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THE APPLICATION OF DEEP LEARNING IN SPORTS DATA ANALYSIS

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Abstract. In order to ensure that students have a deeper and more thorough understanding of knowledge and skills, the author takes deep learning as the direction and integrates it into the real-time evaluation of basketball classrooms, organically combining the two. Deep learning provides a new theoretical perspective and driving force for the optimization of real-time evaluation, and points out the direction for promoting evaluation effectiveness; The optimization of real-time evaluation provides a feasible path for achieving deep learning for students. After the implementation of the real-time evaluation plan between the experimental group and the control group, the comparison results of basketball skills tests were obtained: before and after the experiment, the experimental group's 60 second self throwing and self grabbing, vigorous dribbling, comprehensive dribbling, teaching competitions, and teaching lectures all showed significant differences in test indicators; Before and after the experiment, the control group showed significant differences in the four test indicators of 60 second self throwing and self grabbing, vigorous dribbling, comprehensive dribbling, and teaching lectures. The teaching competition indicators also showed significant differences, all of which were improved. Comparison results of deep learning abilities: Before and after the experiment, there were significant differences in the dimensions of experimental combination ability and learning perseverance, while there were significant differences in the dimensions of communication ability, self-learning ability, and total score of deep learning ability; Before and after the experiment, there was a significant difference in the dimensions of control group work ability, while there was no significant difference in the dimensions of self-directed learning ability, learning perseverance, and communication ability. Overall, there was a very significant difference in deep learning ability. Overall, the experimental group showed a more significant improvement in deep learning ability compared to the control group. The real-time evaluation plan for sports education professional basketball classrooms based on deep learning is more effective in improving students' basketball skills and deep learning abilities than the conventional real-time evaluation plan for sports education professional basketball classrooms. The design of the plan has certain effectiveness and feasibility.

Key words: Deep learning, Sports data analysis, Application, Instant evaluation, Basketball Classroom

1. Introduction. As an important component of national teacher training programs, the physical education major is the main battlefield for cultivating the teaching staff of primary and secondary school physical education teachers, and has the largest proportion in undergraduate physical education majors. Its importance is self-evident [1]. As one of the main courses of physical education in ordinary universities, basketball course is an important part of school physical education teaching. The teaching of basketball compulsory courses is based on the principle of combining theory and practice, according to the requirements of the physical education professional training program and the characteristics of students, with a focus on strengthening students' ideological and political education, moral education, and the mastery of basic knowledge and skills of basketball, improving teaching organization and practical application abilities, highlighting the characteristics of teacher education, enabling students to achieve comprehensive development.

The quality of basketball course teaching to a certain extent affects the quality of talent cultivation. In order to improve the quality of basketball teaching, classroom teaching is the foundation and the main battlefield for students to learn basketball knowledge, master basic basketball skills and tactics, and cultivate basketball teaching abilities.

Teaching activities are a process of joint participation and learning between teachers and students. Therefore, in basketball classrooms, there is a lot of communication and interaction between teachers and students, and real-time evaluation occurs within it. If teachers can flexibly use real-time evaluation based on student learning performance, it can guide students to actively think and promote the improvement of teaching effectiveness. Instant evaluation, as a commonly used teaching method in basketball classrooms, plays an important role in overall control of the teaching process. However, due to various factors, it has not achieved the expected

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results. In classroom teaching, most teachers do not attach importance to the real-time evaluation process, which leads to many problems such as unclear evaluation objectives, single evaluation methods, and incomplete evaluation content. If a teacher fails to provide effective immediate evaluation when a student is learning a new skill, the student may practice the wrong action continuously, leading to the formation of the wrong action and missing out on a good opportunity for correction. Of course, during the learning process, many students may encounter various problems. If the teacher only evaluates right and wrong in real-time evaluation, it will directly affect the student's in-depth learning experience and deep understanding and recognition of skills. It will not play a good role in the important role of real-time evaluation, and there will also be shallow guidance for students in exam taking and other aspects.

Classroom teaching, learning, and evaluation complement each other and jointly promote the development of students. In basketball classrooms, there is a lack of effective real-time evaluation, and teachers are unable to optimize classroom teaching in a targeted manner, resulting in no significant improvement in learning outcomes. Therefore, based on many practical issues, it is necessary to think about how to achieve the true role of real-time evaluation, in order to improve the quality of teaching. With the continuous reform of classroom teaching, real-time classroom evaluation keeps up with the pace of reform, pays more attention to student development, and improves classroom teaching effectiveness. So, paying attention to student development requires a focus on their learning and guiding them to learn how to learn. However, in previous classrooms, real-time evaluation focused on the teacher's "teaching" and neglected the student's "learning". For basketball classrooms, how can real-time evaluation play an important role in achieving good evaluation results? How to achieve good evaluation results?

