

Research on the Influencing Factors of College Sports Teaching Based on Statistical Analysis

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Abstract

With the rapid progress of technology, the society puts forward higher requirements for talent cultivation. The sport teaching emphasizes student's sports experience and participation, the course content is wider, including physical, psychological and emotional health. In previous studies, people don't pay much attention to the sports teaching environment, lack of evaluation of sports teaching environment. In this paper, we first analyze the evaluation standard of classroom teaching quality, and then we analyze the factors that will influence physical education. The result shows that more than 32.9% teacher satisfied with sports venues equipment, more than 72.1% students think the environment will have a great impact on their learning. In addition, the size of a class will also affect the teaching effect. On this basis, we put forward relevant proposals.

Keywords: *Sports teaching; Validity test; Education reform; Evaluation index; External factors*

1. Introduction

In the new century, the increasingly fierce international competition, China's comprehensive national strength has been enhanced, the continuous progress of science and technology, accelerate the pace of social life, in the face of such a situation of social development, society for talents put forward higher requirements, colleges and universities as a culture social need high-quality personnel of the stage, shouldering the heavy responsibility of cultivating all-round talents[1]. The school education is to cultivate good moral values, imparting knowledge, enhances an important place for health, is an important link of cultivating high-quality talents indispensable. As an important base and social integration of colleges and universities, should take training to adapt to the rapid development of today's society, the physical and mental health, can better adapt to the social responsibility of talents. School sports as an important part of school education, and moral education, intellectual education and aesthetic education, labor and technical education closely, shouldering the historical mission of cultivating talents in an all-round way, also school physical education is cultivating students' consciousness of lifelong sports, good personality, good interpersonal relationship, good social adaptation ability, mental and physical health of the important place [2-3]. The existence and development of anything, all cannot do without the environment, the school sports activities are no exception, to ensure the normal school physical education, must take the good sports teaching environment is the prerequisite. Education is a cause, the cause lies in dedication; education is a science, the science is truth; education is an art, the true meaning of art lies in innovation; education is a kind of enlightenment, opening of human wisdom. Education is a process of gradual development, a cultural, political and social functions, the development of the society cannot do without education. It undertakes the implementation of national development and prosperity of the historical mission, education has become the focus of the whole world, the whole nation concerned. Thus, education is an important social activity; teaching is one way to achieve this activity. Teaching as a unique human activity, naturally cannot exist independently from

the environment. Teaching is always in a certain environment. The teaching environment as a real existence, it has formed the teaching effect, become the basis for the existence and development of teaching.

The university sports teaching environment is to promote the purpose of the students' physical and mental development in the national education policy, school training objectives under the guidance of design, construction and organization of educational environment. At the same time, to the ordinary universities sports teaching in subject and object to the pursuit of truth, knowledge, and skills, and thus the development of body and mind, we are bound to a variety of environmental factors are selection, purification, refining and processing purification treatment, the ordinary universities sports teaching environment become the sports teaching activities depend on the support and stage, to ensure that the sports teaching environment and the various elements of the education, guidance and encouragement to play for better training to meet the needs of the society personnel service[4]. Sports teaching environment is one of the factors in the teaching system of sports, have direct or indirect influence on the teaching of physical education. In previous studies, people not pay enough attention to the sports teaching environment, there is a sports environment concept is not clear, the classification standards are not unified, elements is not comprehensive, the lack of criteria for the evaluation of the PE teaching environment and other issues. With the development of education in our country, people gradually realize that the effect of sports teaching environment of physical education teaching, I hope through the improvement or optimization of the sports teaching environment, better service to sports teaching. This article puts forward research ideas of construction and optimization of China's colleges and universities sports teaching environment.

