# The Importance and Implementation Measures of the Integrated Development of College PE Based on the Internet

Xuejuan Zhang, Xudong Zhang, Yun Xu

School of Physical Education, Ningxia University, Yinchuan 750021, China.

*Abstract:* Under the premise of the rapid development of information technology and the "Internet +" plan advocated by the state, the innovation of Internet technology and its application have set off a teaching reform in the education industry. For sports colleges and universities, "Internet +" not only expands the process of teaching organization, but also provides a wider education and teaching platform. The main research content of this paper is that under the background of the rapid development of Internet technology, it puts forward relevant suggestions on the importance of the development of the informatization of PE(physical education) teaching in colleges and universities and the implementation measures. The online and offline mixed teaching method continues the students' learning process to the after-class ,students can obtain the information they want to learn more conveniently and quickly through the mobile app. Compared with traditional PE teaching, the online and offline hybrid teaching mode can effectively stimulate students' enthusiasm for learning, cultivate students' awareness of independent learning, and play a role in improving students' creativity plays a very important role. This paper uses the Internet to establish an evaluation system for the staged teaching process, and uses the convenience and speed of the Internet to establish a staged evaluation of each teaching task, so as to control some problems and weak points of students in the learning process. The final results of the study show that in the questionnaire survey on the effectiveness of PE in the context of Internet +, 66 people said they were very effective, accounting for 31.28%, and 85 people said they were effective, accounting for 40.28%. It can be seen that more than 70% of people are effective in PE in the context of Internet +.

*Keywords:* Internet Technology; College Sports; Evaluation System; Physical Education Teaching

## 1. Introduction

The innovation of information technology and its application have set off a teaching reform in the education industry. For sports colleges and universities, "Internet +" not only expands the teaching organization process, but also provides a wider education and teaching platform [1] . Under the background of the rapid development of information technology, PE in colleges and universities is also developing in the direction of informatization, which has played a positive role in promoting the strengthening of PE and the realization of the goal of quality education. Therefore, the research on the importance of Internet technology to the integrated development of college PE and the implementation measures has certain practical significance.

In recent years, many researchers have studied the importance and implementation measures of the integrated development of college PE based on the Internet, and achieved good results. For example, Christopher K believes that the integration of information technology and PE teaching has a certain space for development, and more exploration and development can be carried out, which will definitely promote the positive development of PE [2]. Albert Tuijnman believes that information technology and PE should be closely integrated, this measure can play a positive role in promoting the development of PE [3]. At present, scholars at home and abroad have conducted a lot of research on the importance and implementation measures of the integrated development of university PE, and these previous theoretical and experimental results provide a theoretical basis for the research of this paper.

This paper is based on the theoretical basis of Internet technology, combined with the analysis of the importance and implementation measures of the integrated development of college PE, and has passed a series of experiments to prove that Internet technology has certain feasibility in the integrated development of college PE. In the questionnaire survey on the

effectiveness of PE in the context of Internet +, more than 70% of the people expressed that they are effective in PE in the context of Internet +.

## 2. Related Theoretical Overview and Research

## 2.1 Comparison of Traditional Teaching and Internet Informatization Teaching

### 2.1.1 Traditional teaching

Traditional teaching refers to the process in which teachers use only textbooks to transmit knowledge to students in one direction based on curriculum standards and training plans. The traditional teaching model is conducive to giving play to the dominant position of teachers, and the investment cost is also low. But traditional teaching also has many limitations. First of all, the teaching method is single, and the teaching is mainly based on blackboard writing, which is not easy to stimulate students' interest in learning, which will lead to insufficient classroom atmosphere, thus affecting the effect of teaching [4-5]. Secondly, under the traditional teaching mode, the teaching materials are limited to the content of textbooks, and the information capacity of the classroom is also small, which is not conducive to broadening the knowledge of students. In addition, traditional classroom indoctrination teaching is not conducive to cultivating students' ability to learn independently. But even so, Internet teaching still has irreplaceable advantages.

### 2.1.2 Internet teaching

Internet teaching refers to the process in which teachers use information-based teaching methods to teach. Information-based teaching methods are becoming more and more abundant in today's era, such as multimedia teaching, online classrooms, micro-courses, and MOOCs. Information-based teaching has higher requirements for equipment, so the cost is relatively high. In addition, the use of information-based teaching requires more time and energy in the process of preparing lessons.

First of all, the teaching methods are more diversified. The use of Internet technology to create situations is more intuitive, vivid and interesting, which is conducive to maintaining the atmosphere of the classroom. Secondly, the content of teaching is no longer limited to the knowledge in books, and the capacity of the classroom can also be increased a lot, which can improve the teaching efficiency and broaden the knowledge of students [6]. In addition, in the process of Internet teaching, especially in live classes, there are higher requirements for students' autonomous learning ability, which can better cultivate students' initiative in learning. Finally, this teaching method is also conducive to improving the overall quality of teachers.

