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Research on Physical Education Evaluation Model Based on Stochastic Simulation Algorithm

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ABSTRACT

Under the background that physical education has been paid more and more attention, the cultivation of students' physical literacy has become the top priority of education. Teaching and helping students develop their core competencies at the same time. Under the background of big data application, the traditional teaching evaluation system of physical education in colleges and universities in our country is difficult to adapt to the social development trend, and gradually exposes more and more problems, which affects the good development of physical education in colleges and universities and universities. In order to define the physical education in-depth teaching and its growth, it is very important to formulate and implement the physiscal education in-depth teaching evaluation index system. Therefore, starting from the important evaluation technology to improve the evaluation indicators of physical education in physical education colleges, this study jointly proposes a triangular distribution function and a random simulation algorithm. On the other hand, the improved analytic hierarchy process (MCAHP) based on stochastic simulation algorithm has been proved to be effective in alleviating the subjective bias implicit in the scoring data extracted from the questionnaire, and in the process, the evaluation indicators of physical training and physical education have been greatly improved. For a good application, the superiority of the method in this paper can be seen through a large number of analysis and index analysis. Therefore, this paper revises the empirical analysis results of the importance of physical education teaching evaluation indicators in physical education colleges, in order to draw more accurate and scientific conclusions, and make suggestions for development. Research on the Evaluation Model of Physical Education in the Future.

Keywords: Physical education evaluation, Stochastic simulation

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1. Introduction

The development of students' core literacy has emerged as a notion for achieving the essential mission of education, which is "creating moral education," as well as for furthering the complete reform of educational institutions in China. After years of growth and refining, deep teaching has been widely accepted. In his opinion, deep teaching is not an increase in the volume and difficulty of information, but rather a shift from symbolic learning to the comprehension and mastery of subject concepts and meaning systems that are founded on inherent knowledge structures, as Prof. Guo Yuanxiang points out. Similarly, deep teaching in physical education does not imply an increase in the difficulty and quantity of students' physical education learning, but rather emphasizes the experience and emotional needs of students' participation in the process of learning motor skills, assists students in experiencing and acquiring the hidden values behind motor skills, focuses on students' growth and progress, and enables the establishment of certain connections between students' physical education learning and their other academic and extracurricular activities. When it comes to developing students' essential literacy skills, in-depth instruction may be quite beneficial in the field of physical education. What assessment indicators, on the other hand, should be provided for in-depth instruction when it comes to physical education and health topics? And, more importantly, how should these indications be obtained? In order to resolve this issue, no research has been undertaken, which makes it difficult for the majority of physical education instructors to concretize in-depth teaching and has an impact on the implementation of in-depth teaching in physical education. The development of a system for evaluating deep physical education instruction, as well as the provision of tools for the evaluation of deep physical education instruction, are critical preconditions for implementing deep physical education instruction and actively cultivating students' core literacy skillsp[1-6].

Over the last several years, the phrase "big data" has grown more common across many different industries. It is now a widely discussed topic among people from all walks of life, and it is being extensively employed in the reform and development of all areas of life. A big data collection is not simply a large-scale data collection, nor is it simply a modern technology and way of thinking; rather, it is a data collection characterized by real-time, high-speed, low-value density, diversity, and a large amount of information; the processing, acquisition, and management of this data collection are difficult to manage. To fully exploit the benefits of big data in areas such as process optimization, insight discovery, decision-making, and other areas, new processing technologies and models are required, as well as the acquisition of valuable information resources. Conventional tools and software are incapable of realizing such data collections in a short period of time, and new processing technologies and models are required. A new age of big data has emerged in response to the development trend of big data, which has been extensively adopted by a broad range of sectors and business functions over the last few years[7-10]. Because big data has become a significant production component in the digital age, efficient mining of big data as well as rational use of big data may disrupt established ways of working, uncover new development possibilities, and provide a more sustainable development foundation. Large amounts of data are currently being collected and used in education and teaching, which is helping to promote education reform by centralizing the collection of education-related data, storing and using the process safely and securely, assisting in the identification of personalized characteristics in education, making significant contributions to the optimization and improvement of education work, and should strengthen the application research and practical exploration work.