2. Literature Review

2.1. National Sports Teaching Practice

Study on physical teaching environment in foreign countries started earlier, and the research in China is relatively late. The United States, Germany, Japan, as one of the world's level of education is the most developed countries, a variety of the sports teaching mode, content rich, fully embodies the development of every student's latent, develop the student's ability, emphasizing students' experience in sports activities and participation, the cultivation of the students' physical and mental health and lifelong physical culture consciousness of the philosophy of education[5]. Through the analysis of relevant data, the PE teaching pattern in the United States, Germany, Japan and other countries have successful experience is behind the powerful sports teaching environment as a support, sufficient advanced sports venues and facilities and equipment, scientific and comprehensive teaching material, and guide with a high level of teachers, and a democratic and harmonious interpersonal relationships. Germany is the birthplace of modern school physical education; physical education has a very important position in school education. Nearly a hundred years to the development trend of the world of sports teaching of the school environment is by nature to school, and in recent years, in Germany, as the representative of school physical education in European countries formed a reverse development trend, namely school to nature[6]. Germany insists movement of student activities in sports teaching experience and participate in the philosophy of education, school itself not only to establish the superiority, standards, and improve the environment and facilities, and make full use of social sports club provides advanced facilities, equipment and environment as the effective supplement, for the smooth development of School Physical Education provides the material guarantee, for the active participation of students, for their lifelong sports play basis. Germany on the sports teaching environment practical exploration focused on transforming teaching

concept software environment of physical education; and to supplement the hardware environment of physical education, and the combination of social forces.

The United States claim to respect students' autonomy, emphasizing to students with autonomous learning space, let the students to prepare activities according to the teaching contents, methods and progress of learning on demand. Teachers in the teaching process to guide the auxiliary role. Therefore, physical education teachers not only ready the deep, broad and rich knowledge and more important is requests the teacher to have the very high level of guidance [7]. In addition, the United States sports teaching materials, curriculum content is wider, there are physiological, psychological and emotional health, family and society. In the sports teaching in Japan, reflecting the teachers to the students' learning autonomy in respect, and by means of discussion, and learning related to the content of learning, the move to fully mobilize students' learning initiative, autonomy and strengthen the emotional communication between teachers and students. From the last century 80's, Japan based on the concept of lifelong physical education, cultivate students' self learning ability, self exercise ability, students have reached the life safety and healthy life. From the above materials, we see sports teaching in sports teaching in Japan and the United States have a lot in common, are paying attention to the students' learning, physical education teachers, guidance, and recognize the role of individual students, pay attention to the students' learning ability.

In China, research on sports teaching environment is relatively small, the analysis from the perspective of value in teaching system factors, students' understanding of the subject, is the main part of learning; teachers are the main part of teaching. Any teaching activity is taught by the subject and the subject to achieve a common. The teaching goal is the starting point of teaching, and the teaching effect evaluation standard. Therefore, to determine the correct teaching goal is very important, the research on the teaching objectives attracted the attention of many scholars. From the analysis of the difficulty of the study: the teaching environment is one of the essential factors in teaching activities, any teaching activities cannot be divorced from the teaching environment and exist independently. But because the elements of teaching environment including very large; existing way of teaching environment diversity, the study of these factors on the teaching environment caused some difficulty. Sports teaching hardware environment can see, touch, and can be quantitatively to measure; sports teaching software environment is we can't see, but can feel of sports teaching software environment were studied in the presence of a certain degree of difficulty. Similarly, to determine the evaluation criteria also have a certain degree of difficulty. Therefore, lead to relatively few studies on the teaching environment.

2.2. Sports Teaching Environment

Factor analysis of evaluation index system of sports teaching environment is based on system analysis and a series of theories and methods as a tool, comprehensive and systematic analysis of the composition elements of sports teaching environment[8]. Evaluation index system of sports teaching environment is a multi factor, multi-level complex system must be using the theory and method of system analysis in a comprehensive and integrated analysis and research, science can grasp the sports teaching environment of the operation of the law. The system is an organic whole composed of various elements of the interaction, the interaction. The PE teaching environment is a is composed with multi hierarchy and multi factor system, decide the evaluation of multi-dimensional and multi-level characteristics of the system, each dimension contains multiple elements, and each element has a certain structure system, between the subsystems of non linear interaction, and continue to communicate with the outside world information, gradually formed and maintained the spatiotemporal orderly structures. Sports teaching environment is a sports teaching hardware environment, software environment and sports teaching

elements and other components of the interaction and mutual influence of unity. Therefore, the factors in the evaluation system are analyzed for a clear understanding of various factors we further significance. In the teaching of physical education in the hardware environment refers to hardware facilities, refers to the material conditions, required by the dissemination of physical conditions and to build the environment. The complex system composed of sports teaching hardware environment is a multi factors, these factors is the guarantee of teaching activities can be carried out smoothly in the matter.

