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Construction of the Evaluation Index System of Physical Education Teachers' Teaching Ability in Colleges and Universities

Yuan Shao

School of Computer and Electrical Engineering, Hunan University of Arts and Science, Changde 415000, Hunan, China

1433884927@qq.com

Abstract: With the continuous development of society and the continuous development of school physical education (PE), the importance of PE courses has also been continuously improved, and the requirements for the teaching ability (TA) of PE teachers are more stringent. This requires physical education teachers to continuously improve their TA, and only when the TA is improved can the teaching quality be improved. Therefore, it is of great significance to establish a comprehensive index evaluation system to evaluate the teaching ability of PE teachers. This paper uses the expert interview method to establish three first-level indicators and ten second-level indicators for evaluating the TA of PE teachers, and builds an evaluation index system (EIS) under the high recognition of the indicators by experts. The system is applied to the evaluation of PE teachers' TA by students in a college, and the final score of teachers is obtained according to the weight coefficient of each index, and the TA level of PE teachers can be analyzed according to the scoring results.

1. Introduction

PE teachers in colleges and universities(CAU) are important implementers of school physical education courses. The level of teachers' teaching ability determines the quality of teaching and affects students' love for physical education courses. Cultural quality and physical quality are equally important, and only the comprehensive development of the two is a high-quality talent. Therefore, it is necessary to improve the TA of PE teachers to promote the improvement of teaching quality.

At present, many scholars have carried out research on the construction of the teaching ability EIS of PE teachers in CAU, and have achieved very significant results. For example, a scholar believes that the evaluation of PE is based on the goals of PE, comprehensively using evaluation

methods and evaluation methods to compare and analyze the effect of teachers' teaching process and students' learning, and adopt correct teaching methods to correct existing problems, so as to So that students' physical and mental health can be fully developed [1]. A researcher pointed out that the TA of PE teachers plays a very important role in the teaching process. PE teachers' teaching ability-related quality and external conditions affect the development of PE teachers' teaching ability and teaching ability[2]. Some scholars have mentioned that PE teachers should have the unity of morality, intelligence, body, beauty and labor. The selection of evaluation indicators should be in line with the teaching characteristics of PE teachers. It should involve the ability of PE teachers in many aspects, not only a certain ability of teachers, highlight the leading role of PE teachers in teaching, and improve the teaching evaluation of PE teachers[3-4]. Although the research results on the construction of the EIS of physical education teachers' teaching ability in CAU are good, but the indicators selected by different researchers are different, and the establishment of a unified standard index system will be more convenient for the evaluation of PE teachers' TA.

This paper first expounds the principle of selecting the relevant indicators for evaluating the TA of PE teachers, and then proposes the calculation formula of the index weight, then designs the evaluation index questionnaire, selects the final evaluation index through expert consultation and interview, and then uses the weight calculation formula to calculate each index. The weights, after the recognition of the indicators by experts, it is determined that the indicators selected in this paper are reliable, and thus the EIS of physical education teachers' TA is constructed. TA evaluation, calculate the evaluation score, and sort teachers' teaching ability according to the score.

2. Evaluation Index Selection and Index Weight Calculation

2.1 Principles of Selection of Evaluation Indicators

(1) Scientific principles

The scientific principle refers to the fact that it is based on a certain actual situation and guided by scientific ideas. In evaluating the teaching ability of physical education teachers, we must have an objective, comprehensive and realistic attitude, and we must adhere to the principle of scientificity. In the process of evaluating teachers' TA, we must have a scientific and rigorous research attitude. Through the sorting and analysis of literature and materials, we can find the characteristics of the TA of public PE teachers in higher normal CAU, and make the evaluation indicators, evaluation procedures, and evaluation methods, evaluation objectives, etc. are in line with the principles of education and teaching evaluation [5-6].

The selection of evaluation indicators should be combined with PE practice teaching, and the selection of evaluation indicators should be scientific and practical. On the basis of not violating the actual situation of PE evaluation, the selected indicators should be added, modified and eliminated. Gradually enhance the scientific nature of the index system [7]. Combined with the actual situation of PE teachers' teaching, scientific methods are used to determine the evaluation standards and procedures of PE teachers, so that all links of the index system are closely integrated, and multi-level consideration, analysis and judgment can maximize the full picture of PE teachers' work [8].

(2) The principle of combining relevance and practicality

The principle of relevance and practicality is based on the basis of PE teaching, fully respecting the research law of education evaluation, fully considering the TA of PE teachers, and on this basis to screen physical education ability indicators. The principle of practicality must be feasible in the process of selecting evaluation indicators, starting from the actual teaching needs and not exceeding the scope of existing conditions, and each selected indicator should be adapted to the TA of PE

teachers [9].

