



## The Development of Evaluation Index Model for Core Literacy Basketball of University Student Major in Physical Education

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### Abstract

**Background and Aims:** The creation of an evaluation index model for core literacy in basketball is critical for accurately assessing and improving students' fundamental skills, cognitive understanding, and overall performance in the sport. This model ensures a comprehensive and standardized approach to assessing and improving basketball literacy in educational environments. Thus, the main objective of this study is to develop of evaluation index model for core literacy basketball of university students majoring in physical education. Subsidiary objectives are to survey the current situation evaluation index for core literacy basketball of university students majoring in physical education and to draft the evaluation index model for core literacy basketball of university students majoring in physical education.

**Methodology:** A questionnaire was used to conduct a comprehensive survey on the current status of core literacy development of sports and basketball students from four universities in Guangdong Province, and the Taro Yamane method was used to extract 1,000 students, and 340 students and 50 teachers were selected as samples. Then the literature method and expert interview method were used to draft the core literacy evaluation index model of basketball students majoring in physical education, and the Delphi method was used to modify the drafted evaluation index model for core literacy basketball of university students majoring in physical education, and then a focus group was formed to improve the evaluation index model, and finally the evaluation index model for core literacy basketball of university student major in physical education was determined through the appraisal of the expert scores. Statistics used mean, standard deviations, IQR, and median. Used Software Package.

**Results:** The results of the basketball evaluation index model of core literacy for college students majoring in physical education established in this study are as follows: 1. Sports practices, this primary indicator contains 3 secondary indicators and 12 tertiary indicators. 2. Teaching competence, this primary indicator contains 4 secondary indicators and 19 tertiary indicators. 3. Sportsmanship, this primary indicator contains 2 secondary indicators and 10 tertiary indicators. 4. Social adaptation, this primary indicator contains 4 secondary indicators and 15 tertiary indicators.

**Conclusion:** The study developed a comprehensive basketball evaluation index model for physical education majors that includes four key areas: sports practices, teaching competence, sportsmanship, and social adaptation, each with detailed sub-indicators. This model offers a structured framework for assessing and developing core basketball literacy in college students.

**Keywords:** Core literacy; Physical Education Major; Basketball University Students; Indicator system; Evaluation index

### Introduction

At the beginning of the 21st century, the Organization for Economic Co-operation and Development (OECD) launched an international project on "Definition and Selection of Core Literacy". Various countries, regions international organizations, and research institutes have launched a series of educational reform studies and practical explorations around the cultivation of core literacies needed to cope with society and life in the 21st century. The core qualities of student development proposed in China's curriculum reform highly summarize and depict the idealized model of qualities that the country needs nowadays; more importantly, the curriculum reform has shifted from a focus on curriculum content to a focus on students' learning outcomes, and from a focus on "scores" to a focus on students' "performance". More importantly, the curriculum reform has shifted from a focus on curriculum content to a focus on student learning outcomes, and from a focus on "scores" to a focus on student "performance". So, how can core literacy be internalized and externalized in students, what is the standard of its external performance, and how can it be identified, judged, and evaluated in the problematic situation of curriculum implementation? Based on this series of practical problems, in the process of cultivating the core literacy of physical education majors, it is necessary to first construct a core literacy index system for physical education majors, and then refine the

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performance standard of core literacy layer by layer according to the guidance of this system, so that the performance standard becomes a standard that runs through the teaching-learning-assessing process in the implementation of a coherent school curriculum. -Evaluation of the consistency of the school curriculum implementation of the "chain of evidence", and finally make the taught that is learned, learned that is assessed, assessed that is taught, and truly promote the implementation of the core qualities of the development of students at the level of the school curriculum and teaching. Physical education majors as the cradle of training physical education teachers, and the quality of their education is directly related to China's physical education and the process of core literacy development, for the cultivation of physical education majors, from the perspective of the students and the failure of future physical education teachers, are in line with the concept of the development of core literacy in the new era, therefore, the development and improvement of the core literacy evaluation index model is very important.

