

The Utility Analysis of the Integrated Development of Mobile APP and College Physical Education Teaching Under the Information Technology

Xudong Zhang, Xuejuan Zhang, Yun Xu

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

Abstract: With the continuous development of information technology, the Internet and mobile smart devices have been vigorously developed, and mobile terminals represented by smart phones are playing an increasingly important role in people's lives. Smartphone APP provides a multi-cloud mode for the training of college sports students. This paper fully considers the use of smartphone APP by teachers and students of physical education in physical education, aiming to help teachers and students optimize physical education teaching mode on the basis of improving teaching and learning, and improve students' interest in learning and the development of personal ability. The ability to use mobile APPs to assist teaching in the teaching process will also be improved. Through the analysis of the integration and development of mobile APP and college sports, this paper shows the advantages of mobile APP in the auxiliary teaching of physical education courses in colleges and universities, what problems should be paid attention to, and what shortcomings can be made up for traditional classroom teaching. The experience of APP-assisted teaching is extended to other disciplines to promote the development of teaching models in the new era of colleges and universities. The final results of the research show that the daily training time of the five college sports students collected after the help of the mobile phone APP has been improved. The training time after using the mobile phone APP is 2.58 hours, 3.66 hours, 3.03 hours, 4.23 hours and 3.69 hours, indicating that the mobile phone APP has a certain helpful effect on physical exercise.

Keywords: Information Technology; Smart Phone; Auxiliary Teaching; Physical Education

1. Introduction

At present, network informatization is developing rapidly. The emergence of smart phones and 5G networks makes information more time-sensitive, and informatization teaching has gradually entered colleges and universities. The development of education is inseparable from network informatization. The informatization of physical education has brought infinite help to physical education. The informatization of sports teaching network promotes the optimization of sports knowledge resources, the effectiveness of information resources, the limitation of learning space and the two-way communication between teachers and students, which brings great help and challenges to the new sports teaching mode. Therefore, the research on the utility analysis of information technology on the integrated development of mobile APP and college physical education teaching has certain practical significance^[1].

In recent years, many researchers have studied the utility of the integrated development of mobile APP and college physical education under the information technology, and achieved good results. For example, Turnermcgriev GM believes that the integration of information technology and physical education is bound to help promote the development of physical education. Therefore, information technology and physical education should be integrated ^[2]. Lewis B believes that if the information technology and physical education can be integrated, and the technology and reference can be increased, not only can the technology be more in line with mechanics, but the scope of theoretical knowledge can also become wider ^[3]. At present, scholars at home and abroad have carried out a lot of research on the integration and development of mobile APP and college physical education. 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 information technology, combined with the utility analysis of the

integrated development of mobile APP and college physical education teaching, and has passed a series of experiments to prove that Internet technology has certain feasibility in the integrated development of college physical education teaching. After collecting the daily training time of the five college sports students with the help of the mobile phone APP, the daily training time has been improved, which shows that the mobile phone APP has a certain role in physical exercise.

2. Related Theoretical Overview and Research

2.1 The Use of Mobile App in the Subject Teaching of Colleges and Universities

With the continuous development of China's current mobile network technology, the functions of the smartphones we use are becoming more and more diverse. Therefore, it is particularly important to integrate smartphones into the classroom teaching of colleges and universities in my country. Using mobile APPs to assist teaching in the classroom can greatly optimize the teaching structure, enrich the teaching content, and improve the teaching quality. The application in teaching is mainly through the application of smartphone APP.

The mobile APP brings great convenience to students in both the practical and theoretical teaching of track and field classes. When students encounter problems in learning outside the classroom, they can still consult teachers in time, so that they can encounter problems in learning. The problem can be solved quickly ^[4-5]. Through this way of learning, classroom learning will be perfectly extended to extracurriculars, and at the same time, online learning resources on the Internet are very rich, and students can learn a lot of knowledge and skills through a large number of materials found on the Internet. By applying the mobile phone APP to assist the track and field teaching of physical education majors in colleges and universities, it not only facilitates students' independent learning, but also makes the communication between teachers and students outside the classroom teaching in colleges more convenient and efficient.

