Vol.5 Iss.1 2024 Communication & Education Review
https://doi.org/10.37420/j.cer.2024.012

Research on the Current Situation of Physical Education Curriculum System in Higher Vocational Colleges in Chongqing

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Abstract:
As a public compulsory course in higher vocational education, physical education aims to enhance students' physical fitness, promote their physical fitness, and provide strong support for subsequent skill practice. Multiple documents from the Chinese education department have clarified the development direction and requirements of higher vocational education, emphasizing the goal of strengthening students' physical and comprehensive qualities in physical education, improving the mechanism of school physical education work, and establishing a sound teaching, training, and competition system.In recent years, with the rapid growth of vocational colleges and students in China, based on research interviews and personal experience, it has been found that many higher vocational colleges currently face problems such as outdated teaching materials, shortage of teachers, outdated facilities and equipment, and imperfect curriculum systems in physical education curriculum teaching.Chongqing, China has 44 full-time vocational colleges, second only to Guangzhou, China's 46, making it the second largest city in terms of higher vocational colleges.This study investigated the data information of physical education textbooks, physical education teachers, teaching venues, teaching equipment, and curriculum construction in higher vocational colleges in Chongqing. Through data analysis, the overall situation of physical education curriculum construction in higher vocational colleges in Chongqing was obtained, and finally, some constructive suggestions were put forward.

Keywords:
Physical Education,Physical Education Curriculum System,Higher Vocational Colleges

1.Introduction

1.1Background of the Study

A review of data released by the Chinese Ministry of Education and the Bureau of Statistics shows that the amount of schools, the amount of students enrolled and the amount of teachers working in Chinese higher vocational education (specialist level) are all growing rapidly and expanding in size. The number of full-

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time specialised schools grew from 1,388 in 2017 to 1,486 in 2021, with the highest growth rate of 3.16% in 2020, with an increase of 45 schools in that year, as shown in Figure 1. The number of full-time students in school grew from 11,049,500 in 2017 to 15,901,000 in 2021, with the highest growth rate of 13.96% in 2020, a increase of 1,788,400, as shown in Figure 2. The fast improvement of higher vocational instructing in China is due to the archive "National Execution Arrange for Professional Instruction Change issued by the Chinese government, which sets the heading for the improvement of vocational education in China to advance tall quality improvement of vocational education (Chinese government, 2019).

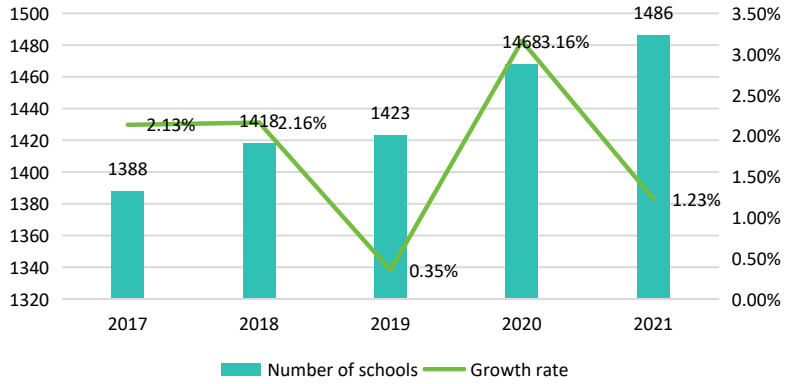


Figure 1:Statistical chart of the number of full-time tertiary institutions in china,2017-2021

Data source:The Chinese Ministry of Education

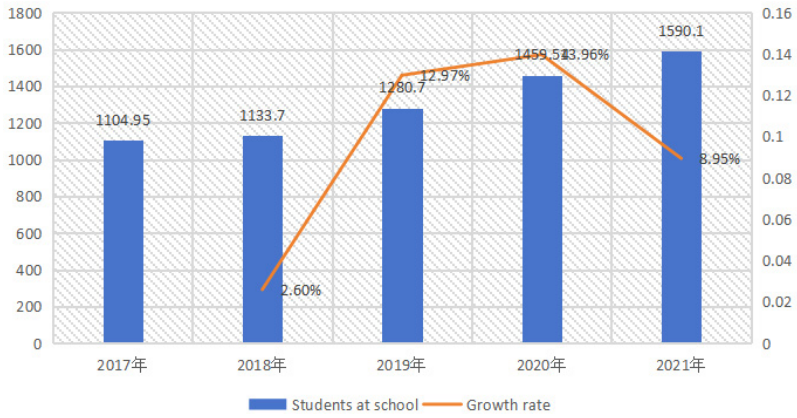


Figure 2:Statistical chart of the number of full-time higher vacational students in china,2017-2021(Unit: 10000)

Data source:The Chinese Ministry of Education

According to the new version of the Ministry of Education of the People's Republic of China and relevant legal interpretation documents, which will be implemented in May 2022, it is pointed out that the essence and goal of vocational education in China is to cultivate qualified technical talents. However, physical and mental qualities are the basic requirements for cultivating technical talents, and good physical and mental qualities can support practice. Therefore, in this context, higher requirements will be put forward for physical educa-