The integration of deep learning has played a leading role in optimizing real-time evaluation in basketball classrooms, which is beneficial for teachers to clarify the direction of real-time evaluation, explore the value of real-time evaluation in basketball classrooms, and achieve a good effect in promoting student development.

In view of this, the author will integrate deep learning with real-time evaluation in basketball classrooms and re-examine the role of real-time evaluation in basketball classrooms. Using questionnaire survey method and mathematical statistics method, a real-time evaluation index content for physical education professional basketball classroom based on deep learning was constructed. Based on the index content, an instant evaluation plan was designed and applied in the classroom, in order to enrich and develop the connotation of instant evaluation and improve the effectiveness of achieving teaching objectives in teaching practice. The significance of this study is to combine deep learning with real-time classroom evaluation, explore the value of real-time basketball classroom evaluation, deepen the theoretical connotation of real-time evaluation, and provide a new theoretical perspective for the optimization of real-time evaluation, combining the two in teaching practice can improve the quality of teaching and promote the comprehensive development of students. At the same time, it provides more detailed references for teachers to promote students' deep learning through real-time evaluation practice, which has certain theoretical and practical significance [2,3].

2. Methods. The author focuses on the five physical qualities of students and their deep learning abilities in basketball teaching under three different teaching modes: flipped classroom teaching mode based on deep learning, flipped classroom teaching mode, and traditional classroom teaching mode.

2.1. Experimental subjects. In this experiment, 20 students from Class 4 and Class 5 of the Physical Education Department of A Normal University in 2021 were selected as the control group and experimental group, respectively (taking into account the differences in basketball skills and special circumstances, excluding basketball players from each class and individual students with injuries). They were aged between 20 and 23 years old and had the same level of exercise, which was relatively balanced. The excluded students also participated in basketball courses and experiments, but the test data is not included in the data reference of this study. The experimental process is shown in Figure 2.1 [4].

2.2. Experimental location and time. Experimental location: The practical class will be held in the basketball court of the School of Physical Education, A Normal University, and the theoretical class will be held in the corresponding classroom. Experimental period: March 2022 to June 2022, a total of 14 weeks of courses, with one class per week [5].

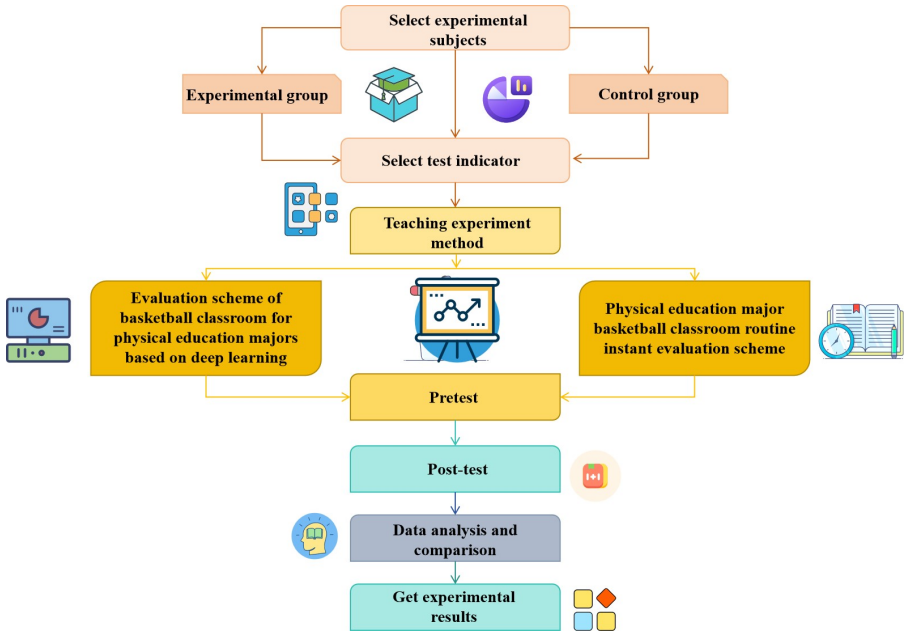

Fig. 2.1: Teaching Experiment Flow Chart

2.3. Experimental independent and dependent variables.

(1) Independent variable. Different instant evaluation schemes (experimental group: Instant evaluation scheme for physical education professional basketball classroom based on deep learning, control group: Routine instant evaluation scheme for physical education professional basketball classroom).

