The Construction Industry and Design of Basketball Teaching System Based on Digital Art and Intelligent Model

Xinghua Xue[1*]

[1] College of Physical Education, Huanghuai University, Zhumadian 463000, Henan, China

Corresponding Author: Xinghua Xue, xuexinghua626@163.com

Abstract. The ecological environment of college basketball course is the premise and foundation of college basketball teaching. Only by establishing and optimizing the ecological system of basketball courses can we improve the quality of basketball teaching in universities, achieve the goal of basketball courses, and achieve students' basketball level. Improve the development of basketball teaching and training in the context of larger data, such as developing an intelligent tuning system based on the big data of student sports projects in the student sports training plan. When designing the motion capture system, input the server to establish an intelligent model, extract learning data for students, and complete the intelligent teaching task. Through comparative experiments, the effectiveness of the designed student intelligent learning scheme in the context of larger data is verified, and the results can provide reference for improving the physical fitness level of basketball students. With the rapid development of modern science and technology and the implementation of college campus sports, the new sports have had a huge impact on the old sports, making the current basketball project in the teaching content, teaching methods and teaching methods have changed. In the face of difficulties, the formulation of the sustainable development strategy has slowed down due to the large contradictions in new areas and the emergence of new phenomena in the diversity of modernization. Therefore, this paper also aims to study the current situation of environmental construction in universities for sustainable development, and formulate environmental construction strategies for emerging environmental problems, so that universities can teach basketball in ecological construction and optimization for further development. The experimental results show that our strategy is very effective and has achieved 87% recognition.

Keywords: basketball teaching ecological environment, sustainable development, big data, digital art

1   INTRODUCTION

The creation of teaching ecological environment is the core, these aspects play a role in regulating and restricting the teaching process all the time[22-23]. It is also carried out under a certain educational ecology, so the educational ecology also plays a related role in restricting and controlling the basketball teaching activities in universities. This effect is multidimensional. Mainly include from the perspective of natural ecological environment, including geographical location, natural conditions, stadiums, venues, equipment and facilities [9], etc. Although from an objective point of view, these factors are all artificially created environments, but for students in basketball teaching activities. From the perspective of social ecological environment [18], it includes various social environmental factors that make up basketball teaching activities [20], such as the number of teachers engaged in basketball teaching, the quality level of teachers, academic qualifications, and the relationship between teachers and students[1].

Taking the basketball project of ordinary college sports courses as an example [2], basketball teaching activities include basketball classroom teaching (such as optional courses and elective courses, etc.) [5], extracurricular basketball activities, and amateur basketball training and competition. They form the unity of basketball education and teaching of physical education courses in ordinary universities [17], and are an artificial ecosystem composed of people who are the leading elements of activities and various educational and teaching ecological environments. Figure 1 below.
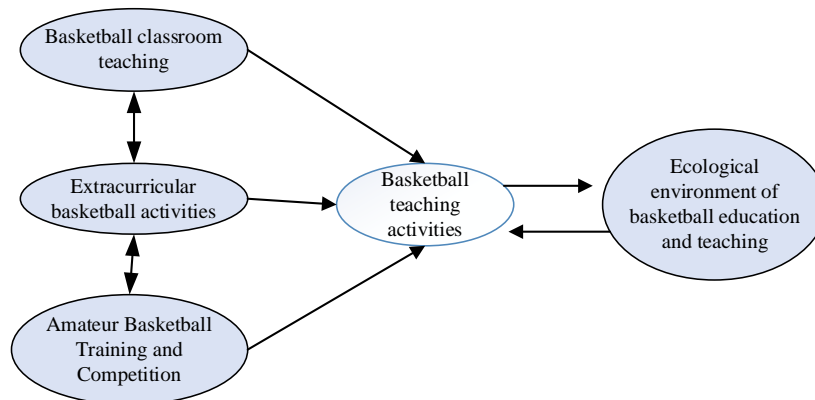

Figure 1: Sketch of the Education Ecosystem of Basketball Teaching Activities in Ordinary Universities.

As we all know, school physical education is a complex system [16], and it is a linked process with several elements running each other. If there is a problem with one of the elements or factors, the balance of the entire system may be disrupted. Basketball is a sports event mainly based on running, jumping, shooting and other forms of physical movement [10-21]. In this way, a solid foundation of physical and mental health is laid for students' professional study and other activities, which can effectively improve the quality of life of students and relieve the pressure of college students in learning, employment, and other aspects. Compared with other sports, the forms of basketball activities are diversified, and it has the characteristics of fitness, entertainment, fun and strong adaptability [12]. The form of basketball activities can vary from person to person. The amount of exercise can be adjusted at will, so it is suitable for the wide participation of all kinds of people. All kinds of participants can find ways to show themselves on the field and meet their needs at different levels. Basketball is a creative sport, and all its techniques and tactics have no established principles and specifications, which can effectively enhance students' creativity and stimulate students'

innovative consciousness [6]. Therefore, students actively participating in basketball courses are not only conducive to improving their own physical fitness, but also have a positive role in promoting the sustainable development of basketball and have practical significance. The construction and optimization of the ecological environment for sustainable development in digital art basketball education within the big data landscape is a complex and interdisciplinary task.

