

OPTIMIZATION STRATEGIES OF PHYSICAL EDUCATION IN COLLEGES AND UNIVERSITIES FROM THE PERSPECTIVE OF COGNITIVE PSYCHOLOGY

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SUMMARY

Background: The purpose of this article is to realize the optimization of physical education and teaching in colleges and universities, and to improve the quality of physical education and teaching in colleges and universities. Therefore, in the perspective of cognitive psychology, the optimization strategy of college physical education is studied, and the optimization strategy of college physical education is proposed according to the main problems and difficulties through the results of investigation and analysis.

Subjects and methods: In this study, using the theories of cognitive psychology, Gestalt theory and cognitive learning methodology, 236 teachers and students in a university were investigated by questionnaire and expert evaluation. Through the results of investigation and analysis, this paper puts forward optimization strategies for the main problems existing in physical education and teaching in colleges and universities.

Results: Through questionnaire surveys and expert review methods, the optimization strategies for the current major problems in physical education teaching in colleges and universities are proposed as follows: strengthening the construction of the teaching staff, creating a reasonable teacher structure, organizing regular teacher training; precise physical education teaching content, streamlining and optimizing teaching content, construct characteristic curriculum content, strengthen practical curriculum content, and penetrate cutting-edge curriculum content; optimize physical education teaching methods, reform physical education teaching methods, adopt "Internet +" online teaching methods, and strengthen mixed teaching methods; strengthen teaching quality evaluation, establish an evaluation feedback exchange platform and organize third parties to participate in the evaluation.

Conclusions: This paper studies the optimization strategy of college physical education from the perspective of cognitive psychology, puts forward further optimization strategies for the main problems existing in college physical education teaching, ensures the teaching effect of college physical education, improves the teaching quality of college physical education, and provides a certain reference value for realizing the optimization of college physical education teaching.

Key words: cognitive psychology - college physical education - physical education teaching - education optimization strategy

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INTRODUCTION

Cognitive psychology is a new science based on computer science, brain science and psycholinguistics. It uses the viewpoint of information processing to explain people's cognitive processing process (Proctor et al. 2020). This subject takes information processing as the core and compares the human brain with the computer. The emergence and development of cognitive psychology theory has a great impact on the proposal of instructional design theory, model and principle. By constantly absorbing the new achievements of cognitive theory, instructional design theory continues to mature and develop (Ramsey & Ward 2020). Cognitive learning theory is the core content of contemporary cognitive psychology. It mainly studies the learning process from a cognitive point of view. It regards the cognitive learning process as the process of people understanding the world, acquiring knowledge, storing knowledge, sorting, transforming and using knowledge (Ma et al. 2019).

The core of cognitive psychology is to explore how to master knowledge and develop intelligence, and how to closely connect education, knowledge and development. Effective teaching is the teaching that teachers successfully cause, maintain and promote students' learning through the regularity of the teaching process, and relatively effectively achieve the expected teaching effect. The main research direction of contemporary cognitive psychology is non intelligence factors. For the research of non intelligence factors, it is fully recognized that interest, motivation, will, habits and other factors have a significant impact on learning, but many people ignore the role of non-intelligence factors (Agarwal & Roediger 2019; Wiener & Pazzaglia 2021). Therefore, developing and cultivating students' non-intellectual factors can help students learn efficiently, and at the same time can greatly promote the development of students' non-intellectual factors. Psychology has a long history of discussing the basic laws of learning and their behavior characteristics. The revealed laws

help people more accurately understand the internal psychological mechanism of the formation and change of external behavior, understand the cognitive structure and its characteristics, and then make more scientific use of various learning laws to improve the cognitive structure and improve the ability of active adaptation. It is required that education and teaching work should pay attention to the law of students' psychological activities and personality differences, establish education and teaching on the basis of psychology, and demonstrate the independence and scientificity of education and teaching with psychology (Erduran et al. 2020). Psychology takes human development as a fact for empirical research, provides theories and methods for reform and development for education and teaching to promote human development, improves classroom teaching efficiency, promotes the growth of education and teaching knowledge, and improves the scientization of education research methods.

With the rapid progress of society, more and more attentions are paid to college physical education, and the requirements for college physical education personnel are higher and higher. The quality of basic physical education teaching is related to the cultivation of teenagers' sports habits and the mastery of sports skills (Xu 2021). Physical education teachers are the main implementation supervisors of physical education, an important part of teachers in China, and an important task and mission to improve the training of physical education professionals (Ho et al. 2019). The training quality of students majoring in physical education is inseparable from their professional curriculum. A more reasonable curriculum content and the setting of curriculum hours and credits will help to improve the teaching quality. It is necessary to provide referential suggestions for the talent training program of physical education specialty in colleges and universities in combination with the development of the country and society. With the in-depth development of college physical education reform, physical education teaching methods are constantly being reformed, and the improvement of teaching quality has become the goal of the reform. Through a combination of theoretical and empirical research, comprehensive use of multiple methods such as logical analysis, comprehensive and in-depth analysis of the current situation and existing problems of physical education in colleges and universities, combined with the characteristics of college physical education courses, and proposed strategies for optimizing college physical education. It has important theoretical significance and practical application value for accelerating the reform and development of physical education teacher education, improving the quality of physical education teacher education, promoting the professional development of physical education teachers, building a team of high-quality physical education teachers, and promoting the

development of basic education physical education.

