

# Realization of Fuzzy Evaluation Platform for Public Physical Training Quality in Colleges Based on Gray System Coding Algorithm

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**Abstract:**Based on the fuzzy comprehensive evaluation theory, an index system for the quality evaluation of public physical education in colleges and universities is established, and the weights and potentials of the corresponding indicators are obtained through the expert scoring method and the analytic hierarchy process. This paper focuses on the GM (1,1) model, the equal-dimension gray number complementary dynamic model and the periodic correction model, and puts forward an improvement plan for the shortcomings and defects of the prediction algorithm. and analysis of development trends. It provides new methods and ideas for the more scientific and rational development of the teaching quality evaluation system of public physical education in colleges and universities.

**Keywords:** Fuzzy Evaluation Platform, Public Physical Training Quality, Gray System Coding Algorithm

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## 1. INTRODUCTION

Classroom teaching evaluation is based on the requirements of the curriculum and syllabus, the characteristics of students' physical and mental development and the principles of classroom teaching [1]. Improve teaching quality and provide reliable information and scientific basis [2]. On the basis of physical education teaching and extracurricular sports activities, the school carries out various forms of after-school training to improve students' sports skills, holds small and diverse competition activities, and requires at least one track and field-based event every year. School-wide sports meeting [3]. The teaching quality evaluation system studied in this paper is mainly based on B/S and adopts the framework of workflow technology. It reflects that the teaching quality evaluation system is more suitable for the online office of sports colleges [4], and can be integrated with the digital campus system to provide unified online office services. And through continuous improvement to achieve systematization and networking [5].

Theoretically, the GM(1,1) model is a continuous time function, which can extend from the initial value  $X^{(0)}(1)$  to any time in the future, but as time goes by, some disturbance factors in the future will affect the system [6]. The farther the future time is, the larger the gray interval of the predicted value. How to improve the teaching quality of public physical education is particularly important [7]. The more similar the curve geometry, the greater the correlation degree will be, and vice versa. The existing grey correlation analysis methods include Dun's correlation, area correlation, slope correlation, relative variability correlation and other methods. Deng's grey relational analysis method is one of the classical analysis methods. The science of evaluation activities. quality [8] of students. The evaluation of college physical education teachers in foreign countries is included in the evaluation of teachers [9]. The research started earlier, and the related

theoretical and practical research is also relatively systematic. The most representative ones are the developmental education evaluation in the United Kingdom and the United States [10].

The establishment of the American Evaluation Association in 1985 marked the in-depth development of the professional research on educational evaluation [11] in the United States. Information is an important aspect of the overall movement of matter in nature. People need to obtain various information to understand and transform the world. Image information is the main source for humans to obtain external information, because about 80% of the information is obtained through the human eye [12], and the human eye obtains image information. It is very important to obtain image information, but the purpose is not only to obtain images [13]. The evaluation of Compared with other analysis methods, the evaluation index of this paper is to apply the knowledge of physical education, education, psychology and other disciplines. 50 questionnaires, 45 valid questionnaires were collected), expert discussion method (10 experts) and logical analysis method to construct, it should also meet the needs of students in sports and social development [14].

The traditional methods of physical education teaching quality evaluation in my country are: the combination of usual assessment and regular assessment [15], the combination of personal self-assessment and the democratic evaluation of the masses, and the hierarchical structure of system use cases, which can be described and designed more clearly. System use cases are divided into different packages for integration [16]. A package represents a group of related system use cases. At the same time, different packages also correspond to different functional classifications, and each package acts as a functional subsystem [17]. The evaluation of teaching quality is a value judgment made on teachers' teaching ability and teaching effect of the class as a whole. , so

the predictive data of the GM(1, 1) model is only one or two data after X'0' (curse), and other data can only represent the existing conditions unchanged [18], based on the private undergraduate degree in Henan Province and the index weights were calculated and obtained according to the analytic hierarchy process, which solved the multi-objective in the evaluation system. The grey relational evaluation model of college campus security problems In order to understand the current situation of teaching quality evaluation of public physical education in private undergraduate colleges and universities in Henan Province [19], find out the reasons for the deficiencies, research and sort out the methods to solve the problems, in order to improve the teaching quality evaluation Provide practical and effective solutions [20].

## 2. THE PROPOSED METHODOLOGY

### 2.1 The Gray System Coding Algorithm

Second, the mode of teacher evaluation has changed The evaluation indicators of this paper are the application of physical education [21]: in modern educational evaluation, it is emphasized that the evaluator and the evaluator have a continuous dialogue throughout the evaluation process, that is, to revise each other's views, so as to Make evaluation conclusions as consistent as possible [22]. At present, due to the education, psychology and other disciplines knowledge, the general development research trend of image processing is mainly digital processing, because this method has many advantages such as high processing accuracy, many grayscales, complex nonlinear operations, and good repeatability.

Determine the weights  $A=(a_1, a_2, \dots, a_n)$  of the evaluation factors. Since the importance of each factor in  $U$  is different, it is necessary to assign different weights to each factor, where  $a_1$  is the weight of the evaluation factor, and  $\sum_{i=1}^n a_i=1$ . Using the GM(1,1) model to predict the sequence, a relatively light exponential growth curve can be obtained, but it is difficult to reflect the random fluctuation of the sequence. In this case, the residual period correction model uses a sine (or cosine) curve to fit the residual sequence. Grey system theory is a complete theoretical system covering grey system theory and grey system analysis methods.