2 RELATED WORKS

Through computer retrieval, there have been many domestic research articles on the relationship between educational ecology (educational system or educational and teaching environment) and the role of school physical education in the past 10 years, which has promoted the in-depth development of school physical education to some extent. After careful and intensive reading of these documents [16], I learned that there is currently a lack of in-depth research and experiments on the decolonialization of school sports in China [24], and there is a lack of supporting theories for guidance, and the blindness is relatively large. Most of the literature is only superficial research, lack of research depth, thus restricting the development process of school sports ecology. Some representative literatures are reviewed from several aspects below [3]. Research on school physical education classroom teaching and ecological environment Physical education activities, as an important part of school physical education work, occupy a crucial position in the realization of school physical education functions. Like any other practical activities [4], physical education activities are always determined by certain real life and restricted by specific real conditions.

The impact of the teaching environment on physical education teaching is multifaceted and huge[8]. Learning various professional courses requires a specific and appropriate professional environment [11]. Physical education is always carried out in a certain environment. As a current existence, especially the social environment of teaching, the physical education environment will have a certain impact on teaching once it is formed and become the basis for the existence and development of teaching. Specific teaching content and methods can only become positive factors in teaching if they are incorporated into certain teaching situations. Creating and optimizing a suitable social environment for physical education teaching and establishing a harmonious teacher-student relationship and student-student relationship play an extremely important role in effectively improving the effect of physical education teaching, improving students' personality, and embodying the humanistic spirit of physical education teaching. Physical education and exercise have special requirements for the sports environment. A good sports environment can avoid the adverse effects of physical education and exercise, so that physical education and exercise can achieve the best results [7]. Precisely because a good physical education teaching environment is crucial to improving the effect of teaching and exercise, teachers must also consider factors such as temperature and air pressure changes in outdoor physical education teaching, wind [19], rain, air pollution, and site equipment. Reasonable selection of teaching content, teaching methods, and organizational methods for teaching; schools should pay attention to and improve the physical education teaching environment and create good sports venues for students to study and exercise. The system proposes that the teaching system and the environment should maintain a "dynamic balance". Because the physical education system is an open system [14], it has obvious dependence on the environment, and it cannot fully exert its function and function without the environment. Therefore, the teaching system must maintain a "dynamic balance" with the environment.

First, it is necessary to link school teaching with the social environment. Secondly, teachers should actively participate in the construction of school-based curriculum and become the designers, implementers, and evaluators of the teaching environment [15]. In addition, teachers should also pay attention to the particularity of each student's own surrounding environment. From the perspective of social environment, this paper studies the influence of external society on PE classroom teaching and analyzes a series of sociological characteristics of PE classroom teaching under these

influences. Through the research, it is concluded that the regional climate environment, school physical conditions and the carrier of sports culture transmission affect the normal development of physical education classroom teaching from the material level. (1) Under the influence of the regional climate and environment, the opportunities for students to receive physical education in different regions of our country are unequal, and students' rights to receive physical education are deprived in disguise, and students and other members of society do not pay attention to the social psychology of physical education classes. Invisibly strengthened. (2) Under the influence of the physical conditions of school physical education, my country's school physical education classroom teaching shows a serious development imbalance; this imbalance leads to unfair treatment of students in different regions at the starting point of receiving physical education, and some schools The physical education classroom teaching has also lost its seriousness and formativeness as a social and cultural education work. (3) Under the influence of the continuous innovation of sports culture communication carriers, the "professional authority" of physical education teachers is increasingly challenged, and their role as sports knowledge imparters is weakened to a certain extent. (4) At the institutional level, on the one hand, physical education classroom teaching has sufficient institutional guarantees, and on the other hand, it is severely constrained by some social systems, especially the social selection system.

In short, the physical education system can only play its overall function if it fully selects, utilizes, and creates a benign teaching environment, and maintains a dynamic balance with the environment. The purpose of education reform and teaching reform is to adapt to the needs of the social environment and use its driving role. Analysis: After careful study of these literatures, it is believed that these studies are not supported by special disciplinary theories. Although they unconsciously applied the educational ecological theory, they are not systematic enough, and most of them are theoretical discussions, lacking empirical data to set off interpretation. In addition, there is a particular lack of research related to the analysis of sports training and competition and extracurricular activities using educational ecological theory.

Through literature search, there is no literature about the relationship between basketball teaching activities and educational ecology in physical education courses in ordinary universities. After expanding the search scope, there are few literatures on the relationship between basketball and education ecology in universities. The following is a review and analysis of this. In physical education, students' learning potential is generally underestimated, and students' principles of "intuitiveness", "consolidation" and "step-by-step" are unilaterally emphasized, and students are placed in passive and passive learning. status, it dampens the active spirit of students' learning, and affects the improvement of learning quality and the cultivation of talents. These problems are mainly exposed in the low practice density of physical education classes, and the practice density of basic parts is only about 25%; physical education teachers have a "one-word class" in class, and the teaching methods and practice methods adopted are not targeted; many teachers prepare lessons mechanically, With fixed teaching methods, steps, time and frequency, students have little or no independent time and space, and have little interaction with each other. In view of the above problems, it is proposed that college basketball teaching should strive towards the "small group" organizational form, high practice density, and multi-directional communication.