(3) The principle of independence and flexibility

The principles of independence and flexibility are mainly reflected in the classification and stratification of the index system, and each category and stratum are interrelated and independent of each other. The indicators in the evaluation system are independent, but are related to each other in content, and the TA level of PE teachers in different CAU is different [11].

2.2 Calculation of Indicator Weights

There are many methods for calculating the weight of indicators, such as AHP, entropy value method, and expert scoring method, and one of them can be used when solving practical problems [12].

$$w_i = \frac{(\prod_{j=1}^{n} a_{ij})^{\frac{1}{n}}}{\sum_{i=1}^{n} (\prod_{j=1}^{n} a_{ij})^{\frac{1}{n}}}, i = 1,2,...,n \quad (1)$$

$$w_{xz} = \frac{S_{xy}}{T_x} \quad (2)$$

Among them, a_{ij} is the indicator, and w_i is the indicator weight. T_x is the sum of the scores of the xth first-level evaluation experts. w_{xz} is the weight coefficient of each first-level index. S_{xy} is the total score of the secondary indicators.

3. Experimental Research

3.1 Questionnaire Design

When designing the questionnaire, discuss with the physical education experts and formulate the questionnaire, analyze and count the data of the survey, and adjust, modify and delete the indicators of the questionnaire, and finally formulate the TA evaluation index of PE teachers in CAU 's questionnaire.

3.2 Research Methods

Expert interview method: In order to obtain the actual situation of PE teaching, on the basis of mastering a large number of documents, an interview outline was designed to conduct interviews with some college PE experts. The interview methods mainly include face-to-face communication and telephone interviews. The understanding of the TA of PE teachers provides important ideas and constructive suggestions for the design of the questionnaires about the TA of PE teachers in CAU.

Mathematical statistics method: collect the collected expert questionnaires, use Excel and Spss software to statistically analyze and process the survey data, and use the analytic hierarchy process to weight each index of physical education teachers' teaching ability.

3.3 Indicator Screening

After obtaining expert advice through interviews, three primary indicators and ten secondary indicators were sorted out. The primary indicators are: basic quality (A), work ability (B), and professional development (C). The secondary indicators under the basic quality are: moral quality (A1), ability quality (A2), and physical and mental quality (A3). The secondary indicators under the working ability are: teaching ability (B1), scientific research ability (B2), extracurricular sports organization ability (B3), and sports competition organization ability (B4). The secondary indicators under professional development include: lifelong learning (C1), communication and reflection (C2), and continuous innovation (C3).

4. Analysis of Experimental Results

4.1 Construction of Evaluation System

(1) First-level indicator weight assignment

Table 1. First-level index weight coefficient and ranking

	Weight factor	sort
A	0.142	3
B	0.586	1
C	0.272	2

According to the index weight calculation formula, the first-level index weight is obtained as shown in Table 1. Among them, basic quality A accounted for 0.142, work ability B accounted for 0.586, and professional development C accounted for 0.272. Among the three first-level indicators, the weight of work ability is the most important, and the second-level indicators below work ability are also the most. Therefore, physical education teachers should improve their work ability in a targeted manner.

(2) Second-level indicator weight assignment

Table 2. Secondary indicator weight coefficients

		Weight factor
A	A1	0.351
	A2	0.473
	A3	0.176
B	B1	0.348
	B2	0.161
	B3	0.255
	B4	0.236
C	C1	0.298
	C2	0.137
	C3	0.465

According to the index weight calculation formula, the first-level index weight is obtained as shown in Table 2. Among them, the moral quality A1 is 0.351, the ability quality A2 is 0.473, and the physical and mental quality A3 is 0.176. Teaching ability B1 is 0.348, scientific research ability B2 is 0.161, extracurricular sports organization ability B3 is 0.255, and sports competition organization ability B4 is 0.236. C1 for lifelong learning is 0.298, C2 for communication and

reflection is 0.137, and C3 for continuous innovation is 0.465. The secondary indicators focus on the ability, quality, teaching ability and continuous innovation of physical education teachers.

