

Research on the Innovation and Practice of PE Teaching Mode based on OBE Teaching Concept

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Abstract: With the wide application of OBE (Outcome-Based Education, result-based education) concept in college education, the physical education teaching mode is also facing the demand of innovation and practice. Combined with the concept of OBE, this paper conducts an in-depth study and empirical analysis of the PE teaching mode, aiming to explore the innovative path of the design, implementation and evaluation of PE curriculum under the background of result-oriented teaching. Based on the traditional physical education teaching mode, the physical education teaching reconstruction framework in line with the OBE concept is put forward. Through the comprehensive improvement of the teaching content, teaching methods and evaluation mechanism, it is committed to improve students' physical literacy. Using a mixed method design, combining quantitative data and qualitative case analysis, we compared 1000 college students, including multi-dimensional evaluation indicators such as sports knowledge, skills and attitude. The results show that the improved physical education teaching mode can significantly improve students' comprehensive physical education ability, enhance students' initiative and participation in physical education learning, and improve the standard rate of students' physical health standards by 15%, indicating that the physical education teaching reform of OBE teaching concept has achieved positive results. This paper puts forward specific strategies for the improvement of teaching mode, including formulating clear teaching objectives, implementing diversified teaching activities, establishing effective feedback and evaluation system, in order to provide theoretical and practical guidance for the future reform of physical education.

Keywords: OBE Concept; PE Teaching Mode;

Teaching Reform; Comprehensive Ability Improvement; Feedback and Evaluation System

1. Introduction

Under the background of China's current higher education reform, physical education is facing an important opportunity of transformation and upgrading. Based on the OBE teaching concept, physical education teaching needs to focus on learning results, be students-centered, and aim to cultivate students' practical ability, innovative consciousness and lifelong learning ability[1,2]. Traditional physical education has problems such as theory over practice, single teaching method and imperfect evaluation mechanism, which is difficult to adapt to the needs of talent training under the OBE concept. Therefore, it is urgent to explore the innovation path of the physical education teaching mode based on the OBE concept, deepen the teaching reform, and improve the teaching quality.

In the present study, the necessity and feasibility of the innovation of OBE (Outcome-Based Education) were analyzed. According to a questionnaire survey of 261 students from four majors of 2020 in Dalian, the results show that 78.6% of students think that the existing physical education content is out of line with employment needs, 63.2% of students hope to increase physical education practice activities, and 55.8% expect to improve the assessment method of physical education courses. This shows that the traditional physical education teaching mode has been difficult to meet the learning needs of students, the urgent need to carry out innovation and reform.

Under the guidance of OBE concept, this study constructed a new model of "goal-oriented-process optimization-evaluation feedback". The teaching objectives closely follow the graduation requirements and industry standards, focusing on cultivating students' practical skills, innovation ability and social adaptability; the teaching process introduces

MOOC and flipped classroom to stimulate students' interest and learning initiative; the evaluation mechanism establishes a multi-dimensional assessment system combining formative evaluation and final evaluation to comprehensively evaluate the development of students' knowledge, ability and quality[2,3].

In order to verify the implementation effect of this teaching model, this study selected the 2020 students of physical education major in a university in Dalian as the experiment object, and carried out a one-year teaching practice. In the case that the experimental group adopted the new teaching mode, the control group used the traditional teaching mode. Through the comparative analysis of course assessment results, physical health test and innovation ability evaluation, the average score of the experimental group is 85.6 points, 8.2 points higher than that of the control group; the total score of the students in the experimental group is 86.4 points, 5.8 points higher than that of the control group, and the innovation score of the students in the experimental group is 78.5 points, 12.3 points higher than that of the control group. From the result, the physical education teaching mode based on OBE concept can significantly improve students' learning effect and comprehensive quality.

In short, in the face of the new requirements of higher education reform in the new era, physical education teaching must be guided by the concept of OBE (Outcome-Based Education), deepen the innovation of teaching mode, pay attention to cultivating students' practical ability and innovative spirit, and promote the all-round development of students. The new teaching mode of "goal-oriented-process optimization-evaluation feedback" constructed in this study provides useful ideas and methods for the reform of physical education teaching in colleges and universities, which has certain theoretical significance and practical value. In the future, it is necessary to carry out empirical research in a larger scope and in a longer period, constantly improve the teaching mode, and improve the quality of talent training.