With the help of the theoretical point of view of educational ecology, the comprehensive application of multi-disciplinary theories, combined with the laws and characteristics of basketball itself, this paper analyzes the ecological environment of basketball teaching in college physical education departments, and puts forward the dominant restrictive factors in basketball teaching and must be followed. rule. This is the only literature about college basketball that uses the theory of education ecology. Due to the research perspective, the author only analyzes the microscopic teaching ecological environment, and the research depth is not enough. This paper makes a research and discussion on the basketball course teaching mode and new problems in basketball teaching in ordinary universities and puts forward some good suggestions. At present, some teaching ideas,

goals, tasks, methods, means and specific requirements in college basketball teaching have been difficult to meet the needs of students, and they do not meet the requirements of the times. Therefore, college basketball teaching should take "health first" and lifelong sports as the guiding ideology, take the cultivation of lifelong sports skills and habits as the main teaching goal, stimulate students' interest in learning and exercise as the guide, and use various methods of confrontation and practice. Teaching competitions, strive to improve students' ability to use technology in confrontation, and establish an assessment and evaluation system centered on improving students' comprehensive sports quality.

Overall, the research on education ecology in my country is not long. Although there are many books on education ecology in China, the number of papers on education ecology research has also increased significantly. However, most of these papers focus on the introduction of theory and discussion at the theoretical level, and there are relatively few studies on how to apply the principles of educational ecology to specific educational phenomena and educational issues (especially in the field of school physical education), and the related research is almost No dedicated, systematic, and comprehensive studies have been carried out.

Looking at the current research situation at home and abroad, when scholars use the theory of educational ecology to study education and teaching issues, they tend to explore the interaction between the overall social environment and human education and teaching activities from the perspective of macroscopic fields, such as educational resources and schools. There are not many studies on the specific application of educational ecology theory to study teaching problems (especially in the field of physical education activities). Existing research lacks sufficient empirical investigations and lacks ecological investigations and implementation strategies rooted in the practice of teaching activities. A complete and systematic ecological analysis; although the existing research occasionally uses educational ecology research methods, its understanding and application are mostly limited to the surface level, tending to be static, especially lack of in-depth research on the educational ecology methodology level.

As mentioned above, basketball teaching activities play an important role in physical education in ordinary universities and play a prominent role. Therefore, based on the above, this study believes that basketball teaching activities in ordinary universities refer to a series of planned, organized, and Purposeful educational teaching activities. It includes basketball classroom teaching, extracurricular basketball activities and amateur basketball training and competition. See Figure 2 below.
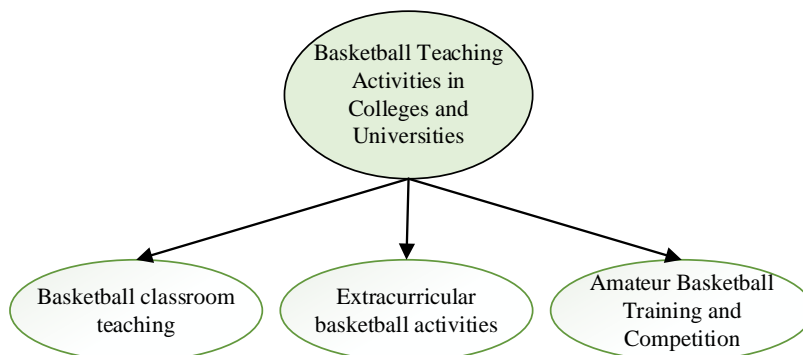

Figure 2: Schematic Diagram of the Composition of Basketball Teaching Activities in Ordinary Universities.

3   METHODS

3.1 The Composition of the Educational Ecological Environment of Basketball Teaching Activities

Educational ecology believes that the ecological environment of education is much more complex than the ecological environment of general biological ecology. There are three environmental circles around education, namely natural ecological environment, social ecological environment, and normative ecological environment. a complex ecological environment. In this ecological environment, its interaction and influence are inseparable dialectical unity. The physical education ecosystem is its extension or reflection, and its operation is not only the sum of the natural and humanistic elements that indirectly or directly affect physical education, but also the reflection of the educational ecological environment and its specific relationship to achieve the goal of physical education. As a form of school physical education in a narrow sense, basketball teaching activities form the unity of basketball education and teaching in general college physical education courses, and are an artificial ecosystem composed of people who are the leading elements of activities and various educational and teaching ecological environments. See Figure 3 below.
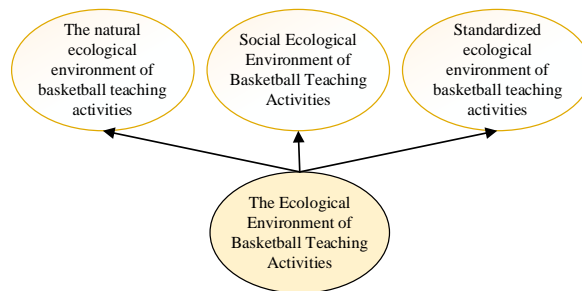

Figure 3: Composition of the Educational Ecological Environment of Basketball Teaching Activities (External).

Based on the theory of educational ecology and the objective reality of basketball activities in the whole school, it is known that basketball education activities in the whole school are ultimately carried out through the main body, that is, through the school (guidance). Teachers and students play an important role in achieving educational ecological harmony in college basketball activities. Therefore, the author divides the educational ecological structure of college basketball activities into upper ecology, middle ecology and basic ecology through analysis, as in Figure 4.