(3) Construction of evaluation system

After expert consultation, the total recognition rate of the weight of the indicators reached 100%, which means that the selected indicators are highly representative and can explain the teaching ability of physical education teachers. Therefore, it can be determined that these indicators are suitable for the construction of physical education teachers' teaching ability evaluation index system. As shown in Figure 1.
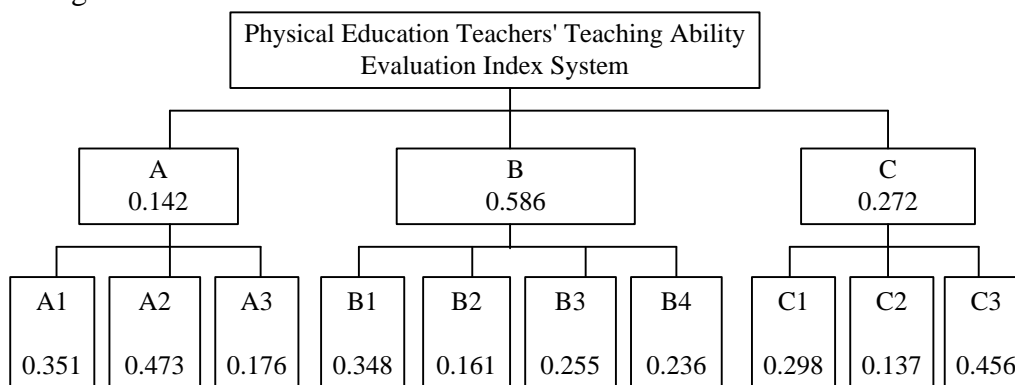

Figure 1. The EIS of PE teachers' teaching ability

4.2 Evaluation System Practice

To evaluate the TA of five PE teachers in a college, build an evaluation standard scale according to the EIS, distribute it to the students of the school for scoring, and then calculate the final score according to the weight of each index and its corresponding score. If the final score of the evaluation is between (90, 100), it can be considered that the teacher's TA is strong; if the score is between (80, 90), it can be considered that the teacher's TA is strong; the score is (70) , 80] is in the middle, it can be determined that the teacher's TA belongs to the general, below 70 points, it can be determined that the teacher's TA is poor. As shown in Figure 2 is the teaching evaluation results.
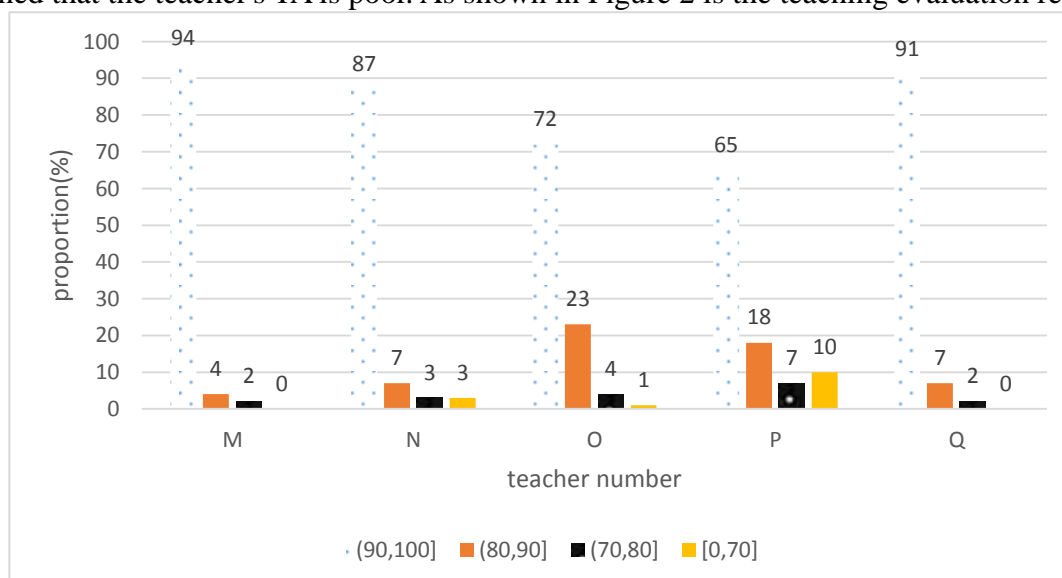

Figure 2. Evaluation results of PE teachers' TA

We calculate the level of teachers' TA according to the percentage of excellent teachers. The percentage of teacher M who is excellent is 84%; the percentage of teacher N is 87%; the percentage of teacher O is 2%, and the percentage of good is 23%. %; 65% of teachers P got excellent, 18% got good 1; 91% of teachers Q got excellent. From the above statistical data, the order of the TA of teachers M, N, O, P, and Q is: M>Q>N>O>P.

