

# Teaching quality management of physical education specialty in China and Ukraine

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## ABSTRACT

The integration of quality management in physical education has changed the traditional approach to teaching. The information overload and an enormous amount of irrelevant data available to qualified specialists may lead to professional stress. Quality management offers educators tips on how to avoid information overload while still staying updated with the necessary information, knowledge and skills. The research aimed to examine the main characteristics of quality management in teaching. The sample consisted of 296 students: 73% - male subjects, 27% - females subjects. The average age is  $19.37 \pm 0.31$ . The research analyzed the factors affecting the quality of education using the quality competency and student satisfaction questionnaire. The findings revealed that Chinese students were satisfied with the physical and environmental conditions ( $8.1 \pm 0.23$  points) and it was 22% higher than the results of Ukrainian students. The education programs, technological opportunities and student scientific work have the greatest influence on the quality of education in China ( $8.38 \pm 0.32$ ). The least influence has the adequacy of management and staff ( $7.21 \pm 0.27$ ). Career support, tours and practices related to physical education have the greatest influence on the education quality in Ukraine ( $8.43 \pm 0.32$ ). The parameters identified by the research can be integrated into the system of higher physical education to improve the quality and academic achievements.

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## 1. INTRODUCTION

Globalization and international relations dictate the need to modernize the education system and introduce quality control to meet the international and national standards of education. The development of the educational minimum requirements is an essential part of modern education. The proposed approach will ensure a high quality of education and help future teachers to acquire knowledge and skills [1].

The international educational organizations view education as a complex socio-political system including a large number of stakeholders, qualified teachers and financial support [2]. The director for the Education and Vocational Training at the Directorate-General of Education and Culture in the European Commission underlines that a highly qualified workforce is the main source of innovation and entrepreneurship in education that fosters the economic growth of the region. Under the current conditions, it is important to develop sports professions [3].

Higher education quality is important for many countries. The quality of education is an issue of concern not only for educational institutions and educational accreditation agencies but to modern students. The main problem of modern higher education is the research and provision of quality control management in physical education. To solve this problem, it was proposed to assess how much it depends on physical education. The integration of new standards and national quality control systems helps to transform the educational process at minimal financial and personnel costs. Therefore, the quality standards provide future professionals with modern knowledge and practical skills [4]. The quality means the level of integration and the use of educational standards and the personal development of the future teacher. The application of the education quality management system leads to high efficiency in education and depends on many factors: teaching staff, education and methodical documentation, material and technological capabilities, intellectual resources of the university, students and graduates [5]. Higher education institutions use quality management tools such as strategic planning, efficiency planning, student satisfaction, assessment, and benchmarking [6]. Quality education influences the development of the socio-emotional states, physical and mental health, and cognitive skills of students ensuring the development of individuals and society [7].

The introduction of quality system standards in education has a positive impact on equality in society, helps to reduce the time and cost of training, increases the number of qualified educators, and increases social awareness. Modern research investigates the development of physical education programs (physical education) [8]. The international service quality standard is ISO 9000 including requirements for organizing and ensuring quality control of service providers [9]. The national standards for quality assurance in education are the laws on higher education [10]–[12] that represent a system of internal and external quality assurance, as well as the activities of national agencies and independent educational institutions for quality assurance in higher education [13].

In Ukraine and China, specialized education standards are introduced to ensure the quality of the physical education curriculum [14]. The physical education programs in Ukraine include the standard of higher education for the speciality 227 physical therapy, occupational therapy as a part of the speciality 22 healthcare (higher education, bachelor's degree). The quality of education is assessed using the results of scientific and pedagogical practices of the world universities, the ratings of teachers, faculties of universities, and interviews with students [15]. The purpose of the research is to analyze the features of quality management for students in physical education in Ukraine and China and examine the opinion of students on the main factors of quality management in education.

## 2. LITERATURE REVIEW

The research on the value of human resources in modern sports organizations was carried out by scholars from Poland [16]. The research highlights those human resources are the most important factors for organizations to acquire knowledge, competencies and physical activities. The sports and physical education industry provides unique services based on industry-specific characteristics, unlike other service providers where users interact directly with educators, staff, coaches and instructors [16].