To further investigate the ecology of basketball theme, as shown in Figure 5 below, we found that basketball classroom ecology includes two major elements: basketball classroom ecology and basketball classroom ecology. The classroom ecological environment is divided into three categories: the natural ecological environment of the basketball school, the social ecological environment of the basketball classroom, and the standardized ecological environment of the basketball classroom. The environmental theme of basketball class includes teachers and students Especially, as the ecological foundation of basketball classroom, the classroom includes two different situations: first, compared with the ecological environment of basketball classroom, teachers and students form a unified whole, which is the ecological subject of basketball classroom. Secondly, the teacher-student interaction has produced two kinds of classroom environment subjects, namely, the teacher environment subject and the student environment subject.
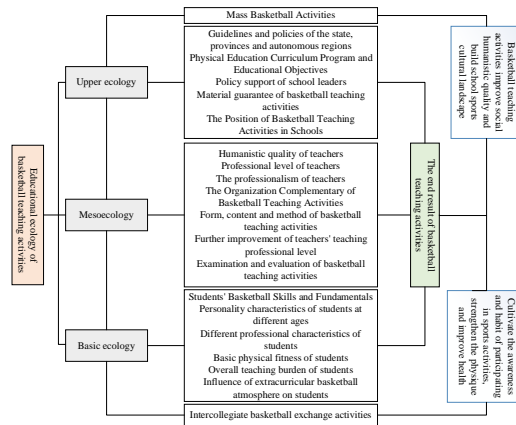
Figure 4: Schematic Diagram of the Educational Ecology of Basketball Teaching Activities.
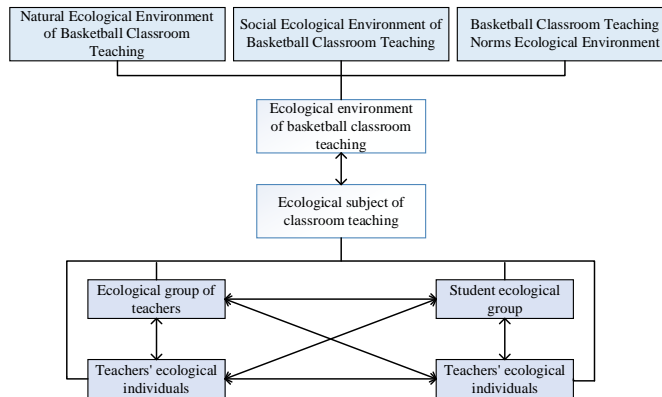

Figure 5: Ecological Structure of Basketball Classroom Teaching.

3.2 Sustainable Basketball Teaching Ecological Environment

This paper will use the "three-dimensional" system of "quantity dimension, quality dimension and time dimension" (as shown in Figure 6) to study the sustainable development of basketball.
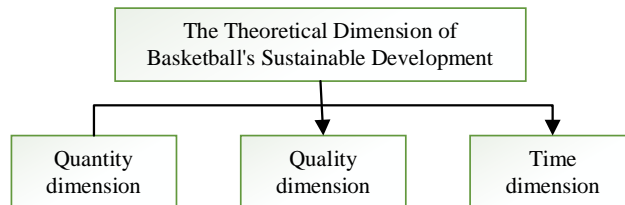

Figure 6: Schematic Diagram of the Theoretical Dimension of Sustainable Development of Basketball.

（1）Construction of sustainable development indicators for basketball

The basic feature of the sustainable development of basketball in my country is the harmony and unity of the three sub-systems of mass basketball, competitive basketball, and basketball industry in terms of quantity, quality and time. The quantitative dimension represents the quantitative changes in the three sub-systems of basketball in our country with the continuous development of the society, and the quality dimension represents the structural and proportional changes in the three sub-systems, and it reflects the quantitative changes. The degree of health; the time dimension represents the change and stability of the three sub-systems, and it reflects the rationality of the management system and operation mechanism of basketball. ⊖According to the "three-dimensional" system of "quantity dimension, quality dimension and time dimension", the first-level indicators of the sustainable development of basketball are initially established as: the foundation of basketball, the development of basketball leagues, and the popularization and promotion of basketball. To ensure the credibility and validity of the first-level indicators of the sustainable development of basketball, this paper conducts an expert reliability test on the selected first-level indicators.

		Very reasonable	reasonable	commonly	unreasonable	Very unreasonable
Quantity dimension	Basics of Basketball	87.6%	12.6%	0%	0%	0%
Quality dimension	Development of basketball league	76%	26%	0%	0%	0%
Time dimension	Popularization of basketball	62.6%	26%	12.6%	0%	0%

Table 1: Screening of Primary Indicators of Basketball Sustainable Development (N=8).

Table 1 conducts an expert reliability survey on the first-level indicators of the sustainable development of basketball. The survey results show that 87.5% of the 8 experts believe that the basis of basketball is very reasonable to reflect the "quantitative dimension", and 87.5% think it is reasonable. Accounted for 12.5%, none thought it was unreasonable; 75% thought it was very reasonable to use the development of basketball leagues to reflect the "quality dimension", and 25% thought it was reasonable, and none thought it was unreasonable; thought that the use of basketball to popularize and promote To reflect that the "time dimension" is very reasonable, 62.5%, 25% think it's reasonable, and 12.5% think it's normal, and there is no unreasonable proportion. Therefore, according to the reliability survey of experts, the first-level indicators of the sustainable development of basketball can be determined as: basketball foundation (quantity dimension), basketball league development (quality dimension), basketball popularization and promotion (time dimension), as shown in the Figure 7 shown.
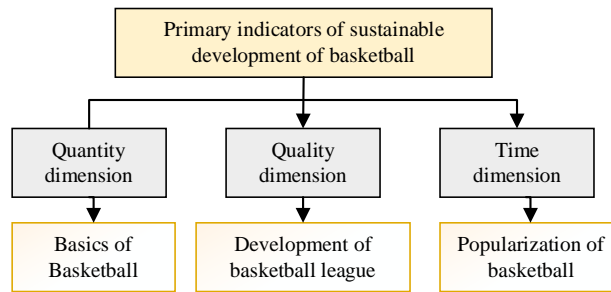
Figure 7: Schematic Diagram of the First-Level Indicators of Sustainable Development of Basketball.