The research innovations of this paper are as follows:

1) The paper proposes a triangular distribution function and a stochastic simulation algorithm.

2) An improved analytic hierarchy process (MCAHP) based on stochastic simulation algorithm is proposed to alleviate the subjective bias implicit in the scoring data extracted from the questionnaire.

3) This paper revises the empirical analysis results of the importance of physical education teaching evaluation indicators in physical education colleges, in order to draw more accurate and scientific conclusions, and make suggestions for development.

2. Related work

It is essential to promote the organic combination of big data and college sports teaching evaluation in order to meet the development needs of social progress while also reforming and innovating the traditional college sports teaching evaluation concept and methods, and fully reflecting the function and role of modern teaching evaluation in college sports work, given the current development trend in the social environment. According to the following three characteristics, the relevance of developing college sports teaching evaluations in line with the backdrop of big data is most clearly demonstrated:

2.1. Evaluation material that is more diverse

Previous physical education teaching in colleges and universities has traditionally relied solely on student performance on physical education examinations to evaluate and measure students' progress, with the content of teaching evaluation being limited in scope, which has had a negative impact on the overall development of students to some extent. Following the application of big data, it is possible to formulate appropriate assessment standards for students' physical education learning and teachers' work from a variety of perspectives, with the evaluation content including sports spirit, learning attitude, physical education theory knowledge, and sports skills, among other things. Physical education teaching assessment material that is more diverse increases the comprehensiveness and reliability of teaching evaluation and accurately reflects the teaching scenario. Teachers' record work and students' physical activity after class are also considered.

2.2. Methods of intelligent evaluation

It is not difficult to discover that the evaluation methods used by the majority of university physical education classes are primarily based on traditional human operation methods, which significantly increases the likelihood of errors and results in a significant consumption of physical and human resources. When big data technology is introduced, we can create a cloud evaluation system that is fast, convenient, and safe. This will greatly reduce the possibility of errors or mistakes occurring during the evaluation process. It will also improve the efficiency and quality of teaching evaluation through intelligent evaluation methods. It will also complete the capture, collation, statistics, and analysis of all aspects of physical education data in the shortest possible time, thereby saving time and money. It also improves the validity of the assessment as well as the application impact.

2.3. A system of data-driven assessment

Instead of the subjective evaluation characteristics of the traditional evaluation system, it can objectively evaluate teaching, highlight the rationality and data characteristics of evaluation indexes, record classroom teaching dynamically and accurately, and assist both teachers and students in understanding themselves rationally, accurately, and objectively in comparison to the traditional evaluation system[11-16].

More and more colleges and universities are developing innovative ideological concepts for physical education, accurately positioning the importance of physical education teaching evaluation, increasing attention to and research in the field of physical education teaching evaluation, and promoting the continuous improvement of the physical education teaching evaluation system as a result of the ongoing promotion of educational reform and rapid development of science, technology, and medicine. In practice, however, the following issues frequently arise in the evaluation of physical education instruction in China's colleges and universities at the present time, which hinder the comprehensive development of teaching evaluation and make it difficult to implement a teaching evaluation process that makes full use of big data.

2.4. The evaluation mode is set too far back.

In the process of physical education, some colleges and universities have introduced multimedia teaching equipment, sports equipment, and professional sports activity rooms, but they have neglected the development of collaborative progress in teaching evaluation and the development of collaborative progress in assessment. Teaching evaluation, when compared to the modernization construction of classroom teaching, is clearly lagging behind. It is difficult to capitalize on the development opportunities of this new era, and it is difficult to fully utilize new technology and new elements in the development of a novel teaching evaluation model..

2.5. The topic of the assessment is too narrow.

The majority of physical education teaching evaluations in colleges and universities are conducted with school leaders and students as the primary subjects of evaluation, and the objective standard and subjectivity of physical education teachers in the process of assessment and evaluation are clearly insufficient, and the overly subjective evaluation has a negative impact on the effectiveness of the evaluation process. The lack of teacher self-assessment and mutual evaluation, along with the typical administrative-style issue of instructors' teaching evaluation, further exacerbates the problem of unjustified and unfair evaluation, resulting in a vicious loop of teaching evaluation.