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tion teaching in public subjects. At present, the Chinese education department regularly releases physical education and health curriculum standards during the compulsory education stage (including primary and secondary schools). For example, the "2022 Compulsory Education Curriculum Plan and Curriculum Standards (Chinese Ministry of Education, April 2022, Document No.: Textbook [2022] No. 2)" released in April 2022 clarifies the curriculum philosophy of physical education and health courses during the compulsory stage The nature of the course, course objectives, course content, textbook teachers, and other related content(Ministry of education of the people's republic of china,2022). However, in the higher education stage, the latest official guidance document is the "Basic Standards for Physical Education Work in Higher Education Institutions (Ministry of Education, June 2014, Document No.: Jiao Ti Yi [2014] No. 4)" released by the Chinese Ministry of Education in 2014(Ministry of Education of the People's Republic of China, 2014). In recent years, with the rapid growth of vocational colleges and students in China, based on research interviews and personal experience, it has been found that many higher vocational colleges currently face problems such as outdated teaching materials, shortage of teachers, outdated facilities and equipment, and imperfect curriculum systems in physical education curriculum teaching.

Chongqing has 44 full-time vocational colleges. According to the National List of Higher Education Institutions released by the Chinese Ministry of Education in May 2022, the number is second only to 46 in Guangzhou, China(Ministry of education of the people's republic of china,2022). In addition, the scale of full-time vocational college students in Chongqing is also ranked high, and Yongchuan, Chongqing, is the base of vocational education in western China. Therefore, this study chooses Chongqing as an example to have certain representativeness.

1.2 Problem Statement

With the support of government policies, China's higher vocational education has promoted the overall development of vocational education. More and more students are choosing to study in vocational colleges and universities, which has led to an increase in the number of students enrolled in many higher vocational colleges and universities with a record high number of students. However, with the late start of higher vocational education in China, the curriculum construction of higher vocational education is backward and the development experience of higher vocational education teaching is insufficient. In the midst of the explosive growth, there are certain problems for all parties involved in higher vocational education, such as schools, government, society and enterprises.

The rapid growth in the number of students in schools has brought certain pressure and challenges to the teaching and management of schools, including teaching venues, teaching facilities, teaching materials, teachers and teaching equipment. Secondly, in order to enhance the school's fame, most of the higher vocational colleges and universities have made the construction of professional courses the key construction development direction of the school, and have spent their major financial resources on the construction of professional training rooms, the introduction of teachers, the development of teaching materials and the introduction of teaching equipment, etc. Only a small amount of money has been invested in the construction of public courses such as physical education. The teaching of professional courses is only for some students of the major, compared to some professional courses, the public courses are for every student of the whole school, and the teaching period is long, usually two academic years and four semesters. The increasing number of teach-

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ing targets, insufficient funding for course construction and the long teaching period have led to the enormous pressure faced by public courses such as Physical Education, English and Ideology and Politics. For example, the number of students enrolled in the researcher's school has reached 15,000 in 2022, and the number of physical education teachers and the teaching space for physical education courses are so severely lacking that one teacher has more than 30 physical education classes a week.

As a compulsory public course in higher vocational education, Physical Education is designed to enhance students' physical and mental health, promote their physical fitness and provide a strong guarantee for subsequent skills practice. Several documents from the Chinese education sector have clarified the direction and development requirements of higher vocational education, emphasising the goal of strengthening students' physical and comprehensive qualities in physical education, improving the school physical education work mechanism, and establishing a sound teaching, training and competition body, which has pointed out the direction for the research on the optimisation of the PE (physical education) curriculum system construction. This study will investigate the current situation of sports textbooks, sports teachers, teaching venues, teaching equipment, and curriculum construction in China, and provide certain suggestions based on the knowledge learned and work experience.

1.3 Research Question

This study aims to conduct a survey on physical education textbooks, physical education teachers, teaching venues, teaching equipment, curriculum construction, and student satisfaction. Data information is collected through a survey questionnaire, and the collected data is analyzed to determine the current status of the physical education curriculum system construction in vocational colleges in Chongqing. Therefore, this study identified two research questions, as follows:

Q1: What is the basic situation of higher vocational colleges in Chongqing?

Q2: How is the construction of the physical education curriculum system in higher vocational colleges in Chongqing?

1.4Significance of the Study

China's higher vocational education has the characteristics of late start, rapid development, and a sharp increase in the number of students. There is a certain lag in the construction of many curriculum systems, especially in the construction of physical education curriculum systems. The construction of the physical education curriculum system in higher vocational colleges is constrained by historical conditions, textbook construction, faculty construction, hardware construction, curriculum construction, and other factors, as well as the influence of the government, schools, students, and social evaluation system. Therefore, it is very necessary to investigate the current situation of the construction of physical education curriculum system in higher vocational colleges in Chongqing. This can provide data support for researchers in their next research and also serve as a reference for other researchers.