The "quantitative dimension" of the sustainable development of basketball mainly reflects the quantitative changes that occur with the development of basketball, and these quantitative changes reflect the development basis of basketball. The basic factors are site facilities, faculty, social support, student participation, national policies, and student interests. To ensure the credibility of the selected indicators, this paper conducts an expert reliability survey on the "quantitative dimension" of the sustainable development of basketball, as shown in Table 2.

	Very reasonable	reasonable	commonly	unreasonable	Very unreasonable
Site facilities	87.6%	12.6%	0%	0%	0%
Teachers	76%	26%	0%	0%	0%
social support	62.6%	26%	12.5%	0%	0%
Student participation	87.6%	12.6%	0%	0%	0%
national policy	0%	12.6%	12.5%	75%	0%
Student interests	0%	0%	25%	75%	0%

Table 2: Reliability survey of "quantitative dimension" indicators of sustainable development of basketball (N=8).

Table 2 conducts an expert reliability survey on the "quantitative dimension" indicators of the sustainable development of basketball. After communication with experts, experts believe that it is not necessary to list national policies and student interests as indicators separately. National policies can be included in social support indicators for necessary analysis, and student interests can be included in student participation indicators for necessary analysis. Therefore, after expert reliability investigation and communication, the "quantitative dimension" indicators of the sustainable development of basketball are determined as four aspects: venue facilities, faculty strength, social support, and student participation.

The "quality dimension" of the sustainable development of basketball mainly reflects the "quality" improvement of basketball through the accumulation of quantity. From the perspective of the current basketball development, this qualitative improvement can be reflected through the development of basketball leagues, combined with Relevant literature found that the main factors

reflecting the development of basketball leagues are training level, management ability, league system, capital investment, and logistical support. To ensure the credibility of the selected indicators, this paper conducts an expert reliability survey on the "quality dimension" indicators of the sustainable development of basketball, as shown in Table 3.

	Very reasonable	reasonable	commonly	unreasonable	Very unreasonable
Training level	0%	25%	25%	50%	0%
Management ability	75%	25%	0%	0%	0%
League system	62.5%	25%	12.5%	0%	0%
Fund input	87.5%	12.5%	0%	0%	0%
logistic service	87.5%	12.5%	0%	0%	0%

Table 3: Reliability Survey of the "Quality Dimension" of the Sustainable Development of Basketball (N=8).

Table 3 conducts an expert reliability survey on the "quality dimension" of the sustainable development of basketball. After communicating with experts, it was found that the description of the training level index would be ambiguous and difficult to define. It is suggested that the training level should be included in the management ability index and expressed as "training management ability". Therefore, after the reliability test and communication of experts, this paper determines the "quality dimension" of the sustainable development of basketball as four aspects: training management ability, league system, financial investment, and logistical support.

The "time dimension" of the sustainable development of basketball mainly reflects the stability of the operation mechanism and development of basketball after the accumulation of "quantity" and the improvement of "quality", and this stability mainly depends on the long-term market industrialization According to the relevant literature, it is found that the main factors reflecting the promotion of market industrialization are: publicity, packaging, echelon construction, marketization, and club construction. To ensure the credibility of the selected indicators, this paper conducts an expert reliability survey on the "time dimension" indicators of the sustainable development of basketball, as shown in Table 4.

Table 4 conducts an expert reliability survey on the "time dimension" index of sustainable development of basketball. After communication with experts, competition packaging, competition marketization and club construction indicators are too commercialized, which is inconsistent with the concept of basketball development. The industrialization of basketball should be people-oriented, and the promotion experience of other project industries can be used for reference, but it is necessary to combine basketball. target group, therefore, it is recommended not to involve. Therefore, after the reliability test and communication of experts, this paper determines the "time dimension" indicators of the sustainable development of basketball as two aspects: event publicity and echelon construction.

	Very reasonable	reasonable	commonly	unreasonable	Very unreasonable
Event publicity	87.6%	12.6%	0%	0%	0%

Event packaging	0%	0%	12.6%	87.6%	0%
Echelon construction	62.6%	26%	12.6%	0%	0%
Competition marketization	0%	0%	12.6%	87.6%	0%
Club construction	0%	12.6%	26%	62.6%	0%

Table 4: Reliability Survey of "time Dimension" Indicators of Sustainable Development of Basketball (N=8).

（2）Establishment of sustainable development indicators of basketball、

This paper extracts the index system of the sustainable development of basketball based on relevant literature. After the reliability test of experts and the communication with experts, the index system of this paper is established. The specific indicators are shown in Figure 8.
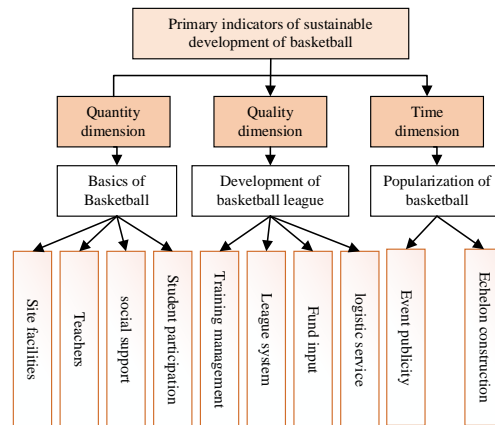

Figure 8: Indicator System Diagram for the Sustainable Development of Basketball.