At present, scholars in related fields have conducted research on the optimization of physical education. Zhou et al. incorporated the implementation of a healthy China strategy into the basic strategy of national development. This basic strategy has provided action guidelines and reform directions for public physical education in colleges and universities. Through research, it is found that in the public physical education teaching of Guangdong colleges and universities, there are exercises that neglect the physical fitness of students in order to stimulate and cultivate students' interest in participating in sports. In response to this situation, combined with other literature materials, a more suitable "major and auxiliary" optional course teaching mode is proposed to optimize the traditional teaching mode (Zhou et al. 2019). Qi et al. clarify the core literacy of sports and the concept of physical education teaching design through literature method, analysis and summary method and practical operation method, and carry out detailed analysis of sports core literacy. By consulting the teaching design of district level seminars in recent three years, this paper makes an overall analysis from six aspects: guiding ideology, teaching material and learning situation analysis, learning objectives, teaching key points and difficulties, teaching process and strategies, problem presupposition and safety prevention. At present, the characteristics of physical education teaching design: the guiding ideology, teaching materials and learning situation analysis are relatively general, but not specific and in-depth. Teaching objectives, teaching difficulties and teaching methods are basically formulated around technical actions, lacking the cultivation of students' physical education and moral education. In view of the shortcomings in physical education teaching design, this paper puts forward some suggestions on the optimization of physical education teaching design for young primary school based on core literacy: the guiding ideology and learning objectives focus on core literacy and enhance the function of physical education. The teaching methods are diversified and their practical value is enhanced. Evaluation criteria are added in the teaching design to diversify the methods, enhance students' self-confidence and improve their interest in learning (Qi et al. 2020). In general, the current field of physical education optimization research has a wide range of perspectives and content, but the focus of the research is on how to effectively set up physical education courses in colleges and universities.

Under the guidance of the above theory, through questionnaire survey and expert evaluation methods, this study will mainly investigate and study from the basic situation of teachers and students, the content of physical education teaching, the way of physical education teaching, and the satisfaction of physical education students with the curriculum. This paper

attempts to find out the main problems and difficulties from the survey results, and puts forward specific optimization strategies, in order to guide and inspire the teaching practice of physical education in colleges and universities.

SUBJECTS AND METHODS

Cognitive psychology theory

The theory and thought of cognitive psychology mainly originated in the western world in the 1940s and 1950s of last century. As an ideological trend and idea of pedagogy and psychology, cognitive psychology studies the psychological mechanism based on human behavior (Boadu & Donnelly 2019). In the theory of cognitive psychology, the internal psychological process between input and output is the key and core. In the development of cognitive psychology, the relationship between cognitive psychology and western traditional philosophy has always been very close. Like western philosophy, cognitive psychology emphasizes the role of knowledge, and also considers knowledge as the main factor determining human behavior.

As one of the important branches of psychology, the related theories and concepts of cognitive psychology developed and initially recognized from 1950 to 1960, and became the main school of Western Psychology in the 1970s. The theories and thoughts of cognitive psychology are often opposite to the relevant theories and thoughts of behaviorism psychology. The objects of theoretical research often focus on the internal mechanisms and internal processes that cannot be directly observed. These research objects or research contents include the processing, storage, extraction of memory and the change of cognitive structure.

In the theoretical system of cognitive psychology, the cognitive process based on the ideas and ideas of information processing belongs to a mainstream trend of modern cognitive psychology, that is, cognitive psychology is actually equivalent to information processing psychology. The information processing psychology of cognitive psychologists often regards people as a system capable of information processing. Cognitive psychologists believe that cognition is actually the process of information processing, including sensory input, coding, storage and extraction. According to the viewpoint of cognitive information processing, cognitive process can be divided into a series of processes or stages, in which each stage is actually a unit for some specific processing and operation of input information, and in this process, reaction is the product of this series of stages and actual operation. In the information processing system, each component is connected with each other in a certain way. Based on this connection, on the basis of the continuous development of cognitive psychology, the concepts and thoughts of this sequential processing

will also be impacted by parallel processing theory and cognitive neuropsychological theories.

In this study, the research on the optimization strategy of physical education in colleges and universities based on cognitive psychology is selected as the theme, which mainly starts with solving and explaining the characteristics of human cognitive process from cognitive psychology, explores and analyzes the optimization strategy of physical education in colleges and universities from the perspective of learners, and focuses on the internalization and acquisition of experience and strategy. It can be said that cognitive psychology provides important guiding ideology and problem-solving ideas for improving the efficiency of college physical education, and provides certain guiding principles for the formulation of college physical education strategies.

