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Optimization Strategies for College Physical Education Courses Based on Big Data Analysis

Fanfan Li

Communication University of China Nanjing, Nanjing, Jiangsu, 210000, China

ABSTRACT
In the era of artificial intelligence, big data analysis is penetrating into various fields at an unprecedented speed, including the college physical education. Its application in teaching is conducive to promoting the intensive development and curriculum optimization of college physical education. This article delves deeply into the value implications and logic of optimizing college physical education courses based on big data analysis, and then proposes optimization strategies, aiming to promote the all-round improvement of students' physical fitness and the in-depth cultivation of their sports literacy, thereby developing a new path for the long-term development of college physical education.

KEYWORDS
Big data analysis; College; Physical education; Curriculum optimization

1 Introduction

Big data analysis provides a transformation path from "experience-driven" to "data-driven" for the optimization of college physical education courses. Based on this, in-depth exploration of the optimization strategies for college physical education courses based on big data analysis plays a significant role in optimizing college physical education courses, promoting the transformation and development of college physical education, and enhancing the quality of talent cultivation.

2 Value Implications of Optimizing College Physical Education Courses Based on Big Data Analysis

The optimization of college physical education courses based on big data analysis has multiple values.

On the one hand, it helps to enhance the pertinence of physical education courses. The application of big data analysis is conductive to conducting a precise analysis of students' sports learning ability maps, specifically covering multiple dimensions such as students' mastery of sports skills, sports interest preferences, and physical fitness development levels. Based on this, the optimization of college physical education courses can help teachers clearly understand the practical needs of each student in physical education courses, improve the adaptability of physical education courses to students' needs, and thereby greatly enhances the pertinence of college physical education courses.

On the other hand, it helps to improve the quality of physical education courses. Big data analysis, with its powerful data processing and analysis capabilities, provides strong support for the improvement of the quality of physical education courses. Through the comprehensive collection and in-depth analysis of students' sports learning data, teachers can identify the problems and deficiencies of physical education course teaching. For instance, whether the difficulty level of the teaching content in physical education courses is appropriate, whether the teaching methods are effective, and whether the teaching resources are sufficient. On this basis, teachers can optimize and adjust physical education courses in a targeted manner, thus continuously improving the quality and effectiveness of physical education courses [1].

3 Logic of Optimizing College Physical Education Courses Based on Big Data Analysis

3.1 Logic of Curriculum Data Collection and Integration

The primary link for the optimization of college physical education courses based on big data analysis is the collection and integration of curriculum data, which covers a wide range, such as data on students' physical education learning and social interaction [2]. In the process of physical education course learning, teachers not only need to collect data on students' mastery of sports skills and sports test scores, but also need to gather basic physical data such as students' height, weight, and cardiopulmonary function indicators. At the same time, they should pay attention to and collect data related to students' social interaction, such as their performance in physical education classroom activities and their activity level in participating in sports clubs. Subsequently, teachers need to integrate data. They should orderly sort and

associate various types of data according to their different types and characteristics. Such comprehensive data collection and integration can provide data support for the subsequent optimization of college physical education courses based on big data analysis.

3.2 Logic of Curriculum Data Analysis and Mining

In the optimization of college physical education courses based on big data analysis, teachers need to collect and integrate students' physical education course learning data, and then use big data analysis technology to mine the potential value information behind various data. On the one hand, teachers can adopt diagnostic analysis to explore the change trends and development patterns of various data in students' physical education course learning, such as the fluctuations in students' sports tests in different semesters, so as to understand the development trend of students' physical fitness. On the other hand, teachers can take advantage of the large data volume and fast speed of big data analysis to tap the in-depth information behind various sports data, such as the intrinsic connection between students' basic physical data and their sports test scores, thereby providing strong support for the precise optimization of college physical education courses.