3.3 Design of Big Data Analysis and Processing Platform for Basketball Teaching and Training

The physical training big data analysis and processing platform for basketball teaching is based on daily physical training and uses the results of confrontation and official competitions as feedback information to provide improvement suggestions for physical training programs. The platform needs to build the athlete data collection function, data processing function and physical state monitoring function, and realize the analysis and processing of big data based on data accumulation. Firstly, it focuses on the functional design of the physical training big data platform.

3.4 Collection of Big Data During Students' Physical Training

Big data systems work based on the collection and analysis of massive data information in multiple dimensions such as time, space, and context. Therefore, the collection of relevant data and

information during the physical training process of professional basketball league students is an indispensable basic information for the construction of big data systems. Combined with the actual situation of students' physical training, the data collection function in the big data system can be realized through the two technical links of "identity system" and "interface". See Figure 9.
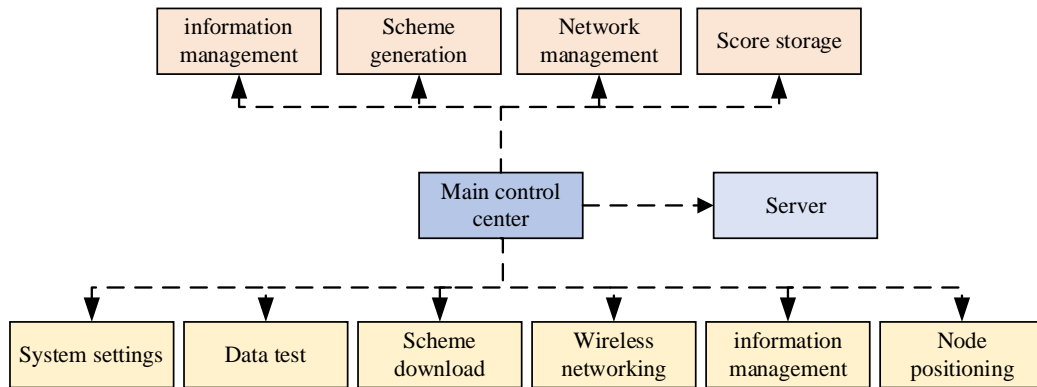

Figure 9: Structural Framework of Physical Fitness Training Big Data Analysis and Processing Platform.

First, the "identity system" is an account number and password distributed by the system to students and coaches. Students log in to their personal accounts to upload and download data, understand their status, and achieve the purpose of optimizing their status. The training assistant completes the data collection of each remote mobilizer and completes the collection and storage of data information through the platform's "compromise calculation" or "conflict confirmation"; on the other hand, set a code for each student, which is quickly mapped to the target students and complete the entry of relevant information and data in their personal database. The introduction of coding can ensure the standardization and correctness of basketball training data collection. Second, set different access rights for different roles such as coaches, assistants, students and team doctors. For example, coaches and data statisticians enter the homepage of the big data system after being authenticated and choose different buttons and passwords according to their personal needs. Each page is described in detail according to the function of the button, and the function and layout are also different. It mainly displays some basic information, such as time, place, date, type, players on the field, and playing time. The mobile terminal automatically imports the personal data of the students into the database through the face recognition technology. The data will change with the changes of the students' training time, times and various scores in a day, which maximizes the accuracy and effectiveness of the data collection system. sex.

3.5 Building an Intelligent Model

In this paper, an intelligent model is used to divide the data according to the data type. After the division is completed, the relationship between the characteristic data is established according to the function curve of the normal distribution. Firstly, intelligent extreme value analysis should be carried out on the collected data, and the model is shown in formula (1).

$$\frac{Q(K)}{N(K)M(k)} = S_B \left[\frac{Q(K)}{N(K)M(k)} \right]^a \left[\frac{K(K)}{N(K)M(k)} \right]^{1-a-K} - \delta_h \left[\frac{G(E)}{N(T)} + \gamma \frac{Q(K)}{N(K)M(k)} \right]$$

（1）

For the specific feedback data $H[a]$ in the intelligent model, as shown in formula (2).

$$H[a] = \frac{\partial^2 \Omega}{\partial v^2} = -\sum_{i=1}^{n} e_k W_i \xi_{ij} \partial l_i^{-1} \left\{ \sin\left[\xi_i^{-1\backslash 2} \right] + \xi_i^{-1\backslash 2} \cos[\xi] \right\} e^{\xi 2i\backslash 2}$$

（2）

In the formula: v^2 is the time lag parameter of the movement characteristics of students during training; Ω is the effective use value of the data; e_k is the labeling operator; W_i is the training content of the i th item; ξ is the difficulty coefficient; ξ_i is the difficulty coefficient of the f to item; ξ_{ij} is the i to item and the . Difficulty factor for combined completion of j items; l_i is the average completion score for item i.

$H[a]$ is the training process intelligently formulated by the big data analysis and processing platform to achieve the training goal. Through the establishment of mathematical models, the guidance of physical training can be realized.