Gestalt theory

The contribution of Gestalt theory or Gestalt psychology to cognitive psychology can be divided into two parts: one is the contribution of Gestalt psychology to narrow cognitive psychology. The second is the contribution to the theory of cognitive psychology in a broad sense. In the narrow sense, cognitive psychology focuses on the internal mechanism of psychology, emphasizing the research on information input, processing and output. These ideas and ideas actually coincide with Gestalt psychology. The contribution of Gestalt Psychology to cognitive psychology in a broad sense is mainly concentrated in the fields of perception, learning psychology and so on. In fact, it is precisely because of the in-depth analysis and research of perception in the field of Gestalt psychology that the development of perceptual psychology has been promoted, and it has been separated from the field of sensory psychology and formed its own set of systems. Similarly, Gestalt Psychology's research on learning theory is also fruitful. Among them, the research on "insight" is a research result that has important implications for cognitive psychology, pedagogy, and psychology.

In the Gestalt theory system, people's perception of the objective things in the world must follow the subject principle of "figure background". Among them, the so-called "figure" refers to the object that the subject can perceive in learning and cognitive activities, while the "background" exists at the same time with the "figure". Its existence is to help more effectively perceive something and highlight and express it from the background. Gestalt theory holds that all intellectual work depends on interest, and interest in learning can promote the improvement of learning ability more than the actual situation of intelligence.

In the research on the optimization strategy of physical education in colleges and universities from

the perspective of cognitive psychology, Gestalt psychology theory provides a reference for the formulation of relevant teaching strategies: first, teachers need to start with students' learning interest and let students consciously and actively choose what they learn. The second is to provide support for how to attract students' attention and enable students to obtain information more effectively through the principle of "figure background" provided by this theory.

Cognitive learning methodology

In the research of physical education teaching strategies in colleges and universities, cognitive learning methodology provides an important theoretical basis for the formulation of specific strategies and the formation of methods. In cognitive learning methodology, cognitive processing is the basis and the intervention of cognitive ability is the main way.

Cognitive learning methodology provides support and basis for improving college physical education. Effective college physical education is to improve students' cognitive ability and analyze from the perspective of students' cognitive structure. At the same time, pay attention to the structure of knowledge itself, implement intervention measures on the basis of combining cognitive mechanism and cognitive representation, and finally achieve the purpose of improving students' problem-solving ability. In the teaching of physical education in colleges and universities, the key to how teachers' teaching can be transformed into students' effective learning is how to connect external physical education knowledge with students' existing knowledge base and knowledge structure, that is, students should learn to transform physical education knowledge with their original cognitive structure. The basic content of the optimization strategy of college physical education based on cognitive learning methodology mainly includes the internalization of students' solutions to college physical education problems. With the support of cognitive methodology, the proposed intervention measures pay more attention to and pay more attention to students' cognitive defects. Starting from students' cognitive defects and deficiencies, it makes targeted remedies based on these. Because cognitive based learning intervention can last longer and may receive

more obvious effects, it is paid more attention by people.

Study setting

The research object of this paper is the teaching problems of physical education major in a university. The survey objects are the students and teachers of physical education major in the university. They understand the problems through questionnaires and put forward optimization strategies.

Design

This paper mainly uses two research methods: questionnaire survey and expert evaluation. The design of the questionnaire is divided into two parts: one is the basic information of college physical education students and teachers, and the other is the investigation of the current teaching situation, mainly from the teaching content, teaching methods, curriculum and teaching management. A large amount of information related to the paper is collected through the questionnaire in order to understand the current teaching situation of physical education major in colleges and universities, and provide an objective basis for further optimizing teaching.

Reliability refers to the stability and reliability of questionnaire data. The test-retest reliability was used to test 236 respondents. Among them, 156 students and 80 teachers were tested. After 15 days, the same group of people were surveyed again. The covariance of the data collected twice was calculated through SPSS 16.0. The coefficient value r was greater than 0.8, meeting the basic requirements of questionnaire reliability. Validity is the analysis of the validity of the questionnaire results. The expert evaluation method is used to test the validity of the questionnaire by visiting 8 experts. The statistical table of questionnaire validity experts is as Table 1.

Table 1. Questionnaire validity expert statistics table

Title	Number of people	Proportion (%)
Professor	3	37.5
Associate professor	2	25
Lecturer	3	37.5

The expert test of questionnaire validity is as Table 2.

Table 2. Expert test of questionnaire validity

Evaluation content	Very suitable	Suitable	More appropriate	Inappropriate	Very inappropriate
Questionnaire content	0	2	6	0	0
Questionnaire structure	0	3	5	0	0
Overall design of questionnaire	0	4	4	0	0

According to Table 1 and Table 2, 8 copies were distributed and 8 copies were recovered, with a

recovery rate of 100%. On the whole, the questionnaire design meets the requirements.

For close students and teachers, the questionnaire shall be distributed face-to-face. For remote students and teachers, the electronic version of the questionnaire shall be distributed through WeChat contact, and the time for the recovery of the questionnaire shall be specified. A total of 236 questionnaires were distributed, 230 were recovered, the recovery rate was 97.4%, 228 were effective, and the effective rate was 96.6%. After collection, the questionnaire was sorted out, and the data of the questionnaire were analyzed by SPSS 16.0.

RESULTS

According to the characteristics of the teaching implementation of physical education major in colleges and universities, this paper believes that the survey results should be counted and analyzed mainly from the basic situation of teachers and students, the content of physical education teaching, the way of physical education teaching, and the satisfaction of physical education major students with the curriculum.