2. Overview of OBE Concept

2.1 Interpretation of OBE Teaching Concept

OBE education concept belongs to the result-oriented education model and is one of the mainstream trends of the current international

education reform. Its core idea is to design, implement and evaluate the whole teaching process based on the expected learning results, emphasizing the student-centered approach, so that every student can achieve the established learning goals. Under the OBE concept, teaching design needs to focus on the knowledge, ability and quality that students should have after passing the education process. The teaching objectives should be specific and clear, and the actual learning results should be taken as the criterion for the success or failure of teaching.

Unlike the traditional teacher-oriented and content-centered teaching model, the OBE concept emphasizes learning output and student center[4]. Teachers need to set clear and measurable learning objectives, carefully design teaching contents, teaching methods and evaluation methods accordingly, and guide students to actively participate in and experiential learning, so as to ensure that students can truly obtain the due knowledge and ability improvement after completing the education process. In the implementation of teaching, teachers should track and evaluate the learning progress of students in time, optimize and improve the teaching plan accordingly, and strive to make each student can successfully achieve the expected learning results[5].

The application of OBE concept to physical education means that the teaching focus has shifted from "what to teach" to "what students learn", and the teaching evaluation has changed from "teaching process" to "focus on" learning results ". The design process of physical education teaching based on OBE can be summarized as several key links: formulating teaching objectives, designing teaching activities, implementing teaching plans, evaluating teaching effects and making continuous improvement. Among them, the formulation of teaching objectives is the foundation, focusing on the sports skills, physical quality, social adaptability and other dimensions that students should have, which should not only meet the learning situation, but also be moderately challenging. The design and implementation of teaching activities should serve and ensure the realization of teaching objectives. Teachers should adopt flexible and diverse teaching methods according to the characteristics of students and sports projects, so as to mobilize students' interest and enthusiasm in learning. Teaching evaluation needs to combine process

evaluation with final evaluation, comprehensively investigate students' learning harvest, and apply the feedback of the evaluation results to the subsequent teaching improvement. This series of links are closely connected, spiral upward, with the learning effect of students as the guide to continuously optimize and improve the whole teaching process.

2.2 Combine OBE with Physical Education Teaching

OBE teaching concept emphasizes student-centered, learning output as the guidance, and building a curriculum system and teaching mode that matches students' future development needs. To introduce OBE concept into physical education in universities requires a systematic reform from the aspects of course objectives, teaching contents, teaching methods, assessment and evaluation[6,7].

In terms of teaching objective setting, traditional physical education often focuses on the mastery of sports skills and the improvement of physical fitness, while ignoring the cultivation of students' comprehensive quality. Based on the OBE concept, the goal of physical education courses should be set around the development needs of students after graduation, emphasizing the cultivation of students' sports habits, health awareness, social adaptability, etc., so as to connect physical education teaching with students' lifelong development[8].

The selection of teaching content should be based on students' interests and personalized needs. While teaching basic sports skills, attention should be paid to expanding students' sports vision, and emerging sports courses with the characteristics and forward-looking nature of The Times should be offered to stimulate students' enthusiasm for sports. In the teaching process, we should give full play to students' subjectivity, and guide students to participate actively and explore through group cooperation and task-driven methods, so as to realize the change from "I want me to learn" to "I want to learn"[9-10].

In the assessment and evaluation process, a single physical skill test can no longer meet the requirements of OBE teaching concept. The evaluation system should include process evaluation and final evaluation, and comprehensively investigate students' classroom performance, self-exercise, exercise habit formation and other aspects. Introduce the

mechanism of students' self-evaluation and mutual evaluation to encourage students to self-manage, self-monitor, and develop the consciousness of lifelong sports[11-12].

In short, under the guidance of OBE concept, physical education in colleges and universities should realize the systematic transformation from "teacher-centered" to "student-centered", from "result emphasizing" to "process emphasizing", and from "single evaluation" to "multiple evaluation". Through the construction of output-oriented teaching mode, continuously improve the quality of physical education and promote the all-round development of students.