4 EXPERIMENTS

4.1 Explore the Influence of Different Ecological Factors

From the situation reflected in Figure 10, there are some unsatisfactory conditions in the decolonialization of sports venues and equipment for basketball teaching activities; especially the decolonialization of equipment and equipment 47.0% and 50.8%. The question 1 and 2 are "your ecological view of the sports venues for basketball teaching activities in your school (%)", and the question 3 and 4 are "ecological equipment of your school's basketball teaching activities (%)". The reason for the analysis may be that: at present, the concept of "decolonialization" has not been scientifically understood, especially when it is related to some material forms and applied to the field of school sports, people do not have enough understanding of the decolonialization of sports venues, equipment, and equipment, which directly affects the effective utilization and scientific construction.

Figure 10: Ecological Survey of Sports Venues, Equipment, and Equipment for Basketball Teaching Activities.

According to the theory of education ecology, combined with the actual practice of basketball teaching activities in ordinary universities, after the expert questionnaire survey and statistics, the author conducted an R-type factor analysis on the selected social and ecological environmental factors that affect basketball teaching activities in ordinary universities, as shown in Table 5.

principal component	characteristic value	Contribution rate	Cumulative contribution rate	Contribution rate	Cumulative contribution rate
1	4.827	34.473	34.473	34.473	34.473
2	2.28	16.284	50.756	16.284	50.756
3	1.995	14.245	65.002	14.247	65.002
4	1.7	12.145	77.147	12.146	77.147
5	1.376	9.833	87.979	9.833	86.979
6	.624	4.4568	91.439		
7	.506	3.616	95.054		
8	.315	2.244	97.298		
9	.229	1.634	98.931		
10	.136	.965	99.894		
11	1.492E-02	.108	100.00		
12	1.556E-17	1.112E-17	100.00		
13	-1.996E-16	-1.426E-16	100.00		
14	-1.523E-15	-1.088E-15	100.00		

Table 5: R-Type Factor Analysis Eigenvalues of Social and Ecological Environmental Factors Affecting Basketball Teaching Activities in Ordinary Universities.

According to the requirements of sociological statistical analysis, it has been able to reflect the amount of information in the main volume total. The opening of basketball venues is very important for students engaged in basketball extracurricular activities. Restricted opening directly affects their sports interest and participation. Therefore, sports venues in ordinary universities should be open to students after class and holidays. The basic requirements of youth sports to enhance youth physical fitness.

As shown in Table 6 and Figure 11, among the students surveyed in this paper, 25.5% expressed dissatisfaction and dissatisfaction with the opening of school basketball venues, indicating that there are still many students who are not optimistic about the opening of school sports venues. Among the very satisfied students, those aged between 18 and 20 accounted for the largest proportion, as high as 47%. This is also one of the problems that some schools should solve as soon as possible.

In the survey of this research, the students' overall views on the basketball teaching courses in their own classes are still relatively good, as shown in Table 7 below, which to some extent shows that the current general college physical education courses basketball teachers have a good overall quality, which may be due to the current situation. In the process of introducing full-time teachers, the following universities pay attention to the educational level and special ability, as well as the further promotion of existing teachers.

	Number of students N=279	proportion
Very satisfied	27	9.4%
Quite satisfied	79	28.1%
commonly	105	37.4%
Not very satisfied	50	17.7%
dissatisfied	23	7.8%
N	278	100%

Table 6: Survey on the Openness of Basketball Venues (Student N=279).
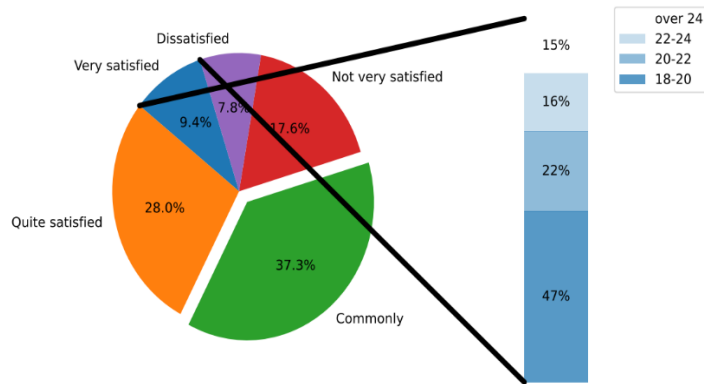
Figure 11: The Students' Opinion on Openness of Basketball Venues.

	Number of students N=279	proportion
Very satisfied	88	31.3%
Quite satisfied	159	56.6%
commonly	33	11.6%
Not very satisfied	3	0.7%
dissatisfied	0	0%
N	280	100%

Table 7: Survey of Students' Overall Views on Teachers in Basketball Teaching.

4.2 Explore the Utility of Big Data Analysis Platforms

To ensure the effectiveness of the designed student physical fitness training plan system, this paper also designs a comparative simulation experiment, the experiment adopts the traditional physical fitness training customized system, and then the intelligent student physical fitness training plan

system designed in this paper is used in the experiment. Parameter setting to ensure the validity of the test, it is necessary to reset the parameters. In this paper, the transmission distance is set as $220\,\mathrm{m}{\sim}1300\,\mathrm{m}$ as the effective transmission distance of the experiment; when setting the parameters, this paper sets the value of the labeling operator as 3700μ; at the same time, the time delay parameter is set as $5200\psi\,/\min$; the expression attribute of big data is set as $8.5\times10^{4}\,\mathrm{GB}\,/\min$. The specific test results are shown in Table 8.