At present, there are four main types of teaching mobile APPs used in colleges and universities: classroom mobile APPs, question bank mobile APPs, dictionary-based mobile APPs and tool-based mobile APPs. Nowadays, many colleges and universities recommend students to use educational mobile APPs, which are generally used: "Learning Pass", "Easy Class", "Netease Open Class", "Huijiang Online School", "Homework Help", "Student Circle" "And a series of excellent APP ^[6]. At present, language subjects such as English in colleges and universities have deeply used mobile APPs to assist teaching in teaching, while our physical education is still in a relatively primary stage and the functions used are also different.

2.2 The Commonly Used Auxiliary Teaching Functions of Mobile App in College Physical Education Courses

2.2.1 Teaching information push learning data transmission function

Physical education teachers can push teaching information to students through the mobile APP before or after class. Through the mobile phone APP, teachers can also transmit the learning materials prepared in advance to the students, so that the students can obtain the most useful learning materials at the first time, saving the time spent searching for materials and screening materials. The APP is also more convenient and quick to access data ^[7-8]. In the normal teaching process, teachers will generally determine the students' usual grades according to the students' attendance rate and other indicators. In the teaching process, teachers can turn on the attendance function before class or before get out of class, and students can successfully complete the check-in through the mobile APP. The simple and fast attendance improves the teaching efficiency. At the end of the semester, the mobile APP can count the attendance rate according to the standard preset by the teacher, which can help the teacher to finally evaluate the students' grades and provide a basis for judgment.

2.2.2 Media-assisted teaching functions such as video and audio

Through the use of smart phone APP software in college physical education, it can assist students to carry out reasonable physical exercise, and the auxiliary teaching function of video and audio media is a very important function in the auxiliary teaching of mobile phone APP in college physical education [9]. The mobile APP contains a large number of teaching materials such as audio and video. The teaching materials in these audio and video are corresponding to the physical education teaching of various projects. This kind of teaching method mainly relies on pictures and sounds to guide students in physical education projects. , students can play the corresponding video and audio materials according to the track and field events they are practicing. On the one hand, students can simulate teaching against the video actions, and on the other hand, they can adjust their technical actions through audio guidance, because these videos The audio recordings are all from professional physical education teachers, so under the guidance of such videos and audios, students still have a certain guarantee for the learning and mastery of skills, and finally master these skills with the help of physical education teachers.

2.2.3 Recording function of practice data

In the previous physical education, we can only understand the situation through exercise time and heart rate to test the exercise load, which makes it difficult for teachers and students to accurately grasp the amount of exercise in teaching. Because of the huge amount of activities, students will feel very difficult in physical education, and then lose interest in physical education [10-11]. However, if some smart wearable devices are adapted through the mobile phone APP during the teaching process, such as: Xiaomi bracelet, etc., it has the function of sports data recording, which can record the students' exercise in real time, so that the students can check their own exercise at any time. Such as running distance, pace, heart rate, etc., to help students master their own exercise volume. At the same time, students can more clearly understand their current physical condition, and make corresponding adjustments to the exercise plan, intensity and time according to the actual needs of physical education teaching.

2.2.4 Strengthen the function of communication between teachers and students in the teaching process

Through the online real-time contact function of the mobile APP, students can strengthen communication with teachers. In extracurricular time, if students have questions and need to ask the teacher for solutions, the mobile APP can become an excellent communication tool. It can also transmit pictures, texts, videos, and audios regardless of time and place [12]. Not only between teachers and students, but also with classmates to share our experience and experience. While exercising to master sports skills and enriching sports knowledge, we also meet many friends who love sports, so as to improve students' learning of sports projects.