2.6. There is a lack of scientific rationale in the assessment index.

It is no longer enough for physical education in colleges and universities to improve students' sports performance; it is also necessary to exercise students' physical and mental quality, to protect students' physical and mental health development as well as future work and life, to guide students in establishing sports spirit, forming sports literacy, and developing the habit of regular physical activity. Although physical education skills continue to occupy a dominant position in teaching evaluation in China's colleges and universities, not enough attention is paid to students' overall development, and the evaluation index lacks scientific rationality, and only reflects evaluation results with abstract excellent, good, or poor ratings, which is undoubtedly a source of constraint to teachers' teaching and students' learning, according to the findings of the study. This places a restriction on the teaching of instructors and the learning of pupils.

The hierarchical analysis technique (AHP) has been extensively embraced as a complete assessment approach due to its simplicity and flexibility, despite the fact that there are numerous ways for studying the index system of physical education evaluation and measurement process. Nevertheless, while utilizing AHP to analyze the indicators of physical education, the following issues are encountered: First, there are errors introduced by subjective judgment during the data collection process; second, even though the method can provide appropriate qualitative and quantitative analysis, it is unable to effectively identify the ranking of indicators with similar weights, and even when it does, the results are inconsistent with the real situation. Given this, it is critical to identify and develop a class of methods that can simultaneously evaluate a large number of various dimensional factors covered by the sports evaluation system at the same time, in order to meet the theoretical requirements of carrying capacity evaluations[17-21].

3. Stochastic simulation algorithm

Stochastic simulation algorithm also known as Monte Carlo method. It is necessary to correct the final results of hierarchical analysis (AHP) in order to obtain reliable data for the problem of lack of probability explanation among adjacent indicators. Monte Carlo simulation (MCS) is used in this process in order to obtain reliable data for the problem of lack of probability explanation among adjacent indicators. In keeping with this concept, this paper treats the judgment matrix $a_{i,j}^{m}$ in AHP as though it were a random variable, and uses the triangular distribution of Monte

Carlo simulation (MCS) to represent the three-point estimates of relevant indicators, in order to ensure that it meets the requirements of Equation 1.

$$a_{j,i}^{m}=\frac{1}{a_{i,j}^{m}},a_{i,j}^{m}=1\left(m=1,2,\cdots,M;i,j=1,2\cdots,N\right) \tag{1}$$

In order to conduct a Monte Carlo simulation (MCS) experiment, a random sample distribution function needs to be determined based on current data or past experience. Considering how the sports evaluation index score evaluation is represented by a simulated random variable, and there are three data points (maximum Max), minimum Min, and infinite possibilities (complex number M), the probability distribution state is a triangular distribution. According to the properties of the triangular distribution, Monte Carlo simulation (MCS) sampling can be divided into two cases: when $x_l \le x \le x_m$, we have

$$x=x_l+\sqrt{RN\times\left(x_h-x_l\right)\times\left(x_m-x_l\right)} \tag{2}$$

when $x_m \le x \le x_l$, we have

$$x=x_h+\sqrt{(1-RN)\times\left(x_h-x_l\right)\times\left(x_h-x_m\right)} \tag{3}$$

where x_m denotes the mode M, x_l denotes the minimum Min, x_h denotes the maximum Max, RN denotes a uniform distribution function in the interval between 0 and 1 . Although some sampling results will exceed the specific range restricted by the formula in the actual simulation operation, using random sampling to obtain RN values in the interval range $(0,1)$, some sampling results will not exceed this specific range, affecting the accuracy of the simulation measurement conclusions.