### 2.1.3 Teaching environment

Most college classes are group classes, with relatively large numbers of people in the class. Most of the time, teachers teach in a way that most people can understand, and there is not much time to guide each student one by one. Some students have a weak foundation and may gradually lose interest in this course, while some students with a good foundation may find it too simple [7-8]. There are few opportunities for teachers to communicate with students. In universities, teachers rarely meet with students after class, which leads to the fact that the relationship between teachers and students is not particularly close. Therefore, a perfect platform for online and offline communication is particularly important. Teachers and students can communicate through one platform at any time and place.

## 2.2 Theories Related to Internet Technology Teaching

### 2.2.1 "Internet +"

The Internet in the new era is actually a new form, a new business form, a product under the background of Innovation 2.0, and a new evolutionary form driven by innovation. In everyone's consciousness, "Internet +" refers to an information technology represented by big data, etc., but "+" represents a combination of the Internet and all walks of life, using the convenience and speed of the Internet to provide Actual offline industry services [9]. In the process of researching the application scope of "Internet +", it is not difficult to find that the tertiary industry is rapidly using Internet technology to form "Internet + tourism", "Internet + medical treatment" (such as telemedicine consultation, remote surgery, etc.), "Internet + education" (such as not being able to go to school during the epidemic, we insist on suspending classes, etc.), "Internet + finance" (such as online stock and fund transactions, etc.), "Internet + hotel accommodation".

These are convenient and quick, and almost all the information can be known in one device terminal. With the in-depth development of "Internet +", methods such as online shopping, online appointment of experts, online learning English, online train ticket purchase, online movie ticket purchase, etc. have been formed, which not only makes the people on the demand side faster and more convenient, but also It greatly increases the volume of sales transactions in the offline industry [10]. Each industry has its own independent opinion on "Internet +", but in a word "Internet +" is a process of integration and cooperation of new information technology in all aspects of the present, making it the current "new normal" . The purpose of "Internet +" is to serve traditional industries. Therefore, "Internet +" traditional industries are the continuation and development of traditional industries under the new situation, and are the links and bridges that recombine and superimpose various elements.

## 2.2.2 "Internet + Education"

In fact, "Internet + education" does not only stay in this aspect of "online teaching". If so, it will be too narrow. Different scholars have different understandings of this thing, but the correct direction should be that the Internet serves the cause of education, not that the cause of education caters to the Internet. However, the previous research results all define "Internet + education" as a new form of education operated by modern information technology, and it is education on modern electronic information [11]. This form advocates students as the main body, educators and educated, educators and schools use modern information technology to communicate with each other, so that most people can still accept it.

In the research process of "Internet + education", there will be many kinds of such shortcuts, such as "Internet + teaching content", "Internet + teaching evaluation" and so on. This kind of integration can penetrate deeply into all aspects of teaching. The current education system has become more detailed and optimized in connection with the Internet [12]. From the perspective of the connotation of the Internet and the nature of education, "Internet + education" is not the opposite of traditional education, but combines the advantages of traditional education with the advantages of the Internet to improve the level of education and teaching. When education is combined with modern technology, the Internet can promote traditional education. The traditional education model is that students and teachers teach face-to-face in the classroom.

The current "Internet + education" is that students and teachers use an Internet medium to link together, and they can teach regardless of the distance. And such links have no time and place restrictions, and you can also choose courses according to your own preferences. This new teaching mode is based on the student-centered teaching concept, and is an innovation based on the original.

## 3. Experiment and Research

## 3.1 Experimental Method

The decomposition method of SVD can theoretically decompose a high-dimensional matrix into a low-dimensional matrix perfectly. However, in the real environment, the data faced by the recommendation system is often sparse rather than dense, and there are many positions in the matrix with empty element values. The calculation process is as follows:

$$Loss = \sum_{c,j \in R} \frac{1}{2}\left(r_{ci} - q_i^T p_c\right) + \frac{1}{2}\gamma|q_i|^2$$

(1)

$$\frac{\partial J}{\partial q} = -2\left(r_{ci} - q_i^T p_c\right)p_c + 2\lambda p_c$$

<div align="right">(2)</div>

In the formula, where R is the set of (c, i) pairs recorded in the original score, r is the actual score of item i by consumer c, the regularization intensity γ is the regularization term to prevent overfitting, and i in the loss function Loss is In order to calculate the square term loss, the Loss value is guaranteed to be the smallest. It is optimized by the stochastic gradient descent algorithm, and the parameters are continuously changed to obtain the minimum loss function value.

## 3.2 Experimental Requirements

This experiment is mainly aimed at the research on the integration development of Internet technology and university PE and the integration development of implementation measures. The experiment surveyed educators and distributed a total of 231 questionnaires, of which 231 were recovered with a recovery rate of 100%, of which 20 were invalid questionnaires , the invalid ratio is 8%, and the collected data is systematically analyzed to verify the feasibility of the integration and development of Internet technology in college PE teaching. At the same time, it analyzes the concerns of students choosing sports online teaching in terms of their preferences for optimizing teaching, real-time practice, action guidance and online answering.