(2) Dependent variables. Basketball skill mastery level, deep learning ability level, cognitive level, and learning methods of the experimental subjects.

(3) Experimental variable control. This experiment was conducted in a double-blind manner (without the knowledge of both teachers and students) to avoid affecting the experimental results. The teaching syllabus, teaching schedule, teaching content, and location of the experimental group and the control group are consistent. The two groups of instructors are the same teacher and familiar with different teaching plans. Before the teaching experiment, there was no significant difference in the various test indicators between the experimental group and the control group students. The design of the experimental plan and the assessment of basketball skills were guided and evaluated by teachers from the School of Physical Education, A Normal University, majoring in Physical Education, Teaching Theory, and Basketball Teaching.

2.4. Testing indicators and tools.

(1) Basketball Skills Test. Including vigorous dribbling, 60 second self pitching and grabbing, comprehensive dribbling, teaching competitions, and teaching lectures. According to the testing content specified in the basketball course of the Physical Education major at the School of Physical Education, A Normal University, the preliminary selection indicators will be selected, and expert interviews will be conducted to improve them based on expert opinions, ensuring the accuracy of the experimental results. Vigorous dribbling: Place 4 marker buckets as required and dribble left and right with one hand directly above the marker buckets. Require standardized movements, a total time of 30 seconds, and record the number of landings. 60 second self shooting and self grabbing: Take the projection point of the hoop as the center of the circle, and select three points on the left, center, and right outside the semicircle with a radius of 3.5 meters (at least 3 meters apart) for mid range self shooting and self grabbing. Do not shoot twice from one point in a row, with a total time of 60 seconds. Record the number of shots made. Integrated dribbling: The starting point is the midpoint of the basketball court's end line. Students change their left hand dribbling to the front of pole A to do a

back-to-back dribbling, their right hand dribbling to the front of pole B to do a back-to-back dribbling, their left hand dribbling to the front of pole C to do a crotch dribbling, and their right hand layup. After shooting, they return to the finish line according to the prescribed requirements, then follow the same method again and stop the watch immediately after reaching the endpoint. If the layup fails to hit, continue shooting until the final score is made up. The overall score will be based on the time and technical evaluation of this test item, with each item accounting for 50% of the test score for that item. Teaching competition: The teacher divided the students into groups of 5 and engaged in a 5-on-5 offensive and defensive competition throughout the entire field. The competition lasts about 10 minutes. Teachers mainly evaluate students based on their individual ability to use offensive and defensive techniques and their awareness of mutual cooperation in competitions. The judges will form an evaluation group consisting of three teachers, each giving a score. Teaching Lecture: Each student selects a basic offensive tactic that they have already learned and cooperates with the teaching to give a lecture (the whole class will explain it on site), mainly explaining the teaching steps, especially the tactical explanation, teacher's teaching methods, and student learning and practice methods. The teacher will evaluate the situation on site and record it on video.

(2) Deep learning ability test. The author used the deep learning ability questionnaire developed by Dr. Bu Caili to test the effectiveness of the experiment. The mastery of professional knowledge, critical thinking, and problem-solving abilities in the cognitive field is mainly evaluated through cognitive tests of thinking level (professional knowledge test questions) and basketball skills tests.

2.5. Mathematical Statistics. The author used Excel 2010 and SPSS 26.0 statistical software to process the data, and conducted independent sample t-tests and paired sample t-tests for inter group and intra group significance differences, respectively, to analyze the data. Finally, the experimental data was obtained.

2.6. Design of real-time evaluation indicators for basketball classrooms in physical education majors based on deep learning.

(1) Design basis for real-time evaluation indicators for basketball classrooms in physical education majors based on deep learning. Effective teaching emphasizes the effectiveness of teaching, that is, what kind of teaching is effective. The focus of "effectiveness" is on students, and only through their development and improvement after a period of learning can teaching prove to be effective, and vice versa. Effective learning mainly refers to students being able to engage in autonomous, exploratory, and exploratory learning, advocating for active thinking and emphasizing the process of understanding and construction, rather than superficial learning such as rote memorization. From this perspective, the concept of deep learning coincides with effective teaching principles, and the two are unified in terms of practical connotation and goal orientation. Therefore, establishing a basketball classroom for deep learning is actually establishing an effective teaching basketball classroom. a basketball classroom for deep learning must be an effective classroom, and an effective basketball classroom also reflects the characteristics of deep learning to a certain extent, therefore, the author's design based on the basic principle of effective teaching theory helps to achieve the goal of effective teaching and truly implement deep learning in classroom teaching. The effective teaching theory believes that providing "immediate feedback" is one of the important behaviors for teachers to effectively "guide" and plays a key role in the classroom. The proposed methods for providing immediate feedback provide certain theoretical references for research.