Theoretical significance: Researchers have found that the number of literature related to the construction of the physical education curriculum system is relatively small, and most researchers have focused on optimiz-

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ing the construction of the professional curriculum system through databases provided by the school, domestic CNKI, and Wanfang. This researcher will study the relevant theories of curriculum system construction from other researchers, organize the theories related to physical education curriculum system, and propose personal insights, which can enrich the theories related to physical education curriculum system and provide reference for other researchers.

Practical significance: This study will investigate and understand the current situation data of the physical education curriculum system construction in higher vocational education institutions in Chongqing, conduct effective analysis of the data, and obtain the current situation of the physical education curriculum system in higher vocational colleges in Chongqing. This can provide data support for researchers in their next practical research and also provide decision-making reference for the physical education teaching management personnel in higher vocational colleges and departments in Chongqing.

1.5 Operational Definition

Vocational education: As can be seen from the substance of the records of the Law of the People's Republic of China on Vocational Education, it alludes to instruction executed in arrange to develop exceedingly qualified specialized and gifted staff and to prepare the taught with comprehensive professional qualities and activity capacities such as proficient morals, logical, social and proficient information, specialized aptitudes, etc. required to lock in in a certain occupation or to attain proficient advancement, counting vocational school education and vocational training.

Higher education: According to the contents of the document of the Education Law of the People's Republic of China, it can be seen that education in China is divided into four levels: pre-school education, primary education, secondary education and higher education. Among them, higher education refers to various professional education built on secondary education, including specialist education, undergraduate education and postgraduate education. Higher education can be further divided into higher vocational education and higher general education according to the different teaching contents and training objectives.

Higher vocational education in China: Higher vocational education in China cultivates technical industrial talents needed by society for the construction of socialist cause with Chinese characteristics. The specialties offered are mainly oriented towards social industries, and the teaching contents are aligned with the work positions of enterprises, and are cultivated according to the quality, skills and knowledge required by industrial workers. At the academic level, they are divided into specialist education, undergraduate education and postgraduate education.

Higher vocational institutions: They are institutions that implement higher education. Depending on the academic level, institutions implementing higher vocational education are different, including vocational colleges at the specialist level, vocational and technical universities at the undergraduate level, and schools with master's degree granting rights at the postgraduate level. The institutions of higher vocational education referred to in this article are mainly colleges that implement vocational education at the specialist level, including private colleges and public colleges.

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2.Literature review

2.1Theories related to the curriculum system

With the development of the times, the theoretical research related to the curriculum system has been gradually enriched. The impact of a curriculum system on the quality of the whole curriculum and on students and teachers is significant, so a successful course cannot be separated from a successful curriculum system. In addition to the impact of the epidemic, online delivery has become a mainstream method, and the establishment of online course systems is gradually becoming more sophisticated. The online and offline delivery model is constantly being improved. The following theories about the curriculum were found.

China's Ministry of Education propose The curriculum of basic education carries the educational policy and educational ideology of the Communist Party of China, stipulates educational objectives and educational content, is the direct manifestation of the state's will in the field of education, and plays a key role in establishing morality and educating people(Zhonggong network,2024).It is a direct expression of the will of the state in the field of education and plays a key role in the establishment of moral education.

The structure of the curriculum includes the intellectual and morphological composition of the curriculum, reflecting the composition of the curriculum and its proportional relationship, which specifies the subject categories that make up the curriculum and the proportional relationship between the content of each subject, and specifies the form of compulsory and optional courses. In general, the curriculum structure is an important expression of the curriculum philosophy and the value orientation of the curriculum, and an important vehicle for helping students to develop a balanced knowledge structure (Liu & Yan, 2020).

There are many theoretical studies on curriculum systems in the world, such as the Australian Qualifications Framework (AQF) was published and implemented in 1995, which organically links basic, vocational and tertiary education to form a national qualifications framework system, allowing learners to move from one type of education to the other two types of education they wish to pursue. There are ten levels, of which Level 1 is the least demanding and provides students with the ability to work on a day-to-day basis, Level 2 provides students with the ability to work under specific conditions, Level 3 requires the ability to work under more complex conditions in certain areas, Level 4 requires more specialised, skilled knowledge and ability and organisational skills to work under complex and changing conditions, and Level 5 corresponds to the specialist diploma. Level 5 corresponds to the Specialist Diploma and requires the ability to work in a paraprofessional or skilled manner and to participate in the development of strategic ideas, Level 6 corresponds to the Higher Specialist Diploma and requires the ability to technically, manage, analyse, diagnose, design, implement and evaluate, Level 7 corresponds to the Bachelor's Degree and requires a broad and coherent theoretical and technical knowledge, Level 8 corresponds to the Bachelor's Honours Degree, Postgraduate Diploma and requires the ability to Level 9 corresponds to the Master's degree, which requires research expertise and skills, and Level 10 corresponds to the PhD, when the graduate has reached the level of a specialist or academic. If written proof can be provided or the assessment can prove the comprehensive ability to study a certain educational qualification, it can be converted into corresponding credits when studying for the next level of educational qualification, i.e. the "Recognition of Prior Learning (RPL) Policy"; secondly, the AQF system is more flexible, and the content of its vocational qualifications advocates the competence-based

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approach and the presentation form is based on the competence units required by the industry. Secondly, the AQF system is flexible in that the content of vocational qualifications is competency-based and is presented in the form of units of competency required by the industry, so that different levels and types of schools can offer vocational education and training courses that go beyond the curriculum standards.