For the purpose of generating random numbers within the correct distribution range, the Monte Carlo simulation (MCS) method is used. The triangular distribution function is used throughout the correction process in order for the critical value K to meet the requirements set forth by the RN values of the random variables. Equation 2 states that after processing the moving square derivation according to Equation 2, a random sample $x=x_m$ is obtained.

$$K=RN=\frac{\left(x_m-x_l\right)}{\left(x_h-x_l\right)} \tag{4}$$

Similarly, according to Equation 3 we obtain:

$$K=RN=\frac{\left(x_m-x_l\right)}{\left(x_h-x_l\right)} \tag{5}$$

In order to effectively improve the authenticity and reliability of the random sampling results, this paper uses the normally distributed random sampling value RA instead of the uniformly distributed random sampling value RN, so as to measure the sampling results obeying the triangular

$$x = x_l + \sqrt{RA \times (x_h - x_l) \times (x_m - x_l)}$$
$$x_l \le x \le x_m \tag{6}$$
$$RA < K$$

where RA obeys a normally distributed random number in the interval $(0, K)$ and its symmetric center is K.

When $x_m \le x \le x_h$ and $RA \ge K$, we obtain

$$x = x_h + \sqrt{(1 - RA) \times (x_h - x_l) \times (x_h - x_m)} \tag{7}$$

Based on the corrected simulation function, the maximum feature root $\lambda_{\max}$ and the corresponding feature vector ω are calculated by using the hierarchical analysis method (AHP), and the consistency is checked according to the step requirement. In this process

In this process, if $CR < 0.1$, it means the consistency test meets the requirements; if $CR > 0.1$, it is necessary to return and regenerate the random variables and judgment matrix that meet the requirements.

4. The development of a system of evaluation indexes for in-depth physical education instruction is underway

4.1. Research steps

The research and development process is divided into six basic parts (see Figure 1).

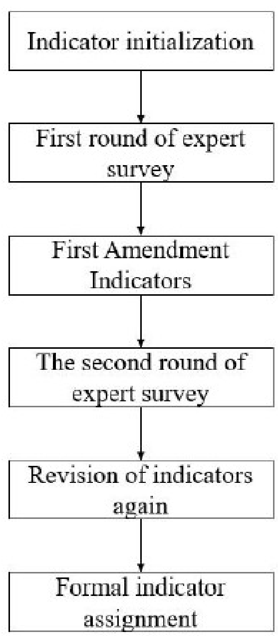

Fig. 1. Steps ofconstructing the index system of physical education depth teaching

Step l: initial identification of indicators. The preliminary design of the index system for deep teaching of physical education is based on the theoretical construction and connotation of deep teaching of physical education, as well as the practice of physical education. The index system for deep teaching of physical education includes five primary indexes, fifteen secondary indexes, and 36 tertiary indexes.

Step 2, the first round of expert survey. The survey was conducted with school physical education experts and secondary school physical education teachers, and l5 and 25 questionnaires were distributed in person respectively; the recovery rate and effective rate were l00%. After the statistics, it can beseen that both ofthem have a high recognition ofthe index.

Step 3: Conduct a preliminary review of the indications. Because of what was learned in this preliminary survey and the viewpoints expressed, the initial indicators were amended by evaluating and thinking again, notably by adding or refining and altering nine tertiary indicators and removing one tertiary indication. The revised indicators contain indicators from the first, second, and third tiers at the rates of5,l5,and44,respectively.

Step 4. Conduct a second round of expert surveys and analyze the results of those surveys. The indicators were graded according to their importance according to the revised indicators,with the most important being "very important," the most important being "important," the average being "unimportant," the least important being "unimportant." It was decided to conduct a second round of expert survey in order to further screen the indications by awarding a score of 5,4,3,2 and l to "extremely insignificant" indicators in order to further filter them. There were three considerations in the selection of indicators for the expert survey's second round: first, that the indicators had a low coefficient of variation (0.25); second, that the consistency of expert evaluation results was good (P 0.05 or 0.0l); and third, that the mean of the indicators was 3.5, which represented approximately 70% of the total score (P0.05 or 0.01). (5 points). The statistical parameters of indicators at all levels (see Figure 1), as well as the results of their consistency tests (see Table 2), were calculated using the EXCEL and SPSS software packages. Mean value of indicator B is shown in Figure 3. Mean value of indicator C is shown in Figure 4.

