

Research on the construction of talent training index system for physical education oriented teacher trainees under the competency model

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Abstract

This study is dedicated to revolutionizing the training mode of physical education teacher trainees in Guangdong Province, focusing on the core concept of “competency” and clarifying the training objectives and pathways. Through in-depth visits to colleges and universities and employment organizations in Guangdong Province, the study analyzes the market demand for physical education teacher trainees and examines the current situation of talent training. On this basis, a competency-based talent training index system was constructed to accurately identify key influencing factors. In order to drive the upgrading of talent cultivation mode, enrich the connotation of education, strengthen the theoretical support, and inject new vitality into the cause of physical education in Guangdong Province and even the whole country. The results of the study show that the first-level indicator system of talent cultivation under the competency model of this study and its weights are: professional knowledge and skills in physical education (0.26), physical education teaching ability (0.23), classroom management ability (0.19), professional ethics and responsibility (0.17), and innovation ability and adaptability (0.15). The secondary indicators and their weights are: professional knowledge and skills in physical education (0.08), mastery of motor skills (0.07), basic knowledge of physical education disciplines (0.07), ability to teach physical education (0.07), ability to design and implement physical education teaching (0.06), ability to evaluate and give feedback on physical education teaching (0.06), professional ethics and responsibility (0.05), ability to manage students' behavior (0.05), ability to apply modern information technology (0.05), ability to combine theory and practice in physical education (0.05), ability to innovate and adapt (0.05), ability to organize and build classes (0.05), respect and care for students (0.04), ability to innovate in physical education teaching (0.04), ability to have a good teacher's professional ethics (0.04), ability to build classroom culture competence (0.04), classroom management competence (0.04), compliance with educational laws and regulations (0.03), ability to adapt to new environments and challenges (0.03), and interdisciplinary integration competence (0.03).

Keywords

Competency; physical education teacher training students; talent training; index system.

1. Introduction

In today's society, with the enhancement of national fitness awareness and the booming development of sports industry, the cause of physical education is ushering in unprecedented development opportunities and challenges. As an important cradle for cultivating future physical education talents, the talent cultivation mode of physical education teacher trainees in colleges and universities is not only related to the quality of physical education, but also has a

direct impact on the inheritance of physical fitness and sportsmanship of China's youth [1]. Guangdong Province, as the frontier of China's economic and social development, the development of its physical education program not only carries the important task of improving the national health level, but also shoulders the mission of leading the innovation of physical education and promoting the inheritance of sports culture. Therefore, it is of great significance to explore and reform the talent cultivation mode of physical education teacher trainees in Guangdong Province to promote the sustainable development of physical education in the region and even in the whole country.

As a core concept in modern human resource management and organizational behavior, "competency" emphasizes the comprehensive ability of knowledge, skills, attitudes and values that are closely related to job performance demonstrated by individuals in specific positions [2]. Introducing the concept of "competency" into the talent training of physical education teacher training students is aimed at clarifying the issues of "what kind of people to train" and "how to train people", i.e., to build a training program that meets the characteristics of physical education majors as well as the needs of the society. This is to build a talent training system that meets both the characteristics of physical education specialties and the actual needs of the society. This system not only requires students to master solid professional knowledge and skills in physical education, but also emphasizes the cultivation of their teaching practice ability, innovative thinking, teamwork and lifelong learning ability, so as to ensure that physical education teacher trainees are capable of taking up diversified jobs in physical education in the future.

In view of this, this study firstly analyzes the theoretical foundation of the training of physical education teacher trainees in the context of "competency", in order to provide a solid theoretical support for the reform practice. Through visiting and researching relevant universities and employment organizations in Guangdong Province, this study strives to accurately grasp the market demand trend for PE teacher educators, and reveal the current situation and problems in the training of PE teacher educators in Guangdong Province from the perspective of competency orientation. At the same time, combined with successful cases and comparative analyses at home and abroad, the study refines the unique connotation and characteristics of the cultivation of physical education teacher trainees in Guangdong Province, and provides empirical evidence for the construction of the subsequent index system. On this basis, this study will further construct a "competency"-oriented indicator system for PE teacher trainee training, and identify the key factors affecting the training of PE teacher trainees in Guangdong Province through scientific methodology and data analysis, in order to provide a precise positioning for the reform of talent training.

