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Developing Intelligent Indicators of Teaching Orienteering Course for University Students

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Abstract

Background and Aim: In recent years, the state has attached great importance to school sports. In October 2020, the Central Committee of the Communist Party of China and the State Council successively issued opinions on comprehensively strengthening school sports and aesthetic education in the new era, emphasizing the important role of sports in promoting the all-around development of students. The new crown epidemic has accelerated the digital transformation of education, and smart teaching has gradually become an important direction of teaching reform. As an important part of college sports courses, orienteering is of great significance for cultivating students' willpower, teamwork skills, and problem-solving skills. However, there are still many problems. Therefore, this research objective was to develop Intelligent Indicators of Teaching Orienteering Course for University Students.

Materials and Methods: This research was a mixed research method to determine the indicator system for evaluation of the Intelligent Teaching Orienteering course for university students through literature reading, expert interviews, and questionnaires. The research invited experts to conduct an IOC test on the preliminary indicators, and adopted the Delphi method to modify and improve the indicators after three rounds of consultation. The questionnaires were distributed to 19 experts, and the indicators were optimized according to the results of statistical analysis to form a scientific and comprehensive evaluation system. The weights of the indicators were determined by the hierarchical analysis method (AHP), 10 experts compared the scores of the indicators at the same level, and the data were analysed by using Yaahp software to obtain the weights of the indicators at all levels. Based on the AHP weight analysis, the Intelligent Indicators of Teaching Orienteering Course for University Students were constructed and verified by seven experts.

Results: The Intelligent Indicators of Teaching Orienteering course for university students consisted of four Primary Indicators, 19 Secondary Indicators, and 81 Tertiary Indicators, which provide a theoretical basis and practical guidance for the application of Intelligent Teaching in orienteering courses.

Conclusion: To promote smart teaching of sports in colleges and universities, it is necessary to formulate a comprehensive guidance plan, clarify the responsibilities of various departments; comprehensively evaluate the required facilities, equipment, and resources, and provide additional support for colleges and universities with scarce resources; incorporate smart teaching content into the curriculum, establish a safety management and teaching quality evaluation and feedback mechanism; provide resource support and smart services for teachers and students, implement teacher training, and provide a personalized learning experience. In the future, it is recommended to carry out practical applications of smart teaching indicators, systematically analyze the key factors affecting the effectiveness of smart teaching, conduct in-depth research on internal and external constraints or facilitating factors, and propose optimization strategies.

Keywords: Intelligent Indicators; Orienting Teaching; University Students

Introduction

In 2019, the Central Committee of the Communist Party of China and the State Council issued the Opinions on Deepening the Reform of Education and Teaching and Comprehensively Improving the Quality of Compulsory Education and put forward the idea of "insisting on the five education and promotion"(Liu, 2019). In October 2020, put forward to actively improve the evaluation mechanism of the policy requirements, which requirements specific requirements detailed as "promoting the reform of school sports evaluation, improving the evaluation of physical education teachers' positions, and improving the evaluation system of education supervision"(Sun, 2018).In 2022, the Ministry of Education's compulsory education curriculum program re-emphasized the principle of comprehensive development around the fundamental task of establishing morality, improving the level of intellectual education, and strengthening physical education and aesthetic education (Cui et al, 2022). The global COVID-19 pandemic has accelerated the digital transformation in education, with online teaching becoming widely used. However, this teaching method faces challenges such as insufficient teacher-student interaction and difficulty in effectively improving students' independent learning ability. In

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this context, the concept of intelligent teaching has emerged, aiming to cultivate students' wisdom by building a smart learning environment through the integration of information technology and education (Ning, 2023). Orienteering, as an emerging outdoor sports program, has been favored by the majority of teachers and students since its introduction into China's institutions of higher education and has gradually developed into an important part of the sports curriculum in universities (Liu, 2023). However, the current teaching of orienteering in universities still relies on traditional models, with problems such as outdated content, single methods, and imperfect evaluation systems (Lu, 2013). Therefore, it is of great practical significance to integrate the concept of intelligent teaching into the college orienteering course and construct a contemporary intelligent indicators model of teaching orienteering evaluation system. Building a scientific and reasonable intelligent indicators model of teaching orienteering evaluation system is crucial for realizing the goal of intelligent teaching and promoting the overall development of students to meet the needs of the times.