Basic information of teachers. Age structure of teachers: The age structure of teachers can reflect the ability of teaching and scientific research activities of teachers to a certain extent. In terms of age structure, physical education teachers should maintain a reasonable proportion of old, middle-aged and young teachers, that is, the age structure with old teachers supporting middle-aged and young teachers as the backbone, which will help to maintain the relative stability and inheritance of physical education teachers, maintain the development continuity of physical education teachers, make them in a good development trend, and then make the teachers maintain high work potential and stamina. The age structure of physical education teachers in colleges and universities is as Table 3.

Table 3. Age structure of teachers of physical education in colleges and universities

Age	Number of people	Proportion (%)
Under 30 years old	18	22.5
30-40 years old	21	26.3
41-50 years old	25	31.3
51-60 years old	11	13.8
Over 60 years old	5	6.25

It can be seen from the survey results in Table 3 that among the 80 teachers of physical education majors in colleges and universities, the average age of teachers is 40.5 years old. Among them, there are 18 teachers under 30 years old, accounting for 22.5% of the total number of teachers. There are 21 teachers aged 30-40, accounting for 26.3% of the total number of teachers. There are 25 teachers aged 41-50,

accounting for 31.3% of the total number of teachers. There are 11 teachers aged 51-60, accounting for 13.8% of the total number of teachers. There are 5 teachers over 60 years old, accounting for 6.25% of the total number of teachers. From the above data analysis, it can be seen that at present, physical education teachers in colleges and universities mainly focus on young and middle-aged teachers, which reflects the younger teaching team. It is a vigorous, vibrant and malleable teaching team.

Teacher title structure: The title structure of physical education teachers in colleges and universities is as Table 4.

Table 4. Professional title structure of physical education teachers in colleges and universities

Title	Number of people	Proportion (%)
Professor	18	22.5
Associate professor	22	27.5
Lecturer	32	40
Assistant	8	10

From the survey results in Table 4, we can see that there are 18 teachers with professorship titles, accounting for 22.5% of the total number of teachers. There are 22 teachers with associate professor titles, accounting for 27.5% of the total number of teachers. There are 32 Teachers with lecturer titles, accounting for 40% of the total number of teachers. There are 8 teachers with teaching assistant titles, accounting for 10% of the total number of teachers. Comparing the ratio of professional titles in the above survey with the normal ratio of 1:3:4:2, it is found that professors are 8 percentage points higher than the normal ratio, associate professors are 12 percentage points lower than the normal ratio, lecturers are 9 percentage points higher than the normal ratio, and teaching assistants are 5 percentage points lower than the normal ratio. Through the above data analysis, it can be seen that the proportion of professional title structure of physical education teachers is inconsistent, that is, the proportion of associate professors is low compared with professors, while the platform of intermediate professional title is too large, and there is a serious fault in the professional title structure. There are 22.5 teachers with Professor titles. We should pay full attention to and make use of the advantages of these teachers with high professional titles, and share their advantages through public lectures, organizing collective discussion and research. In addition, we should pay attention to strengthening the on-the-job training of young and middle-aged teachers, provide them with a fair promotion platform, and fundamentally solve the professional title support of reserve teachers.

Basic information of students. Students' sports foundation: The survey results of students' sports

foundation are as Table 5.

Table 5. Survey results of students' basic physical education

Sports foundation	Number of people	Proportion (%)
Good	33	21.2
General	52	33.3
Poor	71	45.5

It can be seen from the survey results in Table 5 that there are 33 students who have a good foundation in self-evaluation of physical education, accounting for 21.2% of the total number of students. There are 52 students who self-evaluated the basics of physical education, accounting for 33.3% of the total number of students. There are 71 students with poor self-evaluation of physical education, accounting for 45.5% of the total number of students. This shows that the foundation of college students majoring in physical education is generally poor. The reason for the poor physical education foundation of students is that the expansion of college students virtually reduces the requirements for the sports ability of students majoring in physical education, resulting in the shallow physical education foundation and weak foundation of most students, which increases the difficulty of physical education teaching and directly affects the quality of physical education teaching in colleges and universities. In view of this situation, physical education teachers are required to participate in physical education teaching. On the one hand, physical education teaching should be targeted. Different objects should adopt different methods and different organizational forms, so as to improve their physical education foundation for different students. On the other hand, strengthen their counseling and learning to reduce their differences.

Students' interest in sports: The survey results of

students' interest in learning sports are as Table 6.

Table 6. Survey results of students' interest in learning sports

Sports interest	Number of people	Proportion (%)
Very interested	60	38.5
Interested	72	46.2
General	16	10.3
No interest	8	5.1

From the survey results in Table 6, it can be seen that there are 60 students who are very interested in physical education, accounting for 38.5% of the total number of students. A total of 72 students are interested in physical education, accounting for 46.2% of the total number of students. There are generally 16 students in physical education, accounting for 10.3% of the total number of students. There are 8 students who are not interested in physical education, accounting for 5.1% of the total number of students. It can be seen that 94.9 students are interested in physical education, and only 5.1% of students are not interested in physical education. This shows that students have a strong interest in learning compulsory physical education courses, which is conducive to the normal development of physical education courses in colleges and universities.