Number of experiments	Model feedback rate%	Training intensity/B
1	31.4	0.15
2	44.8	0.28
3	56.8	0.37
4	63.7	0.49
5	76.9	0.55
6	89.4	0.68

Table 8: Set Experimental Data.

In this experiment, a total of 6 experimental data were collected to ensure the accuracy and validity of the experimental results. It can be seen from Table 9 that the test software is loaded into the system for use, and different model feedback rates under different training intensities are used respectively. In 6 trials, the model feedback rate increases with the increase of training intensity. The intelligent model It can effectively detect the physical fitness changes of students under different training intensities.

After the data setting is completed, the loaded software is used to test the physical fitness of the students. It should be noted that the SO software will not affect the system and has little impact on the intelligence in the big data environment. In the test software, the index is used to measure the accuracy of the data collected by the platform, and the pol parameter is used to measure the suitability of the platform. The experimental results are shown in Figure 12.
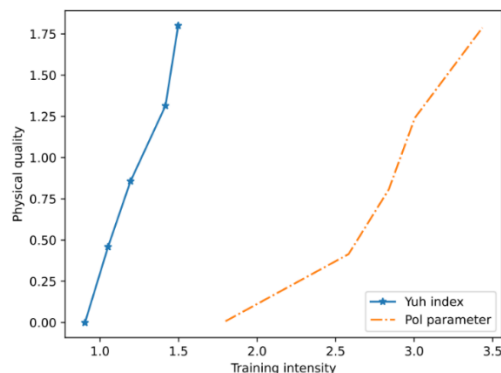

Figure 12: Test Results of Physical Fitness Training Big Data Analysis and Processing Platform.

As can be seen from Figure 12, according to the index and the pol parameter, the pol parameter of the physical training big data analysis and processing platform shows a gradual increase trend with the increase of the number of tests, which shows that it is compared with the big new data analysis and processing platform. Fit, the two can be better matched. The trend of the YUH indicator is rising steadily, indicating that the student physical training big data analysis and processing platform has a high feedback ability.

4.3 Flexibility Quality Test and Bounce Quality Test

After testing (7 times) the flexibility of the students, it was found that before the intelligent system was used, the flexibility of the students during freehand exercises was generally low, and the overall flexibility was poor; after the system was adopted, the overall flexibility of the basketball students The performance was significantly improved, and the number of freehand exercises, ball-holding exercises and rolling movements increased. The specific results are shown in Table 9 and Figure 13.
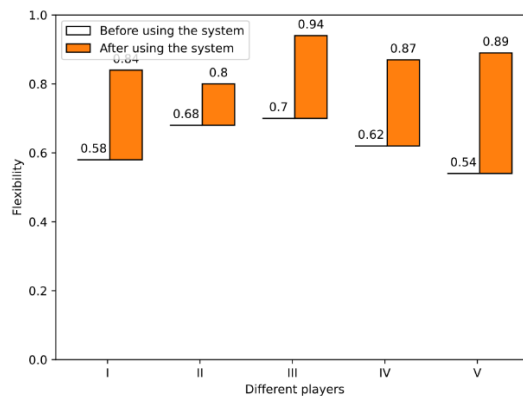

Figure 13: Changes in Physical Flexibility.

To analyze the changes of basketball students' physical bouncing quality. Before adopting this system, according to the results of the basketball students' bounce test, the students' bounce ability is average. Although the test results show that the physical fitness of the students is not very low, there is still a certain gap with the physical training standards of excellent basketball players. After the introduction of the system, basketball students can use 2 feet, 1 foot to skip rope and continuous rope skipping within 1 rain. Compared with before using the system, the bouncing frequency is greatly improved, indicating that the system can significantly improve the students' bouncing ability.

player's number	Before using the system			After using the system		
	Unarmed exercise	Ball exercise	Exercise	Unarmed exercise	Ball exercise	Exercise
1	75	66	22	87	88	31
2	74	66	23	86	86	30
3	72	65	31	86	85	39
4	73	63	26	88	83	32
5	70	66	22	83	84	27

| 6 | 68 | 69 | 21 | 82 | 85 | 25 |
| 7 | 69 | 65 | 21 | 87 | 87 | 22 |

Table 9: Flexibility Test Results (unit: times).

To sum up, the big data analysis and processing platform for students' physical fitness training under the big data environment designed in this paper can effectively solve the problem of data fluctuation in the division of big data trends, realize intelligent operation, and its fluency and accuracy can meet the needs of training. Require. In addition, building a virtual simulation system for basketball students' physical training can effectively improve students' endurance and physical fitness, as well as improve their basic physical fitness.

5   CONCLUSION

To sum up, the optimization and construction of the ecological environment of basketball teaching in universities requires a scientific analysis of various factors, and on this basis, systematic implementation and testing are carried out from the teaching natural environment, material conditions, group environment, and normative environment. Universities have made great efforts in the construction and optimization of the ecological environment of basketball teaching, and accumulated rich experience, but in the actual construction and optimization of the teaching ecological environment, there are still many problems, which affect the quality of basketball teaching in universities. and the achievement of teaching objectives. Therefore, in-depth research on ecological environment construction and optimization, and innovative ecological environment construction and optimization strategies are the main directions and topics for universities in the construction and optimization of basketball teaching ecological environment in the future.

Xinghua Xue, https://orcid.org/0009-0005-1460-2023

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