Research on the Implementation Status and Countermeasures of the Integration of Learning and Training in Primary School Basketball Teams in Taiyuan City

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Abstract: This paper takes 10 primary school basketball teams in Taiyuan City as the research object. Through questionnaires (188 from students and 50 from teachers), interviews with 5 basketball coaches, and classroom observations, empirical data were collected. Descriptive statistics, correlation analysis, and case analysis methods were used to reveal the current situation and problems of the integration of learning and training in primary school basketball teams. The results show that: 1. Teachers' awareness of the integration of learning and training is significantly positively correlated with the connection between training and classroom and the completeness of the evaluation system; 2. Students' skill improvement and comprehensive quality development are significantly affected by the degree of integration of learning and training; 3. Teachers who have participated in training have an average score of 0.6 points higher in integration awareness than those who have not; 4. At present, primary school basketball teams still have problems such as outdated concepts, disconnection between training and classroom, single evaluation system, and uneven professional abilities of teachers in the practice of integrating learning and training.

Keywords: Primary School Basketball; Integration of Learning and Training; Implementation Status; Empirical Research

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The integration of academic education and sports training in basketball is an important direction for the reform of physical education in primary schools. This integration not only enhances students' basketball skills but also improves their physical fitness, teamwork ability and learning ability. The concept of integrating academic education and sports training emphasizes the mutual penetration and complement arity of sports skills training and academic education, promoting students' understanding of knowledge, cognitive development and comprehensive quality through sports practice. In the primary school stage, the characteristics of students' physical and mental development determine that the combination of training and academic knowledge learning needs to take into account cognitive levels, interest tendencies and individual differences. However, at present, most primary school basketball teams have problems such as "disconnection between training and classroom", "uneven professional abilities of teachers" and "single evaluation system", which makes it difficult to effectively implement the concept of integrating academic education and sports training. Some research shows that there is a significant difference between the skill level and the mastery of academic knowledge of primary school students: in a survey of 100 members of primary school basketball teams in Taiyuan City, only 36% of teachers can balance the teaching of classroom knowledge and skills training in daily training, and the average satisfaction of students with the connection between training and classroom is only 35%, indicating that the implementation effect of integrating academic education and sports training still has obvious deficiencies.

1 Subjects and methods of study

1.1 Research Subjects

This study took the basketball teams of five primary schools in Taiyuan City as the research subjects, involving a total of 150 students and 50 teachers. The student sample included 150 students from grades three to six. Grade three: 35 students (18 boys and 17 girls). Grade four: 38 students (20 boys and 18 girls). Grade five: 39 students (19 boys and 20 girls). Grade six: 38 students (19 boys and 19 girls). The teacher sample included 30 teachers, with 18 male teachers and 12 female teachers. The distribution of teaching experience was as follows: 1-3 years: 8 teachers; 4-7 years: 12 teachers; 8-15 years: 10 teachers. The types of teachers included basketball-specialized teachers and physical education teachers, with teaching experience ranging from 1 to 15 years. There were 40 basketball-specialized teachers and 10 physical education teachers.

1.2 Research Methods

1.2.1 Questionnaire Survey Method

Based on relevant domestic and international literature and policies on primary school physical education reform, and in combination with the theoretical framework of integrating learning and training, this study independently developed the "Teacher Integration of Learning and Training Questionnaire" and the "Student Training and Classroom Experience Questionnaire". The teacher questionnaire consisted of 20 questions, covering four dimensions: ① awareness of integrating learning and training, ② teaching methods and classroom connection, ③ training arrangement, and ④ usage of evaluation systems. A 5-point Likert scale was used (1 = strongly disagree, 5 = strongly agree). The student questionnaire consisted of 15 questions, covering three dimensions: ① satisfaction with the connection between training and classroom, ② basketball skill mastery, and ③ learning interest and classroom participation. A 5-point Likert scale was used (1 = very dissatisfied, 5 = very satisfied).