4.3 Strategies for Cultivating the TA of PE Teachers in Colleges and Universities

(1) Increase investment in the TA evaluation system of PEn teachers

The development of TA of PE teachers in CAU is uneven, and some teachers still have certain problems in TA. We should strengthen scientific research on the teaching ability of physical education teachers, and seriously discuss the training measures to promote the development of PE teachers' TA. The government and schools should increase investment in the development of PE teachers' TA.

(2) Organize more competitions and participate in competition scoring work

The organization of the competition and the scoring of the competition can fully reflect the referee competition ability of PE teachers. The complete success of an event depends on the organizer of the event, and the organizer is often undertaken by the PE teacher, which is the embodiment of the comprehensive ability of the PE teacher. Through this form of competition, teachers can recognize their own shortcomings, enhance their self-learning ability, and improve the comprehensive ability of PE teachers.

(3) Increase the emphasis of school leaders on PE teacher training

To carry out the continuing education of PE teachers well in CAU, school leaders must pay attention and support, which is the premise of continuing education. The importance of school leaders is a factor that affects the improvement of PE teachers' TA, and is also a factor that restricts the development of PE. There are differences in the ability development of teachers in PE colleges. While admitting the differences, school leaders should consider how to improve teachers with poor or slightly poor ability as soon as possible. In order to narrow the gap between differences, these teachers can often be funded to receive training or organize in-school teachers' TA competitions, etc., and reasonable policies and systems can be formulated to reward and punish outstanding PE teachers to encourage outstanding performance in education and teaching.

5. Conclusion

This paper studies the TA of physical education teachers in CAU, and constructs the teaching ability EIS. The index weights are calculated for the selected primary and secondary indicators, and the weight coefficients of each indicator in the indicator system are established. Through the application of the EIS, analyzing the TA of PE teachers can not only help PE teachers recognize their own deficiencies, but also allow CAU to understand the actual teaching level of teachers and formulate TA training policies.

Acknowledgements

References

[1] Gustavo González-Calvo, Gallego-Lema V , Gerdin G , et al. Body image(s): Problematizing future physical education teachers' beliefs about the body and physical activity through visual imagery:. European Physical Education Review, 2022, 28(2):552-572.

[2] Rappaport T S , Xu D . Construction on teaching evaluation index system of track and field general course for physical education major in light of wireless network technology. Journal of Intelligent and Fuzzy Systems, 2019, 37(7):1-9.

[3] Sari H , Gkda H , Kizilkaya A E . Evaluation of Special Education Teachers' Opinions about Literacy Textbooks, Teaching Individuals with Intellectual Disabilities. Journal of Modern Science, 2018, 38(3):53-72.

[4] Asuru V , Ikpa A . Evaluation of Teachers' Pedagogical Competencies and Academic Performance of Secondary School Students in Rivers State. Sport Education and Society, 2020, 6(2):43-53.

[5] Joycilin S A , Shakeel Z , Sylvia V . Classroom Teaching to Remote Teaching: Preparedness of Teachers of HEIs in India. Journal of Critical Reviews, 2021, 7(9):3303-3309.

[6] Ahyani L N , Pramono R B , Astuti R D , et al. Evaluation of the PELITA Bullying Prevention Program: A Study of Elementary School Teachers in Kudus, Indonesia. The Open Psychology Journal, 2019, 12(1):147-154.

[7] Lestari M , Arono A . Evaluation Of English Teaching Materials Used At Sd It Ummi In Kota Bengkulu Based On Ktsp (Kurikulum Tingkat Satuan Pendidikan). Joall (Journal of Applied Linguistics and Literature), 2019, 3(2):88-102.

[8] Ahmad T . Teaching evaluation and student response rate. Psu Research Review, 2018, 2(3):206-211.

[9] FANG , Hong. Discussion on the Performance Evaluation Index System of Basic Course Teaching Team in Colleges and Universities. Asian Agricultural Research, 2020, v.12(03):76-78.

[10] Manglik N , Dudrey E F , Padilla O . Group for Research in Pathology Education (GRIPE): Teaching and Evaluation Using Distance Learning, 50th Annual Meeting, 2021, Held Virtually. Medical Science Educator, 2022, 32(2):599-601.

[11] Bae M H , Lim Y S , Kim Y S . A study on physical education curriculum of education universities. Journal of Korean Society for the Study of Physical Education, 2020, 25(2):151-175.

[12] Teresita C . Program Management And Performance Of Teacher Education Among State Universities And Colleges (Sucs) In Calabarzon. International Journal of Advanced Research, 2020, 8(12):179-201.