Constructivist theory holds that learning should possess six core characteristics: positivity, constructiveness, accumulation, diagnostic, reflective, and goal guidance. Constructivist theory explains deep learning, which conforms to the six core characteristics of constructivist learning and belongs to constructivist learning. Constructivist theory emphasizes the subjective initiative of students in the learning process and the construction of knowledge, and the most important thing in achieving this process is the guidance of teachers. The role of teachers should become guides for students to learn, improve learning engagement, and enhance learning transfer ability. From the perspective of constructivist theory, teaching evaluation should focus on evaluating the learning process, with the goal of promoting comprehensive development of students; The evaluation content focuses on the physical and mental development of students, and emphasizes the dynamic evaluation of their abilities, emotions, and ways of thinking; The evaluation subject pays more attention to the student's subjectivity. As the evaluation subject, students actively participate in learning activities, carry out self-evaluation and peer evaluation, and the focus of evaluation shifts to focusing on the learning process. Internal evaluation is the main focus, dynamic evaluation is emphasized, and the process evaluation of teaching and learning is

emphasized. Evaluation is implemented according to the learning needs of students, and teaching work is adjusted and improved in a timely manner, making the evaluation more objective and effective. In summary, deep learning conforms to the principles and objectives of constructivist theory, and the evaluation strategies under constructivist theory provide a certain theoretical basis for the design of this study.

Diversified evaluation refers to the diversification of evaluation objectives, methods, content, and subjects. The theory of multiple evaluations is based on the design of real-time evaluation indicators for physical education professional basketball classrooms based on deep learning, mainly reflected in the following points.

The goal of instant evaluation is diverse. The setting of immediate evaluation goals should be reasonably designed from multiple aspects such as cognition, emotion, and ability development [6]. The content of instant evaluation is diverse. The basketball course for physical education majors is a course that cultivates comprehensive quality talents and emphasizes practice and application. Therefore, in addition to evaluating the mastery of professional knowledge and skills learned, students should also pay attention to the acquisition of higher-order thinking ability, the ability to apply basic basketball knowledge and skills, positive emotional experience, and the mastery of core abilities. The subject of instant evaluation is diverse. The diversification of evaluation subjects can deepen the cognitive level of learners by analyzing, processing, and reconstructing individual and others' learning information. Therefore, in the classroom, teachers should organize student-centered evaluation activities, guide students to conduct self-evaluation and peer evaluation in a timely manner, and broaden the evaluation subject. Instant evaluation methods are diverse. Teachers in basketball classrooms can use various verbal and nonverbal evaluation methods to timely guide and guide students in deep learning based on the teaching process and their performance and behavior. The evaluation related to classroom teaching will include four basic elements: evaluation objectives, evaluation content, evaluation methods, and evaluation subjects. Based on deep learning theory, design indicator content and deeply explore the guiding role of deep learning on the four basic elements. Instant evaluation goals focus on preset and generated. From the perspective of deep learning, the goal of real-time evaluation in basketball classrooms is to pay more attention to the cognitive level, emotions, and ability development of students. Teachers should view students and the teaching process from a dynamic and developmental perspective. During the process of students learning knowledge and practicing skills, teachers should promptly pay attention to various situations that occur in the teaching context, seize educational opportunities, and focus on generative resources. At the same time, pay attention to the combination of generative goals and preset goals, and adjust teaching strategies in a timely manner to jointly promote the long-term development of students.

Instant evaluation content is not limited to mastery of the learned content. Deep learning theory emphasizes higher-order thinking and points to deep cognition. Higher order thinking requires the evaluation content to break through shallow and superficial evaluation content, trigger cognitive conflicts among students through evaluation content, and promote the improvement of thinking ability. The evaluation content for deep level cognition should include the application methods, timing, value, and other content of the learned content. When designing real-time evaluation indicators for physical education professional basketball classrooms based on deep learning, it is necessary to deeply explore the evaluation content of deep level cognition, emotional attitude, and ability development, continuously enrich the breadth and width of the evaluation content, and truly achieve deep learning.