The German curriculum system: The German vocational qualification system originated in the apprenticeship system of the medieval guilds and has been developed over the centuries. There is no clear division of German vocational qualification certificates into different categories, according to the issuing body can be divided into vocational training completion examination certificate, training certificate, graduation certificate, respectively by the industry association, cooperation enterprises, vocational schools for certificate issuance; according to the certificate function can be divided into apprentice certificate, master certificate, apprentice certificate is not necessary for job seeking, but can increase the employment competitiveness of job seekers, master certificate on the record of the master's certificate, which records the level of achievement in a specific subject, is proof of the learner's level of education, management, professional knowledge and skills, and is a guarantee of quality of work. In Germany, vocational qualifications are awarded by "industry associations", which are independent of training institutions and employers, and the third-party assessment and certification system ensures the objectivity and rigour of the certification. The German National Qualifications Framework (Der Deutsche Qualifikations Rahmen, or DQR) is a national qualifications framework with national educational characteristics developed in Germany in line with the European Qualifications Framework (EQF), which was implemented in 2013 and has been updated annually since then. The DQR levels are divided into eight levels, each describing the level of technical skills that practitioners are expected to achieve, covering areas of study, areas of work, subject knowledge and areas of professional activity. (Liu & Yan, 2020)

The author of this article combines his possess ponder and work encounter to contend that the educational programs framework alludes to the diverse course categories of the same calling orchestrated in a disciplinary arrange, which is the entirety of the instructing substance and prepare, and the arrange of the course categories decides what kind of information structure understudies will get through their considers. The educational modules framework is the directing rule of the instructive exercises, it is the concretization and back of the preparing goals, and it gives the arranging conspire for the execution of the preparing targets. The curriculum system is made up of a specific view of the curriculum, its objectives, its content, its structure and its activities. The curriculum system is the vehicle for achieving the training objectives and is the key to ensuring and improving the quality of education.

2.2 PE (physical education) curriculum System

Due to the impact of the epidemic, online courses are gradually becoming the main teaching method, so the PE (physical education) curriculum system is divided into online and offline courses.

Hu et al. (2020), in response to the impact of the new epidemic on the normal start of university education and classroom teaching, constructed an online university PE (physical education) curriculum system with "one body, two wings and three basics" based on research on the current situation of online teaching in universities, including curriculum design objectives, design ideas, core contents, teaching method optimization and evaluation mechanism. Liu et al (2021) argues that the use of mobile network technology in the teaching

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process can give full play to the advantages of online teaching, innovate the teaching methods of university physical education and meet the learning needs of students. Currently, the use of online educational resources can enrich teaching methods and approaches, using animated presentations and multimedia playback functions to teach students about physical education and enable them to better understand sports movements. The filming of PE teaching videos should be planned in detail, with comprehensive planning of the teaching content, trying to choose multi-angle filming techniques to emphasise the key and difficult points of teaching.

The offline PE (physical education) curriculum system is as follows: Yu et al. (2020) Comprehensively strengthen and improve physical education in schools, build a "three-wide physical education" curriculum system for the new era, implement a sports club management system, open up all physical education classes, increase the number of compulsory physical education credits and physical education classroom teaching hours, improve the APP running distance system for extracurricular physical exercise, implement a system for every student to participate in physical education competitions every semester, and standardize the physical education system for students. The system of campus sports competitions, the standardisation of students' physical education examinations and physical fitness tests, and the achievement of full coverage of students' physical education in and out of class.

Based on the above theories and their own practical experience, the authors of this article conclude that the PE curriculum system should combine online and offline courses. The online component: teachers make full use of the online platform to teach, recording videos to demonstrate and explain the main points of the movements according to the teaching content; the teaching process focuses on interaction, and teachers use a variety of ways to guide students to give full play to their subjective initiative and work together to solve problems in learning, which increases the interest of the class and improves the teaching effect. The offline part: students were encouraged to exercise independently offline to consolidate the teaching effect of online physical education special class in time, and they were also encouraged to actively exercise after class and submit exercise photos and videos.

3.Data collection and analysis

3.1 Survey Object

The participants in this study included teachers, students, parents, and education experts, all of whom are relevant to the construction of the PE (physical education) curriculum system. Firstly, physical education teachers, as the people who teach the PE (physical education) curriculum, collected data from their units on the current situation of the PE (physical education) curriculum system construction and their opinions on the PE (physical education) curriculum system construction by distributing questionnaires on the subject of PE (physical education) curriculum system construction to about 50 physical education teachers. Secondly, students, as the target group for the implementation of the PE (physical education) curriculum, are required to take and pass physical education courses in all four semesters of their studies in higher vocational institutions. Therefore, in this study, questionnaires will be distributed to approximately 100 students to collect data on the implementation of physical education courses in their schools and their opinions on the PE (physical education) curriculum. Lastly, education experts are those who hold the title of associate professor or above in

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the field of physical education or hold the position of director of a teaching and research department or above, who have been engaged in physical education and management in the field of physical education for many years and are experienced. One-to-one interviews will be conducted with about 10 education experts to obtain their data on the current development of physical education courses and their opinions on the construction of the PE (physical education) curriculum system.