Objectives

1. To study the current situation of intelligent indicators of teaching orienteering courses for university students.
2. To draft the intelligent indicators of teaching orienteering courses for university students.
3. To confirm the intelligent indicators of teaching orienteering courses for university students.

Literature Review

This study focuses on the systematic construction of evaluation indicators needed for an intelligent indicators model for teaching orienteering courses in universities. The following literature and research review will be summarized through 4 major sections:

1. Orienteering (Definition of Orienteering; Origin of Orienteering; Teaching Orienteering Course; Classification of Orienteering; Relevant Research on Orienteering Course)
2. Intelligent Teaching (Connotation of Intelligent Teaching; The Hierarchical Teaching Structure of Intelligent Teaching; Value Orientation of Intelligent Teaching; Evaluation Purpose of Intelligent Teaching; Intelligent Teaching Hardware and Software)
3. Theoretical Foundations (Intelligent Courses - Constructivism, CIPP Theory; Teachers' Intelligent Teaching Competence - TPACK framework; Students' intelligent learning ability - Bloom's Theory, Theory of Multiple Intelligence)
4. Domestic and foreign studies (Research on the development of orienteering course; Research on the teaching implementation and training theory of orienteering course; Research on the inspiration of orienteering on psychological cognition; Research on the value and impact of teaching orienteering course; Research on teaching resources of orienteering course)

With the rise and development of Intelligent Teaching of Orienteering in China, people have begun to analyze the possibility of its development in universities, the current status of its implementation, and the countermeasures for its development (Liang, 2012). Research on orienteering in China has shown that factors such as the degree of awareness of orienteering in universities, the degree of importance attached to it, the strength of teachers, and the curriculum facilities affect the teaching of orienteering (Liu, 2019). In this paper, the teaching status of orienteering courses in Guangzhou universities was studied from four aspects: curriculum, teacher teaching, student learning, and course facilities (Jiang, 2017). The evaluation indicator system of Intelligent Teaching of Orienteering Sports Courses in Guangzhou universities is constructed, and the corresponding teaching mode is proposed, which provides experience for promoting the implementation of Intelligent Teaching of Orienteering Sports Courses.

Conceptual Framework

This paper determines preliminary indicators based on the research background of targeted courses and intelligent teaching through literature review, interview method, and questionnaire survey method. A total of 19 experts from five groups of experts and one group of athletes were invited to conduct a Delphi questionnaire survey. Finally, the final indicator system was determined through the AHP method and mathematical statistics method, and then expert argumentation was used to determine

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Intelligent Indicators of Teaching Orienteering Course for University Students. Please see Figure 1 below.