The pedagogical flexibility in sport was analyzed by scholars [17]. Sports management provides solutions to individuals using flexible pedagogy and helps to cope with difficulties and achieve high results. The flexible pedagogy in physical education and quality management helps to adapt educational programs in sports disciplines to meet the needs and demands of modern society, as well as stimulate thinking, improve analytical skills and develop the teaching staff [17]. These factors include the support of relatives, motivation, the prevalence of sedentary lifestyle and obesity, regular sports activities, regular attendance of sports clubs and associations, and social space [18].

The professional training of master's students learning physical culture in China were analyzed by educators [19]. The physical education training of teachers in China has high quality. The Chinese higher education system is the largest in the world. The state supports higher education institutions and the quality management meets international requirements applied to physical education [19]. Modernization of education requires new teaching techniques rather than copying and translating international standards to the national system of education. The higher education institutions adopt international standards to the existing system of education in China. Human resource potential and its ability to meet the highest requirements of industry are important factors of quality management [20].

British scholars analyzed the socio-cultural conditions of physical education. The training of physical education teachers (physical education teacher educator or PETE) includes the following components: critical consciousness, the development of freedom, and social space [21]. The main goal of training is to achieve productivity which is important in physical education. The responsibility of a teacher is to introduce the course of actions to improve the academic performance of students. A key aspect of physical education is its quality assessment that depends on the work and the adequacy of teachers [22].

In physical education, effective training means clearly defined learning objectives, the content of training, social environment, material and technical resources of educational institutions [23]. Effective training includes the use of appropriate organizational and pedagogical methods, timely feedback, training time, teaching methods, and motivation to learn. Internal (students' motivation) and external (social, economic, pedagogical influence) motivational factors have a special impact on teaching [24].

The weaknesses and difficulties faced by physical education professionals also were examined. The research highlighted problems such as socio-political issues and the inability to develop an effective curriculum for physical education [25]. The present research aims to analyze and deepen the understanding of the teaching quality and the main factors influencing physical education in China and Ukraine. Moreover, the research promotes sports knowledge and skills to motivate students to learn.

### **2.1. Setting goals**

The quality assessment of higher physical education helps educators to achieve high academic results and teach students professional knowledge, competencies and attitudes. The application of the National Higher Education Standard and the ISO 9000 standard improve physical education and highlight the need to research the education quality system and its influence on the educational process. Higher physical education relies on technologies for assessing the teaching quality to improve the special knowledge and practical skills of future sportsmen.

The research analyses the quality management in teaching physical education in China and Ukraine. The aim is to examine the quality of teaching physical education. The research objectives include but are not limited to the following: i) Examine factors affecting the teaching quality; ii) Evaluate the training success; iii) Discuss the relationship between the quality of teaching and student learning success; iv) Analyze: physical and environmental conditions; social space and activities; the education programs, training, resources, technologies and the student research work; career support, tours and practices in the physical training sector; the adequacy of the teaching staff; the adequacy of university management and administration. The use of technology for assessing the teaching quality in physical education ensures the reliability of the research and establishes the criteria for students to acquire theoretical knowledge and practical skills.

## **3. RESEARCH METHOD**

### **3.1. Research design and sample size**

The research was conducted at the University of Neijiang Normal University (China) and Simon Kuznets Kharkiv National University of Economics. The research design and methodology were developed by a group of scholars. Each university participating in the research had the education quality assurance department. The main responsibility of the department is to ensure the quality control of the services provided to students. The optimization of the education quality system is achieved by: i) Coordinating and improving the faculties and departments performance to meet the state and international standards of the educational process; and ii) Controlling the system quality surveying the participants - students, graduate students, and teachers. The education quality is analyzed by the monitoring group, consisting of the teachers (80-85%) and the students (15-20%). The sample consists of the second-year students: Group 1 (153 students), students of College of Education, Simon Kuznets Kharkiv National University of Economics (Ukraine); Group 2 (143 students) - Physical Culture Institute, Neijiang Normal University (China). The average age of the respondents was  $19.37 \pm 0.31$ , males - 73%, females - 27%.

### **3.2. Research tools**

The education quality was analyzed using the quality competency and student satisfaction questionnaire [26]. The students assessed the impact of the six factors on the education quality: i) Physical and environmental conditions; ii) Social environment and activities; iii) The education content, training, resources, technology and the student research work; iv) Career support, tours and practices in physical culture; v) The adequacy of the teaching staff; vi) Competencies of the educational leaders and staff. The respondents enter the numbered answer to the questionnaire from 0 points (the factor that had the least influence on the education quality) to 10 points (the factor that had the most influence). The points were assigned percentage scores. The surveys were conducted using the online service Google Forms. The scholars sent students a link to the questionnaire that was active for one month (September 2021) and easily accessible from any modern digital device. The evaluation of the academic achievements was based on the five-point scale, where 1=the student had no success, 2=minimum success, 3=sufficient, 4=above average, and 5=excellent.