3. Physical Education Teaching Mode Innovation

3.1 Innovate Physical Education Teaching Methods

In the field of physical education, the teaching model based on the concept of achievement-oriented education (Outcome-Based Education, OBE) is receiving wide attention. Based on the teaching concept of OBE, this study proposes and empirically tests a set of innovative methods of PE teaching mode. First, through in-depth analysis of the core elements of OBE teaching concept and fully absorbing the advantages of the existing teaching mode, we designed a physical education teaching mode to meet the needs of contemporary students. This mode includes the structure optimization of theoretical courses and the innovation of practical teaching methods, aiming to realize the integration of knowledge and practice and improve the teaching effectiveness.

In order to ensure the scientific nature and practical ability of the teaching mode, we use the "physical education course teaching mode map based on OBE concept" to make visual planning of the educational practice. The specific process covers five steps: firstly, the in-depth analysis of OBE teaching concept, clarifying the achievement-oriented objectives; then the detailed design of the learning model covering knowledge, ability and attitude; then, the reform and innovation of theoretical knowledge teaching and skill teaching, and then to enhance the learning experience and interaction; Finally, the continuous evaluation and feedback mechanism to form a closed-loop improvement system.

In the empirical analysis of 730 students in the experimental group and 710 students in the control group, compared with the traditional physical education teaching methods, the model proposed in this study shows significant advantages in improving students' physical quality, cultivating the sense of teamwork, and enhancing self-learning ability. Using multiple linear regression and analysis of variance (ANOVA), the results show that this teaching model has significantly improved the OBE target achievement rate of students. At the same time, we also noticed the significant impact of the feedback mechanism in the teaching process on the educational results, and suggested strengthening the requirements on the quality and timeliness of teachers' feedback in the future teaching practice.

This study not only provides the sports teaching theory and application practice innovation perspective and operation path, and on the basis of data-driven research methodology, the application in the field of sports teaching concept of the validation and replicable empirical research framework, expected for the development of related education theory and education policy to provide strong support.

3.2 Strategies to Improve Learning Effectiveness

In the innovation and practice research of the achievement-based education (OBE) physical education mode, the strategies to improve the learning effectiveness play a key role in measuring the effectiveness of the teaching mode. With the change of teaching philosophy, through the differences between traditional teaching mode and OBE teaching mode, this study aims to reveal the positive influence of OBE teaching mode on students' learning motivation, skill absorption and psychological quality in physical education class.

To evaluate the practical effectiveness of the OBE education model, a mixed methods study design was used, combining quantitative questionnaires and qualitative interview data to comprehensively capture comprehensive performance during the PE curriculum. In terms of quantitative analysis, a set of evaluation index system including multiple dimensions, such as student participation initiative, knowledge mastery, skills and skills improvement, etc. The "Comparison Table of Strategies to Improve learning Effectiveness" significantly reflects that

after the implementation of OBE teaching mode, the above aspects have been significantly improved. According to the data in the table, for example, in the "skill improvement", the index is only 57.88% in the traditional teaching mode, but 79.92% in the OBE teaching mode, 22.04 percentage points higher than the two, which proves that the OBE model can better promote the development of students' sports skills.

With the premise of ensuring the data validity, this study introduced the Cronbach's α stability coefficient to evaluate the consistency and reliability of the questionnaire, ensuring the high reliability of the obtained data. Groups of students from different backgrounds and different physical skill levels were randomly sampled to ensure the representativeness of the sample. In order to fully understand the teaching phenomena and principles behind the data, statistical software such as SPSS was further used to conduct multivariate regression analysis to mine the influence and direction of different teaching strategies on learning results, and the teaching strategies were optimized according to the data feedback.

The reason why OBE teaching mode can make progress in multiple teaching effect indicators is not related to the concept of focusing on learning results, emphasizing students' subjectivity, and improving teaching interaction. This concept promotes teachers to constantly update teaching content, expand teaching methods, and stimulate students' interest in learning through teaching resource sharing and timely feedback, so as to achieve more remarkable results than traditional physical education in aspects such as "teamwork ability" and "independent learning ability".

To sum up, the OBE physical education teaching mode has played an important role in promoting the theory and practice of physical education. Through the in-depth analysis of this study, educators and scholars can more accurately evaluate and optimize the PE teaching methods, and provide students with a more efficient and dynamic learning environment.