The real-time evaluation method does not stop at simple Q&A. Deep learning theory emphasizes critical understanding and meaning construction. Deep learning advocates understanding meaning as its purpose, emphasizing the construction of knowledge and the learning process of critical understanding. However, real-time classroom evaluation is generated through teacher-student interaction and communication, but due to time constraints and other factors, it is easy to stay at a simple level of feedback and processing, neglecting in-depth analysis of student responses, missing opportunities for understanding and learning, and not conducive to critical understanding and construction of what students have learned. Therefore, deep learning theory provides guidance for real-time evaluation methods, enabling them to truly be effective.

The subject of immediate evaluation is not limited to the teacher's "solo role". The theory of deep learning embodies student-centered approach and advocates active physical and mental participation [7]. Learners not only need to actively learn knowledge and skills, experience the learning process firsthand, improve their cognitive level, but also learn to engage in self reflection and evaluation. Students participating in the evaluation

Table 3.1: Comparison of basketball skill test results within the experimental group before and after the experiment

Test content	Before the experiment	After the experiment	T	P
60 second self throw and self grab	54.36±5.942	77.01±9.516	-8.288	0
Powerful dribbling	58.76±9.443	92.51±7.23	-12.682	0
Integrated dribbling	55.16±3.632	84.71±10.835	-11.166	0
teaching competition	63.71±4.17	69.26±4.352	4.3701	0
Teaching lectures	55.66±6.202	80.66±4.357	-14.41	0

of the classroom can be more effective, so participating as the evaluator in the classroom can enhance their learning engagement, experience deep learning experiences, objectively understand themselves, and gain self-efficacy.

(2) Realistic basis. Through interviews with students, course teachers, and field observations, the author found that most teachers still focus on evaluating students at a superficial level, emphasizing basketball knowledge and basic skills and tactics themselves, neglecting the exploration of deep cognition, lacking questioning and reflection on problems, which cannot cause cognitive conflicts among students and cannot generate profound understanding. In basketball classes, teachers tend to make immediate evaluations of students too simplistic, with a focus on single affirmations and negatives. The language used for immediate evaluations mainly includes phrases such as "well practiced" and "excellent", which are not inspiring and do not have a significant promoting effect on students, which is not conducive to promoting their learning and mastery of motor skills. In basketball classrooms, teachers mostly evaluate students using methods such as affirmation, negation, and repetition of student answers, while their evaluations of students remain simple responses and lack descriptive feedback. Such evaluation methods do not stimulate deep thinking among students and are not conducive to their progress and development. Through interviews and on-site observations, it was found that the majority of immediate evaluations in basketball classrooms are mainly conducted by teachers, rarely engage in student self-evaluation and peer evaluation, while student participation in self-evaluation and peer evaluation can enhance personal reflection and critical abilities, if this link is missing, it is not conducive to students' deep understanding of basketball knowledge and the cultivation of critical thinking. Secondly, in teacher centered real-time evaluations, most of them are based on the evaluation of the entire class by the teacher, with less evaluation of individual and group students. Such evaluations lack specificity, and in the classroom, students are more eager to receive separate guidance and evaluation from the teacher, which will enable them to make greater progress and development.

In summary, in basketball classroom teaching, the immediate evaluation of teachers tends to be superficial and superficial, and there are many problems that have not played a true role. In view of this, the author designs an instant evaluation index for sports education professional basketball classrooms based on deep learning, so that instant evaluation can play its due role.

3. Results and Analysis.

3.1. Comparison of basketball skill tests between the experimental group and the control group before and after the experiment. According to Table 3.1, after the experimental intervention, various test indicators in the experimental group were subjected to statistical paired sample T-test, and the P-values of the 60 second self throwing and self grabbing, vigorous dribbling, comprehensive dribbling, teaching competitions, and teaching lectures were all less than 0.001, indicating significant differences. This indicates that the application of the real-time evaluation plan for physical education professional basketball classrooms based on deep learning can significantly improve students' basketball skills [8]. According to the data statistics in Table 3.1, it can be seen that the three test indicators of 60 second self throwing and self grabbing, vigorous dribbling, and comprehensive dribbling belong to the assessment of students' technical mastery level. The results of the three test items in the experimental group before and after the experiment are very significant. Analysis of reasons: Firstly, in the new teaching stage, students can greatly improve their basketball skills through

Table 3.2: Comparison of basketball skill test results within the control group before and after the experiment