### 3.3. Statistical data analysis

The data were analyzed using the Microsoft Office Excel program of the Microsoft Office package. The quantitative parameters were calculated using (1).

$$(x \pm m) \quad (1)$$

Where,  $x$  is the arithmetic mean and  $m$  is the error of the mean. Calculations were performed at a significance level ( $p$ ) of 0.05. The findings help to identify the relationship between the teaching quality factors and the academic success of students. The following steps were taken. The first, correlation analysis helps to identify the presence or absence of the relationship or correlation between the education quality parameters. For this purpose, the Pearson coefficient ( $r$ ) was used; its absolute value up to 0.2 was assessed as a very weak correlation between the parameters; value up to 0.5 meant weak correlation; value up to 0.7 meant medium correlation; value up to 0.9 meant high correlation; value over 0.9 meant very high correlation. Second, multiple regression analysis helps to examine the tight relationship between the research parameters.

### 3.4. Research limitations

The research did not include students from several faculties. They were Natural Geographic, Philology and Journalism, Preschool and Primary Education, Law, Public Administration and Administration, History, Foreign Languages, Mathematics, Physics and Computer Science, Arts and Educational Technologies. The reason was that the educational programs of these faculties used other training curricula, education programs and syllabuses that differed from the programs under research. Also limiting factors could be different learning styles, individual characteristics of students, which should be considered in further research.

### 3.5. Ethical issues

The research met the Declaration of Helsinki on Ethical Principles for Medical Research Involving Humans Subjects. Each participant received information on the research objectives and procedure. All participants signed written consent for participation in the research. Instructors, teachers and moderators participated voluntarily in the research and got acquainted with all the requirements related to the program. The anonymity of all participants was ensured. There was no conflict of interest. The bioethics committees of the universities allowed the scholars to research during the 2021-2022 academic year.

## 4. RESULTS AND DISCUSSION

The research found that the educational programs, training, resources, technologies and the level of student scientific work have the greatest influence on the education quality in China ( $8.38 \pm 0.32$ ). The adequacy of management and staff has the least influence on the quality of education ( $7.21 \pm 0.27$ ). The career support, tours and different practices in physical training have the greatest influence on the education quality of Ukrainian students ( $8.43 \pm 0.32$ ). The education programs, training, resources, technological innovations and the level of student research work have the least impact on physical education ( $6.07 \pm 0.51$ ) in Ukraine as presented in Table 1.

Table 1. The factors influencing the physical education quality in China and Ukraine

#	Factors influencing the education quality	China		Ukraine		p-value
		M±SD	%	M±SD	%	
1.	Physical and environmental conditions	8.1±0.23**	81	6.31±0.18	63.1	0.034**
2.	Social environment and activities	7.85±0.11**	78.5	6.76±0.43	67.6	0.027**
3.	The education programs, training, resources, technologies and the level of student research work	8.38±0.32**	83.8	6.07±0.51	60.7	0.041**
4.	Career support, tours and practices related to physical training	7.68±1.15 *	76.8	8.43±0.32	84.3	0.059*
5.	The adequacy of the teaching staff	7.98±0.76 *	79.8	7.14±0.59	71.4	0.061*
6.	The adequacy of management and staff	7.21±0.27 *	72.1	8.01±0.92	80.1	0.064*

\* $p > 0.05$ , no significant differences, \*\* $p < 0.05$ , significant differences

The findings suggested that Chinese students were satisfied with the physical environment and other environmental conditions ( $8.1 \pm 0.23$ ), which was 22% higher than the same results of Ukrainian students (significant differences). About 21.5% of Chinese students and 32.4% of Ukrainian students were dissatisfied with the social environment and activities provided by the university (significant differences). The students in China and Ukraine were satisfied with education programs, training, resources, technologies and student

scientific work ( $8.38 \pm 0.32$  and  $6.07 \pm 0.51$ , respectively) (significant differences). The students of China and Ukraine agreed that they needed career support, tours and other practices related to physical training ( $7.68 \pm 1.15$  and  $8.43 \pm 0.32$ , respectively) (no significant differences). The respondents were dissatisfied with the teaching staff knowledge level -20.2% (China) and 28.6% (Ukraine). Chinese students were satisfied with the leadership factors ( $7.21 \pm 0.27$ ), while Ukrainian students were satisfied ( $8.01 \pm 0.92$ ) (no significant differences) as shown in Table 1.