3.2 Data Collection

The number of survey questionnaires distributed to students this time is 110. Through online means, 110 questionnaires were distributed to students from schools such as Chongqing Science and Technology Innovation Vocational College, Chongqing Urban Vocational College, and Chongqing Telecom Vocational College. 108 questionnaires were actually collected, with 100 valid questionnaires and a response rate of 98.18% and an effective rate of 92.59%. The questionnaire data is valid. The number of survey questionnaires distributed to teachers this time is 100. They were distributed through offline invitations and online distribution to in-service teachers in multiple vocational colleges in Chongqing. 100 questionnaires were distributed, 99 questionnaires were collected, and 99 were valid, with a response rate of 99% and an effective rate of 100%. The questionnaire data is valid. The number of interview questionnaires for education experts this time is 10, which were completed through one-on-one interviews through invitation. 10 questionnaires were distributed, 10 were collected, and 10 were valid. The response rate and validity rate were both 100%, indicating that the data is valid.

3.3 Data analysis

3.3.1 Descriptive statistical analysis

In the normality test, it was found that eight variables from the survey questionnaire aimed at teachers, namely teacher number rating, teacher structure rating, teacher training rating, teaching content rating, textbook development rating, teaching resources rating, the proportion of final assessment, and first-time pass rate, are described as approximately normally distributed. However, four variables, including the quantity of research, guidance in student competitions, awards in student competitions, and the number of students, do not satisfy a normal distribution. To obtain specific information about these 12 variables, a descriptive statistical analysis was chosen. The analysis included the following 12 variables: teacher number rating, teacher structure rating, teacher training rating, teaching content rating, textbook development rating, teaching resources rating, number of students, quantity of research, guidance in student competitions, awards in student competitions, first-time pass rate, and the proportion of final assessment. The results of this analysis are presented in Table 3-1. According to the results, except for the coefficient of variation (CV) of the first-time pass rate, which is less than 0.15, the CVs of all other variables are higher than 0.15. Moreover, the CVs of seven variables, including teacher number rating, teacher training rating, teaching resources rating, textbook development rating, quantity of research, number of student competitions guided, and number of student competition awards, are higher than 0.3. This indicates significant variability in these data, suggesting the possible presence of outliers.

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Table 3-1 Table describes the results

variable name	sample size	maxi-mum	mini-mum	mean	standard deviation	median	variance	kurtosis	skewness	Coefficient of variation (CV)
Q7 Number of teachers to score	99	5	1	2.879	1.327	3	1.761	-1.024	0.227	0.461
Q8 Teacher structure score	99	5	2	3.566	1.032	3	1.065	-1.174	0.105	0.289
Q9 Teacher training score	99	5	1	3.071	1.38	3	1.903	-1.311	0.085	0.449
Q10 teaching content scoring	99	5	2	3.636	1.054	4	1.111	-1.218	-0.075	0.29
Q11 Teaching resources scoring	99	5	1	3.071	1.214	3	1.475	-1.126	0.211	0.395
Q12 teaching material development and scoring	99	5	1	3.364	1.241	3	1.54	-1.069	-0.106	0.369
Q20 Number of students	99	576	140	380	86.365	388	7458.898	3.117	-0.929	0.227
Q21 Number of scientific research	99	4	0	0.364	0.721	0	0.519	7.495	2.495	1.982
Q22 Guide students on the number of competitions	99	6	0	0.798	1.245	0	1.551	4.247	1.979	1.56
Q22-1 Number of awards	99	3	0	0.374	0.764	0	0.583	4.206	2.191	2.044
Q23 first test pass rate	99	1	0.87	0.924	0.037	0.92	0.001	-1.016	0.29	0.04
Q25 final assessment proportion	99	0.9	0.5	0.683	0.113	0.7	0.013	-0.707	0.431	0.166