Test content	Before the experiment	After the experiment	T	P
60 second self throw and self grab	51.86±4.998	71.01±7.539	-8.755	0
Powerful dribbling	61.26±8.717	88.36±5.224	-11.421	0
Integrated dribbling	53.71±3.877	78.91±5.776	-.19.831	0
teaching competition	62.36±4.196	65.91±3.611	-2.867	0.01
Teaching lectures	52.81±5.908	75.66±6.548	-16.782	0

teacher explanations, extensive practice, and pre class consolidation and review; Secondly, the use of a real-time evaluation plan for physical education professional basketball classrooms based on deep learning enables students to have a deeper understanding and mastery of skills, and a more thorough understanding of the content they have learned. As a result, students pay more attention to the various details of the skills they have learned during the practice process, promoting their skills to reach a deeper level. The teaching competition mainly focuses on the comprehensive evaluation indicators of students' personal application of offensive and defensive techniques, as well as their awareness and ability to cooperate with each other. There is a significant difference in the assessment results before and after the experiment. Analysis of reasons: Firstly, through the practical application of competitions and extensive practice in each class, students can gradually improve their technical application ability and cooperation awareness; Secondly, through the application of a real-time evaluation plan for physical education professional basketball classrooms based on deep learning, teachers consciously adopt real-time evaluation in the classroom, combining different practice situations of students and various teaching stages, so that students can timely recognize the errors in the game and actively think and make corrections, guiding students to deeply understand the essence of offensive and defensive techniques and how to better cooperate with each other in the game, so as to effectively improve the teaching competition results of students. Teaching lecture is different from the other four indicators, mainly focusing on the evaluation indicators of students' personal action and technical teaching ability. It mainly tests the teaching steps, especially the explanation of tactics, the teaching methods of teachers, and the methods of students learning and practicing. The assessment results of this item show significant differences before and after the experiment. Analysis of the reasons: Firstly, in basketball classrooms, teachers will permeate teaching knowledge such as teaching methods for the skills they have learned. This not only enables students to demonstrate basketball skills, but also teaches them how to teach the skills they have learned and understand the methods of skill teaching, including the methods taught by the teacher and the methods used by students to learn and practice; Secondly, during the learning process, teachers use questioning based evaluation methods to teach students skills, triggering cognitive conflicts and guiding students not only to understand "what to teach", "how to teach", and "how to teach", but also to understand "why to teach", further deepening students' essential understanding of skill teaching. Therefore, the experimental group students showed a more significant improvement in the teaching and lesson indicators.

According to Table 3.2, after the experimental intervention, statistical paired sample t-test was used to analyze the data of various test indicators in the control group. The P-values of the four indicators of the control group, including 60 second self throwing, strong dribbling, comprehensive dribbling, and teaching lectures, were less than 0.001, all of which had significant differences. The P-value of the teaching competition indicator is less than 0.05, indicating a significant difference.

According to the data statistics in Table 3.2, it can be seen that the three test indicators of 60 second self throwing and self grabbing, vigorous dribbling, and comprehensive dribbling belong to the assessment of students' technical mastery level. The control group before and after the experiment showed significant differences in these three test indicators [9]. Analysis of reasons: Firstly, due to the fact that throughout the entire semester of teaching, there is a review, consolidation, and practice section in each skill class. Therefore, after repeated practice in multiple classes, the mastery of skills by students will inevitably be greatly improved over time, which is also one of the main reasons for the improvement of their learning effectiveness and grades; Secondly, in terms of the role of real-time evaluation in class, in the real-time evaluation of the control class, the teacher evaluates students based on skill practice and answering questions, informing them of existing

Table 3.3: Comparison of intra group deep learning ability test results before and after the experiment in the experimental group

Dimension	Before the experiment	After the experiment	T	P
cooperation	26.81±4.938	30.66±3.760	2.970	0.008
communica--tion skills	20.86±4.017	25.41±2.280	4.966	0
Autonomous learning ability	37.91±7.497	46.16±7.036	-12. 131	0
Learning perseverance	28.61±5.576	30.86±4.158	-3.428	0.001
Total score	113.66±20.366	133.06±12.133	-7.491	0

