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ПОРІВНЯЛЬНИЙ АНАЛІЗ МОДЕЛЕЙ ПІДГОТОВКИ ФАХІВЦІВ ФІЗИЧНОЇ КУЛЬТУРИ В КИТАЙСЬКИХ УНІВЕРСИТЕТАХ

Анотація. Стаття присвячена порівняльному аналізу моделей підготовки фахівців з фізичного виховання в китайських університетах. Підготовка фахівців з фізичного виховання у китайських університетах є багатограним завданням, сформованим реформами навчальних програм, технологічним прогресом і розвитком суспільних потреб. Метою статті є порівняльний аналіз моделей підготовки фахівців з фізичної культури в китайських університетах, визначення їхніх ключових характеристик та можливих напрямів адаптації передового досвіду в міжнародному освітньому просторі. Цей аналіз досліджує різні аспекти цих моделей навчання, спираючись на доступну літературу для висвітлення ключових компонентів, педагогічних підходів та сфер для вдосконалення. За аналізом наукових публікацій були охарактеризовані моделі підготовки фахівців з фізкультури китайських університетів, які еволюціонують з урахуванням сучасних освітніх теорій і технологій: моделі експериментального навчання; моделі онлайн та дистанційного навчання; моделі, орієнтовані на розвиток фізичної грамотності; моделі педагогічної підготовки фахівців фізичного виховання; моделі методів оцінювання; моделі формування фізичної грамотності. Зазначені методи дозволили виявити кілька проблем і обмежень у реалізації моделей підготовки фахівців з фізичного виховання. До них відносяться: слабка онлайн-інфраструктура, нестача досвіду онлайн-викладання, прогалини в IT-підготовці, складна домашня обстановка, проблеми психічного здоров'я, тривала ізоляція. Показано, що майбутня підготовки фахівців з фізкультури в китайських університетах, ймовірно, буде формуватися під впливом кількох ключових тенденцій: розширена інтеграція технологій, акцент на фізичну грамотність, гнучке та персоналізоване навчання, співробітництво, фокус на психічному здоров'ї.

Ключові слова: порівняльний аналіз; модель підготовки; фахівці фізичної культури; китайські університети; освіта.

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COMPARATIVE ANALYSIS OF MODELS OF TRAINING SPECIALISTS IN PHYSICAL EDUCATION IN CHINESE UNIVERSITIES

Abstract. The article is devoted to a comparative analysis of the models of training specialists in physical education in Chinese universities. Training specialists in physical education in Chinese universities is a multifaceted task shaped by curriculum reforms, technological progress, and the development of social needs. The article is aimed at a comparative analysis of models of training specialists in physical education in Chinese universities, determining their key characteristics and possible directions for adapting best practices in the international educational space. This analysis explores various aspects of these learning patterns, drawing on the available literature to highlight key components, pedagogical approaches, and areas for improvement. According to the analysis of scientific publications, models of training specialists in physical education at Chinese universities, which are evolving and considering modern educational theories and technologies, were characterized: models of experimental learning, online and distance learning models, models focused on the development of physical literacy; models of pedagogical training of physical education specialists; models of assessment methods; models for the formation of physical literacy. These methods made it possible to identify several problems and limitations in implementing models for training specialists in physical education. These include weak online infrastructure, lack of experience in online teaching, gaps in IT training, challenging home environments, mental health problems, and prolonged isolation. It is shown that the future training of physical education professionals in Chinese universities is likely to be shaped by several key trends: expanded integration of technology, emphasis on physical literacy, flexible and personalized learning, collaboration, and focus on mental health.

Keywords: comparative analysis; training model; physical education specialists; Chinese universities; education.

Problem statement. In the modern world, high-quality physical education specialist training is essential to developing education, sports, and a healthy lifestyle. In the context of globalization, countries are actively improving their educational systems, borrowing successful practices, and adapting them to their own needs. Physical education and sports are important in China's universities, promoting students' health, social development, and national pride. Universities offer a variety of athletic programs, from compulsory physical education classes to extracurricular sports clubs and competitions. These programs aim to improve physical fitness, skill training, and team spirit. Chinese universities demonstrate unique approaches to training specialists in this field, combining traditional pedagogical methods, modern technologies, and innovative teaching strategies. The study of models of training specialists in physical education in China allows us to assess their effectiveness, determine the features of the organization of the educational process, and compare them with the approaches used in other countries. The analysis of such models helps to identify the strengths and

weaknesses of different educational systems, which can help improve national training programs for specialists in the field of physical education.

Analysis of current research. Physical education is a mandatory component of the curriculum of most Chinese universities. The recent reform of curricula in China places increased demands on the development of physical education aimed at improving students' quality and motor skills [10]. These classes typically cover various activities, including gymnastics, athletics, ball games, and traditional Chinese martial arts such as tai chi.