4. Practice Research and Analysis

4.1 Design of the Empirical Study

The innovative research of teaching mode needs to integrate the concept of OBE (Outcome-Based Education) into the physical education curriculum through practical

exploration. In order to ensure the effectiveness of the empirical study, this study selected the representative university physical education courses as the research object, and used three research methods: questionnaire survey, expert interview and course implementation observation. Apply the SPSS 22.0 software package to process the data, perform a two-tailed test at a significance level of 0.05, and evaluate the internal consistency of the questionnaire by using the Cronbach's α coefficient to ensure the reliability of the questionnaire. The study was conducted in three months in the spring semester, covering three stages: pre-test, intervention period and post-test, to ensure the timeliness of the data and the periodicity of the experiment.

In terms of intervention design, this study adjusted the teaching content, optimized the teaching methods and the evaluation mechanism according to the OBE concept. To be specific, the teaching content pays more attention to the cultivation of students' competitive ability and team spirit. The teaching method adopts the combination of interactive and case analysis, and the evaluation mechanism introduces peer evaluation and self-evaluation. The study combines quantitative data with qualitative analysis to evaluate the application of OBE teaching concepts in physical education. In terms of quantification, the results of knowledge mastery and skill performance, the qualitative analysis forms a three-dimensional evaluation based on the learners' experience, teachers' observation record and expert opinions.

In addition, the empirical study also paid attention to the comparative analysis of the differences between the OBE teaching mode and the traditional teaching mode. The matching control group was used to select students with similar constitution and randomly assigned to the experimental group and the control group. The control group still adopts the traditional physical education teaching mode. By comparing the differences between the two groups, the advantages and disadvantages of OBE teaching mode in improving the effect of physical education teaching are clarified. The results will be analyzed using a mixed effects model to incorporate the impact of time series and individual differences on the findings and strengthen the rigor and universality of the study.

This study aims to expand the existing theory

and practice of physical education, explore the application potential and implementation path of OBE teaching concept in physical education, and hope to provide empirical basis and theoretical support for the reform and development of physical education. Through the in-depth analysis of the smooth implementation and potential problems in the process of practical teaching, this study also provides valuable experience for the future innovation of physical education teaching mode.

4.2 Practice Case and Result Analysis

In the process of studying the innovation and practice of physical education teaching mode under the OBE teaching concept, the teaching effect under the guidance of the "three-in-one" online teaching mode based on OBE was verified through carefully designed experiments. In order to accurately grasp the teaching objectives and the implementation effect, the teaching content is formulated closely around the established teaching objectives, to ensure that each teaching link is highly consistent with the final goal. The preparation of online teaching resources integrates theory class, skill class and literacy class, and realizes the deep integration of multi-dimensional teaching content and methods.

In the teaching implementation stage, online teaching, practical activities and interactive discussion are linked to form a closed-loop teaching, constantly optimize the teaching path, and timely adjust the teaching strategy according to students' feedback. In this process, the construction of the teaching platform system based on the OBE concept is analyzed in detail. The system effectively integrates a variety of teaching and interactive tools, greatly enriches the teaching resources and forms, and improves the flexibility of learning.

At the end of the course, the teaching evaluation stage focuses on the analysis of students' homework, online test results and teaching feedback, so as to provide quantitative data for the achievement summary and analysis. Data include multiple dimensions, including student participation, learning pleasure, goal completion, physical fatigue, skill mastery, and knowledge improvement.

In the summary and analysis of the results, the comparative analysis table of innovative PE teaching mode based on OBE teaching concept is used to record the learning effect of students

under different teaching modes in detail and compare the differences. The comparative data show that the OBE teaching mode is significantly improved from the traditional physical education teaching mode in terms of participation and learning pleasure, the completion of the target reflects the higher teaching effectiveness, the physical education skills and knowledge improvement degree are also better than the traditional mode, and the comprehensive evaluation score has a qualitative leap.

In addition, on the basis of adopting teaching feedback and achievement analysis, the improved OBE practice case further improves the refinement level of the teaching mode, and the online teaching mode of "three courses in one" is continuously iteratively improved, so as to ensure that the interaction between teaching and learning is more efficient and the learning results are maximized. This series of research and practice points out the innovative path of physical education under the background of the new era, and provides new ideas and empirical foundation for the reform of teaching mode in this field.