problems and methods to correct errors. Although this form of real-time evaluation has a relatively simple method and language, it also has a certain promoting effect on students to master the learned content, and can help students initially form correct action cognition. Therefore, during the learning process of basketball courses, students can gain a clearer understanding of the exercise content through the guidance and correction of various practice stages by the teacher, as well as their serious practice. In addition, the real-time evaluation conducted by the teacher during the learning and practice can help students develop a clearer understanding of the exercise content. These factors are beneficial for students to master basketball skills, and the improvement effect of their basketball skills will also be significant. The teaching competition mainly focuses on the comprehensive evaluation indicators of students' personal application of offensive and defensive techniques, as well as their awareness and ability to cooperate with each other. There is a significant difference in the assessment scores of the control group before and after the experiment. Analysis of reasons: Firstly, through the teacher's explanation, demonstration, and specialized exercises organized by the organization, students develop a preliminary understanding of the application of offensive and defensive techniques and how to cooperate; Secondly, if students have a profound understanding and understanding of the essence and application requirements of techniques and tactics in competitions, it will help them to flexibly apply them in competitions. In the control group basketball classroom, teachers not only provide real-time evaluations of errors that occur during the practice process, but also conduct real-time evaluations during the game based on the use and cooperation of students in offensive and defensive techniques, informing students of their mistakes and how to correct them, in order to gain favorable opportunities during the game. Therefore, the teaching competition scores of the control group students have also improved.

Teaching lectures are mainly aimed at evaluating the individual teaching ability of students in motor skills, mainly testing the teaching steps, especially the explanation of tactics, teaching methods of teachers, and methods of students learning and practicing. There is a significant difference in the assessment scores of the control group before and after the experiment. Analysis of reasons: On the one hand, through the teaching and explanation of teachers in class, as well as combining their own learning, students can master the relevant teaching steps and practice methods, and form a preliminary understanding of "how to teach"; On the other hand, through real-time evaluation by teachers in class, it further helps students deepen their understanding of skill teaching, gradually guiding them to deeply understand the essential characteristics of skills and teaching methods. The above two aspects jointly promote a significant improvement in the teaching presentation test scores of the control group students.

3.2. Comparison of deep learning abilities between the experimental group and the control group before and after the experiment. From Table 3.3 and Figure 3.1, it can be seen that before and after the experiment, the dimensions and overall level of deep learning ability in the experimental group were subjected to statistical paired sample T-test, and the P-values of cooperation ability and learning perseverance were all less than 0.01.

The P-values of communication ability, self-learning ability, and deep learning ability were all less than 0.001, indicating significant differences. The application of an instant evaluation scheme for basketball classrooms in

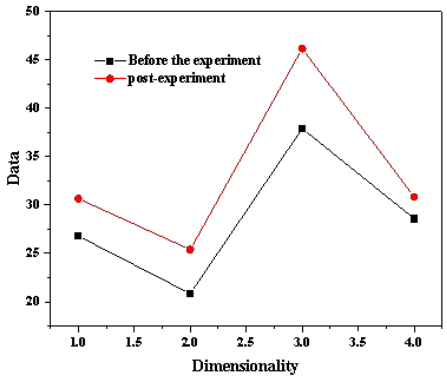

Fig. 3.1: Comparison of intra group deep learning ability test results before and after the experiment in the experimental group

physical education majors based on deep learning can significantly enhance students' deep learning abilities. According to the data statistics in Table 3.3, there are significant differences in the dimensions and overall level of deep learning ability between the experimental group before and after the experiment, mainly due to: On the one hand, basketball itself is a collective collaborative sport with collective characteristics. The positive impact of basketball mainly includes cultivating strong willpower, unity and cooperation spirit, improving self-control, enhancing self-confidence, improving emotional state, and so on. Therefore, as long as students participate in the learning of basketball courses, their cooperation ability, communication ability, self-learning ability, and learning perseverance dimensions are important, these will all be improved to varying degrees; On the other hand, teachers consciously promote the development of students' deep learning abilities through real-time evaluation. In terms of immediate evaluation goals, teachers will pre-set the phased development of deep learning ability, set the development goals of deep learning ability for each class, focus on how to promote students' long-term development, and clarify the expected effects that immediate evaluation aims to achieve, in addition, in class, emphasis will also be placed on goal generation, adjusting real-time evaluation goals based on the practice situations of different students in class, combining generative goals with preset goals to form new educational resources, and then adjusting the teaching process and improving teaching methods. In terms of instant evaluation methods, teachers will use various evaluation methods such as literacy based evaluation to evaluate the ability development reflected in learning tasks in an instant manner, making it explicit; In terms of instant evaluation content, teachers pay more attention to the development of deep learning abilities, which can help students form a comprehensive understanding of ability development; In terms of real-time evaluation subjects, students can reflect on their strengths and weaknesses and objectively understand themselves by participating in self-evaluation and peer evaluation. At the same time, during the practice process, students continuously provide feedback, communicate with each other, learn from each other, and jointly promote the improvement of deep learning abilities.