The recent reform of curricula in China has increased demands on the development of physical education aimed at improving students' quality and motor skills. Traditional models are being improved to address the lack of accuracy in motion recognition and detection, which can help teachers improve the quality of teaching. This involves studying educational teaching activities required by the new curriculum in connection with China's current social, political, and economic development [10].

One of the significant achievements is the proposed application of artificial intelligence technology in physical education. This includes creating deep learning models to analyze human movements based on short-term memory neural networks (LSTMs) to detect the state of students' activities. These AI-driven systems typically consist of three components: data collection, calculation, and visualization [10].

Intelligent wearable systems detect students' status and provide feedback during learning. The collected data is then used to train and test AI models. The results of the experiments demonstrated that the amount of losses during training meets practical requirements, while the accuracy of the test algorithm exceeds 97.5% for various subjects. Compared to other algorithms, this approach has shown better efficiency, offering a promising perspective for popularizing physical education [6].

Universities play an important role in solving these problems and ensuring quality training for physical education specialists. This includes providing resources and support, encouraging innovation and collaboration, and integrating technology into learning. Providing adequate resources and support for online learning, including technology, training, and technical assistance. Edmond Kwesi Agormedah et al. found that students expressed negative sentiments (not ready/prepared) because they lacked formal orientation training, experienced a lack of constant access to an internet connection, and faced financial unpreparedness. Encouraging a culture of innovation and collaboration among faculty members to develop and implement effective online teaching strategies [1]. Marta Abelha et al. noted that strategies to increase the employability of graduates worldwide depend on a strong sense of innovation and collaboration in education [1]. Integrating technology to improve traditional teaching methods. Taofeng Liu et al. proposed the application of artificial intelligence technology to help teachers improve the quality of recognition and detection of movements [10].

Various problems require a comprehensive analysis of the training models of physical education specialists in China. Therefore, **the article's purpose** is a comparative analysis of the models of training specialists in physical education in Chinese universities, determining their key characteristics and possible directions for adapting best practices in the international educational space.

Methods. For a comparative analysis of the models of training of specialists in physical education in Chinese universities, we used the following theoretical research methods: Analysis and synthesis to consider individual components of educational models (curricula, teaching methods, practical training) and generalization of the information obtained to create a holistic view of the training of specialists in China; Induction and deduction to identify general trends in the system of training specialists based on the study of specific university programs and their comparison; Comparative analysis to compare different models of training specialists in physical education in China, determine their characteristics and effectiveness, as well as compare with international practices; A systematic approach to considering the training of specialists as a complex system that includes academic disciplines, pedagogical technologies, infrastructure and the influence of socio-cultural factors.

These methods made it possible to conduct a deep analysis of educational models, assess their effectiveness, and develop recommendations for improving the training of specialists in physical education.

Results. As the analysis revealed, pedagogical approaches in training physical education specialists of Chinese universities' models are evolving considering modern educational theories and technologies.

Models of experiential learning. Experiential learning theory (ELT) is one such framework that can guide empiricist teachers in higher education [8]. Basic ELT concepts such as learning cycle, learning style, and learning space are widely used to enhance the learning experience [8].

Online and distance learning models. The COVID-19 pandemic has significantly impacted educational practices, leading to a rapid shift to online and distance learning [4]. The transition to online education has brought both challenges and opportunities. An Indy Man study by Kit Ho et al. investigated factors affecting student satisfaction with emergency distance learning (ERL) in higher education during the COVID-19 pandemic [6]. The results showed that although most of the students were competent in technology, face-to-face learning was still better [6]. The level of effort made by teachers, the appropriateness of adjusted assessment methods, and the perception of well-conducted online classes were strongly correlated with

student satisfaction [6].

Blended learning, combining online experiences with traditional classroom learning, offers a flexible and meaningful educational approach [9]. This reduces classroom overcrowding and provides a planned learning experience [9]. Adarsh Kumar et al. conducted a survey to evaluate the effectiveness of blended learning tools and methods during COVID-19 and before COVID-19, reporting on its implementation in Indian universities. The study found that blended learning was beneficial in school, university, and vocational settings [9].

Models focused on the development of physical literacy. Physical literacy is a holistic concept encompassing the physical, cognitive, and affective qualities necessary to lead a physically active lifestyle [5]. Johannes Karl et al. evaluated the implementation of physical literacy in research, policy, and practice across Europe, finding a heterogeneous situation with close links to a particular country's conceptual discussions and traditions [5]. Integrating physical literacy into physical education training models can improve the quality of physical education and promote physical activity among students throughout life. This involves equipping physical education specialists with knowledge and skills to form physical competence, confidence, and motivation in their students. By focusing on holistic individual development, physical education professionals can play a crucial role in promoting public health and well-being [5].