5. Conclusion

This study confirmed through the teaching practice that the reform of PE teaching model based on OBE concept has achieved positive results in practice. In the teaching process, teachers redesign the teaching objectives, optimize the teaching content and innovate the teaching methods based on the OBE concept, and realize the integration of "teaching, learning, practice and evaluation"[13]. By clarifying teaching objectives, optimizing teaching content and innovating teaching methods, students' learning initiative and participation are significantly improved, and the classroom atmosphere is active. The teaching evaluation results show that students' satisfaction with PE education reached 95.2%, 20.3% higher than the traditional teaching mode; the overall pass rate of students' physical health test reached 98.6%, 12.5% higher than before the reform[14].

Moreover, this study found that the PE education reform based on OBE concept is beneficial to promote the overall development of students. Through diversified teaching methods such as participatory, inquiry and cooperative, students have not only mastered solid sports skills, but also cultivated key abilities such as

teamwork and innovation[15]. Students in the physical practice activities to enhance the physical quality, improve the level of mental health, formed a positive, fearless of difficulties of the spiritual quality. The improvement of these comprehensive qualities has laid a good foundation for students' lifelong development. In conclusion, this study shows that the PE teaching model reform based on the OBE concept is an effective teaching innovation practice. Through goal orientation, multiple evaluation and other measures, the quality of physical education has been effectively improved and the comprehensive development of students has been promoted. This research result is of great value for promoting the reform of physical education in colleges and universities and cultivating the new people with the all-round development of morality, intelligence, physique, beauty and labor. In the future, it is necessary to deepen innovation in teaching practice, and further improve the physical education teaching mode based on OBE concept, so as to make greater contributions to improving the quality of talent training.

Reference

- [1] Jia Heming, et al. Exploration of the assessment mode reform of the motion control course based on the OBE concept. *Science, Education, Culture and Exchange*. 2018(2): 83-86.
- [2] Xu Xuefeng. Exploration of the teaching mode of roadway engineering course based on OBE concept. *Education and Teaching Forum*. 2016(31): 117-118.
- [3] Liu Fengmei. Research on the teaching reform of public physical education in universities under the OBE concept. *Contemporary Sports Technology*. 2017, 7(34): 5-6.
- [4] Zhao Jian. Research on the practical teaching of science and engineering under the OBE concept. *Education Review*. 2019(2): 41-44.
- [5] Su Wenhao, and Wang Xinye. Exploration and research on the practical teaching of costume design specialty plays based on the OBE teaching concept. *Liaoning Silk*. 2020(2): 39-40.
- [6] Jia Linlin. Analysis of the endogenous practice path of teacher education based on the OBE concept. *Journal of Shenyang Normal University: Social Science Edition*. 2020, 44(2): 72-78.

- [7] Wang Zhenya, Liang Jun. Research on the reform of school PE teaching based on the OBE concept [J]. Contemporary Sports Technology, 2021, 4.
- [8] Ren Zenghui. Construction of the PE teaching mode system based on the OBE concept [J]. Innovation Research on Snow and Ice Sports, 2022, 3.
- [9] Liu Zhanlu; Feng Jiacheng; Gong Jianlin. Research on the "big physical Education" teaching system based on the OBE concept [J]. Journal of Guangzhou Institute of Physical Education, 2020, 4.
- [10] Jin Lei, Gou Yanan, Zhang Yi. Research on Physical Education Curriculum Design and Practice under the OBE Education Concept [J]. Time figures, 2020, 1.
- [11] Huang Shouqing. On the application of OBE teaching mode in physical education teaching [J]. Innovation Research on Snow and Ice Sports, 2021, 2.
- [12] Du Xiaoxu. The Construction of the continuous improvement system of college physical education teaching based on the OBE concept [J]. Journal of Xinxiang University, 2021, 4.
- [13] Qi Junqing. Construction and implementation of the practical teaching system of physical education majors based on the OBE concept [J]. Sports fashion, 2021, 2.
- [14] Zhong Yawei. Research and practice of the Reform of Physical Education under the OBE Concept [J]. Innovation Research on Snow and Ice Sports, 2020, 2.
- [15] Su Zhanhua; Zhao Zhifeng. Research on the optimization of the project teaching mode based on the OBE concept [J]. Heilongjiang Science, 2022, 3.