According to Table 3.4, Figure 3.2, before and after the experiment, the dimensions and overall level of deep learning ability in the control group were tested by paired sample t-test, and the P-value of the cooperation ability dimension was less than 0.05, indicating a significant difference; The P-values of communication ability, self-learning ability, and learning perseverance dimensions are all greater than 0.05, and there is no significant difference [10]; Overall, the P-value of deep learning ability is less than 0.01, indicating a significant difference. Based on the above data analysis, it is evident that the conventional real-time evaluation plan for basketball classrooms in physical education majors cannot comprehensively enhance students' deep learning abilities.

From the data statistics in Table 3.4, it can be seen that there is no significant difference in communication ability, self-learning ability, and learning perseverance dimensions between the control group before and after

Table 3.4: Comparison of Intragroup Deep Learning Ability Test Results before and after the Control Group Experiment

Dimension	Before the experiment	After the experiment	T	P
cooperation	25.26±4.102	26.81±3.820	-2.704	0.014*
communication skills	19.91±3.972	20.81±4.124	1.757	0.095
Autonomous learning ability	40.86±6.252	41.36±6.226	-1.423	0.171
Learning perseverance	27.71±4.824	27.81±4916	0.172	0.866
Total score	112.81±16.201	116.76±16.101	-3.336	0.003**

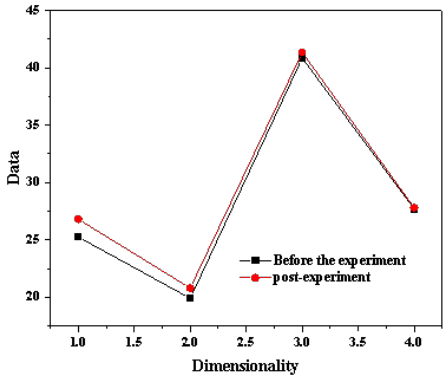

Fig. 3.2: Comparison of intra group deep learning ability test results before and after the control group experiment

the experiment. The reason for this is that during the in class practice process, teachers mostly impart basketball knowledge and skills to students, and there are not many opportunities for feedback and communication between students and teachers. Teachers sometimes conduct real-time evaluations of communication skills, self-directed learning abilities, and learning perseverance dimensions based on their learning situation. However, due to the insufficient promotion of real-time evaluations, they cannot attract students' attention, resulting in a significant improvement in students' communication skills, self-directed learning abilities, and learning perseverance. There is a significant difference in the dimension of cooperative ability. Analyze the reasons: On the one hand, because basketball is a collective sport, students can improve their cooperative ability to a certain extent through classroom teaching and competition practice, as well as learning basic offensive and defensive tactical coordination methods; On the other hand, teachers will conduct real-time evaluations of the quality of cooperation and the cooperation between peers through multiple collaborative exercises such as consolidation and improvement, offensive and defensive confrontations, and actual matches.

Through the evaluation content and methods, teachers can point out the strengths and weaknesses of students in cooperation, which is beneficial for students to have a certain impact on their cooperation ability and promote the development of their cooperation ability.

4. Conclusion. This study designs instant evaluation indicators for basketball classrooms in physical education majors based on deep learning. Based on the content of the indicators and classroom characteristics, an instant evaluation plan is designed and applied to basketball classroom teaching practice, in order to verify the impact on the effectiveness of deep learning for students. The aim is to enrich and develop the connotation of

instant evaluation in basketball classrooms in sports colleges and departments of universities, and to improve the effectiveness of achieving teaching goals in teaching practice. The results show that the application of a real-time evaluation plan for physical education professional basketball classrooms based on deep learning can significantly improve students' basketball skills, promote their deep understanding of basketball knowledge and skills, and enable them to master basketball skills more proficiently. The application of an instant evaluation plan for basketball classrooms in physical education majors based on deep learning can significantly enhance students' deep learning abilities. The application of an instant evaluation plan for basketball classrooms in physical education majors based on deep learning can significantly deepen students' learning methods, weaken their original shallow learning tendencies, and further strengthen their tendencies towards deep and strategic learning methods. The application of an instant evaluation scheme for basketball classrooms in physical education majors based on deep learning can effectively achieve deep learning for students and truly facilitate learning. It is recommended to apply this real-time evaluation plan to actual teaching in future basketball classroom teaching, and design and use it reasonably according to different teaching situations.

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