## 4. Analysis and Discussion

## 4.1 Research and Analysis on the Development of Physical Education Teaching Under the Background of Internet +

In the survey of educators, a total of 231 questionnaires were distributed, of which 231 were recovered with a recovery rate of 100%, and 20 of them were invalid, with an invalid ratio of 8%. The experimental data are as follows.

<div align="center">Table 1: Research and analysis table on the development of PE and teaching in the context of Internet +</div>

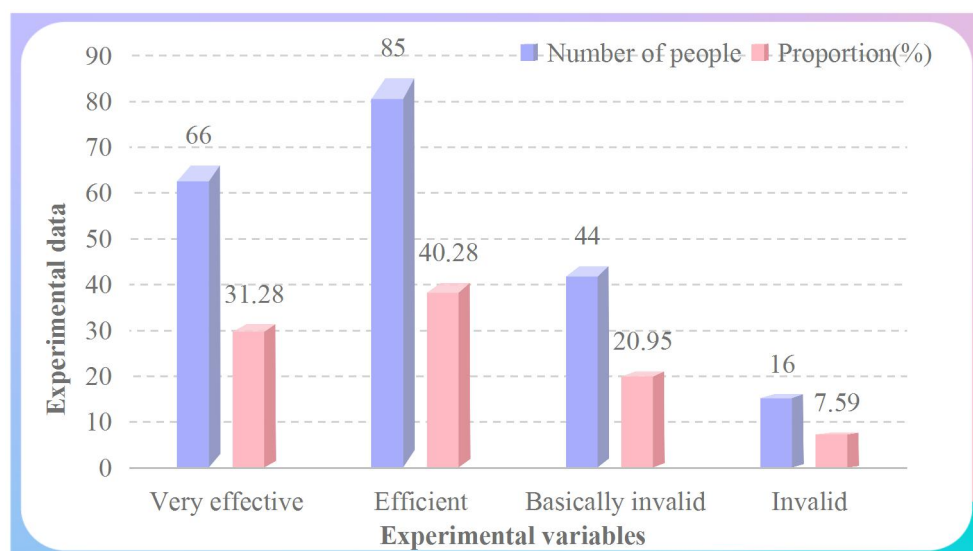| Degree of effectiveness | Number of people | Proportion(%) |
|---|---|---|
| Very effective | 66 | 31.28 |
| Efficient | 85 | 40.28 |
| Basically invalid | 44 | 20.95 |
| Invalid | 16 | 7.59 |



<div align="center">Figure 1: Research and analysis diagram of the development of PE under the background of Internet +</div>

It can be seen from Figure 1 and Table 1 that in the questionnaire survey on the effectiveness of PE in the context of Internet +, 66 people said that they were very effective, accounting for 31.28%, and 85 people said that they were effective, accounting for 40.28%. %, the number of people who said it was basically invalid was 44, accounting for 20.95%, and the number of people who said it was invalid was 16, accounting for 7.59%. It can be seen that more than 70% of the people are effective in PE in the context of Internet +.

## 4.2 Analysis of Students' Preference for Physical Education in the Context of Internet +

Through the research and analysis on the development of PE teaching under the Internet + background, more than 70% of the people are effective in PE teaching under the Internet + background. This experiment continues to analyze the students' preference for PE teaching in the Internet + background. The experimental data is shown in the figure below.



Figure 2: Analysis of students' preference for PE in the context of Internet +

As shown in Figure 2, in the four online teaching preferences of optimization teaching, real-time practice, action guidance and online answering, the number of people selected are 44, 77, 23 and 67, accounting for 20.85 %, 36.49%, 10.9% and 31.75%, it can be seen that the number of real-time exercises and online answers is the largest, and this is also not available in offline teaching.

## 5. Conclusion

Based on the theoretical basis of Internet technology, combined with the analysis of the importance and implementation measures of the integrated development of college PE, and through a series of experiments to prove that Internet technology has a certain feasibility in the integrated development of college PE, from the Internet + background The research and analysis of the development of PE teaching and the experimental data of the students' preference and choice of PE teaching in the context of Internet + can be seen that more than 70% of the students are effective in PE teaching in the context of Internet +, and the number of people who choose real-time practice and online answers is the largest In addition, this is also not available in offline teaching. In college teaching, the ability of teachers to work on the Internet is very important. Only when teachers have this ability can they match the existing rich and practical Internet resources, and can more effectively integrate "Internet + teaching" into PE teaching. In order to promote the comprehensive development of students. Therefore, in terms of improving the level of teachers' Internet work, teachers can improve through their own efforts. In this era of Internet +, the impact on traditional classroom teaching can be said to be subversive. Therefore, it requires PE teachers to develop their

thinking, rebuild the teaching content of each class, and organically combine online and offline teaching links. To the goal is clear, the design is novel.

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