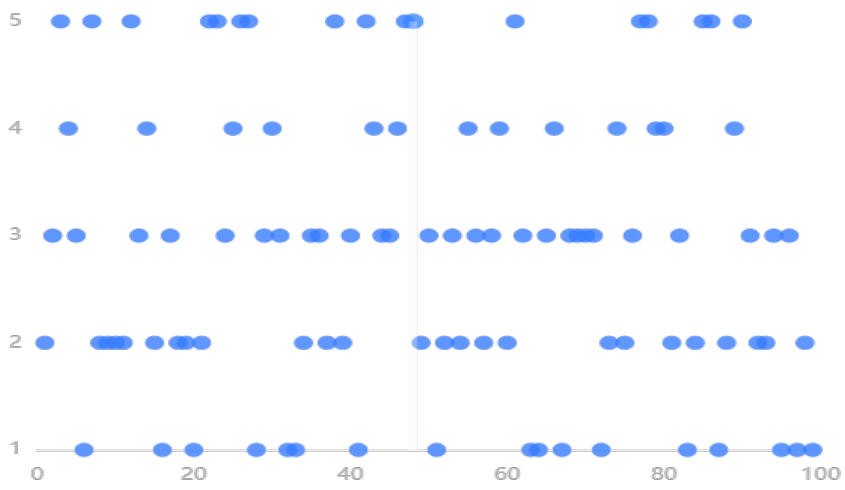


Figure 3-1 Scatter plot of the number of teachers scoring

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Based on the data in Table 3-1, it is observed that the skewness values for teacher number rating, teacher structure rating, teacher training rating, teaching content rating, textbook development rating, teaching resources rating, first-time pass rate, and the proportion of final assessment fall within the -0.5 to 0.5 range, and their kurtosis values are within the -1.5 to 0 range. This indicates that the data for these variables are symmetrically shaped with a gentle peak, suggesting that they are approximately normally distributed. An example of this distribution can be seen in the scatter plot for teacher number rating, as shown in Figure 3-1. In contrast, the variables for the number of students, quantity of research, guidance in student competitions, and awards in student competitions do not have skewness values within the -0.5 to 0.5 range, and their kurtosis values are greater than these thresholds. This indicates that the data for these variables are skewed and have a peaked distribution, suggesting a non-normal distribution.

Table 3-2 Results of variable frequency analysis

Name	option	frequency	percentage (%)	Cumulative percentage of (%)
Q7 Number of teachers to score	1	17	17.172	17.172
	2	25	25.253	42.424
	3	27	27.273	69.697
	4	13	13.131	82.828
	5	17	17.172	100
Q19 class number	[2.0,5.0)	9	9.091	9.091
	[5.0,9.0)	34	34.343	43.434
	[9.0,12.0)	37	37.374	80.808
	[12.0,15.0]	19	19.192	100
Q20 Number of students	[100.0,200.0)	2	2.02	2.02
	[200.0,300.0)	14	14.14	16.16
	[300.0,400.0)	40	40.40	56.56
	[400.0,500.0)	35	35.35	91.91
	[500.0,576.0]	8	8.08	100
Total		99	100.000	100.000

A frequency analysis was conducted on the variables of teacher number rating, class number, and student number, with the results presented in Table 3-2. In the teacher number rating variable, 17.172% (17 teachers) rated a score of 1, indicating a severe shortage of physical education teachers in their schools. 25.253% (25 teachers) rated a score of 2, suggesting a relative shortage of physical education teachers. 27.273% (27 teachers) rated a score of 3, indicating a basic satisfaction with the number of physical education teachers. 13.131% (13 teachers) rated a score of 4, suggesting a sufficient number of physical education teachers, and

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17.172% (17 teachers) rated a score of 5, indicating an abundance of physical education teachers. In total, 69.697% (69 teachers) perceived a shortage of physical education teachers in their schools.

Regarding the class number variable, 56.566% (56 teachers) reported teaching more than 9 classes during the survey semester. In the student number variable, 83.4% (83 teachers) reported teaching more than 300 students during the survey semester. According to the "Opinions on Fully Strengthening and Improving School Physical Education Work in the New Era" issued by the People's Government of China, there is a clear requirement to adequately staff physical education teachers in higher education institutions.According to Chinese education experts, the teacher-student ratio for physical education teachers in higher education should be within 1:300(Qinghai student sports network,2021). Considering the frequency analysis results, both in terms of teachers' ratings of physical education teacher availability and the number of classes and students taught during the survey semester, it can be concluded that there is a shortage of full-time physical education teachers in higher vocational colleges (full-time specialized colleges), leading to a heavy teaching workload.

Teacher number, teacher structure, textbooks, teaching content, and teaching resources are important elements of the curriculum system. To explore whether the nature of the school influences these factors, a cross-tabulation analysis and a categorized summary analysis were conducted. The categorical variable chosen was the nature of the school, and the quantitative variables selected were ratings for teacher number, teacher structure, textbooks, teaching content, and teaching resources. The results of the categorized summary analysis are shown in Table 3-3, and the cross-tabulation analysis results are in Table 3-4. According to the categorized summary results, the average scores of teachers from private and public schools are similar in the dimensions of teaching content and teaching resources, indicating limited influence of school nature on these aspects. However, teachers from private schools scored lower on average than those from public schools in the dimensions of teacher number, teacher structure, teacher training, and textbook development, suggesting that the nature of the school has a certain impact on these factors. The cross-tabulation analysis data further reveal that the proportion of teachers from private schools scoring 3 or below in teacher number rating, teacher structure rating, teacher training rating, and textbook development rating is higher than that of teachers from public schools.