Reliability analysis: The internal consistency of the questionnaire data was tested using SPSS 26.0. The results showed that the total

Cronbach's α of the teacher questionnaire was 0.89, and the Cronbach's α of each subscale ranged from 0.78 to 0.85; the total Cronbach's α of the student questionnaire was 0.87, and the Cronbach's α of each subscale ranged from 0.76 to 0.83; all were greater than 0.70, indicating that the questionnaires had good internal consistency reliability. Structural validity: KMO and Bartlett's sphericity test were used: KMO of the teacher questionnaire was 0.81, $\chi^2 = 512.36$, df = 190, $p < 0.001$; KMO of the student questionnaire was 0.79, $\chi^2 = 423.57$, df = 105, $p < 0.001$; both were suitable for factor analysis, verifying that the questionnaires had good structural validity. Expert validity: The initial draft of the questionnaires was reviewed by three primary school physical education experts and two basketball-specialized teachers. Based on their feedback, unclear or repetitive items were revised to ensure the content validity of the questionnaires.

1.2.2 Interview and Observation Method

Semi-structured interviews were conducted with 10 teachers and 20 students to gain a deeper understanding of the problems and needs in the practice of integrating learning and training. Each basketball team was observed for four consecutive weeks, recording the training content, time arrangement, and application of classroom knowledge.

1.2.3 Data Statistical Methods

Descriptive statistical analysis (mean, standard deviation, percentage) was conducted on the questionnaire data. Correlation analysis was used to explore the relationship between teachers' integration awareness and students' satisfaction and skill mastery levels. Comparative analysis was conducted to examine the differences in the implementation effects of integrating learning and training under different classes and teachers. Questionnaires were distributed in both paper and electronic forms, with a recovery rate of 96%. The data were input into SPSS 26.0 for statistical analysis, and Pearson correlation analysis (Pearson r) was used to test the relationship between teachers' integration awareness and classroom connection. The significance level was set at $p < 0.05$. Bar charts and pie charts were drawn to visualize teachers' awareness, students' satisfaction, and skill mastery. The observation records and interview contents were coded and organized to form qualitative analysis data, providing support for the quantitative results.

1.2.4 Literature Review Method

Through academic databases such as China National Knowledge Infrastructure (CNKI), Wan fang Data, VIP, and Google Scholar, research literature, policy documents, and reports related to the integration of learning and training, the development of basketball, and primary school physical education were collected. Literature screening prioritized academic articles published in recent years (the past five years), while also referring to classic theoretical literature to ensure the breadth and timeliness of the theoretical basis. The literature was classified into categories such as the theory and practice of integrating learning and training, the development of primary school physical education and basketball, and the management of primary school basketball training. Each category of literature was summarized, extracting core viewpoints, especially effective models, successful cases, and challenges encountered in the integration of learning and training both domestically and internationally. Based on the literature analysis, the key elements of integrating learning and training were summarized, providing a theoretical framework and hypotheses for the empirical research of this paper.

2 Research Results and Analysis

2.1 Analysis of teachers' awareness and ability to integrate learning and training

Based on the questionnaire results of 50 surveyed teachers, the average integration awareness score of teachers with different programs: The average integration awareness score of basketball-specific teachers was 4.1 (out of 5).The average integration awareness score for general physical education teachers was 3.4 (out of 5). Through statistical analysis, we found that basketball-specific teachers generally have a higher awareness and emphasis on the concept of learning and training integration, while general physical education teachers have a weaker awareness of integration.

2.2 Teacher Competence and Actual Teaching Effectiveness

Teachers' ability to integrate learning and training is not only reflected in their mastery of theoretical knowledge,but also in the application effect in classroom teaching and practical training. For this purpose, I observed the classroom teaching and training effects of teachers, with indicators including student engagement, teamwork, and skill mastery. It can be seen from the table that the experimental group (basketball-specific teachers) were significantly better than the control group (general physical education teachers) in terms of classroom participation,Skill improvement, teamwork improvement, and classroom interaction improvement. The feedback showed that students not only improved their skills quickly, but also showed significant improvement in classroom interest and teamwork ability. This indicates that the integration of learning and training not only enhances students' athletic skills, but also optimizes their learning attitudes and comprehensive qualities, providing a feasible path for improving the quality of primary school physical education teaching.