Physical education is always carried out in a certain environment, restricted by the specific conditions. The teaching environment is clearly not directly into the teaching and learning process, but it is an indispensable condition for the particular education field, has very important significance to the teaching process and results. In the sports teaching hardware environment is no exception, is not directly into the process of teaching and learning, but physical education teaching activities, the essential material conditions[9]. Therefore, it is necessary for us to carries on the analysis to the factors of sports teaching hardware environment. Good teaching hardware environment is an important material condition for the effectiveness of classroom teaching. For other discipline in addition to physical education, teaching hardware environment on the effectiveness of classroom teaching not decisive role, or play a decisive role accounted for a smaller proportion of. Therefore, there is a "teaching material environment of useless". But sports discipline has its own characteristics, it on physical environment, strong dependence sports discipline offered a lot of teaching contents must have certain material conditions as a foundation, leaving the material environment of sports teaching, sports teaching can't be carried out smoothly, it will be impossible to achieve the goal of physical education teaching[10]. Therefore, teaching hardware environment is a necessary condition for effective teaching. But due to the different disciplines, resulting in the teaching hardware environment requirements, dependence, also from a certain extent determines the position in the teaching hardware environment is not the same, and with the different views on teaching hardware environment, emphasis on teaching hardware environment is different.

Sports teaching environment is divided into software and hardware environment and the environment of physical education teaching. Sports teaching software environment plays an important role in the teaching of physical education teaching environment, directly or indirectly impact it had on the teaching of physical education has far exceeded the sports teaching hardware environment, can also affect the effectiveness of physical education teaching in a certain extent, so we should highly pay attention to the sports teaching software environment. The environment of sports teaching software is mainly composed of sports teaching in the sports teachers, students, and teaching relationship elements -- relationship the relationship between individuals, between individuals and groups, groups and organizations between the relationships. From the perspective of the number of software environment factors of sports teaching, sports teaching software environment is rich in content. Therefore, this study respectively from two aspects of relationship factors of sports teaching environment elements and physical teaching software environment analysis of sports teaching environment, try to put all factors into consideration, but still not to the utmost. In the sports teaching practice, every school and every class has its own characteristics, and this research will focus on the common factors on the sports teaching software environment.

3. Physical Education Factor Analysis

3.1. The Concept of Physical Education

The PE teaching environment as a special and relatively microscopic teaching environment, many scholars have tried to give a clear definition of sports teaching environment, but so far, there has been no consensus. This paper borrows the philosophy that environment is the object with a center or relative subject. On the physical teaching environment gave the concept, the main body of sports teaching environment is physical education teachers and students. Therefore, sports teaching environment can define as the combination of physical education teachers and students and the relative physical education object. Definition of sports teaching environment has broad sense and narrow sense. In a broad sense, sports teaching environment, including social system, physical laws and regulations, science and technology, family conditions, these factors are relative object with physical education teachers, students, extent, restricts the effectiveness of physical education teaching activities. From the narrow sense, integrated object in teaching activities and sports teachers and students relatively, this paper is to study the contents of the special sports teaching environment.

In general, the classification methods of the scholars have different advantages and disadvantages, but the classification standards are not a unified. A thought is a whole concept, it focuses on the overall pattern of things, the overall concept is the basic view of the field of thinking, and the whole is actually the interaction among. Sports teaching environment is a complex system that is one of the elements of physical education system, so the important content of sports teaching environment construction is a system of PE teaching reform. Any teaching activities cannot be divorced from the physical education environment and independent. The PE teaching environment in various forms of state performance, material and spiritual, tangible and intangible, natural and social, macroscopic or microscopic form *etc.* This paper from the perspective of philosophy of the definition of sports teaching environment in sports teaching, sports teachers and students comprehensive and relative object. Sports teaching environment is composed of multiple factors. Because of sports teaching environment is the main sports teachers and students, and physical education teachers and students in PE Teaching in inter object, according to the definition, physical education teachers and students also belong to category of sports teaching environment. And physical education is physical education teachers, students, physical education teachers and students left the, sports teaching does not exist, it serves to show the importance of physical education teachers and students. Therefore, physical education teachers and students should be the important elements of sports teaching environment.