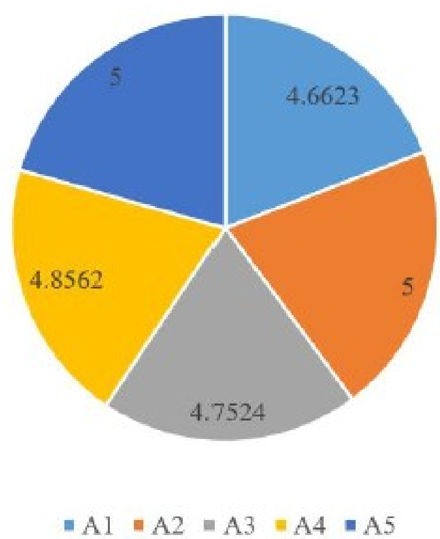

Fig. 2. Mean value of indicator A

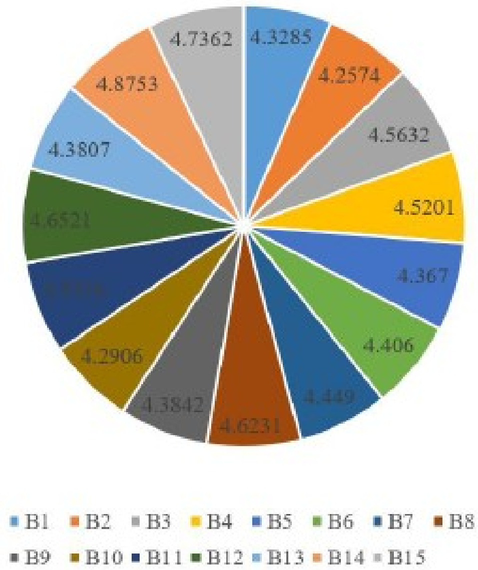

Fig. 3. Mean value of indicator B

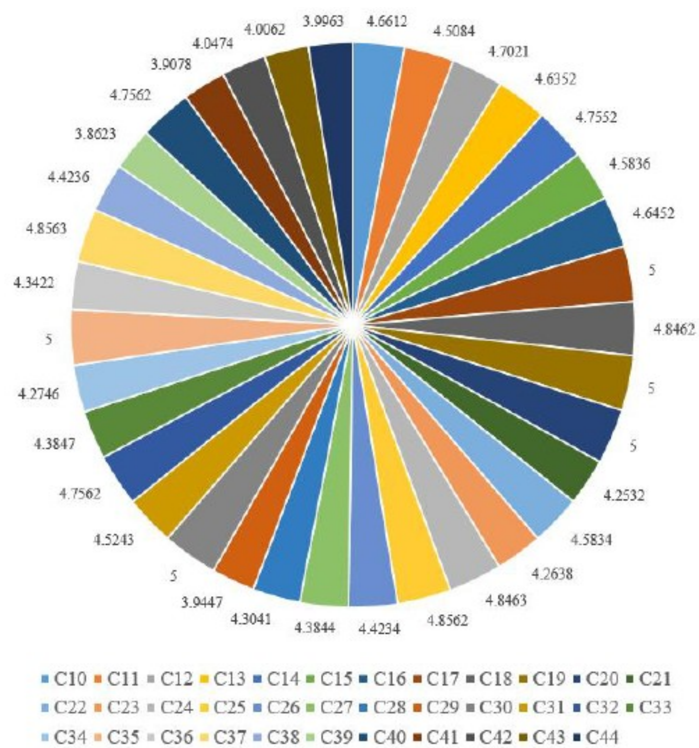

Fig. 4. Mean value ofindicator C

The results of the second round of expert survey showed that the coefficients of variation of the first-, second-, and third-level indicators were all <0.25. In terms of consistency, the consistency coefficient of the first-level index was 0.9ll, the consistency coefficient of the second-level index was 0.873, and the third-level index was 0.873. The consistency coefficient of the index is 0.8l4, and the P values of the primary, secondary and tertiary indicators are all <0.05, indicating that experts have a high degree of recognition for the primary, secondary and tertiary indicators. The indicator system was highly recognized by experts after the second round of questionnaire survey.