The factors affecting the education quality as presented in Table 1 are the following: i) Chinese students suppose that the physical and environmental conditions meet their expectations by 81%; the findings are 22% higher than that the same of Ukrainian students (significant differences); ii) Only 21.5% of Chinese students and 32.4% of Ukrainian students are dissatisfied with the social sphere and activities provided by the university (significant differences); iii) About 83.8% and 60.7% of students in China and Ukraine are satisfied with the education programs, training, resources, technologies and student scientific work (significant differences); iv) Students of China and Ukraine admit that they need career support, tours and practices in physical training, 76.8% and 84.3%, respectively (no significant differences); v) Only 20.2% of respondents (China) and 28.6% (Ukraine) are dissatisfied with the teaching staff knowledge and skills (no significant differences); vi) About two-thirds, 72.1% of Chinese students and 80.1% of Ukrainian students are satisfied with the university management (no significant differences). The results suggest no significant differences between the average scores of Chinese and Ukrainian students as shown in Figure 1.

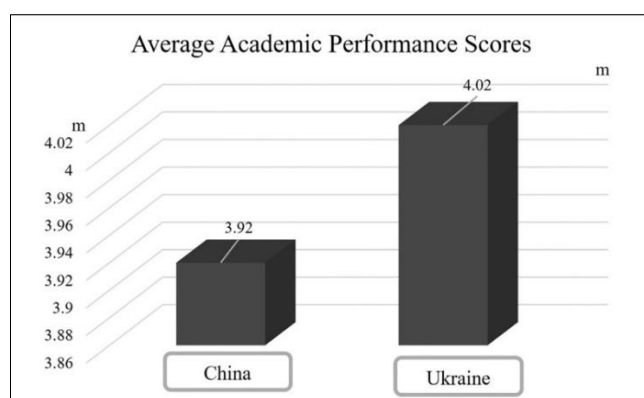


Figure 1. Analysis of average academic performance scores

The research analysis uses the multiple regression model. As a dependent variable (Y), the parameter Average Score of Student Success was taken. Factors that affected the value of success were taken as independent variables. They included physical and environmental conditions (X1); social environment and activities (X2); education programs, training, resources, technologies and the level of student research work (X3); career support, tours and practices in physical training (X4); the adequacy of the teaching staff (X5); the adequacy of management and staff (X6).

Assessing the strength of the correlation connection, among Ukrainian and Chinese students, an average quantitative measure of the tight connection ( $r$ ) was established for the factors X1, X2, X3, and X5; weak relationship - for factors X4 and X6 as presented in Table 2. A regression analysis of factors X1, X2, X3, and X5 were performed. The coefficient was 0.831 and 0.796 for Ukrainian and Chinese students, respectively. The indicator of academic success is 83.1% and 79.6% for Ukrainian and Chinese students, respectively. The indicator of academic success is explained by the dependence of the following factors, such as: i) Physical and environmental conditions; ii) Social environment and activities; iii) Education programs; iv) Training; v) Resources; vi) Technologies; vii) The student research work; and viii) The adequacy of the teaching staff.

The Y-intersection coefficient was 1.6086817 and 1.3005291 for Ukrainian and Chinese students, respectively. If all parameters in the model are equal to 0, then Y will be 1.6086817 and 1.3005291, respectively. Other factors that are not analyzed in this model affect the success value. The analysis of variance showed the significance of the Fisher test ( $p$ ) that was 0.051 and 0.039, respectively. It means that the multiple regression model is significant (the significance level of Fisher's test is less than 0.05) and the independent variables have an impact on the analyzed dependent variable. The multiple correlation-regression analysis for the average positive correlation was identified for factors such as physical and environmental conditions; social environment and activities; training and the adequacy of teaching staff.