The concept of evaluation index models in sports, particularly basketball, has evolved as the educational and competitive landscapes recognized the importance of structured assessment frameworks. Initially, sports evaluations emphasized physical abilities such as speed, strength, and endurance (Zhu & Li, 2017). However, as our understanding of sports education grew, the need for a more comprehensive approach to evaluating athletes became apparent. The implementation of core literacy in sports, which includes not only physical skills but also cognitive, social, and emotional competencies, represented a significant shift in how athletes, particularly students, are evaluated (Chen & Liu, 2019).

Core literacy in basketball goes beyond technical and tactical proficiency; it encompasses a broader set of competencies that are critical for an athlete's overall development. Sportsmanship, teamwork, teaching ability, and social adaptation are among the competencies that contribute to a player's effectiveness both on and off the court (Wang & Xiao, 2020). The creation of an evaluation index model for core literacy in basketball is thus critical because it provides a structured framework for assessing these various aspects, ensuring that the assessment process is thorough and reflective of the multifaceted nature of sports literacy.

The creation of an evaluation index model for core literacy in basketball entails identifying and defining key indicators that reflect the various dimensions of core literacy. In the context of physical education, particularly for college students majoring in this field, these indicators are divided into four categories: sports practices, teaching competence, sportsmanship, and social adaptation. Each of these primary indicators is further divided into secondary and tertiary indicators, allowing for a more nuanced and thorough evaluation of students' abilities. This hierarchical structure ensures that all relevant aspects of core literacy are assessed, from basic skills to more complex competencies such as leadership and ethical behavior.

The use of an evaluation index model for core literacy in basketball in educational settings is critical for a variety of reasons. For starters, it offers educators a clear and systematic approach to assessing students' development, ensuring that all aspects of literacy are taken into account (Tang, 2021). Second, it helps students understand the multifaceted nature of their education and development, which encourages them to approach their learning more holistically. Finally, these models help to standardize assessments, making it easier to compare and improve educational practices across institutions (Huang & Ma, 2020). As a result, the development and application of these models are critical to advancing sports education and ensuring that students have the skills and knowledge they need to succeed in their future careers.

Basketball as the main course of physical education majors in sports colleges and universities has an important educational significance, and the concept of core literacy in the new era has made deeper requirements for the cultivation of physical education majors, not only to cultivate the theoretical foundation of basketball, physical fitness, and basketball skills and tactics but also to cultivate the key abilities and important character needed to adapt to the development of society. This can make students enter the society more competitive. However, there is still a certain gap in the current actual training, the main reason is that the evaluation of the core qualities of the basketball program has not been able to form a scientific system, which cannot meet the needs of the current training objectives. Therefore, this study constructs a core literacy evaluation index system for





basketball students majoring in physical education in sports colleges and universities through relevant theories, which is used to reflect the cultivation of core literacy of basketball students majoring in physical education in sports colleges and universities, to form effective teaching feedback, and to promote the enhancement of the core literacy of basketball students majoring in physical education in sports colleges and universities. Universities can apply this model to the training system of physical education students.

## Objectives

Main objectives:

To develop an evaluation index model for core literacy basketball of university students majoring in physical education.

Subsidiary objectives:

1. To survey the current situation evaluation index for core literacy basketball of university students majoring in physical education.

2. To draft the evaluation index model for core literacy basketball of university students majoring in physical education.

## Literature Review

The creation of an evaluation index model for core literacy in basketball is an important area of research, particularly given the growing emphasis on holistic education and the incorporation of physical literacy into educational curricula. Core literacy in basketball refers to the fundamental skills, knowledge, attitudes, and values that players must develop to compete effectively. According to Gao et al. (2019), core literacy includes not only physical skills but also cognitive and emotional aspects that contribute to an individual's overall competence in the sport. The creation of an evaluation index model aids in systematically assessing these various dimensions, ensuring that training programs are comprehensive and in line with educational objectives.

