participation in sports cultural activities is included in the comprehensive quality evaluation of students. (2) Create a dynamic incentive mechanism. Design a dynamic incentive mechanism to stimulate the enthusiasm of teachers

and students to participate in sports cultural activities. For example, set up the "Sports Culture Star" selection and regularly recognize outstanding participants. (3) Formulate a long - term evaluation mechanism. Establish a long - term evaluation and feedback mechanism to ensure the sustainable development of the campus sports culture ecosystem. For example, regularly conduct evaluations of sports culture construction and timely adjust and optimize strategies.

## **6. Conclusions and Recommendations**

### *6.1 Research Conclusions*

Based on the theory of educational ecology, this study systematically explored the construction values, challenges, and optimization paths of the campus sports culture ecosystem. The main conclusions are as follows: (1) The construction of the campus sports culture ecosystem has important values. The campus sports culture ecosystem is not only an important part of the school education ecosystem but also a key carrier to promote the realization of the "holistic education" goal for students. Through the deep integration of sports with culture, psychology, and social abilities, the campus sports culture ecosystem can effectively improve students' physical fitness, psychological resilience, and social adaptation ability, and at the same time promote the diversification and innovative development of campus culture. In addition, it also plays an important role in optimizing the educational ecological structure, promoting educational equity and quality improvement, and serving social sustainable development. (2) The construction of the campus sports culture ecosystem faces multiple challenges. Although the construction of the campus sports culture ecosystem is of great significance, in practice, it still faces problems such as uneven resource allocation, lack of cultural identity, insufficient technology integration, and imperfect evaluation mechanism. These challenges restrict the healthy development of the campus sports culture ecosystem and urgently need to be solved through systematic optimization paths. (3) The proposed optimization paths provide theoretical support for practice. The four optimization paths of resource integration, cultural integration, technology - enabled, and evaluation innovation proposed in this study provide a systematic solution for the construction of the campus sports culture ecosystem. Through diversified resource supply, multi - level cultural identity system, digital technology - enabled, and scientific evaluation and incentive mechanism, the sustainable development of the campus sports culture ecosystem can be effectively promoted.

### *6.2 Research Recommendations*

Based on the research conclusions, this paper puts forward the following recommendations to provide references for the construction and practice of the campus sports culture ecosystem: (1) Strengthen resource integration and construct a diversified resource supply and sharing mechanism. The education authorities should increase the capital investment in campus sports culture construction, especially the support for resource - scarce areas. At the same time, schools are encouraged to cooperate with communities, enterprises, and sports clubs to construct an internal - external school resource linkage mechanism, promote regional resource sharing, and improve resource utilization efficiency. For example,

through a digital platform, the cross - school allocation of sports facilities and teaching staff can be realized to maximize the use of existing resources. (2) Deepen cultural integration and create a multi - level sports cultural identity system. Schools should deeply integrate the sports spirit into campus culture construction and enhance students' sense of identity with sports culture through diversified activities such as sports events and art performances. At the same time, promote the collaborative education of family, school, and society to create a social atmosphere that supports the development of sports culture. For example, through activities such as family sports days and community sports events, social recognition and support for sports culture can be enhanced. (3) Promote technology - enabled and accelerate the construction of digital and intelligent sports culture. Schools should actively introduce intelligent equipment and virtual reality technology to enhance the enjoyment and scientific nature of sports teaching. At the same time, build a digital sports resource platform to provide services such as online courses and sports data analysis to meet the personalized needs of students. In addition, strengthen the digital literacy training of teachers and students to improve their ability to use modern technology and provide guarantees for technology - enabled campus sports culture. (4) Improve the evaluation mechanism and establish a scientific and long - term incentive mechanism. The education department should promote the diversified reform of the sports evaluation system and incorporate sports skills, cultural literacy, teamwork, and innovative ability into the comprehensive quality evaluation system for students. At the same time, design a dynamic incentive mechanism to stimulate the enthusiasm of teachers and students to participate in sports cultural activities. For example, through the establishment of the "Sports Culture Star" selection and regular recognition of outstanding participants, the participation enthusiasm of teachers and students can be enhanced. In addition, establish a long - term evaluation and feedback mechanism to ensure the sustainable development of the campus sports culture ecosystem.

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