Content of physical education teaching. Novelty of teaching content: The novelty survey results of teaching content are as Figure 1.

According to the survey results in Figure 1, 51.4% of students think that the teaching content is relatively new, 33.8% of students think that the teaching content is relatively old, 13.7% of students think that the content of teaching is very novel, 1.1% of students think that teaching content is very old. This shows that there is a gap between the renewal speed of teaching content and students' needs.

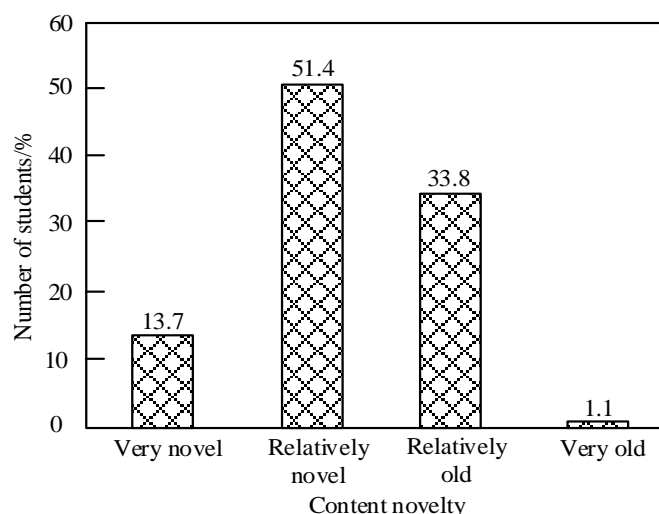


Figure 1. Survey results of novelty of teaching content

Demand for teaching content: The demand survey results of teaching content are as Figure 2.

From the survey results in Figure 2, we can see that, in the demand for teaching content, 42.6% of sports professional skills knowledge, followed by 27.4% of the forefront knowledge of sports education reform, the second is 26.6% of the classroom management and organizational ability training, and

the last is 3.4% of students' psychological knowledge. This shows that there is less demand for students' psychological knowledge and more demand for professional skills of physical education.

Teaching methods of physical education. Expectations of teaching methods: The survey results of expectations of teaching methods are as Figure 3.

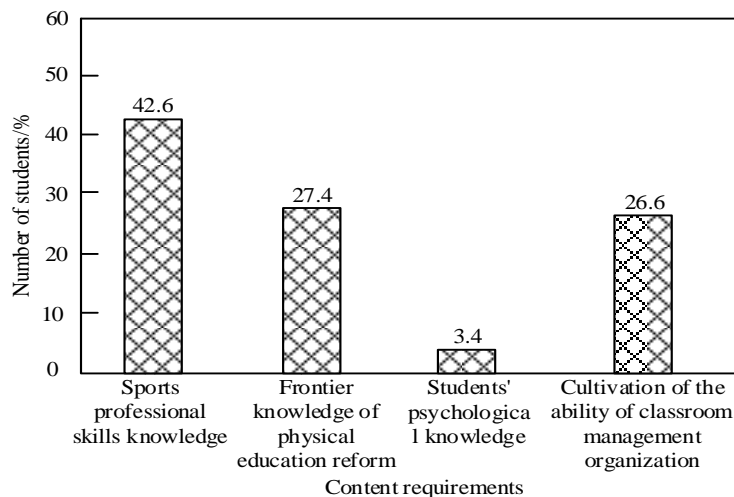


Figure 2. Demand survey results of teaching content

From the results of the survey in Figure 3, we can see that the proportion of teaching methods is 8.2%, the proportion of methods based on visual perception is 19.4%, the proportion of practice-oriented method is 30.4%, and the problem-oriented approach is 42%. It can be seen that students expect teachers to use problem-based teaching methods in the teaching process. There is a gap between these data and the

current teaching methods used by teachers in teaching, indicating that the teaching methods used by teachers are inconsistent with the teaching methods expected by students.

Expectations of the curriculum resource platform: The survey results of the expectations of the curriculum resource platform are as Figure 4.

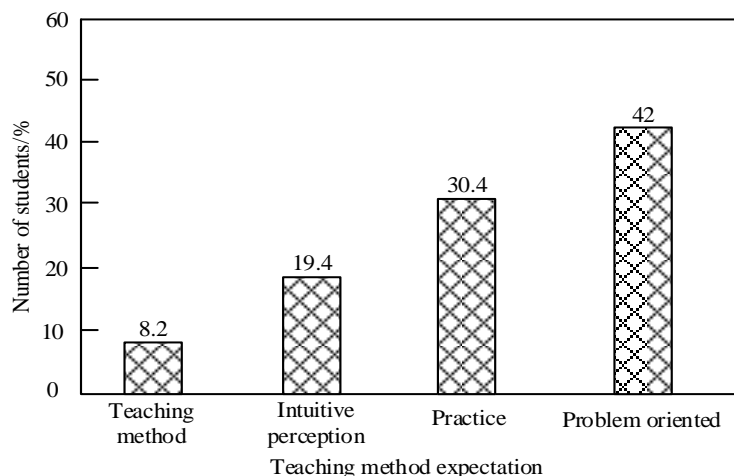


Figure 3. Expected survey results of teaching methods

From the survey results in Figure 4, we can see that 91.6% of the students want to set up a curriculum resource platform for online classes and after-school homework. 1.4% of students do not want to set up a

course resource platform for online classes and online homework. And 7% of the students said they didn't care whether they expected to set up a course resource platform. It can be seen that students have high

expectations for setting up a curriculum resource platform.