3. Experiment and Research

3.1 Experimental Method

Slope one is an algorithm for predicting ratings. It uses a linear regression model to predict the ratings of unrated items, instead of calculating the similarity of items or users like other collaborative filtering algorithms. The calculation process is:

$$dev_{i,j} = \sum_{u \in U_{i,j}} \frac{R_{u,i} - R_{u,j}}{\text{sum}(U_{i,j})} \quad (1)$$

$$p(u_i) = \frac{\sum_{j \in I_i} dev_{i,j} + R_{u,j}}{\text{sum}(I_j)} \quad (2)$$

In the formula, the set of users who have evaluated both items i and j is represented by U, the set of ratings by user u to j

is represented by R , I represents the set of items evaluated by the target user and other users at the same time, and \sum represents the sum operation over the collection. Then the mean deviation is dev and the predicted score is $P(u)$.

3.2 Experimental Requirements

This experiment is mainly aimed at the utility analysis and research of the integrated development of information technology, mobile APP and university physical education teaching. College students conduct a questionnaire survey, select and analyze the five teaching preference functions of teaching attendance, data transmission, media assistance, data recording, and teacher-student communication, and systematically analyze the collected data to judge the application of mobile APPs in the integration and development of college physical education teaching feasibility.

4. Analysis and Discussion

4.1 Analysis of Time Change of Mobile App-Assisted Teaching and Training

Table 1: Analysis of time change of mobile APP-assisted teaching training

Sports trainee	Practice before using the app(h)	Practice after using the app(h)
Athlete one	1.23	2.58
Athlete two	2.45	3.66
Athlete three	1.89	3.03
Athlete four	3.36	4.23
Athlete five	2.88	3.69

The daily training time of college students before and after using the mobile phone APP to assist teaching is used for mobile phones, and the changes before and after are analyzed. The experimental data are as follows.

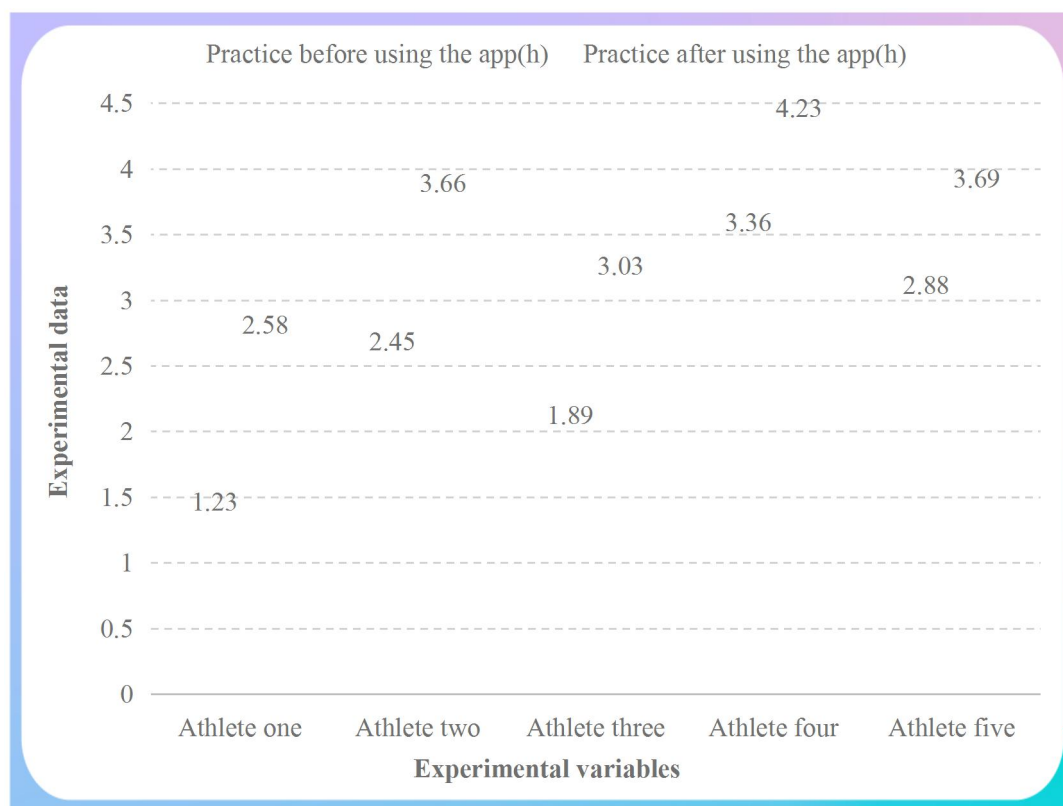


Figure 1: Analysis of the time change of mobile APP-assisted teaching training

It can be seen from Figure 1 and Table 1 that the daily training time of the five college sports students collected after the