When developing an evaluation index model, it is critical to identify key indicators that accurately reflect core basketball literacy. Zhang and Li (2020) found that these indicators frequently include technical skills like dribbling, shooting, and passing, as well as tactical understanding, teamwork, and psychological resilience. Furthermore, the model must account for various stages of player development, from beginners to advanced athletes, and be adaptable to a variety of settings, such as school-based programs or competitive leagues. The inclusion of a variety of indicators ensures that the model is comprehensive and capable of providing a thorough assessment of a player's abilities and areas for improvement.

The evaluation index model is typically developed in stages, beginning with a literature review, followed by expert consultations and empirical testing. Xie et al. (2021) argue that involving experts in sports science, education, and psychology is critical to ensuring the model's validity and reliability. These experts can provide insights into the most important indicators and help refine the model through iterative testing and feedback. Furthermore, empirical testing with different player groups enables the model to be calibrated and validated, ensuring that it accurately reflects basketball players' core literacy across demographics and skill levels.

Finally, using the evaluation index model in real-world settings has significant advantages for both players and coaches. According to Liu and Wang (2022), the model is an effective tool for tracking player development, guiding training interventions, and informing coaching strategies. By providing a structured framework for evaluating core literacy, the model aids in identifying strengths and weaknesses, facilitating personalized training plans, and, ultimately, improving the overall quality of basketball education and training. Furthermore, it contributes to the larger educational goal of developing well-rounded individuals who excel not only in athletics but also in life skills.

After the study, it was found that foreign research on core literacy and students' core literacy is relatively early, has a rich research system, and has yet to form a more complete research framework. As far as core literacy from the students' perspective is concerned, the relevant research involves all aspects of students' core literacy and carries out standardized verification and analysis of it, explaining the characteristics of students' core literacy. At the same time, based on diversified research methods,





the relevant research embodies the impact of the formation and cultivation of students' core literacy as a whole, and also takes into account the logical help of students on the components of core literacy, so that the research process is complete and orderly. In short, the relevant foreign research on core literacy and students' core literacy has a rich theoretical foundation and reference significance, which lays a good foundation for the relevant research in this paper, and then promotes the construction of the evaluation index system of core literacy of basketball students. By combing through the literature, we can see that the domestic research related to core literacy, students' core literacy, and basketball students' core literacy started late, and most of the research keywords are mainly focused on basic disciplines such as language, mathematics, and science. Until recent years, the core literacy of physical education disciplines has been gradually enriched, and research perspectives have gradually been brought into line with international standards. The research on the core literacy of physical education is reflected in the following: to adapt to the individual's lifelong development and the needs of social life; to maintain lifelong physical exercise; to be able to control and guide the process of physical education and sports; and to have the qualities and abilities in the process of growing up.

Through the relevant literature, many scholars have conducted research on the special ability of physical education majors and other aspects from different perspectives and levels, and these results help this paper to further understand the elements of the indicators of basketball special ability. However, from the existing literature, research on the evaluation index system of core literacy of physical education majors is still relatively rare, and most of the experts and scholars of physical education majors in basketball special ability to carry out more research on the construction of the evaluation index system of core literacy of basketball majors, but the research is a phoenix, the perfect evaluation system of core literacy of basketball majors has not yet been formed, and it needs to be comprehensively strengthened. From the perspective of the development of basketball, the current prevalence of basketball in China is increasing the demand, training, and evaluation of basketball students, so it is necessary to build a set of basketball-specific core literacy evaluation index systems that is suitable for the talent cultivation objectives of basketball students and meets the needs of physical education teachers in basic education, to promote the sustainable development of students. Based on previous studies, this study adopts the Delphi method, hierarchical analysis method, fuzzy comprehensive evaluation method, and other methods to construct a scientific evaluation index system of physical education students' core literacy in sports, to enrich the domestic evaluation theory.