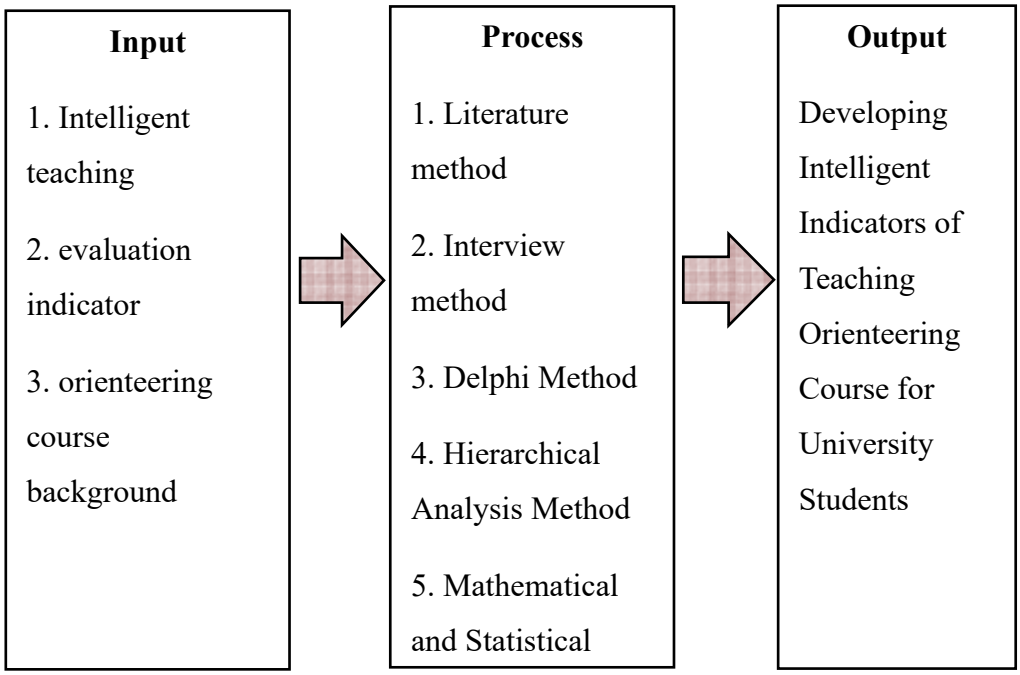

Figure 1 Conceptual Framework

Methodology

1. Literature method

We searched the official website of the Central People's Government of the People's Republic of China, the official website of the Ministry of Education of the People's Republic of China, and the China Academic Degrees and Postgraduate Education Information Network for the relevant policies and documents about "education and teaching" and "higher education". "Intelligent teaching" and "Intelligence-Based Teaching" as the search terms in foreign language databases such as Web of Science and EBSCO. We conducted subject searches on the Web of Science, EBSCO, and other foreign databases with "intelligent teaching", and "Intelligence-Based Teaching" as the search terms, and conducted subject searches on China Knowledge Network with "teaching ability", "intelligent teaching", "intelligent classroom" as the search terms, and summarized the relevant information collected, We also summarized the relevant data collected and the Chinese and English literature to lay a theoretical foundation for this paper.

2. Questionnaire method

The questionnaire method refers to the investigator, based on a certain survey purpose, the preparation of questionnaires, and a written or electronic way for the selected survey respondents to understand the situation or ask for opinions. This study intends to solicit opinions from the people concerned in the process of investigating the current status of orienteering course development in universities.

3. Interview method

Interview, also known as the interview method, is a basic psychological research method that uses direct dialogue between the interviewer and the interviewee to understand the psychology and behavior of the interviewee. Depending on the nature of the problem to be solved, the purpose, and the target, different approaches can be used. According to the norms of the interview process, the interviews can be divided into two categories: structured interviews and unstructured interviews.

In the preliminary stage of indicator selection, five experts from relevant associations as well as bases such as the Guangdong Orienteering Sports Association, Guangdong Federation of University Orienteering Sports Associations, and colleges and universities were interviewed to conduct in-depth

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interviews on the development of intelligent teaching of university orienteering sports courses and to collect the views and opinions of experts and scholars to complete the selection of indicators.

4. Delphi Method (Expert Survey Method)

The Delphi method, also known as the expert prediction method, was pioneered by O. Helm and N. Darke in the 1940s and further developed by T.J. Gordon and RAND. It uses a correspondence survey to ask questions to experts in the field related to the predicted problem, then synthesize and collate their replies and give anonymous feedback to the experts, and then synthesize and give feedback after soliciting opinions again. After several feedback to get a more consistent and reliable opinion.

(1) Selection of experts. The selection of experts includes three basic conditions: first, senior title experts and scholars with experience in research on intelligent teaching in orienteering courses; second, experts and scholars who have been engaged in the management of intelligent teaching in orienteering courses; and third, experts and scholars engaged in the study of intelligent teaching technology.

(2) The process of expert consultation. The first step is to conduct an expert consultation on the necessity of intelligent teaching evaluation indicators. This study distributed the consultation questionnaire by email or WeChat and asked experts to rate the necessity of all the indicators on a five-level scale, and set up a "new" item for the second-level indicators so that experts could modify or replace the inappropriate indicators, incorporate the experts' opinions on the modification of the indicators, and modify the descriptions of the individual indicators, as well as add the indicators suggested by experts. The description of individual indicators has been modified, and new indicators suggested by experts have been added. At the same time, experts were asked to rate their familiarity with the indicators on a five-level scale, rate the basis of indicator evaluation on a three-level scale, and the dimensions of the evaluation included four aspects, namely, practical experience, logical reasoning, knowledge of domestic and foreign countries, and intuition. In the second step, the evaluation of the importance of the evaluation indicators of intelligent teaching was conducted. Absorb the modification opinions of the experts in the first round to form a new evaluation indicator system of intelligent teaching and ask the experts to evaluate the importance of the new indicator system in the questionnaire, using a five-level rating.