help of the mobile phone APP has been improved. The training time before using the mobile phone APP was 1.23 hours and 2.45 hours respectively. hours, 1.89 hours, 3.36 hours and 2.88 hours, while the training time after using the mobile phone APP was 2.58 hours, 3.66 hours, 3.03 hours, 4.23 hours and 3.69 hours, respectively. This shows that the mobile phone APP has a certain helpful effect on physical exercise.

4.2 Analysis of the Preference Function of Mobile App in Physical

Education Teaching in Colleges and Universities

Through the analysis of the time change of mobile APP-assisted teaching and training, the mobile APP has a certain helpful effect on physical exercise. This experiment continues to analyze the preference function of mobile APP in physical education teaching in colleges and universities. The experimental data is shown in the figure below.

As shown in Figure 2, in the selection of the five teaching preference functions of teaching attendance, data transmission, media assistance, data recording and teacher-student communication, the number of people selected are 36, 45, 61, 58 and 16. people, accounting for 16.67%, 20.83%, 28.24%, 26.85% and 7.41% respectively. It can be seen that the number of media assistance and data recording is the largest. Media assistance can be taught through Internet materials, which is very convenient and fast. Recording can record exercise data in time, and perform data analysis of exercise volume and exercise effect.

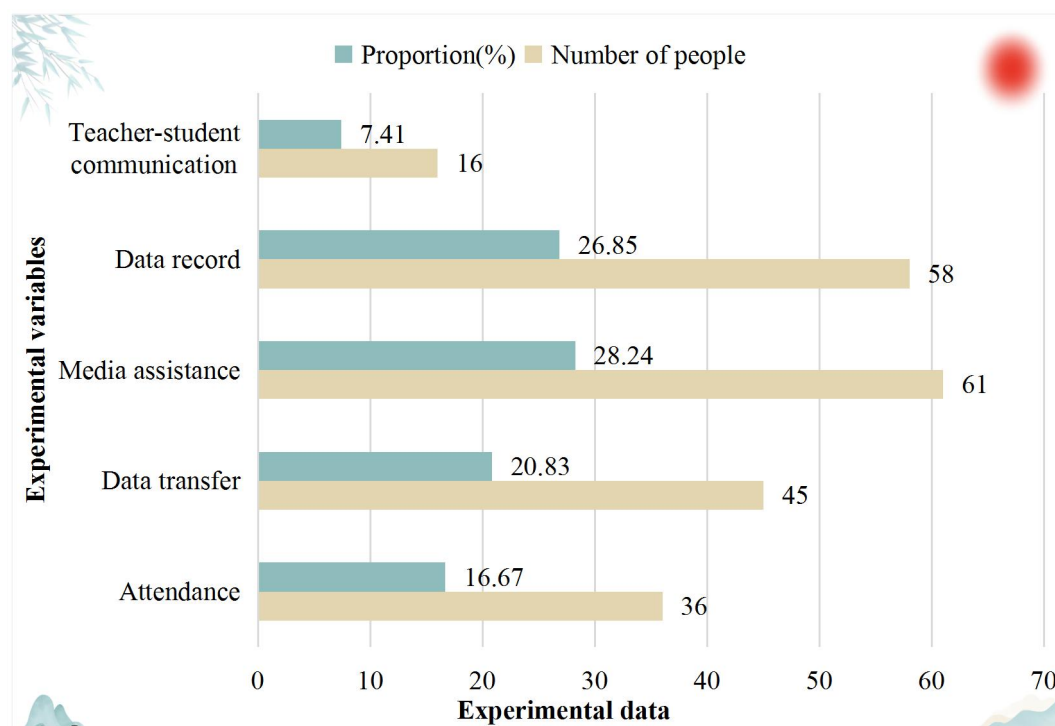


Figure 2: Analysis of the preference function of mobile APP in physical education teaching in colleges and universities