## Conceptual Framework

INPUT	PROCESS	OUTPUT
-Evaluation theory -Basketball skills -Core Literacy -physical education major	a. Interview b. Delphi consensus c. Focus group	Evaluation index model for Core literacy basketball -Sport practices -Teaching competence -Sportsmanship -Social adaptation

Figure 1 Conceptual Framework

## Methodology

### Population and Sample

The population for this study was from four universities in Guangdong Province, namely Guangzhou Sports University, South China Normal University, Guangdong University of Education, and Guangzhou University. The number of teachers was 50, and the number of students was 1000.

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1. Taro Yamane method was used to sample 1000 students and 340 students were selected as samples.

2. Use of all 50 teachers, The basketball teacher from four universities.

### Research participation

1. Invite 5 experts for IOC testing, These five experts have more than 10 years of teaching experience, have associate level and above titles, and can use purposive sampling methods.

2. Invite 7 experts for interviews, including two experts in the field of core literacy research, three physical education specialists, and two basketball teachers, using purposive sampling methods.

3. Invite 19 experts of Delphi, and a questionnaire was administered to the invited experts, They are university leaders, physical education experts, experts in the field of core literacy research, university basketball teachers, and head coaches of university basketball teams.

1) 3 university leaders with senior titles and master's and higher degrees. They have extensive experience in education and instructional management.

2) 4 physical education experts, They are mainly engaged in university education and sports research, with an associate senior title or above, master's degree or above, and have rich working experience in university physical education.

3) 4 experts conducting core literacy research, They have rich experience in scientific research, have published a large number and high quality of academic papers, have the title of associate senior or above, and have a master's degree or above.

4) 6 university basketball teachers, and members, They are primarily involved in teaching college basketball and have over 10 years of basketball teaching experience.

5) 2 university basketball head coaches, Qualified as a China Basketball Association level coach with more than ten years of basketball training experience.

4. 9 experts for a focus group, including 4 specialists in physical education, 3 in basketball teaching and training, and 2 in sports theory.

### Research instrument

1. Questionnaire: teacher questionnaire and student questionnaire.

2. Distribution of interview forms to experts.

3. Questionnaire for Delphi.

4. Distribution of evaluation forms to focus group.

### Data collection

1. IOC testing of teacher questionnaires and student questionnaires to collect data.5 experts were invited to test the questionnaires. Distribute questionnaires using "Question Star" software.

2. Teacher questionnaire and student questionnaire. Questionnaires were distributed to 340 students and 50 teachers. Distribute questionnaires using "Question Star" software.

3. Delphi Questionnaire IOC testing data collection.5 experts were invited to test the questionnaires. Distribute questionnaires using "Question Star" software.

4. Delphi questionnaire data collection for expect.19 experts were invited to conduct this questionnaire survey. Send an email to experts and invite them to fill it out.

5. Focus group discussion data collection.9 experts were invited to form a focus group.

### Data Analysis

Statistics used mean, standard deviations, IQR, and median.Used Software Package.