Expert discussion method (10 experts) and logical analysis method, the index weight is calculated and obtained according to the analytic hierarchy process, which solves the multi-objective in the evaluation system. The goal of physical education is the center of physical education classroom teaching. gray system is mainly described by the gray equation containing the gray coefficient (referred to as gray element). The key to study the gray system is to whiten, quantify, model and optimize the gray elements by processing them. Gray relational analysis is the main content of gray system analysis theory, and its basic idea is based on the geometric shapes between geometric curves. Analysis and comparison, that is, the closer the geometric shapes are, the greater the degree of correlation between the corresponding sequences, the closer the development and change trends are, the greater the degree of correlation, and vice versa.

### 2.2 The Quality Assessment of Public Sports Training in Colleges and Universities

Whether the setting is specific and practical directly affects the effect of a physical education class. In 2002, "National College Physical Education Curriculum Teaching Guidance Outline", and it is a relatively definite and invariable parameter to obtain the answer of gray system whitening. The idea of gray system modeling is to turn an unclear gray system with insufficient overall information from gray to white in terms of structure, model, and relationship. The grey relational degree pointed out five target areas of physical education curriculum teaching: "mental health target, physical health target, social adaptation target, sports participation target, sports skill target", that is, the relative changes over time in the development process, and use the closeness of their changes in magnitude, direction and speed. measure the correlation between them.

Physical education classroom teaching evaluation is the product of modern education and scientific development. It is different from the general physical education teaching inspection and evaluation that people are familiar with in the past. It has a relatively complete set of theories and methods. , but also from various angles and according to different standards. When using Dunn's grey relational analysis method to analyze a complex system, firstly, it is necessary to select the evaluation data series that reflect the characteristics of the system's behavior, teaching can be obtained. The evaluation grades in Table 1 are obtained by statistics and normalization of the scores of 30 students in a class.

It is called the mapping quantity of the system's behavior, and it is used to indirectly represent the system's behavior. The The principle is shown in the figure below. The standard data sequence curve representing the best campus security status. activities and extracurricular sports training for the whole school. They undertake the training tasks of high-level sports teams in the school, and plan and organize various sports competitions throughout the school. forming teams to participate in sports events at all levels. There are 365 students who think that the content of physical education is "general", accounting for 31.20% of the total number, and some students are not very represents the data sequence curves of the four schools participating in the evaluation. is related to the school's curriculum arrangement. Through investigation, it is known that some schools fail to set sub-item physical education teaching according to students' interests and hobbies.

Among them, the "fuzzy comprehensive evaluation method" is a method to comprehensively evaluate the on the evaluation of experts and students. The evaluation content is: (1) Expert evaluation standards; general physical education classroom teaching quality evaluation adopts a certain index system to form a scoring table standard for experts, which is conducive to the operation and application of classroom teaching evaluation. , mainly including first-level indicators (teaching preparation, teaching process, teaching effect).

### 2.3 The Physical Training Quality Fuzzy Evaluation Platform

Physical education is inseparable from the design, arrangement and dedication of physical education teachers, but it is also inseparable from the diligence and cooperation of evaluation object based on the fuzzy mathematics fuzzy set theory, which is in line with the educational phenomenon.

plays an important role in improving the quality of physical education teaching.

It can be seen from the figure that the most similar geometric shape to the standard data series curve is the school evaluation data series curve. In the notice of the Ministry of Education on printing and distributing the "Guidelines for the Teaching of Physical Education Courses in National Colleges and Universities", it is mentioned in the eighth requirement that according to the overall requirements and actual conditions of school education. in the physical education courses, various types of sports should be open to all students. The physical education curriculum can break the original department and class structure. In order to evaluate and analyze the data sequence of the participating objects, it is necessary to determine the evaluation standard data sequence for reference.

The evaluation of these indicators is divided into 5 levels; "very important", "important", "relatively important", "generally important", "not important". System users (administrators, teachers, students) all use the login number (Work number, student number) as the system login account, you can use the maintenance module to maintain your own login password, and you can log in to the system after the identity, account, and password authentication. Neural network has been widely used in image segmentation, among which BP network has many applications and is relatively mature. And it can more comprehensively collect the opinions of various evaluators, because the number of nodes in the hidden layer affects the generalization ability of the network (the trained BP network, for those not in the sample set, input also gives the appropriate output).

### 3. CONCLUSIONS

On the basis of the second-level fuzzy comprehensive evaluation for leadership evaluation and self-evaluation, a fuzzy comprehensive evaluation is carried out to obtain a more comprehensive, scientific and objective evaluation result. This paper proposes a grey relational adaptive mean filter algorithm. It mainly includes teaching ability, guiding ability, learning ability, organizational management ability, creativity ability, ability to use information tools, scientific research ability and social activity ability. The content of teaching quality evaluation is mainly evaluated from the aspects of teaching attitude, teaching method, teaching content, teaching process, and teaching effect.

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