3.2. The Status of Physical Education Teachers

The teacher is an important participant in the teaching of physical education, physical education is one of the important elements of the soft environment, is one of the important in the teaching of physical education. PE teachers will act invisible to students, PE teaching exerts subtle influence, can also affect the effectiveness of physical education in a certain degree. With the development of society, the value of sports, physical education teachers to reflect the value, the status of PE teachers will continue to be reflected. Reflect the status of physical education teachers or the roles of PE teachers with the professional quality of teachers, teaching ability, and teaching level, professional knowledge is inseparable. Teachers are the most important factors influencing the effectiveness of classroom teaching of physical

education, but also affect students' learning the main object of environmental factors, are one of the important factors affecting the quality of sports teaching environment, as the following aspects.

- 1) **Concept of Education:** the basic views embodied in Teachers' teaching beliefs of individual teacher education environment and system, internal interrelation and function. The concept of teacher education not only affects the teaching behavior of teachers, but also affects students' learning behavior, which directly affect the effectiveness of physical education classroom size. The idea is forerunner of behavior, influence people's behavior concept will lasting. The work of teaching behavior of PE teachers are affected, in the certain education concept, under the control of the.
- 2) **Ideological and Moral Cultivation:** occupation morality is the basic criterion of regulating inters industry and intra industry relations between members of the contemporary society, no matter what the industry, occupation morals are the most basic rules of conduct. Teachers' moral cultivation has a direction for teachers to work in the leading role, is the core of teachers' quality.
- 3) **Cultural level:** teaching is based on the basis of professional teachers, teachers have professional knowledge, does not exist in teaching activities, which is no doubt. Teachers' cultural level can be reflected through the knowledge structure of teachers, teachers' professional knowledge, practical knowledge; conditional knowledge constitutes a system of knowledge structure of teachers. Different knowledge in physical education play different roles, and indispensable, reflects the common cultural level of teachers.
- 4) **Professional skills:** teaching ability in specific teaching activities linked, ability of organic integration of knowledge and skills to achieve the teaching. Rich teaching knowledge and skills is the foundation of teaching ability, and teaching practical knowledge and skills through the teaching activities into Teachers' teaching ability. Teaching ability has the characteristics of the individual, situation, innovation, development of composite of; teaching ability has its own reasonable structure system, specific include teacher's choice, integration ability, teaching communication skills, teaching evaluation of teachers' ability and innovation ability.

4. Empirical Analysis

4.1. Questionnaire

In order to from different levels of clear understanding of China's sports teaching environment present situation and various colleges and universities sports teaching environment in the presence of the problem, this paper deals with the sports teaching environment for teachers questionnaire and physical teaching environment student questionnaire. According to the questionnaire design popular principles, integrity principle, neutral principle, exclusive principle and practical principle, give full consideration to the questionnaire design: problem formulation to specific and feasible, clear purpose, expression accurate, easy to understand language, understand, avoid main view of emotions, choose the right angle and other important factors and design the questionnaire. The questions are complex from easy to difficult, from the line to know the principle of. Questionnaire for all respondents are inquiries to unification, and in a unified way release and fill in the questionnaire, this can reflect with to have some social homogeneity of the respondents average trend and general condition, and can have some

kind of social heterogeneity in different regions of the respondents were compared and analyzed, using the same questionnaire to collect data, can carry on statistical processing, to make quantitative analysis. Through the issuance of the network questionnaire, we investigate the students by the basic data analysis, as shown in Table 1.