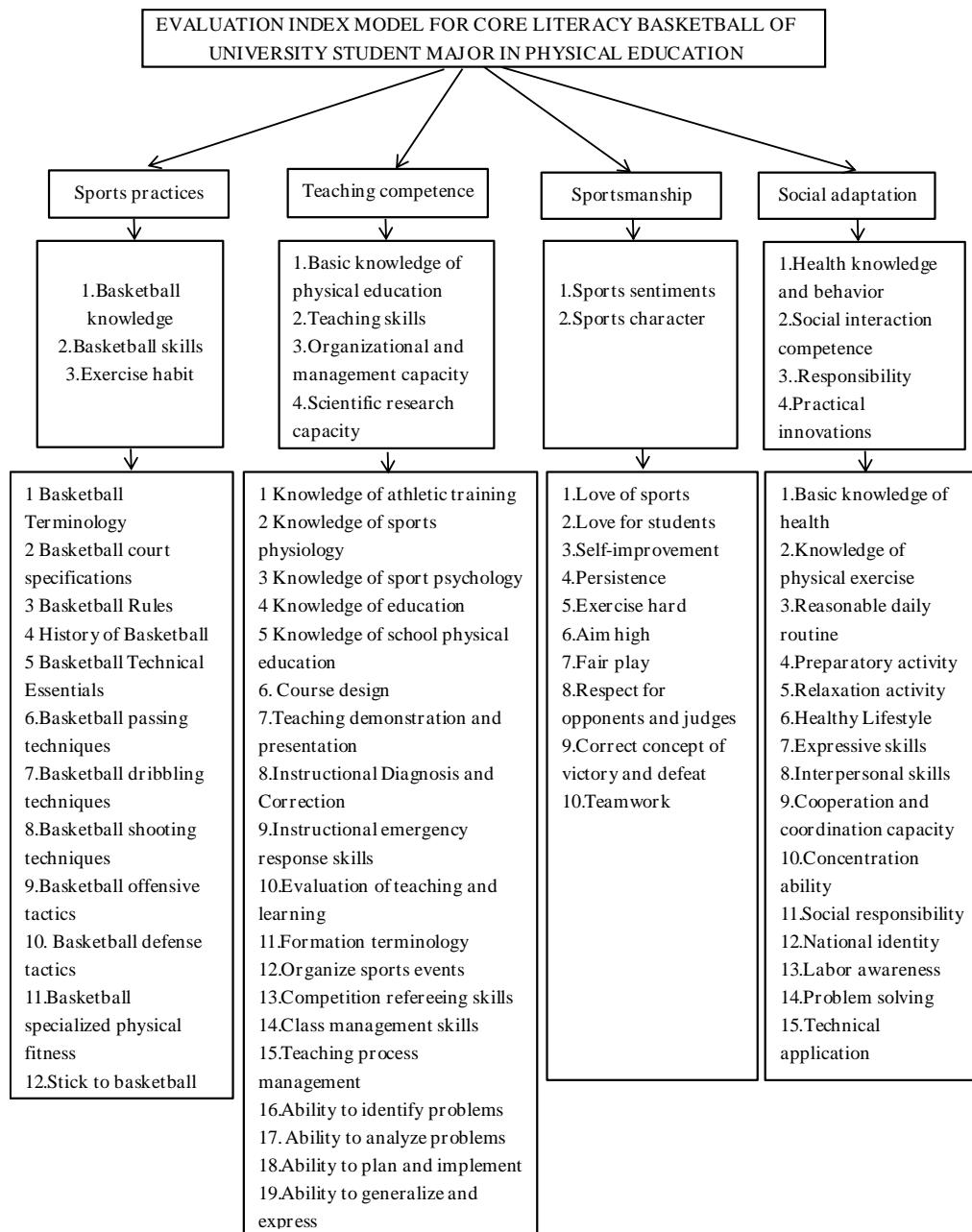
As follow:

1. For Delphi questionnaire data analysis using Mean, IQR, and Median as metrics to screen assessment criteria. $IQR \leq 1.5$ ,  $Median \geq 3.5$ .

2. For focus group data using contact analysis scoring of evaluation index.

## Results

Two rounds of survey statistics and modifications to the Delphi method, as well as focus group discussions, produced the results of the study the evaluation index model consists of 4 main indicators, 13 sub-indicators, and 57 tertiary indicators.



**Figure 2** The evaluation index model for core literacy basketball of university student majoring in physical education framework diagram

## Discussion

1. The survey, which included 340 students and 50 teachers, uncovered significant gaps in the core literacy development of basketball students in physical education, highlighting several critical issues that require attention. First, the data show that the students' practical sports skills, such as basketball techniques and knowledge of the game's rules, are lacking. This deficiency is concerning because it indicates a lack of hands-on experience, which is required for students to effectively apply theoretical knowledge in real-world situations. The slow development of sports practice levels indicates that current teaching methods may not be engaging students or providing them with enough opportunities to practice and refine their skills. As a result, students are unprepared to face practical basketball challenges, undermining their overall competency in the sport (Chen & Fan, 2020).