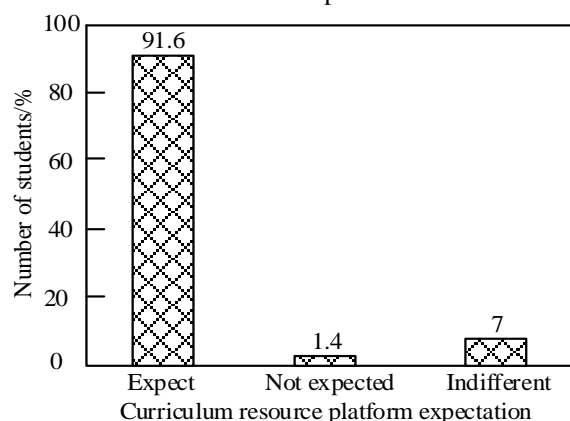


Figure 4. Expected survey results of the course resource platform

Satisfaction with curriculum. The quality of the curriculum needs to be reflected in the work. If it can be used in the actual work, it proves that the curriculum content is reasonable. Therefore, the consistency between the curriculum and the actual work needs shall be investigated. The survey results of physical education curriculum and actual work demand are as Figure 5.

From the survey results in Figure 5, it can be seen that 55.2% of the students believe that the physical education curriculum is consistent with the actual work needs. 24% of the students believe that the

physical education curriculum is in line with the actual work needs. 10.8% of the students think that the physical education curriculum is in line with the actual work demand. However, 8.2% of the students thought that the curriculum of physical education specialty was inconsistent with the actual work demand, and only 1.8% of the students thought that the curriculum of physical education specialty was very inconsistent with the actual work demand. This shows that students basically agree with the curriculum of physical education.

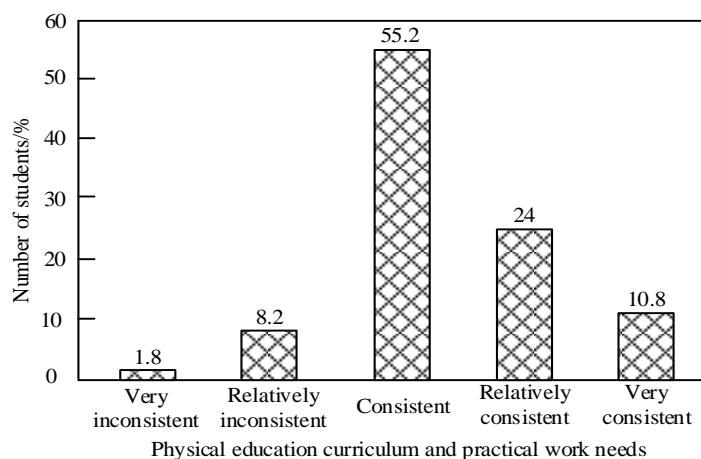


Figure 5. Survey results of physical education curriculum and actual work demand

The survey results of satisfaction with the curriculum of physical education specialty are as Figure 6.

From the survey results in Figure 6, we can see that 56.3% of the students think that the curriculum of physical education is quite satisfactory, 33.8% of them think that the curriculum of physical education is satisfactory, and 5.2% of them think that the

curriculum of physical education is very satisfactory. However, 3.5% of the students think that the curriculum of physical education is not satisfactory, and only 1.2% of the students think that the curriculum of physical education is not satisfactory. This shows that students are basically satisfied with the curriculum of physical education.

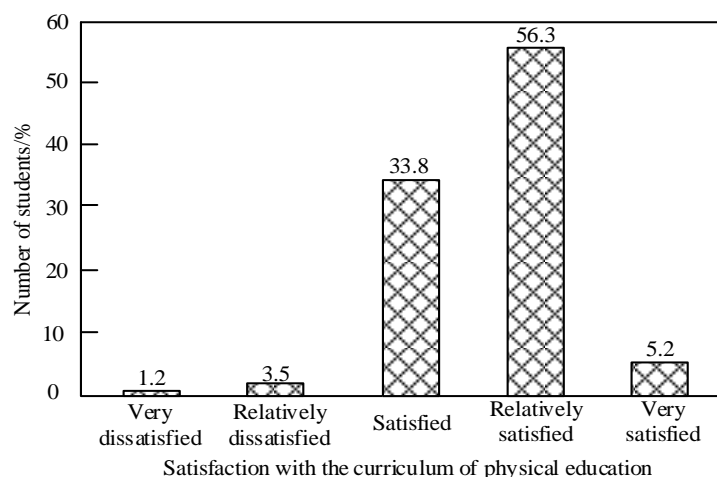


Figure 6. Survey results of satisfaction with the curriculum of physical education majors