(3) The experts' positive coefficient is represented by the effective recovery rate of the questionnaire. A recovery rate greater than 70% indicates that the experts are highly motivated.

Expert reliability is represented by the expert authority coefficient (Cr). The range of Cr is between 0 and 1. In general, Cr≧0.70 is regarded as acceptable; that is, Cr is determined by two factors: one is the basis of expert judgment, Ca, the basis of judgment coefficient; the other is the expert's familiarity with the issue, Cs, the familiarity coefficient. The closer Cr is to 1, the higher the degree of authority of the experts participating in the survey is, and the higher the reliability of the results of the expert's consultation is. The assignment of the value of Ca and Cs is in Tables 1 and 2, respectively. The assignments of Ca and Cs are carried out according to Tables 1 and 2, respectively.

Table 1 Expert judgment based on coefficient assignment

	Ca		
	High impact	**Average impact**	**Small impact**
Practical experience	0.5	0.4	0.3
Logical inference	0.3	0.2	0.1
Knowledge of domestic and international	0.1	0.1	0.1
Intuition	0.1	0.1	0.1
Total	1.0	0.8	0.6

Table 2 Assignment of the coefficient of expert familiarity with the indicator

	Cs
Very familiar	1.0
Fairly familiar	0.75

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	Cs
Fairly familiar	0.50
Not very familiar	0.25
Very unfamiliar	0.00

(4) The degree of coordination of experts' opinions, i.e., whether the experts' judgment on the indicators is consistent or not, is expressed by the coefficient of variation (CV) (Coefficient of Variance) and Kendall's coordination coefficient (W). The smaller the Coefficient of Variance (CV), the more the experts' opinions on a particular item converge. The value of W ranges from 0 to 1, and when W fluctuates from 0.4 to 0.5, the coordination is better, and the consultation can be stopped. The closer the W value of Kendall's coordination coefficient is to 1, the better the degree of coordination of the experts.

(5) Indicator screening criteria, First, the arithmetic mean refers to the average of all experts‘ scoring data, the coefficient of variation CV refers to the variation of all experts’ scoring data, and the full score frequency refers to the average of the ratio of experts' full scores, for example, if the indicator one is 60% and the indicator two is 80%, then the full score frequency is 70%; second, on the formula of the threshold value and judgement, it is based on the arithmetic mean, the coefficient of variation CV and the full score frequency of the three indicators. Second, the formula and judgment of the threshold value, it is based on the arithmetic mean, coefficient of variation CV value, and full score frequency of the three indicators, and through the average and standard deviation of the three indicators for the calculation of the threshold value; third, if the indicator data in the threshold value or below, then it is considered that the indicator did not pass the screening, such as the arithmetic mean and the full score of the frequency of the standard ‘less than the threshold value’, and the coefficient of variation CV value of ‘greater than the threshold value’ as the standard. For example, the arithmetic means and frequency of perfect scores are taken as ‘greater than the threshold’, while the coefficient of variation CV is taken as ‘greater than the threshold’. Combining each indicator with the judgment criteria, the final indicator screening judgment is made. If all three indicators have problems, the indicator should be deleted; if all of them pass, then it is retained, and if there are 1/2 problems, then it should be a combination of trade-offs.

5. Hierarchical Analysis Method

The analytic Hierarchy Process (AHP) constitutes an analyzable hierarchical model by the general objective, criteria, and candidates, with no influence between the layers, and ultimately, all candidates can be evaluated individually according to different factors, and the weights of all candidates relative to the general objective can be solved. The hierarchical analysis method adopts nine levels of scoring, and the scoring principle is to ask experts to compare the importance of all the indicators two by two to derive the relative importance of each element and list the two-by-two comparison matrix; the consistency indicator CR of the two-by-two comparison matrix is calculated, and the hierarchical ranking of the judgment matrix is considered to be satisfactorily consistent if the $CR < 0.1$.

The general goal of this study is the construction of the evaluation indicator system of the intelligent teaching model. Based on the results of the Delphi expert consultation, the author establishes the structural model of the evaluation indicators of the intelligent teaching model through the software of Mai-Shi AHP hierarchical analysis and then designs the consultation questionnaire of the hierarchical analysis method to carry out the expert consultation of the indicators' weights. After the expert scoring, the expert scoring results are imported into the AHP software to calculate the weighting results.