It should be noted that the implementation of physical literacy in research, policy, and practice in Europe is heterogeneous and closely related to conceptual discussions and country-specific traditions [3]. Despite the growing scientific attention, physical literacy is gradually penetrating the politics of most countries, which indicates the need to intensify scientific activity and empirical work [9]. Integrating physical literacy into the training models of physical education professionals can improve the quality of physical education and promote lifelong physical activity among students.

Models of pedagogical training of physical education specialists for empirical learning. Pedagogical approaches in Chinese universities in the training of specialists in physical education are evolving to incorporate modern educational theories and technologies. One such concept is the theory of empirical learning (TEN), which can guide teachers in higher education institutions [8]. Basic concepts of TEN, such as learning cycle, learning style, and learning space, are widely used to enhance the learning experience [8].

Models of assessment methods. Assessment methods in training physical education specialists are evolving considering both traditional and innovative approaches. Conventional methods include written exams, practical teaching assessments, and research projects. However, more and more attention is being paid to including more authentic, outcome-based assessments that reflect real-world learning scenarios. Google Forms can assign exam-style questions and assess students' comprehension [7]. Tests before and after the session can be included to assess the assimilation of knowledge, with points given to individual participants [7]. Advanced assessment technologies, such as wearable sensors and video analysis, can objectively measure students' motor skills and physical activity levels. These tools can be used to remotely monitor results and reduce the need for cumbersome in-person visits.

Models of development of physical education teachers. While artificial intelligence and technology integration are becoming increasingly important, traditional aspects of physical education training remain crucial. These include the development of a broad understanding of sports science, pedagogy, and practical teaching skills. In a pragmatic feasibility study by Christopher I. Wright et al., a new Embedded Work Program was investigated to enhance teachers' ability to deliver physical literacy-enriched education [2]. The study found that such programs can effectively transform physical education practices, with teachers reporting improved lesson planning, various activities, and targeted skill development. There is a significant professional development gap focused on generalist teachers' physical literacy, potentially limiting their ability to maximize student health. The program aimed to address this problem by providing a 10-week intervention that showed promising results in increasing teacher confidence and satisfaction. However, the study also noted that motor competence regressed after implementing this program, indicating the need for further research and ongoing support [11].

Despite the achievements and innovations in the training of physical education specialists, several problems and limitations remain. These include weak online infrastructure, lack of experience in online teaching, gaps in IT training, difficult home environments, mental health problems, and prolonged isolation. Weak online infrastructure and unequal access to technology can hinder the effectiveness of online and blended learning approaches. Wunong Zhang et al. suggested the need to promote the construction of an educational superhighway and equip students with standardized home teaching/learning equipment. Too little experience in teaching online among educators can lead to unequal learning outcomes. Teacher training and professional development are essential to address this problem. A gap in online teaching and assessment best practices can limit the quality of teaching. Supporting academic research in education and disseminating results can help bridge this gap. Complex home environments can create challenges for students engaged in online learning. Providing support and resources to help students manage their learning environment is critical [12]. The COVID-19 pandemic has raised concerns about students' mental health, including anxiety, stress, and mood

disorders. Education inspectors and institutions must provide support and resources to address these challenges. Prolonged isolation can reduce the effectiveness of students' coping strategies. Creating platforms for social interaction and peer support can help mitigate the adverse effects of isolation.

The future of physical education training in Chinese universities is likely to be shaped by several key trends: increased integration of technology, emphasis on physical literacy, flexible and personalized learning, collaboration, and focus on mental health. Strengthening the integration of technologies, including artificial intelligence, virtual reality, and wearable sensors, to improve teaching, assessment, and student engagement. Greater emphasis is placed on physical literacy to promote holistic development and physical activity throughout life [8]. This involves equipping physical education specialists with knowledge and skills to form physical competence, confidence, and motivation in their students [8]. Developing more flexible and personalized learning approaches to accommodate students' diverse needs and learning styles. This may include offering online, blended, and face-to-face learning. Closer cooperation between universities, schools, and communities creates a favorable ecosystem for training physical education specialists [1]. This involves involving stakeholders in developing and implementing training programs to ensure relevance and effectiveness [10]. Greater attention is paid to physical education professionals' mental health and well-being, and problems and stressors associated with the profession are recognized [7]. Belinda Agyapong et al. highlighted that stress and burnout continue to be a problem among teachers worldwide, leading to anxiety and depression.

Conclusions. The training of specialists in physical education in Chinese universities is undergoing significant transformations due to the reform of curricula, technological progress, and the development of social needs. While challenges and limitations remain, the integration of artificial intelligence, an emphasis on physical literacy, and the introduction of flexible learning approaches open up promising pathways to improve the quality of physical education training and encourage physical activity among students throughout life. Ongoing research, innovation, and collaboration are essential to ensure that physical education professionals are well-equipped to meet the societal demands of the 21st century.

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