Research on the Integration of Modern Educational Information Technology and Physical Education Teaching Process

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Abstract—Through the methods of literature, experiment and mathematical statistics, this paper analyzes and discusses the path and specific implementation method of the integration of modern educational technology and physical education teaching process. The research shows that the teaching effect of integrating modern educational information technology into physical education classroom teaching is obviously better than traditional teaching. Modern educational information technology can provide students with personalized guidance, give play to students' main position, and form a new cognitive structure and improve the effect of classroom teaching through students' active participation. Suggestion: Reasonably integrate modern educational information technology into physical education classroom teaching to improve the scientific and accurate level of physical education teaching.

Keywords-information technology; physical education; integrated development

1. INTRODUCTION

Today's world is marching towards the information age. Information has become the "blood" and "lubricant" of social and economic development. Modern information technology is widely infiltrating and changing people's life, study and work; Under the impact of this global information wave, many aspects of modern education are also strongly affected by information technology. How to integrate into college physical education, modern education is facing new development opportunities.

The book "Research on information-based teaching theory and practice of physical education teaching" compiled by Feng Kunye, a domestic scholar, is divided into six chapters to elaborate the relationship between physical education teaching and modern information technology. The book points out that physical education teaching should carefully study the path of integration with information technology. The information-based teaching using information means and information resources can effectively improve the teaching effect of physical education courses.Li Haiying, a scholar, believes that we should start from the integration value of information technology and physical education, and comprehensively explore specific integration strategies from multiple perspectives such as using information technology, highlighting teaching interests and creating teaching situations. Scholars Zhuang Quan and Yang

Guang believe that the significance of information technology integration in college physical education is to improve teaching quality, enhance learning initiative and strengthen the mastery of technical actions. The path can be through the creation of wechat and QQ groups for teaching, the use of information technology to record videos in advance and strengthen the learning of information technology by physical education teachers. Foreign scholar Tony weir & Sean coonor (2009) pointed out in his research that information technology provides video clips of students' performances in physical education teaching, and carries out feedback and review based on this, that is, digital video is regarded as a tool in physical education teaching, and carries out formative and summative evaluation through this tool. Papastergiou M (2009) proposed that video games, as an important part of information technology, are an important tool for physical education teaching.

Throughout the research of scholars at home and abroad, some from the application of information technology in college physical education, some from the integration and development of information technology and school physical education teaching resources, and the impact of the application of information technology on students' participation in school physical education, showing the characteristics of in-depth research content, rich research methods and expandable research perspective. Through the analysis, it is found that there is no further research on how to implement and how to integrate. Therefore, this study starts with the specific integration path, strengthening the innovation of research methods and deepening the research content, in order to provide a comprehensive theoretical basis for the future application of information technology in Physical Education in colleges and universities, and point out the practical direction for the application of information technology in Physical Education in Colleges and universities.

2. MATERIALS AND METHODS

2.1 Research Target

This teaching experiment selects 60 people as the research object of the general elective course of Shandong management university sports basketball club. The content is one handed shoulder shot. The students are randomly divided into two groups. The first group is 30 people in the experimental group and the second group is 30 people in the control group. The same teacher has classes from 2021 to 2022 fall semester, with a total of 32 class hours.

2.2 Research Method

1) Literature Method

Query the full-text database of CNKI and Wanfang, consult the relevant books and materials in the library of Shandong management university, and collect, classify, sort and read the materials, so as to provide theoretical support for the writing of this paper.

2) Experimental Method

Experimental group: when learning the technique of one hand shoulder shot, using modern educational information technology, the action method of one hand shoulder shot was made into

video or PPT in advance. The steps are carried out according to the implementation method. Control group: using traditional teaching methods.

3) Mathematical Statistics

The measurement data of experimental teaching are grouped and sorted, and the statistical results are analyzed quantitatively.

2.3 Specific Implementation Method

Teachers integrate curriculum teaching resources before class and send the teaching contents of physical education teaching design, including videos, audio PPT, teaching resources, micro classes, etc. to students, who can learn through mobile phones; In classroom activities, students will display and exchange the contents they have mastered, and give students personalized guidance according to their different mastery levels; Evaluate the learning content through learning, guidance and practice; After class, teachers investigate and understand the adaptability of students to master the learning effect and content, optimize the curriculum resources, form a virtuous circle and promote teaching. As shown below:
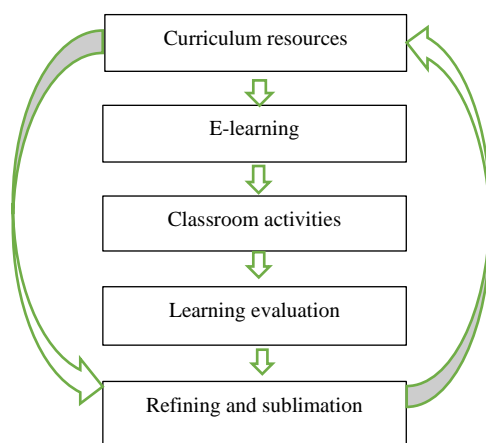
Figure 1. Implementation method

1) Curriculum Development

After making course resources, use computer or mobile phone to design pre class learning objectives, online learning requirements, learning difficulties, key points and other contents, and push relevant materials of course resources (PPT, teaching resources, videos, micro courses, MOOC, Web links, etc.).