2. Research Objects and Methods

2.1. Research object

The index system for the training of physical education oriented teacher trainees under the competency model covers the following aspects:

- (1) Colleges and universities in Guangdong Province: the study selected a number of colleges and universities with physical education majors in Guangdong Province as the object of the study, focusing on the curricula, teaching methods, practice links, evaluation system and other aspects of these colleges and universities in the cultivation of physical education oriented teacher trainees.
- (2) Employment units: including primary and secondary schools, sports training institutions, community sports service centers, and other employers who receive physical education teacher training graduates, to understand the needs, evaluation standards, and feedback of these units on the practical abilities of physical education teacher training students.

(3) Physical Education Oriented Teacher Trainees: To study the current physical education oriented teacher trainees and graduated physical education teacher trainees, and collect their views on the existing training mode, their feelings of personal ability enhancement, and their expectations for future career development.

2.2. Research Methods

(1) Literature analysis method: Extensively collect domestic and international literature on competency theory, physical education teacher trainee cultivation, education reform, etc., and systematically sort out and analyze them, so as to provide a solid theoretical foundation and reference basis for this study.

(2) Questionnaire survey method: design a questionnaire for teachers and students of physical education majors in colleges and universities, managers of employing organizations and physical education teacher trainees to collect data and information about cultivation objectives, curriculum, teaching methods, practical abilities, employment needs and other aspects. The questionnaire will be in the form of Likert scale and other forms to facilitate quantitative analysis.

(3) Interview and survey method: Selecting the persons in charge of physical education majors in some colleges and universities, senior teachers, representatives of employers and outstanding physical education teacher trainees to conduct in-depth interviews to obtain first-hand information about their views on the current training mode, problems and suggestions for improvement.

(4) Hierarchical analysis method: firstly, through in-depth interviews and questionnaire surveys, systematically collect and identify the competency elements required for PE oriented teacher trainees; secondly, hierarchize the competency elements according to their intrinsic logical relationship and importance, construct a multi-level index system framework, and clarify the subordination and support relationship between the indicators of each level; lastly, for the specific indicators at each level, adopt the methods of scoring, data analysis, etc., and then analyze and analyze the data to find out their views on the current training mode. Finally, for each level of specific indicators, expert scoring, data analysis and other methods are used to allocate weights in a scientific and reasonable way to ensure the objectivity and accuracy of the indicator system [3].

(5) Data analysis method: SPSS, Excel and other statistical software are used to statistically analyze the data collected from the questionnaire survey, including descriptive statistics, correlation analysis, etc., in order to identify the key factors affecting the cultivation of talents and construct a scientific indicator system.

3. Results and Analysis

3.1. Theoretical basis of talent cultivation index for physical education oriented teacher trainees under competency modeling

As an advanced human resource management concept, the competency model is centered on guiding talent cultivation and career development by identifying and defining the key competencies, knowledge and skills needed to complete a job. In the field of physical education, competency not only includes the basic teaching skills of physical education teachers, but also covers their educational philosophy, motor skills, student management ability, psychological counseling and other aspects of quality [4]. Therefore, applying the competency model to the talent training of physical education oriented teacher training students means building a comprehensive and systematic index system, which needs to be closely centered on the characteristics and requirements of physical education, to ensure that the teacher training

students not only have solid professional knowledge, but also be able to flexibly apply it in practice, and effectively promote the physical and mental health development of students.

Further, the development and application of competency model provides a scientific theoretical framework for the training of physical education teacher educators. From the definition, competency is the collection of characteristics that can distinguish the performance advantages and disadvantages of an individual, which is beyond the traditional concept of competency and pays more attention to the comprehensive performance of an individual in the actual work situation. In the field of physical education, this requires us to consider not only the degree of mastery of professional skills of teacher trainees, but also how to transform knowledge into practical ability, how to embody humanistic care in the process of teaching and how to continuously self-reflect and grow when we formulate the indicators of talent cultivation. A review of related studies at home and abroad shows that competency modeling has been successfully applied to talent training in many educational fields, which significantly improves the quality of education and the adaptability of talents. Drawing on these successful cases and combining with the special characteristics of physical education, we can build a set of index system for training talents of physical education oriented teacher trainees that meets the needs of the times and embodies the characteristics of physical education, so as to lay a solid foundation for the cultivation of high-quality and specialized physical education teacher teams.