Table 1. Analysis of the Basic Information of Students

Basic information	project	frequency	Proportion (%)	total
Gender	male	3400	52.5	6476
	female	3076	47.5	
grade	first grade	2953	45.6	6476
	second grade	2467	38.1	
	third grade	738	11.4	
	fourth grade	318	4.9	

Firstly, the questionnaire after the completion of NanJing XiaoZhuang University, with 100 students and 30 teachers as sample pre testing. The data collected by the project analysis, reliability analysis, validity analysis, the formal questionnaire. In the questionnaire prior to the issuance by the designated contact person briefly explain the questionnaires to the subjects of physical education teachers and students content, fill in the answer and research purposes, eliminate teachers' psychological alert, and try to ensure student questionnaire can with teacher questionnaire at the same time to recover. Distribution and reclamation of specific questionnaire is shown in Table 2

Table 2. The Questionnaire Release and Recovery

	issued	recovery	recovery rate	effective rate
Physical Education Teachers	363	341	93.9%	93.9%
Student questionnaire	7260	6476	89.2%	89.2%

In order to ensure the validity of questionnaire, the content and the structure design and questionnaire before, please NanJing XiaoZhuang at the university sports science aspects of experts, a total of 10 bit, of questionnaire content, structure and difficulty degree of validity, according to experts and scholars of the feedback of questionnaire are rearranged, modified to form the final questionnaire, as shown in Table 3 shows.

Table 3. The Questionnaire Validity Test

	appropriate	suitable	commonly	not appropriate	unclear
content design evaluation	8	1	1	0	0
Percentage (%)	80	10	10	-	-
Structural design evaluation	7	2	1	0	0
Percentage (%)	70	20	10	-	-
difficulty evaluation	8	1	1	0	0
Percentage (%)	80	10	10	-	-

4.2. The Evaluation of Classroom Teaching Quality

For the students, physical education teachers are students of sports teaching environment, and with respect to the physical education teachers, students are sports teachers of sports teaching environment, *i.e.*, their mutual environment. Therefore, this

paper in the setting of sports teaching environment evaluation standard, were more likely on the basis of the concrete behavior in classroom teaching are classified is behavior of physical education teachers, students set for PE teaching environment is an important one of the evaluation criteria. From the sports teaching software environment includes the elements, we have to, the environment of sports teaching software is by physical education teachers teaching behavior and its performance, students' learning behavior and its performance, PE teachers and students, students and students *etc* elements. Teachers and students are the main software environment of physical education, physical education teachers and students left, there is no software environment of PE teaching. Therefore, we determine the software environment of PE teaching evaluation standard, should pay attention to in the teaching of physical education, physical education teachers, students' behavior and interactive behavior. In some on the evaluation of classroom teaching quality standard, some indicators are around the sports teachers, students to develop. Therefore, research on classroom teaching quality evaluation criteria can for this study established software environment of PE teaching evaluation criteria provide a reference.

Table 4. Index Evaluation Standard in Classroom Teaching

Index	Frequency	Proportion
Teaching objectives	12	80%
content of courses	13	87%
teaching method	13	87%
teaching effectiveness	14	93%
basic skills	10	67%
Interaction	1	6.7%
instructional design	1	6.7%
classroom atmosphere	1	6.7%

4.3. The Evaluation of Physical Education

We can see from Table 5, surveyed sports teachers say the venue is helpful to physical education, physical education teachers suggests a role for the stadiums is recognized. Different teachers' satisfaction on school sports venues equipment, very good, good accounted for 32.9%, and general and bad accounted for 62.1% that PE teacher in different schools of sports teaching venue and equipment requirements, at the same time that, different school sports teaching venues and equipment construction there are differences. From the point of view of general and bad accounts for the proportion, indicating that the construction of our country ordinary universities sports venue and equipment also need to further improve, to meet the needs of sports teaching, better service to sports teaching to achieve purpose of improving the quality of physical education teaching.

Table 5. Ordinary College Sports Venues Equipment

School facilities	Frequency (N=341)	Percentage (%)
very good	46	13.4
good	66	19.5
commonly	121	35.4
not good	108	31.7
total	341	100.0

The sports venues are space based sports teachers and students to sports teaching. In the sports teaching, due to the limitation of site conditions, many students like to physical and mental development of students produced good results in the sports cannot be carried

out. From Table 6 we can see, PE teachers choose sports item depends on site accounted for to 73.2%, and that because the stadium, there are a lot of projects would not be carried out, resulting in the project in Colleges and universities because of the lack of enough space and is not easy to start. And close to 30% of the physical education teachers think the choice of sports on the sports field dependence is not very strong, indicating that these physical education teachers in relatively flexible for some due to subject to site constraints and not to carry out a wide range of sports teaching, further suggesting that these physical education teachers can on the basis of existing venues, some space is limited and not very good attempt of the development of sports teaching. Therefore, as a sports teacher should give full consideration to the sport of sports field dependence, but also through their own efforts to the sports teaching facilities and equipment transformation, as far as possible sports teaching.