3.3 Logic of Curriculum Decision Support and Feedback

In the process of optimizing college physical education courses based on big data analysis, teachers should conduct a comprehensive assessment of students' physical education learning based on the valuable information obtained from curriculum data collection, integration, analysis and mining. Specifically, teachers can leverage big data analysis technology to comprehensively analyze students' performance in physical education course learning. And then, based on the obtained data, they should adjust the content of physical education courses and reasonably arrange the teaching progress, to ensure that the courses not only meet students' physical development needs, but also effectively enhance their sports skills and levels. Meanwhile, teachers can establish an effective feedback mechanism to widely collect students' feedback on the content and teaching methods of physical education courses, as well as their evaluation data on the teaching effectiveness of physical education courses. Therefore, teachers can promptly understand the actual effect of curriculum optimization measures and then continuously improve and optimize the courses, thereby forming a virtuous cycle, and effectively enhancing the quality and effectiveness of college physical education courses.

4 Strategies for Optimizing College Physical Education Courses Based on Big Data Analysis

4.1 Optimize Course Content

The optimization of college physical education courses based on big data analysis first requires the optimization of course content.

On the one hand, relying on big data technology, the content of physical education courses is designed in a hierarchical manner. Teachers need to analyze data such as students' participation in physical education classes and the improvement of their sports skills based on big data, and then design teaching content in a hierarchical manner to accurately identify students' real learning needs in physical education courses. Taking students' mastery of sports skills as an example, teachers can divide physical education courses into the basic skill level and the advanced skill level. The basic skill level focuses on the explanation and training of basic movement standards and principles of sports as the course content, aiming to lay a solid foundation for students' subsequent physical education learning. Based on the basic skill level, the advanced skill level focuses on the deepening of sports skills and the understanding and application of sports tactics, and appropriately adds challenging and interesting rock climbing programs as course content. Meanwhile, teacher can leverage the data of students' various sports performances to optimize the movement guidance, so as to meet the pursuit of advanced skill level students for more difficult sports skills, and make the content of college physical education courses more contemporary and attractive. Designing the content of physical education courses in a hierarchical manner enables each student to find a physical education course suitable for themselves, thereby preventing the physical education course content from affecting students' enthusiasm for physical education learning due to being too difficult or too easy.

On the other hand, college physical education teachers also need to identify students' interests and hobbies in sports based on big data analysis, and appropriately incorporate popular and suitable sports as course content. If big data analysis shows that students are interested in ultimate frisbee, teachers can fully integrate the origin and background, rules and venues, as well as skills of ultimate frisbee into the physical education course content. On this basis, they can moderately explain the characteristics of ultimate frisbee, such as its fitness and mental health benefits, economic and appreciate value, and carry out corresponding practical activities to enrich the content system of college physical

education courses, and enhance the recognition and influence of ultimate frisbee among students, thus meeting students' diverse needs for physical education course learning and stimulating their enthusiasm for participating in this sport [3]. Meanwhile, if big data shows that students are more interest in traditional sports such as martial arts, teachers can further expand the relevant content in the course, such as elaborating on the key points of Tai Chi moves and the skill items of dragon and lion dance, so that the course content can not only cater to students, interests, but also inherit and promote excellent sports culture, therefor further enhancing the diversity and attractiveness of college physical education course content.

4.2 Optimize the Teaching Staff

Optimizing the teaching staff is the main guarantee for the optimization of college physical education courses based on big data analysis. The professional quality and teaching ability of teaching staff are directly related to the effectiveness of curriculum optimization.

On the one hand, colleges and universities should make use of big data analysis technology to accurately grasp the professional development needs of physical education teachers. By integrating and analyzing the teaching data of physical education courses by teachers and the evaluation data of students, they can accurately identify the advantages and disadvantages of physical education teachers in the course teaching process. On this basis, they should focus on encouraging physical education teachers to participate in training and education related to big data analysis, regularly train physical education teachers on the development of digital teaching resources for physical education, the application of digital technology in the field of physical education, and the methods for innovating and optimizing physical education courses based on big data, in order to enhance physical education teachers' awareness of optimizing college physical education courses based on big data analysis, and bridge the "digital divide" among physical education teachers [4]. At the same time, colleges and universities should encourage teachers to participate in mixed research and training activities based on big data analysis, such as observation of excellent course teaching cases, demonstration lecture tours, teaching competitions or lesson case studies. On the basis of achieving the sharing of physical education teaching and research resources, it promotes physical education teachers to learn from practice and practice from competitions, and gradually enriches physical education teachers' practical experience in physical education course teaching based on big data analysis [5].