Table 3-3 Table of classification summary results

Q1 Nature of school	Q7 Number of teachers to score	Q8 Teacher structure score	Q9 Teacher training score	Q10 teaching content scoring	Q11 Teaching resources scoring	Q12 teaching material development and scoring
private	2.579	3.105	2.711	3.632	3.079	3.079
public	3.033	3.852	3.295	3.639	3.066	3.541

* Categorical summary type mean

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Table 3-4 Table of contingency analysis results

Questions	Name	Q1 Nature of school		Total
		Private	Public	
Q7 Number of teachers to score	1.0	6(35.300%)	11(64.700%)	17
	2.0	11(44.000%)	14(56.000%)	25
	3.0	15(55.600%)	12(44.400%)	27
	4.0	5(33.300%)	10(66.700%)	15
	5.0	1(6.700%)	14(93.300%)	15
Total		38	61	99
Q8 Teacher structure score	2.0	12(80.000%)	3(20.000%)	15
	3.0	12(31.600%)	26(68.400%)	38
	4.0	12(57.100%)	9(42.900%)	21
	5.0	2(8.000%)	23(92.000%)	25
Total		38	61	99
Q9 Teacher training score	1.0	6(46.200%)	7(53.800%)	13
	2.0	13(44.800%)	16(55.200%)	29
	3.0	10(58.800%)	7(41.200%)	17
	4.0	4(22.200%)	14(77.800%)	18
	5.0	5(22.700%)	17(77.300%)	22
Total		38	61	99
Q10 teaching content scoring	2.0	7(43.800%)	9(56.200%)	16
	3.0	10(32.300%)	21(67.700%)	31
	4.0	11(44.000%)	14(56.000%)	25
	5.0	10(37.000%)	17(63.000%)	27
Total		38	61	99
Q11 Teaching resources scoring	1.0	2(33.300%)	4(66.700%)	6
	2.0	15(42.900%)	20(57.100%)	35
	3.0	7(35.000%)	13(65.000%)	20
	4.0	6(27.300%)	16(72.700%)	22
	5.0	8(50.000%)	8(50.000%)	16
Total		38	61	99
Q12 teaching material development and scoring	1.0	2(33.300%)	4(66.700%)	6
	2.0	10(47.600%)	11(52.400%)	21
	3.0	14(50.000%)	14(50.000%)	28
	4.0	7(36.800%)	12(63.200%)	19
	5.0	5(20.000%)	20(80.000%)	25
Total		38	61	99

Based on the categorized summary data and cross-tabulation analysis results, and in conjunction with expert interviews and the actual situation of the researchers' work units, a comprehensive analysis was conducted. Public schools, funded by the government and student tuition fees, generally have more abundant resources compared to private schools, which are established by enterprises or other organizations and mainly rely on student tuition fees and government subsidies. In public schools, the average score for teacher number was 3.033, and the average score for teacher training was 3.295, both above 3. This indicates that the number of physical education teachers in public schools is generally sufficient, and there is adequate support for teacher

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development. This is attributed to the ample funding and hiring mechanisms in public schools, which make them more competitive in recruiting teaching talent. Public schools offer higher salaries and better benefits than private schools, making them a preferred choice for many job-seeking teachers. Additionally, as public schools in China are considered public institutions, they offer long-term employment contracts, leading to less teacher turnover, stable staffing, and more funds allocated for teacher training. Hence, public schools find it easier to recruit and retain teachers. In private schools, the average score for teacher number was 2.579, and the average score for teacher training was 2.711, both below 3. This suggests a relative shortage of physical education teachers in private schools and limited support for teacher training. Due to restricted funding, private schools offer lower salaries and benefits compared to public schools, making teacher recruitment more challenging and retention difficult, leading to a frequent shortage of teachers. Furthermore, the high turnover rate among private school teachers and limited school budgets mean that these schools are less willing to invest significant resources in teacher training, as well-trained teachers may leave for other institutions. Moreover, although the scores for teacher structure and textbook development were above 3 in both public and private schools, indicating that both types of schools value these aspects, the average scores were lower in private schools. This suggests that, compared to private schools, public schools provide greater support in these areas.

Table 3-5 The frequency analysis results of school-based / self-compiled textbooks

Name	option	frequency	percentage (%)	Cumulative percentage of (%)
Q14 School-based / self-compiled textbooks	No	91	91.919	91.919
	Yes	8	8.081	100
Total		99	100.000	100.000

In order to further analyze the situation of physical education curriculum textbooks, frequency analysis was conducted on the data of school-based/self compiled textbooks, and the resulting data are shown in Table 3-5. School-based textbooks refer to materials compiled internally by the school for use in its own courses, while self-compiled textbooks are those written by school teachers for use in their own and other schools' courses. According to the frequency analysis results of school-based/self-compiled textbooks, only 8.081% (8 teachers) reported using school-based or self-compiled textbooks in their schools, while 91.919% (91 teachers) used textbooks that were neither school-based nor self-compiled. Compared to the 38.35% usage of school-based or self-compiled textbooks in professional courses at the researcher's institution, this indicates a low rate of school-based/self-compiled textbook usage in higher vocational college physical education courses, suggesting that physical education teachers lag behind professional course teachers in textbook development capabilities.