3.2. Analysis of Market Demand and Current Situation of Talent Cultivation for Physical Education Oriented Teacher Candidates

In Guangdong Province, with the deepening of education reform and the booming development of sports industry, the talent cultivation of sports oriented teacher trainees is facing unprecedented market demand and challenges. The ability requirements of employment units for physical education teacher trainees are diversified and specialized. In addition to the traditional teaching skills and mastery of sports skills, modern physical education pays more attention to the comprehensive quality of teacher trainees, including the ability of innovative thinking, teamwork, psychological counseling, and information technology application. With the reform of school physical education, more and more schools tend to recruit physical education teachers who are able to design and implement diversified physical education programs, focus on the monitoring and assessment of students' physical fitness and health, and effectively stimulate students' interest in sports. Meanwhile, with the deep integration of physical education and health education, physical education teacher trainees who master health knowledge, nutrition principles and psychological counseling skills are more favored by the job market [5]. In addition, with the popularization of the concept of national fitness and the rapid development of the sports industry, emerging fields such as sports training, sports event organization and management, and sports tourism also put forward higher requirements for PE teacher trainees in terms of professional skills and innovation ability. These trends show that the talent cultivation of sports-oriented teacher trainees in Guangdong Province needs to keep up with the market demand and continuously adjust and optimize the cultivation program in order to cultivate more composite talents that meet the requirements of the times.

At present, Guangdong universities have achieved certain results in the cultivation of talents for sports-oriented teacher trainees, but there are still some problems and challenges. In the cultivation program and curriculum, colleges and universities generally focus on the combination of theory and practice, and offer a series of courses such as physical education theory, sports skills training, physical education teaching design and practice, aiming to comprehensively improve the professionalism and teaching ability of teacher trainees [6]. At the same time, colleges and universities also provide rich internship practice opportunities for teacher trainees through school-enterprise cooperation and industry-academia-research combination, in order to enhance their practical ability and social adaptability. However, in the

actual talent cultivation process, there are still problems such as the disconnection between the curriculum and the market demand, insufficient practical teaching resources, and weak teachers. Some colleges and universities pay too much attention to the teaching of theoretical knowledge in the curriculum and neglect the cultivation of practical ability, which makes it difficult for teacher trainees to flexibly apply what they have learned in actual teaching. In addition, due to the limited resources for practical teaching, some teacher trainees have insufficient opportunities for internship practice and find it difficult to gain sufficient practical experience. At the same time, with the rapid development of physical education, the faculty of colleges and universities are also facing challenges. Some teachers lack the learning and mastery of new concepts and technologies, making it difficult for them to effectively guide teacher trainees in their learning and practice. To a certain extent, these problems have affected the quality of talent cultivation of sport-oriented teacher trainees in Guangdong Province and restricted their ability to adapt to the market demand. Therefore, universities in Guangdong Province need to further strengthen the connection with the employment market, optimize the curriculum, strengthen practical teaching, and enhance the faculty strength in order to cultivate more high-quality sports-oriented teacher trainees who meet the market demand. It can be seen that the talent cultivation of sports oriented teacher trainees in Guangdong Province shows a positive trend in terms of market demand and status quo, but it still needs to be continuously optimized and adjusted in order to adapt to the rapidly changing market demand and to cultivate more composite talents with professionalism, innovation ability and social adaptability.

3.3. Construction of Talent Cultivation Indicator System under Competency Modeling

First, the construction of talent cultivation index system under competency model is a complex and delicate process, and this study starts from multiple dimensions to ensure the scientific and comprehensive nature of the index system. First, the competency elements are systematically identified, and these elements form the basis of the talent cultivation index system. For example, for physical education oriented teacher trainees, professional knowledge, practical ability, innovative thinking, teamwork and communication ability, as well as lifelong learning and development awareness are all indispensable elements of competency. These elements not only cover the basic professional qualities of physical education teachers, but also reflect the new requirements for physical education teachers in the context of the new era [7]. On the basis of identifying these elements, specific indicators need to be set scientifically to ensure that each element can be reflected by specific and measurable indicators. For example, in terms of professional knowledge, we can set indicators such as the degree of mastery of the curriculum, professional theory examination results; in terms of practical ability, we can set indicators such as the performance of teaching internships and the organization and participation in sports events.