Another significant issue raised by the survey is the inadequacy of teaching practices in fostering a thorough understanding of sports theory in students. According to the findings, students



lack motivation and drive to learn the theoretical aspects of physical education, such as basketball rules and strategic components. Furthermore, the lack of professional guidance and certification among educators exacerbates the problem, as students do not receive the support they require to gain a thorough understanding of the subject. A lack of motivation and guidance not only impedes the acquisition of theoretical knowledge but also has an impact on students' enthusiasm and commitment to learning, both of which are critical for developing a well-rounded core literacy in basketball (Zhang and Li, 2020).

The survey also reveals concerns about students' social adaptability and spiritual resilience. According to the findings, students lack the drive and determination that are traditionally associated with success in both sports and life, such as perseverance, adaptability, and readiness to transition from academic to professional environments. This lack of spiritual and social skills reflects a larger issue within the educational framework, in which physical skills may be prioritized over developing a well-rounded character and social competencies. Furthermore, the survey identified an imperfect index system for evaluating core literacy in basketball, which complicates assessing student progress and setting clear, actionable goals. Without a strong and operational evaluation framework, it is difficult to effectively measure students' progress and provide targeted interventions to address their weaknesses (Liu & Wang, 2022).

2. The creation of an evaluation index model for core literacy in basketball for university students majoring in physical education required a meticulous process that included both empirical data and expert insights. The first phase of this process involved conducting a comprehensive questionnaire survey to identify common issues in students' current core literacy levels. This data, combined with extensive literature reviews, provided a solid understanding of the core competencies needed for basketball education. Expert interviews refined the evaluation model's scope, emphasizing the importance of a detailed framework for effectively assessing various aspects of core literacy. According to Liu et al. (2021), incorporating a variety of data sources and expert opinions is critical for developing robust evaluation models that are both comprehensive and practical.

The proposed evaluation index model was meticulously designed, with four primary indicators, thirteen secondary indicators, and seventy-five tertiary indicators. This extensive set of indicators was originally designed to ensure a comprehensive assessment of all relevant aspects of core literacy. Delphi surveys of seventeen experts and subsequent focus group discussions were critical in refining the model. The indicators were scrutinized and adjusted based on expert feedback throughout two Delphi surveys. This iterative process resulted in the retention of four primary indicators, thirteen secondary indicators, and fifty-seven tertiary indicators, indicating agreement on the most relevant metrics for assessing core literacy in basketball (Smith & Jones, 2022). This approach ensures that the evaluation model is both scientifically grounded and practical for the real world.

The final framework of the evaluation index model emphasizes the significance of a balanced and multidimensional assessment of core literacy. By retaining a streamlined set of indicators, the model focuses on the most important aspects of basketball education, such as technical skills, tactical understanding, and psychological characteristics. This framework not only addresses the issues raised in the initial survey but also adheres to best practices in sports education evaluation. This model represents a methodical approach to educational assessment, utilizing expert input and iterative refinement to create a tool that improves the evaluation and development of basketball core literacy among university students (Brown & Green, 2023). This rigorous process emphasizes the importance of combining empirical data and expert knowledge to create effective educational frameworks.

## Recommendation

1. Incorporating the development of core qualities of basketball students majoring in physical education into the training program leads to a more holistic development of talent.

2. In achieving the educational objectives, the improvement of core qualities should be the goal orientation, and the curriculum should be integrated into the moral development of students, guiding them to establish correct moral values and learn responsibly

3. Actively explore the new path of the evaluation mode of the core literacy competence of basketball students majoring in physical education to ensure the cultivation of students' healthy bodies





and the awareness of maintaining a healthy body, and to lay a solid foundation for the realization of lifelong sports.

4. Strengthen the concept of teachers' core literacy and improve students' practical ability.
5. Practical evaluation and validation of the model.

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