DISCUSSION

Based on the results of the above questionnaire survey, aiming at the main problems and difficulties in physical education teaching in colleges and universities, the optimization strategies for college physical education are proposed:

Strengthen the construction of teaching staff.
Create a reasonable teacher structure: Formulate and adjust relevant policies according to the actual situation of physical education teachers in colleges and universities, and strive to do a good job in the construction of physical education teachers. The combination of introduction and improvement is adopted to cultivate a high-quality teacher team, make the construction of physical education teachers develop towards institutionalization and standardization, and ensure that physical education teachers with sufficient professional standards meet the teaching requirements. Strengthen the supplement to the teachers of physical education professional courses and basic courses, introduce high-level talents, give institutional guarantee, provide diversified teaching for students and effectively improve the level of teachers.

Organize regular teacher training: Improve the current situation that the title of existing teachers is dominated by lecturers, support teachers to carry out post service refresher training, improve teachers' knowledge structure through on-the-job, orientation, commission training and other channels, improve teachers' professional ability, and break the traditional concept of seniority. Regular training creates conditions for college physical education workers and provides a platform for students to learn new knowledge better. Through training, teachers can improve their professional quality, have a deeper understanding of the frontier of sports discipline, gradually lay the foundation of sports discipline, clarify the development trend of sports research, and enable students to obtain timely and effective information in the increasingly updated information

society.

Precise physical education teaching content.
Streamlining and optimizing teaching content: With the reduction of teaching hours and the variety of physical education teaching content, students cannot master all teaching content. Therefore, streamlining and optimizing teaching content has become the key to improve the quality of physical education teaching in colleges and universities. We should greatly increase the class hours of theory and ability training courses to enable students to complete the transformation from educatee to educator.

Construction of characteristic curriculum content: Using the thinking of cognitive psychology, in the process of curriculum content construction, according to the principles of quality education and lifelong education, highlight the characteristics of college physical education and change the tendency of simple transplantation of current physical education. Understand the students' learning situation and the actual work needs of students, build a college physical education curriculum system focusing on teacher education, reform the curriculum content, highlight the comprehensive characteristics, and explore the teaching content suitable for the requirements of physical education.

Strengthen practical course content: Provide students with cutting-edge knowledge, strengthen practice and practice, improve professional skills, carry out activities related to sports, and increase the supply of high-level spiritual culture, ability improvement, quality improvement, etc. Colleges and universities should pay attention to cultivating students' practical ability, deepen students' attention to academic research and innovation, gradually approach the teaching content to the requirements of social talent training and construction, and better realize the training goal of health education.

Infiltrate cutting-edge course contents: Make full use of practical experience resources, select teaching materials and contents with teaching characteristics of physical education in colleges and universities,

improve auxiliary teaching materials according to students' actual occupational types and needs, add appropriate teaching contents and eliminate old teaching contents. Starting from the diversified characteristics of education, we should pay attention to the cutting-edge, comprehensive and sociality in the educational content, and strengthen students' social adaptability.

Optimize the teaching methods of physical education. Reform the teaching methods of physical education: Teachers' teaching methods should not only be reflected in teaching students to learn, but more importantly, teaching students to learn and realize the transformation from learning to learning. The teaching methods adopted should give full play to the leading role of teachers and students, and ensure that students can actively participate in teaching activities. We must reform the teaching method focusing on knowledge transfer, and the teaching method aiming at cultivating active learning, improving ability and students' comprehensive quality.

Adopting the "Internet +" online teaching method: Teachers use teaching plans and teaching content to record corresponding videos. Starting from the characteristics of students, they customize special teaching plans for the physical education major and integrate educational resources. The video recording is based on the teaching plan of the physical education major, adding practical courses, digesting relevant sports theoretical knowledge from practice, and various teaching methods, which can improve the online rate of students. With additional online homework, students can use their personal accounts for video learning, and the number of videos on-demand is unlimited, providing students with a flexible learning form. This learning form is more similar to point-to-point teaching, that is, P2P structure.

Strengthen the mixed teaching method: Complete the teaching tasks through the dual methods of face-to-face and online teaching. In face-to-face courses, educators should use emerging technologies, integrate the characteristics of the times to change teaching concepts, and focus on students' problem-solving abilities from the perspective of students. Students learn with problems according to their own experience, easy to understand what they have learned, improve learning efficiency and realize effective teaching. In online teaching, students can use fragmented time to learn. All online curriculum resources and teachers are shared, so that educators and educates can break the boundaries of time and space and communicate anytime and anywhere.

Strengthen the evaluation of teaching quality. Establish an evaluation feedback exchange platform: Establish an evaluation platform by using information technology. Managers can view the online teaching situation in the system, follow up the teaching links, check the problems in teaching and evaluate the

teaching quality. After the evaluation, it will be presented in the form of a list of problems, find out the person responsible for the problems, and rectify the problems, so that the teaching quality can be effectively monitored and improved.