Table 2. Correlation of physical education quality factors

#	Factors affecting the education quality	The correlation coefficient, r		
			Ukraine	China
1.	Physical and environmental conditions	X1	0.789	0.754
2.	Social environment and activities	X2	0.675	0.611
3.	The education programs, training, resources, technologies and the student research work	X3	0.646	0.625
4.	Career support, tours and practices in physical culture	X4	0.151	0.339
5.	The adequacy of the teaching staff	X5	0.639	0.576
6.	The adequacy of management and staff	X6	0.105	0.161

The role of pedagogical skills in physical education was researched by Ukrainian scientists. The findings reveal that the moral and ethical qualities of the teacher and a high level of knowledge help students to develop professional skills cultivate a love for the profession, diligence, respect for themselves and others. Highly qualified teachers prepare students for the independent and creative use of their professional responsibilities [27]. Pedagogical skills are important for 71.4% of Ukrainian students. Among Chinese students, they were important for 79.8%.

Physical training education and social environment were examined by Russian scholars. The research examined the social environment and interaction of students. The researchers underline that a social environment is an effective tool that can improve the physical, emotional, mental and social states of students, and help them to achieve their academic goals [28].

Environmental conditions affecting student performance were analyzed by a team of Netherlands scholars. The educators examined the impact of four parameters of physical conditions (indoor air, thermal conditions, noise and lighting) on the quality of teaching and academic performance. The results showed that physical conditions have a positive influence on education quality and academic achievements [29]. The present research came to the same conclusion: the importance of physical factors for Chinese and Ukrainian students was 81% and 63.1%, respectively.

The role of educational technologies and the teacher in physical education was examined by previous scholars. The research examined the relationship between learning outcomes and the influence of students' perceptions of the teacher's personality. The analysis results highlight a high Cronbach alpha score (0.86) [30]. The correlation of learning outcomes and the influence of teachers on students in China was 0.567, and on students in Ukraine - 0.639.

The impact of education quality management on student achievement was examined by educators in Jordan. The researchers suppose that the quality management system in education results in high effectiveness of education. The research examined all assumptions on the quality of education and its main factors. The results showed the relationship between the effectiveness of education and the education quality management system [31]. In present research found that education quality management factors lead to student academic success.

The quality assessment of the physical education program was conducted by scientists from the Philippines. The findings suggest that the following factors have a great impact on the educational process: the level of literacy among teachers; premises, equipment and resources; curriculum flexibility; student community and control over the education quality. The research found no significant influence of university administration on the assessments [32]. The adequacy of leadership was not important for students and the correlation coefficients for Ukrainian and Chinese students were 0.105 and 0.161, respectively.

Russian scientists analyzed the teaching methods applied to physical training at the university. The research examined the objective and subjective factors influencing the teaching of physical training. The quality of education is influenced by the didactic factors of teaching; knowledge of the basic principles of physical training and sport; physical environment, forms and methods used in the educational process; teacher's abilities to transfer knowledge and skills to students [33]. Factors such as physical conditions and the adequacy of the faculty are important for physical education. Physical and environmental conditions are admitted by Chinese and Ukrainian students, 81% and 63.1%, respectively. The adequacy of management and staff is important for 72.1% of Chinese students and 80.1% of Ukrainian students.

Scientists from Thailand analyze the factors that influenced physical education. The research found that four factors had a great impact on the effectiveness of education: management and students' evaluation; improvements of the students' potential; the quality of the lectures, the training content and management of the educational process. The components account for 70.16% of the total scores of students' satisfaction [34]. The results show that the success factors are amount to 78.6%. The quality management of physical education improves the results of education and transforms the educational processes. The results highlight that there is a need to monitor and manage the quality of education on a national scale.

## 5. CONCLUSION

The quality management system of higher physical education depends on parameters that allow educators to provide students with knowledge and skills and prepare future specialists to perform their professional responsibilities. The implementation of the teaching quality management system in the learning process helps teachers to develop an effective system of education and optimize the use of resources to improve students' learning, as well as prepare the future graduate for successful career paths.

The research examined the factors of the education quality using the questionnaire "The assessment of quality competency and student satisfaction." The following factors were analyzed: physical and environmental conditions; social space and activities; the education programs, training, resources, technologies and the student research work; career support, tours and practices in the physical training sector; the adequacy of the teaching staff; the adequacy of university management and administration. The indicators of academic success were examined using the 5-point scale, and the correlation between factors affecting the education quality and the academic achievements of students.

The results recommended physical education professionals integrate the proposed parameters into higher physical education. The proposed methods will help physical education teachers to improve the theoretical knowledge of students and develop practical skills important for their future careers. There is a need for further research to investigate the quality of education management. The significant value of the study lies in the fact that results will help educators to introduce changes to the education programs and syllabuses of physical education and improve the knowledge and skills of future physical education teachers.





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