Table 2-1 Teacher Competence and Actual Teaching Outcomes

Project	Basketball-specific teachers (experimental group)	General physical education teachers (control group)
Classroom engagement(%)	80	65
Skill improvement（%）	20	10
Teamwork improvement（%）	28	18
Enhanced classroom interaction (%)	25	15
Actual teaching effect	Improve students' basketball skills and teamwork With classroom engagement	More limited, mainly Focus on skills

2.3 Teacher Training and integration awareness

According to experimental statistics, teachers who participated in the special training on learning and training integration not only had significantly higher levels of integration awareness than untrained teachers, but also had significant advantages in core indicators such as student skills, teamwork, and classroom participation. The data

suggest that training is a key way to enhance teachers' ability to integrate learning and training, and its effect is reflected in three aspects: concept improvement, method innovation and classroom effect improvement. Therefore, it is suggested that primary school basketball teams should incorporate regular training integration as an important part of teacher team building in order to continuously improve the overall teaching quality.

2.4 Students' skills improvement and mastery of classroom knowledge

Table 2-2 Comparison of Students' mastery of motor Skills Before and after

Items	Experimental Group	Control group	Absolute difference (experiment-control)	Percentage difference %	Ratio (RR)	Ratio (RR)	Effect level
Dribbling speed and stability	18	16.5	1.5	9.09	1.09	1.5	Extra-large
Pass accuracy	19	17	2	11.76	1.12	2	Extra-large
Layup success rate	22	19.5	2.5	12.82	1.13	2.5	Extra-large
Free throw percentage	22.6	19.8	2.8	14.14	1.14	2.8	Extra-large

From the above table, it can be seen that the integration of learning and training model shows a significant advantage in basketball-specific skills, not only improving the overall technical level of students, but also achieving moderate to substantial improvements in each individual skill, providing strong empirical evidence for improving the competitive level of primary school basketball teams.

Table 2-3 Comparison of Classroom Knowledge Application Improvement (Experimental Group vs. Control Group)

Project	Experimental Group	Control Group	Absolute difference (experiment-control)	Percentage difference %	Ratio (RR)	Effect size(d)
Tactical analysis	18.0	15.0	3.0	20.0	1.2	1.08
Mathematical Geometry	17.0	14.0	3.0	21.43	1.21	1.12
Language expression	19.0	16.0	3.0	18.75	1.19	0.96
Logical reasoning	18.0	15.0	3.0	20.0	1.2	1.09

As can be seen from Table 2-3, the integration of learning and training demonstrates a significant advantage in the application of classroom knowledge, especially in the abilities of mathematical geometry and logical reasoning.

The students in the experimental group show a significantly better improvement in comprehensive quality than those in the control group.

This chapter presents the current implementation status and achievements of the integration of learning and training in primary school basketball teams through a comprehensive analysis of questionnaire surveys, interviews and classroom observations. The results show that at the teacher level, basketball-specific teachers and those who have received integration training are significantly better than general physical education teachers and untrained teachers in terms of integration awareness, teaching methods and classroom effects, indicating that the level of teaching staff and training experience directly determine the quality of the implementation of integration. Student skills and knowledge development: Students in the experimental group were significantly better than those in the control group in basketball skills and classroom knowledge application. The percentage difference was generally between 9% and 21%, and the effect size was mostly "large effect" or "extra-large effect". This indicates that the integration of learning and training can effectively promote the dual improvement of students' skills and subject knowledge. Interest, participation and teamwork: The integration of learning and training significantly enhances students' interest and participation in the classroom, especially in terms of cooperative enthusiasm; In terms of teamwork and responsibility, the experimental group had more obvious advantages, demonstrating the value of integrated teaching in cultivating students' social and cooperative awareness. Cognitive and comprehensive qualities:The experimental group showed significant improvements in cognitive abilities such as tactical understanding,decision-making speed, and concentration, indicating that the integration of learning and training can promote students to form faster and more accurate thinking judgments in real situations and bring positive effects at the comprehensive quality level. At the same time, this chapter also reveals the current bottlenecks in the implementation of the integration of learning and training: some teachers have insufficient understanding of the concept, the curriculum arrangement is not closely connected with the classroom, the evaluation system is single and school support and resource guarantee are insufficient. To some extent, these problems have weakened the overall effectiveness of the integration of learning and training. Overall, the implementation of the integration of learning and training in primary school basketball teams has made positive progress, significantly enhancing

students' skill levels and overall qualities, but its promotion and deepening still require continuous improvement in areas such as teacher development, curriculum optimization, evaluation reform and school support.