On the other hand, college and universities can build a big data analysis communication platform to enable physical education teachers to share their practical experience and teaching optimization plans based on big data analysis on the platform, promote mutual learning and communication among teachers, and form a favorable teaching research atmosphere, thereby enhancing teachers' ability to optimize physical education course teaching through big data analysis. In addition, they can establish a reward mechanism for optimizing physical education courses based on big data analysis to make efforts to provide material and spiritual rewards to physical education teachers who have performed outstandingly and achieved remarkable teaching results in the application of big data analysis. For instance, they can set up special bonuses or give appropriate bonus points in professional title evaluation. Through these measures, colleges and universities can expand the development opportunities and space for physical education teachers to stimulate them to actively engage in the application practice of big data analysis in the optimization of physical education courses, and thereby provide teacher support for the continuous optimization of college physical education courses.

4.3 Optimize the Course Evaluation System

Optimizing the course evaluation system is an important link in the optimization of college physical education courses based on big data analysis.

On the one hand, colleges and universities need to utilize big data analysis to optimize the evaluation indicators of physical education courses. The evaluation of physical education courses based on big data analysis should abandon the previous single evaluation index focusing on physical fitness test scores, and mainly use multi-dimensional data such as students' physical fitness, sports skills and sports theoretical knowledge as evaluation indicators. Among these indicators, the physical fitness of students mainly covers multiple indicators such as speed, endurance and agility. The evaluation of students' sports skills is based on different sports events. For instance, in basketball, students' shooting percentage and other data are taken as the core indicators to comprehensively assess their mastery of skills in various sports. For the theoretical knowledge of physical education, a combination of subjective and objective questions is used to test students' knowledge reserves in school physical education, introduction to physical education, and sports sociology, in order to comprehensively measure students' performance in physical education courses. In addition, teachers can also leverage big data analysis technology to promptly capture the changes in students' physical education learning process, thereby making the evaluation of physical education courses more dynamic and targeted.

On the other hand, it should promote the application and feedback of the evaluation results of physical education

courses through the use of big data analysis technology. In terms of the application of evaluation results of physical education courses, based on the personalized feedback mechanism of big data analysis, teachers should conduct in-depth mining of students' learning data and generate personalized reports covering students' physical education learning attitudes, learning duration, weak links in physical education, and improvement suggestions, so that the evaluation results can truly serve the improvement of students' comprehensive physical education abilities. In terms of feedback on the evaluation results of physical education courses, in addition to the traditional face-to-face communication and feedback method, teachers should build diversified feedback channels and make efforts to strengthen the application of online learning platforms, so as to promptly feed back the evaluation results of physical education course learning to students. At the same time, teachers should encourage students to conduct self-feedback or mutual feedback with peers to enable them to recognize their performance in physical education learning from different perspectives. In addition, a tracking mechanism for evaluation results should be established. Teachers need to regularly conduct a comprehensive comparative analysis of the physical education ability development data of students at different learning stages of physical education courses, so as to provide data support for the continuous optimization of physical education courses.

5 Conclusion

The optimization of college physical education courses based on big data analysis is an important measure in the context of the digital transformation of education and the construction of a sports power. It not only conforms to the development trend of the times, but also provides an optimization direction for the improvement of the quality of college physical education. In the future, with the development of advanced science and technology and the expansion of application scenarios, colleges and universities should further deepen the research on the application of big data in physical education courses and explore more innovative optimization paths.

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About the Author

Fanfan Li, Master's Degree, Associate Professor, Research Field: Physical Education.

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