Step 5: Revise the indicators again. Since the second round of expert survey has a high level of agreement on the indicators, nofurther revision is made.

Step 6: Confirm the formal indicators and assign weights. Hierarchical analysis is used to calculate the weights, and the process includes the following steps: first, establishing the evaluation model; second, constructing a two-by-two comparison judgment matrix; third, single ranking of the hierarchy and its consistency test, calculating the maximum eigenvalue of the judgment matrix and the corresponding eigenvector, finding out the weight value of each layer of elements, and conducting consistency test; fourth, total ranking of the hierarchy and its consistency test. The 2nd round of experts to investigate the consistency test results of indicators atall levels is shown in Table 1.

Table 1. The 2nd round of experts to investigate the consistency test results of indicators at all levels

Indicators	Consistency coefficient	Cardinality $\left(\chi^2\right)$	Asymp Sig
Level 1	0.911	48.781	0, 007
Level 2	0.873	58.937	0, 041
Level 3	0.814	67.453	0, 044

4.2. The process of calculating weight values

The third round of expert survey was conducted by using the "Questionnaire on the Expert Assignment Value of Physical Education Depth Teaching Standards System". 6 questionnaires were sent out and 6 questionnaires were collected, with a 100% recovery rate. The data of the questionnaires were organized and calculated by using EXCEL software. Table 2 shows the data of the judgment matrix of one of the experts, and the weights of the five tertiary indicators (C27, C28, C29, C30, C31) of the secondary indicator "time management" (B9) were calculated as an example. The 2nd round of experts to investigate the consistency test results of indicators at all levels is shown in Table 2.

Table 2. Scoring table of the judgment matrix of the three-level indicators (C27 to C31) of "time management (B9)" of an expert

	C27	C28	C29	C30	C31
C27	1	1	2	1	1
C28	1	1	2	1	1/2
C29	1/2	1/2	1	2	1
C30	1	1	1/3	1	1
C31	1	2	1	1	1

Step 1, calculate the product of the elements of each row and the nth root of the product to obtain W.

Step 2, regularize the vector W.

Step 3, calculate the maximum characteristic roots of the matrix.

After collecting the weight data from six experts, the average weight values of each level and each indicator are found by the method of geometric mean, and the weight values of indicators at each level relative to those at the previous level are obtained (see Table 3).

Table 3. Comprehensive weighting table of physical education in-depth teaching standards index system