2) Learning First

In this link, students participate in course activities and complete pre class tasks according to course resources. According to the background data fed back by the platform, teachers understand students' pre class learning and clarify the key points and strategies of offline classroom teaching. Teachers can see and master the overall preview of students on the mobile terminal, view the preview progress and homework completion of students in real time, browse the online communication of students, and timely remind students who have not participated in

or completed the preview before class, so as to fully master the online learning activities of students before class, and master the differences of students by using the learning stage of students.

3) Classroom Internalization

In classroom teaching, teachers comment on the completion of students' pre class tasks and introduce in class tasks with advanced difficulty. Classroom activities take students as the center, adopt students' practical practice, group discussion, interactive guidance and evaluation, supplemented by teachers' teaching, real-time demonstration and other teaching methods, connect online learning resources and offline classroom teaching, and break through the difficulties of the course. Teachers analyze the key points and difficulties of this class through mobile phone data, arrange exercises, allocate mutual learning according to individual differences, unite and cooperate to overcome key and difficult problems, and teachers stand in a higher position for personalized guidance, so as to form a new cognitive structure.

4) Evaluation Feedback

In the learning evaluation stage, teachers use mobile phone data to record the learning situation of each student in detail, and timely adjust the teaching progress through online and offline activities. For the homework assigned by teachers, each student will form their own personal learning files to realize personalized guidance. The homework arranged in the class is studied in groups. The group members are "homogeneous between groups and heterogeneous within groups", that is, the level between groups is balanced, and the level of students in groups is different. Conduct collective guidance. The evaluation of students can be based on the data of students' personal learning files as objective evaluation factors, which makes the whole evaluation process of students more objective, fair and just.

5) Discussion Summary

Critical reflection will be formed after all classroom teaching is completed. After class, based on the actual needs of students, teachers release the expansion tasks and hot spots in relevant fields of the course content on the platform to strengthen the learning effect, stimulate students' enthusiasm for research and encourage students to go deep into practice. By summarizing the students' completion of after-school tasks, teachers carry out critical reflection, optimize the scheme, optimize the curriculum resources and teaching design.

3. RESULTS AND DISCUSSION

3.1 Results

Before the experiment, the experimental group and the control group counted the basketball one handed shoulder shots (10 shots), and scored the shooting technical actions.

Table 1. Before the experiment, the number of one hand shoulder shot goals in the experimental group and the control group

group	Number of people	Average number	5 or less	6-7	8-9	10
experience group	30	4.5	16	10	4	0
control group	30	4.0	18	8	4	0

Before the experiment, the experimental group and the control group were tested for single hand shoulder shooting, each shooting 10 times, and the number of goals was counted. After statistical analysis, the average number of goals in the experimental group was 4.5, and the average number of goals in the control group was 4. Independent sample T-test was conducted on the data of the experimental group and the control group, $t > 0.05$, there was no significant difference. The next experiment can be carried out.

Table 2. Before the experiment, the results of the experimental group and the control group were evaluated by one hand shoulder shooting technique

group	Number of people	6 and above	6.5-7.4	7.5-8.5	9 and above
experience group	30	9	17	3	1
control group	30	8	18	3	0

Before the experiment, the technical action of one hand shoulder shooting in the experimental group and the control group were scored, and the scoring standard was carried out according to the evaluation standard of shooting technology. Independent sample T-test was conducted on the score data of shooting action between the experimental group and the control group, $t > 0.05$, there was no significant difference. The next experiment can be carried out.

Table 3. After the experiment, the number of one hand shoulder shot in the experimental group and the control group

group	Number of people	Average number	5 or less	6-7	8-9	10
experience group	30	5.5	10	15	5	0
control group	30	4.0	15	11	4	0

After the experiment, the experimental group and the control group were also tested for single handed shoulder shots, with each person shooting 10 times and counting the number of goals. After statistical analysis, the average number of goals in the experimental group changed from

4.5 to 5.5, an increase of 1, and the average number of goals in the control group was 4, which did not change. In terms of the distribution of the number of shooting goals, both the experimental group and the control group have increased. The experimental group has concentrated 6-7 goals, and the overall increase is more obvious, while the control group has all the increases, but not obvious.

Table 4. After the experiment, the results of the experimental group and the control group were evaluated by one hand shoulder shooting technique

group	Number of people	6 and above	6.5-7.4	7.5-8.5	9 and above
experience group	30	6	8	13	3
control group	30	8	16	6	0

After the experiment, the technical action of one hand shoulder shooting in the experimental group and the control group were scored. There was a large gap between the skill scores of the experimental group before and after the experimental teaching. After the experiment, the technical evaluation scores of the experimental group were mostly concentrated between 7.5-8.5, while the technical evaluation scores of the control group did not change significantly compared with those before and after the experiment.

3.2 Discussion

Through the experiment of modern educational information technology, the results show that the teaching effect of the experimental group is better than that of the control group in the teaching process of one hand shoulder shooting. This is because the experimental group allows students to study first in the form of micro courses, and then fix the technical action through classroom internalization, and organically combine the action appearance through vision, listening and practice, which further promotes the solidification of action skills. Secondly, in the process of experimental teaching, teachers give full play to students' dominant position, greatly improve students' learning enthusiasm, meet students' learning requirements at different levels, and further strengthen the learning effect.

4. CONCLUSIONS

Based on the data analysis of the integration of modern educational information technology and classroom experimental teaching: this organic integration can improve the solidification of students' action skills, improve students' interest in learning, and more reflect the student-centered educational thought. In classroom teaching, teachers can better teach students according to their aptitude, better carry out more creative educational activities, reasonably arrange teaching contents, and promote students' ability to solve problems independently.

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