6. Mathematical and Statistical Methods

In this study, the calculation of the results of the Delphi expert consultation method was carried out through SPSS 26.0 and Excel 2019. The hierarchical modeling of the evaluation indicator system of the intelligent teaching model in the orienteering course and the analysis and processing of the indicator weights were carried out through the Mysore AHP hierarchical analysis method software.

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Results

Implementation steps for the construction of an indicator system for the evaluation of Intelligent Teaching of Orienteering universities

The division of dimensions was determined through the literature method, questionnaire survey method, and interview method. Interviews with 5 experts, 240 student questionnaires, 225 recovered questionnaires, a recovery rate of 93.75%, 219 valid questionnaires, effective recovery rate of 91.25%, to select Primary Indicators, Secondary Indicators, and Tertiary Indicators, and the preliminary formulation of evaluation indexes and inviting 5 experts to complete the Delphi questionnaire of the IOC test. Through three rounds of the Delphi method, prepare expert questionnaires and distribute them, recover 19 experts 'questionnaires within the specified time, statistically analyze the experts' ratings and summarize the experts 'opinions, delete and modify the indicators according to the experts' suggestions for relevant amendments to the screening indicators, and determine the most general evaluation indicators.

Number of indicators for the first round: 4 Primary Indicators, 17 Secondary Indicators, and 116 Tertiary Indicators;

Number of indicators for the second round: 4 Primary Indicators, 19 Secondary Indicators, and 96 Tertiary Indicators;

Several indicators for the third round: 4 Primary Indicators, 19 Secondary Indicators, and 81 Tertiary Indicators.

Through the preparation of the evaluation indicator weight expert opinion consultation form, experts are invited to compare the relative importance of two or two indicators at the same level and score them, transform and enter the data, and then complete the determination of the weights of each indicator in each evaluation indicator system with the help of Yaahp software of Mai-Shi AHP. Complete the construction of an intelligent indicators model of teaching orienteering according to AHP weight analysis and complete 7 experts' empirical studies.

Composition of the expert group

Participants in the study

Group 1: Invited 5 experts for the IOC test.

Group 2: Invited 5 experts for an interview.

Group 3: Invited 240 students for a questionnaire survey.

Group 4: Invited 19 experts for Delphi Consensus revision.

Group 5: Invited 10 experts for AHP.

Group 6: Invited 7 experts for Connoisseurship.

Delphi experts were selected using a snowball method; experts from other groups were selected using a targeted sampling method.

The specific indicators are as follows:

[A] Intelligent Courses

[A1] Intelligent Teaching Objectives

[A11] The orienteering program is in line with the school's orientation and talent cultivation objectives and adheres to the principle of cultivating people with moral integrity.

[A12] The objectives and expected learning outcomes of the Orientation Sports Program are clearly stated, operable, and evaluable.

[A13] The credits, hours, and teaching arrangements of the Orienteering Sports Program are reasonable.

[A14] Orienteering courses can meet students' interests and needs.

[A2] Elements of Intelligent Teaching

[A21] Orienteering knowledge, ability, quality, and other different levels of teaching objectives positioning accurate and comprehensive, intelligent teaching objectives are clear, practical, and feasible.

[A22] Orienteering sports teaching content difficulties are set accurately; the focus is prominent.

[A23] Orienteering in the form of both text resources and video resources.

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[A24] Orienteering sports content includes both complete action teaching design and detailed decomposition of the key action teaching design, accurate explanation of technical movement essentials, systematic, practical, and strong.

[A25] Orienteering sports teaching methods are designed to be flexible and targeted.

[A26] Orienteering intelligent learning links closely, making full use of online course resources, reasonable design of offline lectures, and online learning of various links.

[A3] Intelligent Teaching Process

[A31] Orienteering teaching highlights the key points and difficulties, and the allocation of credit hours is scientific and reasonable.

[A32] Orienteering intelligent teaching methods can mobilize students' enthusiasm and active classroom atmosphere.

[A33] Orienteering is simple, efficient, flexible, tailored to the needs of the students, and combines teaching and practicing.

[A4] Intelligent Teaching Content

[A41] Identify the core orienteering learning content and ensure that the core learning content is directed towards the achievement of the core learning objectives.

[A42] The relevance of orienteering content and content and the gradual progression of specific content knowledge.