Level 1 Indicators	Level 2 Indicators	Level 3 Indicators
A1 Physical Education Depth of Instruction Objective 0.2754	B1 target determination 0.3265	C1 Highlighting physical education and sport skills, knowledge meaningful dimensions 0.5000
		C2 Integrated and comprehensive around the curriculum, teaching materials and learning 0.2754
	B2 target narrative 0.3107	C3 Learning objective is clear 0.4267
		C4 Learning methods are clear 0.5733
	B3 target achieved 0.3628	C5 focus on physical education emotions, subject ideas, values and other meaningful knowledge 0.5318
		C6 focus on the integration of physical education skills, knowledge and life reality 0.4682
A2 Physical Education Depth of Instruction Content 0.1532	B4 Content selection 0.3158	C7 Can consider real-life situations. Reasonable beyond the teaching materials 0.5000
		C8 Teaching content is experientially related to life 0.5000
		C9 Organic reorganization of teaching content sequence 0.1357
		C10 The teaching content is in line with students' skills and physical foundation 0.1614
	B5 Content design 0.4023	C11 The total amount of teaching content is moderate 0.1671
		C12 Teaching content includes physical ability 0.1275
		C13 Teaching content meets students' interests, hobbies or has novelty 0.1743
		C14 Integration of generalist sports culture 0.1272
	B6 content presentation 0.2819	C15 Integration of local sports culture or phenomenon 0.1068
		C16 Demonstration is focused on the goal and correct 0.5634
		C17 The explanation and demonstration are based on the students' foundation 0.4366
		C18 Focus on students' self-learning methods 0.3315
		C19 Appropriate teaching methods and modes are used 0.3627
A3 Physical education depth teaching organization 0.2419	B7 Method application 0.3617	C20 Pay attention to the rational and diverse use of equipment and space 0.3058
		C21 Harmonious relationship between teachers and students 0.1439
		C22 Harmonious student-student relationship 0.1147
		C23 Actively create learning situations 0.2123
		C24 Teachers and students build classroom systems and maintain compliance 0.1946
	B8 Context creation 0.4154	C25 Teachers and students build classroom "spirit" to create classroom culture 0.1714
		C26 Contextualization is practical 0.1631
	B9 Time management 0.2229	C27 Teacher's explanation time 0.0837
		C28 Teacher's demonstration time 0.1103
		C29 Students' skills practice time 0.3122
		C30 Students' physical practice time 0.2077
		C31 Students' independent cooperation and inquiry time 0.2861
		C32 Timely and effective classroom feedback 0.4675
		C27 Teacher's explanation time 0.0837
	B10 Information feedback 0.2387	C33 Positive classroom feedback 0.5325
A4 Physical Education Depth of Instruction Evaluation 0.3362	B11 Evaluation content 0.3362	C34 Assessment content is effective 0.5000
		C35 Comprehensive evaluation content 0.5000
	B12 evaluation method 0.4251	C36 Combination of quantitative, qualitative evaluation methods 0.3400
		C37 Combination of formative and summative evaluation 0.3400
		C38 Plurality of evaluation subjects 0.3200
	B13 Objective reflection 0.2923	C39 Reflecting on the applicability of teaching objectives 0.5000
		C40 Reflecting on the attainment of teaching objectives 0.5000
A4 Physical Education In-depth Instructional Evaluation 0.2126	B14 Content reflection 0.3459	C41 Reflecting on the appropriateness of teaching content 0.4194
		C42 Reflecting on the transcendence of teaching content 0.5804
		C43 Reflecting on the instruction of students' learning methods 0.5738
	B14 Content reflection 0.3459	C44 Reflecting on students' emotional experience of physical education 0.4262

5. Definition of the composition of the physical education in-depth teaching index system and the access to evaluation

It is the educational results and standards that are intended to be achieved by teachers and students working together in physical education that are known as physical education objectives. The most important part of instructional design is determining fair and accurate physical education teaching objectives for students.

The objectives are based mostly on the curriculum standards, and the new curriculum standards are designed to help students build their physical education core literacy, which includes motor ability, health behavior, and physical moral character, among other things. The development of core literacy among students in physical education has, as a result, become the primary basis for determining the educational objectives of in-depth physical education. The following are indications for determining goals:

1) Highlighting physical education and sport skills, knowledge, and significance level. As a result, the characteristics of physical education discipline should be considered when determining the starting point for physical education teachers' teaching objectives determination, with the pursuit of the meaning level of the main body of sport skills and knowledge being emphasized rather than stopping at the symbolic level.

2) Comprehensive in terms of the curriculum, instructional materials, and learning environments. Teachers should thoroughly identify the teaching objectives in accordance with the standards, teaching materials, and learning conditions in order to meet the requirements and ensure that every student gains the maximum amount of knowledge and skills feasible. These two indicators are collected using the following methods: lesson plan review and classroom observation recordings.

It is the process of making the subject curricular objectives concrete, situational, and operational that represents the professionalism and professional responsibility of instructors. Teaching objective narrative is one way to do this. Among the objective narrative indicators are the following:

1) Knowledge points that are easily understood. Student growth is expressed in terms of cognitive, affective, and motor skill development, according to contemporary instructional design theory. Physical education involves symbolic knowledge transfer in order to attain students' mastery of meaningful knowledge, and boosting the transfer level of students' motor abilities becomes an essential condition for achieving this goal in the classroom. A major point in the narrative of the aims of in-depth physical education teaching is that clarity of the teaching objectives in terms of the level of transfer and the level of understanding the meaning of the meaning is one of the most important issues.