5. Conclusion

This paper is based on the theoretical basis of information technology, combined with the utility analysis of the integrated development of mobile APP and university physical education teaching, and has passed a series of experiments to prove that Internet technology has certain feasibility in the integrated development of university physical education teaching. The experimental data from the analysis of the change of training time and the analysis of the preference function of mobile APP in college physical education teaching can be seen that the daily training time of college sports students has been improved after the help of the mobile APP. There is some help, and the selection of media assistance and data recording is the largest. Teachers should improve teaching methods, cooperate with mobile APPs to carry out reasonable teaching, and change

the previous teaching methods of "cramming" and "indoctrination". In teaching, it is necessary to fully mobilize the enthusiasm of students, let students take the initiative to participate in the physical education class, let them learn to cooperate and learn to think in the process of learning. And in the classroom, teachers should be good at creating a relaxed and harmonious atmosphere for students, and at the same time cultivate students' innovative ability and innovative consciousness.

Acknowledgements

This work was supported by 2022 Ningxia Hui Autonomous Region Philosophy and Social Science (Pedagogy) planning project. Project Number: 21NXJB14.

References

- [1] Gemma FM, Esther GF, Carme FG, et al. Mobile Phone Apps to Promote Weight Loss and Increase Physical Activity: A Systematic Review and Meta-Analysis. *Journal of Medical Internet Research*, 2019, 17(11):253-255.
- [2] Turnermcgriev GM, Beets MW, Moore JB, et al. Comparison of traditional versus mobile app self-monitoring of physical activity and dietary intake among overweight adults participating in an mHealth weight loss program. *Journal of the American Medical Informatics Association*, 2019, 20(3):513-518.
- [3] Lewis B, Williams D, Dunsiger S, et al. User attitudes towards physical activity websites in a randomized controlled trial. *Preventive Medicine*, 2019, 14(1):77-99.
- [4] Kirwan M, Duncan MJ, Vandelanotte C, et al. Using Smartphone Technology to Monitor Physical Activity in the 10,000 Steps Program: A Matched Case-Control Trial. *Journal of Medical Internet Research*, 2020, 31(5):1257-1273.
- [5] Cyarto EV, Myers A, Tudorlocke C. Pedometer accuracy in nursing home and community-dwelling older adults.. *Medicine & Science in Sports & Exercise*, 2020, 36(2):205-219.
- [6] Barkley A, Flipping the College Classroom for Enhanced Student Learning. *North American Colleges and Teachers of agriculture*, 2019, 59(3):59-66.
- [7] Kaoru Okamoto. Lifelong Learning and the Leisure-Oriented Society: The Developments and Challenges in the Far East. *International Handbook of Lifelong Learning* 2021, (13):15-19.
- [8] Anna Tuschling, Christoph Engemann. From Education to Lifelong Learning: The emerging regime of learning in the European Union *EDUCATION PHILOSOPHY AND THEORY*, 2020, 5(7):78-136.
- [9] Kwak JH, Choi HH. The Role of Taekwondo as Physical Education for the Disabled. *Korean Journal of Sports Science*, 2020, 29(1):51-60.
- [10] Boiche J, Sarrazin P, Grouzet F, et al. motivational profiles and achievement outcomes in physical education: a self-determination perspective. 2019. 14(3):51-59.
- [11] Williams J, Pill S. Traditional Asian Games, Doing Critical Pedagogy and the Knowledge That Actually Counts in Australian Physical Education Teacher Education. *Journal of Teaching in Physical Education*, 2021, 9(21):40-74.
- [12] Moya EC. Active Methodologies in Physical Education: Perception and Opinion of Students on the Pedagogical Model Used by Their Teachers. *International Journal of Environmental Research and Public Health*, 2021, 5(2):45-64.