Second, construct a hierarchical indicator system framework and clarify the logical relationship between the indicators. This usually involves stratifying the elements of competency according to importance or relevance to form a clear structure of the indicator system. When constructing the framework, make sure that each indicator is closely related to the competency element it belongs to, and that there is no logical conflict or duplication between indicators. At the same time, the weights of the indicators are reasonably assigned according to job requirements and professional standards. The basis for weight allocation can include the degree of job demand for each competency element, the importance of the indicators in the assessment, and the availability of data. When determining the weights, expert review, data analysis and other methods are used to ensure that the weights are assigned in line with the actual situation and have a scientific basis. Finally, quantitative standards are developed for each indicator by

combining industry standards and practical experience. These standards should be both challenging and operable, and be able to truly reflect the ability and level of the teacher trainees. With the development of education and changes in market demand, the quantitative standards need to be adjusted in due course to ensure the timeliness and effectiveness of the indicator system. In the process of constructing the index system, attention needs to be paid to maintaining the rigor and meticulousness of the whole process. From the identification of competency elements to the setting of indicators, to the allocation of weights and the formulation of quantitative standards, each step needs to be carefully considered and planned to ensure that the final indicator system can accurately assess the quality of talent cultivation and provide powerful support for the optimization of talent cultivation mode. The specific indicators and their weights are listed in the table below:

Table 1 List of Talent Development Indicator System and Weights under Competency Modeling

Level 1 indicators	weights	Secondary indicators	weights
Physical Education Professional Knowledge and Skills	0.26	Physical Education Professional Knowledge and Skills	0.08
		Basic Knowledge of Physical Education Subjects	0.07
		Mastery of sports skills	0.07
		Ability to combine physical education theory and practice	0.05
		Physical Education Teaching Competencies	0.07
Physical Education Teaching Ability	0.23	Physical Education Teaching Design and Implementation Competencies	0.06
		Physical Education Teaching Evaluation and Feedback Ability	0.06
		Modern Information Technology Application Competence	0.05
Classroom management skills	0.19	Classroom Management Skills	0.04
		Class Organization and Construction Skills	0.05
		Student Behavior Management Skills	0.05
		Class Culture Building Skills	0.04
Professional ethics and responsibility	0.17	Professional ethics and responsibility	0.05
		Compliance with Education Laws and Regulations	0.03
		Respect and care for students	0.04
		Good teaching ethics	0.04
Creativity and Adaptability	0.15	Creative and Adaptive Skills	0.05
		Physical Education Teaching Innovation Ability	0.04
		Interdisciplinary integration ability	0.03
		Ability to adapt to new environments and challenges	0.03

It can be seen that the system of first-level indicators of talent development under the competency model of this study and their weights: professional knowledge and skills in physical education (0.26), physical education teaching ability (0.23), classroom management ability (0.19), professional ethics and responsibility (0.17), innovation and adaptability (0.15). The secondary indicators and their weights are: professional knowledge and skills in physical education (0.08), mastery of motor skills (0.07), basic knowledge of physical education disciplines (0.07), ability to teach physical education (0.07), ability to design and implement physical education teaching (0.06), ability to evaluate and give feedback on physical education

teaching (0.06), professional ethics and responsibility (0.05), ability to manage students' behavior (0.05), ability to apply modern information technology (0.05), ability to combine theory and practice in physical education (0.05), ability to innovate and adapt (0.05), ability to organize and build classes (0.05), respect and care for students (0.04), ability to innovate in physical education teaching (0.04), ability to have a good teacher's professional ethics (0.04), ability to build classroom culture ability (0.04), classroom management ability (0.04), compliance with education laws and regulations (0.03), ability to adapt to new environments and challenges (0.03), and interdisciplinary integration ability (0.03).