2) The clarity with which learning approaches are presented. The description of the profound teaching objectives of physical education highlights the transcendence and migration of symbolic knowledge to meaningful knowledge as a key feature of the physical education curriculum. This process necessitates students producing or constructing meaningful connections with meaningful life on the basis of their original knowledge and experience, and as a result, students must clarify the related learning approaches. These two indicators are collected using the following methods: lesson plan review and classroom observation recordings.

The achievement of goals relates to whether or not the educational objectives have been met and the expected effect has been obtained. Detailed physical education teaching objectives advocate for the pursuit of knowledge that transcends symbolic knowledge and the realization of meaningful knowledge, rather than simply the mastery of physical skills and knowledge, and for the consideration of the emotional experience, the enhancement of values, and the connection to life during the learning process, rather than simply the mastery of physical skills and knowledge. The following are examples ofindicators ofgoal attainment:

1) Concentrate on significant knowledge such as physical education emotions, disciplinary principles, and values, rather than on rote knowledge. The pursuit of meaningful knowledge in physical education is the pursuit of students' sports emotions, such as whether or not they enjoy sports, the spirit of struggle and tenacity demonstrated in sports, and so on. It also includes sports discipline ideas, such as how sports skills and knowledge come about and how they develop and change, and so on. It also includes sports values, such as how to view the value and role of sports skills and knowledge, the contribution of sports to society, and so on. This includes sport values, such as how to assess the importance and role of sport skills and knowledge, as well as the contribution of sport to the human body and to society in general. The achievement ofthese levels of relevant knowledge is the part that needs to be concentrated on in order to attain in-depth teaching and learning objectives.

2) Stress the importance of applying physical education skills and knowledge to real-world circumstances. It is the purpose of physical education to enhance students' mastery of sports abilities as well as their ability to use sports to exercise and enjoy their bodies and brains in their daily lives after high school. In addition to the qualities of in-depth physical education, it focuses on the integration of sports abilities, knowledge, and application in real-world situations, as well. In addition to the capacity to apply sports abilities and knowledge in real-world situations, this involves the ability to integrate with life reality as well as the ability to accurately interpret and explain sports phenomena in real-world situations. These two indicators are derived by looking at the courseplanand keeping track of classroom observations.

6. Conclusion

Due to the measurement error and scientific orientation caused by subjective feelings, most of the current research data on the influencing factors of physical education evaluation comes from the subjective evaluation of the questionnaire, because the measurement cannot determine the importance order of similar indicators. Errors and scientific positioning. AHP measurements are subjected to a stochastic simulation algorithm, also known as a Monte Carlo method, to fit a triangular continuous probability distribution. This is done in order to revise the empirical results of the influencing factors of PE teaching evaluation, which are obtained by usingAHP to measure the results. It has been proved that Monte Carlo Analytic Hierarchy Process (MCAHP) can eliminate the influence of traditional methods due to subjective judgment to a certain extent, and at the same time improve the validity, objectivity and scientificity of the analysis results, thereby enriching the relevant research theories and methods. . Physical education should be transformed from the traditional shallow physical education to the deep teaching of physical education, based on the development of students' core literacy. In-depth physical education requires teachers to understand, care for, and identify with students' emotions, morals, ways of thinking, and value judgments, while teaching motor skills in a reasonable manner. Therefore, in-depth physical education has become a tool to cultivate students' basic literacy. Therefore, the evaluation of physical education in-depth teaching is more specific and clear, which is conducive to the development and implementation of physical education in-depth teaching. The evaluation index system of sports in-depth teaching is constructed around the aspects of sports in-depth teaching objectives, teaching content, teaching organization, teaching evaluation, and teaching reflection. However, it should be noted that teaching is a complex system. This research only constructs an evaluation index system for the in-depth teaching of physical education; the real realization still needs to be practiced and explored by the majority of physical education professionals and researchers.

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