Organize the third party to participate in the evaluation: The participation of the third party helps to clarify the responsibilities of colleges and universities, the government and society, promote the separation of management, management and evaluation, facilitate the fairness and openness of the evaluation results, play a good role in diagnosis and improvement of teaching evaluation, fundamentally improve the training quality of adult correspondence education and improve the quality assurance system.

CONCLUSIONS

From the perspective of cognitive psychology, through the investigation and analysis results, this paper puts forward specific optimization strategies for the main problems and difficulties in college physical education, and draws the following conclusions:

The results of investigation and analysis show that at present, the teachers of physical education major in colleges and universities are mainly young and middle-aged teachers, which reflects the youth of the teaching team. It is a teaching team with great plasticity. The proportion of professional title structure of physical education teachers is uncoordinated, that is, the proportion of associate professors is low compared with professors, while the platform of intermediate professional title is too large, and there is a serious fault in the professional title structure. The foundation of college students majoring in physical education is generally poor, but students have strong interest in learning compulsory physical education courses, which is conducive to the normal development of college physical education courses. There is a gap between the renewal speed of teaching content and students' needs. There is less demand for students' psychological knowledge and more demand for professional skills of physical education. The teaching methods used by teachers are inconsistent with the teaching methods expected by students, and students have high expectations for setting up a curriculum resource platform.

The optimization strategy of college physical education is to strengthen the construction of teachers, create a reasonable teacher structure, and organize regular training of teachers. Precise physical education teaching content, streamline and optimize teaching content, build characteristic curriculum content, strengthen practical curriculum content, and penetrate cutting-edge curriculum content. Optimize physical education teaching methods, reform physical education teaching methods, adopt "Internet +" online teaching methods, and strengthen mixed teaching methods. Strengthen the evaluation of teaching quality,

establish an evaluation feedback exchange platform, and organize a third party to participate in the evaluation. The above optimization strategies can effectively ensure the teaching effect of physical education in colleges and universities, improve the quality of physical education in colleges and universities, and provide a certain reference value for realizing the optimization of physical education and teaching in colleges and universities.

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Contribution of individual authors:

Peng Liu: the experiment designer and executor of this research, completes data analysis, and writes the first draft of the paper.

Qiyang Yan & Chunlei Zhang: the project conceiver and person in charge, directing experimental design, data analysis, essay writing and revision.

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RESEARCH ON CREATIVE PRODUCT DESIGN OF EXPERIENTIAL CULTURAL TOURISM BASED ON COGNITIVE PSYCHOLOGY

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SUMMARY

Background: In recent years, with the improvement of income level and demand level, tourists began to seek experiential tourism close to the essence of life.

Subjects and methods: This paper analyzes the relevant theoretical concepts of cognitive psychology, designs the form innovation design model of experiential cultural tourism products based on cognitive psychology and the user model based on cognitive psychology, the scientific measures of product design innovation with the help of cognitive psychology, and gives the design objectives and principles of experiential cultural tourism creative products based on cognitive psychology.

Results: Taking wine cultural tourism products as an example, this paper summarizes and analyzes the current situation of wine tourism development in the study area, and puts forward the development countermeasures of experiential wine cultural tourism according to the relevant theories of experience economy and tourism experience carrier, combined with the particularity of wine cultural tourism resources.

Conclusions: This paper fully combines the theory of cognitive psychology and clearly points out the direction and measures of product innovation design.

Key words: cognitive psychology - creative products - cognitive development theory - RMCP development mode - tourist experience

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INTRODUCTION

With the development of global science and technology in the 21st century, the changes of life and production mode and the prosperity of multiculturalism, the satisfaction of users' needs and product forms have undergone fundamental changes. In the context of social informatization, users' demand for products is changing from "use of practical functions" to "cognitive experience of information" (Im et al. 2019). Users not only buy the product itself, but also the service, experience and personality value of the product. Therefore, the product should not only have use value, but also have rich information value and significance (Liu et al. 2021). Product innovation is no longer simply reflected in the function of the product, but gradually transferred to the personal meaning needs and emotional satisfaction of users (Xing et al. 2019).

In the traditional product design process, companies often focus on the product or technical system itself, but they have not made an effective plan for product design from a cognitive perspective, although some research staff have also done so in recent years. To carry out scientific research and analysis on these aspects, but did not get better results in the cognitive psychology level of product design.

From another aspect of scientific analysis, it can be seen that the product design of cognitive psychology is often human-centered. It focuses on the research of human thinking methods. It emphasizes breaking through directional thinking and focusing on innovation (Schmidt & Mamede 2020). From this perspective, product design innovation based on cognitive psychology will be the main direction of enterprise product design. Cognitive psychology, which emerged in the 1950s, regards people as active information processors who have rich internal resources and interact with the surrounding environment, and mainly studies their cognitive processes of receiving, storing and using information, including feeling, perception, attention, consciousness, memory, representation, thinking, language and problem solving (Ramsey & Ward 2020). In the 1960s, the research of product design theory began to realize that design innovation is different from scientific reasoning. The design method should be based on the research of human thinking process, emphasizing the research and exploration of design thinking characteristics and behavior laws. The research of design method has moved towards the process of analysis and design, and its research focus has shifted to exploring how people think about design and solve