3.4. Analysis of Factors Affecting the Talent Cultivation of Physical Education Oriented Teacher Trainees

In the process of sports oriented teacher training, a variety of factors are intertwined and jointly shape the quality and direction of talent training. Policies, regulations and institutional environment, as macro-level influencing factors, play a decisive role in guiding the cultivation of talents. The education policy, sports education development plan and related institutional design issued by the government, such as the teacher qualification examination system and the internship and training policy for teacher trainees, not only provide a clear career development path for sports oriented teacher trainees, but also promote the standardization and specialization of talent cultivation through the policy incentives and institutional guarantee. Meanwhile, the educational resources and teacher strength of colleges and universities are the key factors affecting the quality of talent cultivation. The investment of educational resources in colleges and universities, including teaching facilities, library materials, research funds, etc., is directly related to whether teacher trainees can be exposed to advanced teaching concepts and technical means [8]. The strength of the teachers' strength, on the other hand, has a direct impact on the depth of the teacher students' professional knowledge and the effect of the cultivation of their practical ability. An excellent team of teachers can impart cutting-edge academic achievements and practical teaching skills to students, and stimulate their innovative thinking and practical ability. However, the lagging of policies and regulations, the unbalanced distribution of educational resources, and the shortage of teachers may have a negative impact on the talent cultivation of physical education oriented teacher trainees, such as restricting the space for teacher trainees' career development and lowering the quality of teaching.

Students' personal characteristics and learning motivation, as well as socio-economic and cultural backgrounds, are micro-level influences, which have far-reaching impacts on talent cultivation through influencing teacher trainees' learning attitudes, learning habits and career planning. Students' personal traits, such as learning interests, personality traits, and self-management abilities, are intrinsic factors that determine whether they can succeed in the field of physical education. Students with strong learning motivation are more willing to invest time and energy in learning and practicing, and thus are more likely to make breakthroughs in their professional knowledge and teaching ability. The socio-economic and cultural contexts, on the other hand, have an indirect impact on talent development by influencing the educational opportunities, access to educational resources, and career choices of teacher educators. For example, students with better family economic conditions may have more educational resources and internship practice opportunities, while students from different cultural backgrounds may enter the field of physical education with unique perspectives and ways of thinking, injecting new vitality into talent cultivation. However, problems such as unequal educational resources due to socio-economic differences and communication barriers due to differences in cultural backgrounds may also become obstacles to talent cultivation, affecting the overall development and career competitiveness of teacher educators.

In addition, the improvement of policies and regulations, the enrichment of educational resources, the enhancement of teachers' strength and the optimization of students' personal

attributes can create favorable conditions for the talent cultivation of sports-oriented teacher trainees and promote their comprehensive development. On the other hand, the negative impacts may be manifested in the outdated cultivation program caused by the lagging policy, the shortage of educational resources restricting the practical ability of teacher trainees, and the insufficient teacher strength affecting the quality of teaching and learning, etc. [9]. Furthermore, the influencing factors do not exist in isolation from each other, but are interrelated and affect each other. For example, the improvement of policies and regulations can guide the rational allocation of educational resources and enhance the learning motivation of students; while the improvement of social and economic conditions can provide a material basis for the investment of educational resources and the enhancement of teachers' strength. Therefore, in the reform of talent cultivation mode, we need to comprehensively consider various influencing factors, and form a synergistic effect by optimizing the policy environment, strengthening the investment of educational resources, enhancing the teachers' strength, and stimulating the students' personal potential, so as to jointly promote the improvement of the quality of the talent cultivation of physical education oriented teacher trainees. It can be seen that the factors affecting the cultivation of sports oriented teacher training students are complex and diverse, including macro-level policies and regulations and institutional environment, university educational resources and teacher strength, but also including micro-level students' personal traits and learning motivation, socio-economic and cultural background. In the reform of talent cultivation mode, we need to comprehensively examine these influencing factors, and form a good environment conducive to talent cultivation through comprehensive measures, so as to cultivate more high-quality and professional sports-oriented teacher trainees for the cause of sports education in Guangdong Province and even the whole country.

4. Conclusion

This study has innovated and explored the talent cultivation mode for physical education teacher trainees in Guangdong Province. Taking "competency" as the core, through in-depth research on market demand and analysis of the current situation, we have constructed a talent cultivation index system based on competency, and clarified key influencing factors and their weights, such as professional knowledge and skills in physical education, physical education teaching ability, classroom management ability, professional ethics and responsibility, innovation ability and adaptability, and so on. The key influencing factors including professional knowledge and skills in physical education, physical education teaching ability, classroom management ability, professional ethics and sense of responsibility, innovation ability and adaptability and their weights are clearly defined. The results of the study show that the index system can effectively drive the upgrading of the talent cultivation mode, inject new vitality into the cause of physical education in Guangdong Province and even in the whole country, and provide a richer talent cultivation path with theoretical support and practical guidance.

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