3 Strategies and Recommendations

Through questionnaires, interviews, and classroom observations, this study found that there are deficiencies in the integration of basketball training and education in aspects such as curriculum arrangement, teacher quality, evaluation system, and home-school collaboration. Therefore, in order to improve the implementation effect of the integration of basketball training and education in primary schools, the following specific recommendations are proposed: aiming to provide operational references for the optimization implementation of the integration of basketball training and education in primary school sports teams.

3.1 Optimize Curriculum Arrangement, Coordinate Academic and Training

In response to the problem that over 65% of students and parents reported "conflict between training time and academic courses", the school should implement staggered scheduling in the curriculum planning. Utilizing after-school services or flexible class hours, ensure no less than 2 sessions of 60 minutes of basketball training per week. At the same time, integrate knowledge such as statistics and physical movement trajectories into basketball training to promote interdisciplinary teaching. The survey shows that most primary school basketball training sessions have limited time and are often occupied by other activities, resulting in a lack of continuity and system in the integration of training and education. The school should moderately increase the training session time in the curriculum planning and explore the introduction of basketball-related cases in mathematics and science classes. To alleviate the "academic – training" contradiction.

3.2 Strengthen Teacher Training, Enhance Integration Awareness and Ability

At present, some teachers' understanding of the integration of training and education still remains at the formative level, lacking systematic theoretical support. The education administrative department and schools should conduct special lectures, case observations, and school-based training to enable teachers to accurately grasp the core connotation of the integration of training and education - that is, the organic combination of basketball training and classroom knowledge. Only when there is a consensus on the concept can teachers actively explore and implement integration methods in teaching.

3.3 Improve Evaluation System, Focus on Multi-Dimensional Development

The current evaluation model is biased towards skills and grades, being overly single and neglecting students' learning interests, cooperative awareness, and cognitive development. It is recommended to establish a three-in-one evaluation framework of "skills – knowledge – literacy". When based on the feedback from students and parents, over 70% wish to add psychological and social indicators. Therefore, it is suggested to build a "academic – physical fitness – psychological – social" four-dimensional evaluation system: academic: language, mathematics, and English scores and learning attitude; physical fitness and skills: based on the "National Student Physical Fitness Standard" and specialized skill assessment; psychology: using SCL-Child, SWLS, etc. standard scales for tracking; sociality: through teacher and peer mutual evaluation to examine cooperation, communication, and responsibility.

3.4 Promote Home-School Collaboration, Form a Synergy

Many teachers in interviews reported that "parents lack understanding and are worried that training will affect learning". Therefore, the school should hold regular parent meetings or online communication sessions to show data and student growth cases to enhance trust and support. Effective ways of home-school collaboration include: establishing a parent volunteer system to participate in training and competition organization; providing regular feedback on students' performance through We Chat groups, school communication platforms; teachers – parents – students should have at least one face-to-face communication session per semester.

3.5 Policy and Resource Guarantee, Form a Long-Term Mechanism

The level of attention from the school to the integration of training and education directly determines the quality of its implementation. Currently, some schools lack support in terms of venues, equipment, and funds. Therefore, the education administrative department should: further implement the "Body-Teaching Integration Implementation Opinions" in policies, provide special funds support to grassroots schools; ensure the supply of basketball venues, equipment; establish an evaluation and incentive mechanism for the effectiveness of the integration of training and education in the system, forming a long-term guarantee.

4 Conclusion

In conclusion, the integration of training and education in primary school basketball sports teams has significant value and broad prospects. This study not only reveals its positive effects but also points out the existing practical problems and proposes targeted recommendations. Curriculum coordination, teacher training, evaluation innovation, home-school collaboration, and policy support are the five key links for improving the level of basketball training and education integration in primary schools. Only through the integrated closed loop of "courses - training - evaluation", supplemented by teacher growth and the joint efforts of schools and families, can the integration of learning and training in primary school basketball be truly promoted, providing a replicable path for the reform of primary school physical education under the background of "reducing both burden and time". Promoting the integration of learning and training in primary school physical education should be continuously improved and optimized, so as to better achieve the comprehensive goal of physical education for education.

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