The researcher analyzed the reasons for the weaker textbook development capabilities of physical education course teachers, based on information from textbook development meetings organized by their institution and consultations with experts. The main reasons identified are as follows: firstly, Physical education teachers primarily come from sports-related majors. In China, due to the training mechanism for sports students,

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both the college entrance examination scores and the general cultural quality of sports students are lower than those of students in other disciplines at the same educational level. This cultural quality affects the development of textbooks. Secondly, the content of current physical education courses mainly revolves around college students' physical fitness, with relatively fixed and less variable content. Existing textbooks already meet teaching needs, reducing the necessity for developing new physical education course materials. Thirdly, in higher vocational colleges, physical education courses are considered basic public courses. Compared to specialized technical courses, they receive less attention. Consequently, the investment in physical education course development, in terms of funding and resources, is limited compared to that for professional courses.

3.3.2 Interview Text Analysis

In addition to surveys targeting students and teachers, this research also conducted one-on-one face-to-face interviews with 10 experts in physical education teaching management. These experts included 3 leaders from physical education departments, 4 professors, and 3 associate professors. Among these interviewed experts, 3 were from universities offering undergraduate programs, and 7 were from higher vocational colleges. The interview questionnaire consisted of three opinion-based questions: the first about the problems in physical education teaching at their institutions, the second about the positive aspects of physical education teaching, and the third about suggestions for the development of physical education courses in higher vocational colleges.

Analysis of the problems in physical education teaching at the respondents' institutions revealed several key points, including issues with classroom organization, theoretical courses, teaching methods, content, objectives, materials, teacher structure, assessment, and teacher quantity. For example, some respondents noted that after completing warm-up activities, physical education teachers often let students engage in free activities, leading to ineffective teaching. The lack of theoretical courses in physical education was also highlighted, as well as the predominance of traditional teaching methods and content focused mainly on physical fitness tests. Additionally, the objectives of physical education courses were often not implemented effectively, and there was a low usage rate of physical education textbooks, with few teachers explaining the material. The structure of physical education teachers was considered imbalanced, with a lack of diversity in expertise and insufficient focus on the historical, cultural, and theoretical aspects of sports in assessments. Lastly, the number of physical education teachers was deemed insufficient, impacting the quality of teaching and limiting opportunities for research and student competition guidance.

Analysis of the positive aspects of physical education teaching at the respondents' institutions showed several strengths, such as achievements in student sports competitions, high pass rates in physical fitness tests, good quality and quantity of sports equipment, well-developed sports facilities, and elective courses based on student interests. Regular teaching meetings were held to discuss and improve teaching methods, and some institutions had implemented teaching reforms like flipped classrooms and competitive sports activities to increase student engagement.

4. Summary and Discussion

4.1 Summary

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Based on the data collected from this survey aimed at teachers, students, and physical education experts, the current situation of physical education curriculum teaching in Chongqing's higher vocational colleges will be summarized based on the analysis results. The current situation will be described from several aspects, including teachers, textbooks, teaching, scientific research, guiding student competitions, assessment methods and content, and student satisfaction.

Regarding the current situation of teachers, overall, the teacher structure is not very reasonable, and private schools are even more in short supply of teachers. The allocation of teachers in public schools is almost sufficient, and the training intensity of teachers in private schools is lower than that in public schools. Regarding the overall situation of teaching materials, the distribution rate of physical education courses is high, but the teaching material explanation rate is low. Physical education teachers have a low ability to develop teaching materials, and private schools provide less support for teaching material development than public schools. Regarding the current situation of teaching, both public and private schools attach equal importance to the construction of teaching content and resources. However, the management of physical education classrooms is not very strict, and students have a longer period of free activity. The proportion of students participating in physical education courses is relatively low, and most students play electronic games in physical education courses. Regarding the current situation of scientific research, overall, the participation of physical education teachers in scientific research projects is not high, and the main ones carrying out scientific research projects are teachers with professional titles of associate professors and professors. Regarding the current situation of guiding student competitions, teachers have a high enthusiasm for guiding students to participate in competitions. Most teachers have guided students to participate in relevant sports competitions, and the award rate for teachers guiding students to participate in sports competitions is about 50% of the participation rate. Teachers with associate and professor titles have a higher award rate for guiding students to participate in competitions than teachers with lecturer and teaching assistant titles. Regarding the current situation of assessment methods and content, the main assessment methods for physical education courses are attendance, regular grades, and final assessments. Teachers have limited efforts to explain the assessment methods to students, and most students are unaware of their regular grades. The assessment mainly focuses on physical fitness projects. Regarding the current situation of student satisfaction, students are generally satisfied with physical education teachers and the overall physical education curriculum, but not very satisfied with sports equipment and venues.

4.2 Recommendation

Based on the results of this data analysis, the researchers believe that the construction of the physical education curriculum system can be strengthened from three aspects: funding investment, resource construction, and curriculum management. Suggestions on funding investment, especially for private colleges, should learn from public colleges and strengthen the funding construction of the physical education curriculum system, especially in terms of venues and teachers that students are concerned about. Suggestions on resource construction: Schools should strengthen the construction of physical education curriculum resources, especially in online courses, competition courses, course materials, teaching equipment, etc. Abundant equipment and course resources will enhance student participation. Suggestions on course management: Physical education courses should strictly manage teaching before, during, and after class, emphasize class discipline, and in-

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crease course participation and the proportion of discipline in assessment.

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