Table 6. Influence of Sports Venues

field	frequency (N=341)	Percentage (%)
very important	83	24.4
important	167	48.8
commonly	62	18.3
Not important	25	7.3
very unimportant	4	1.2
total	341	100.00

According to the previous research results confirmed that the size of a class of the sports teaching effect to a certain extent. We can see from Table 7, the class size of 30 people, 40-50 people accounted for 22.2%, 21%, and the class size of 30-40 people accounted for 42%, while the class size is 50-60, more than 60 people accounted for 14.8%. After a previous research on class size effect on the teaching quality of physical education, sports teaching in Colleges and universities of our country began to pay attention to the sports teaching in the class size, began to pay attention to class size effect on the teaching of physical education; also shows that the number of China's physical education teachers in a certain extent reached the demand of sports teaching.

Table 7. The Number of Classes of Physical Education

Number	Frequency (N=341)	Percentage (%)
Less than 30 people	77	22.2
30-40 people	143	42.0
40-50 people	72	21.0
50-60 people	43	12.3
More than 60 people	6	2.5
total	341	100.0

The external environment has direct or indirect influence on the teaching of physical education. From Table 8 environmental factors on physical education influence the result of the survey, students think that external environment of their class to produce great and large impact accounted for 72.1% of investigation number, indicating that the sports teaching is affected by the influence of the external environment. Because environmental quality and physical education teaching venues, lecture class how many are closely linked, if the venue, the attention of the students will relatively concentrated, if at the same time there are different teaching contents to students in class, the student's attention will be more dispersed, it will affect the effect of sports teaching.

Table 8. Effect of Environmental Factors on Physical Education

Influence of external environment	Frequency (N=341)	Percentage (%)
great	1787	27.6
large	2882	44.5
not big	1645	25.4
Very small	162	2.5
total	6476	100.0

5. Conclusions

The PE teaching environment is one of the important factors in physical education teaching system, with the development of China's economic development and the comprehensive national strength enhanced, and education, people gradually realize that the effect of sports teaching environment of physical education teaching, and has put forward higher requirements on the physical teaching environment, hope that by improving or optimizing the environment of sports teaching, to better for sports teaching service, and improve the quality of PE teaching. Sports teachers and students are the main body of sports teaching environment, the development of physical education teachers, students themselves, will have a certain impact on the relationship between them and their behavior. Sports teachers and students is the key factors in the environment of sports teaching software, is a carrier of sports teaching software environment. Therefore, to optimize the physical education teachers and students is software environment of PE Teaching in an effective way. The changes in development and behavior of physical education teachers will exert a certain influence on students, and students' learning behavior and performance, influence of PE Teachers' teaching behavior. Therefore, we should according to the teaching of theory of sports teaching in physical education teachers and students behavior optimization. Sports' teaching is PE teachers and students involved in bilateral activities, will the sports teaching physical education teachers and students contact together, and changes of PE teachers, students' behavior is mainly in the sports teaching influence each other, and gradually optimized.

Government departments should formulate related policy to encourage sports teacher's own development; and to develop the corresponding PE Teachers' professional development standards, to promote sports teacher according to the standard of their own development, formulate corresponding teacher training institutions; to create conditions for the professional development of physical education teachers. School of PE teachers professional development issued by the state file can execute; encourage exchanges between school physical education; encourage teachers discussions between the academic research *etc*; physical education teachers are encouraged to participate in vocational training; for the development of sports teachers create favorable conditions. Continuously improve sports teaching management system, the implementation of the decentralization of certain rights, rights to space and development of PE teachers in certain. To sum up, this paper on the basis of theory study, established the evaluation standard of sports teaching environment, for our country ordinary universities physical education teaching environment provide a measure of the ruler; the our country ordinary universities sports teaching environment were investigated. Clearly understand the status of physical education teaching environment in Colleges and universities and the existing problems. According to the related theories, and puts forward the ways to optimize the teaching environment of physical education, can provide a theoretical reference for the optimization of the school sports teaching environment.

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