[A43] Effective integration and coordination between the content of orienteering and highlighting the key content.

[A5] Intelligent Teaching Design

[A51] Design different teaching activities according to different levels of learners to support the development of intelligent teaching of orienteering.

[A52] Flexible use of intelligent teaching methods that meet the cognitive patterns of learners, innovative, and able to maintain students' attention to learning.

[B]Intelligent Equipment

[B1] Intelligent Teaching Online Operation Status

[B11] Support playback in different terminals

[B12] The video image is clear and stable, with appropriate brightness.

[B13] Automatically recommend relevant orienteering online learning resources according to the learning content.

[B14] Orienteering online teaching provides a discussion and communication platform between teachers and students.

[B15] The learning platform can guarantee the use of time, space, and equipment for students in online and offline learning sessions.

[B16] Orienteering online teaching provides a platform for discussion and exchange between students.

[B2]Intelligent Teaching Online Media Effect

[B21] Orienteering online teaching layout is reasonable, hierarchical, beautiful, and clean.

[B22]Orienteering online teaching color coordination, in line with the principle of vision.

[B23]Orienteering online teaching animations and background music are in line with the teaching content.

[B24]Orienteering online teaching animation, background music, and other settings do not overpower the main, relaxed, and pleasant.

[B3]Intelligent teaching offline equipment conditions

[B31]The software and hardware construction for intelligent teaching of orienteering in schools is in place to support the construction of intelligent courses for orienteering.

[B32]Developing and utilizing various orienteering curriculum resources according to the time and place.

[B33]Reasonable use of electronic watches to monitor students' sports data.

[B34]Utilize camera positioning technology to ensure students' safety.

[B35]Enable students to have a better experience of maps through the smart classroom.

[B36]Enable students to master basic map knowledge through smart classrooms.

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[B37]Analyze students' running posture through the running camera system to improve performance.

[B38]Improve deployment efficiency through drone surveillance.

[C] Teacher's Intelligent Teaching Ability

[C1] Teachers' Intelligent Teaching Literacy

[C11]Teachers' qualifications, titles, years of teaching experience, and scientific research.

[C12]Teachers have good moral character, good manners, and are good teachers.

[C13]Teachers have good theoretical knowledge and practical experience in orienteering.

[C14]Teachers have a strong sense of intelligence and innovation in teaching.

[C2] Teachers' Intelligent Teaching Management Skills

[C21]Teachers arrange to set up the venue and check the venue equipment in advance.

[C22]Teachers can detect and prevent safety problems promptly.

[C23]Teachers can use intelligent technology to monitor students' movement status and provide appropriate interventions during the teaching process.

[C24]Teachers can handle technological accidents in the classroom.

[C3] Teachers' Cognitive Competence in Intelligent Teaching

[C31]Teachers are clear about the meaning, techniques, and methods of intelligent teaching and learning and the basic process of intelligent instructional design.

[C32]Teachers can effectively deconstruct intelligent teaching resources according to the characteristics of orienteering.

[C4] Teachers' Intelligent Teaching Technology Competence

[C41]Teachers have general knowledge of information technology.

[C42]Teachers can operate common software for orienteering.

[C43]Teachers can select appropriate intelligent technology resources for orientation.

[C44]Teachers can guide students to familiarize themselves with the use of orienteering map-making software, to facilitate students' independent exploration and transfer of learning.

[C5] Teachers' Intelligent Teaching Application Competence

[C51]Teachers can teach classes and help students summarize and improve based on technology support.

[C52]Teachers can instruct students on pedagogy and individualize instruction to students based on data.

[C53]Teachers can design or apply assessment scales appropriately.

[C54]Teachers can collect assessment data along with the progress of teaching and learning.

[C55]Teachers can visualize and analyze assessment data.

[C56]Teachers can analyze and summarize the assessment results and provide timely feedback and guidance to students.

[C57]Teachers can use intelligent teaching tools to organize teaching and learning.

[C6] Teachers' Intelligent Teaching Development Competence

[C61]Teachers can use digital resources for continuous learning, self-reflection, and summary improvement and enhancement.

[C62]Teachers can integrate information technology with teaching activities in physical education.

[C63]Teachers can rationally utilize intelligent teaching methods and relevant knowledge of physical education to deconstruct the content of teaching materials.

[C64]Teachers can design intelligent teaching situations with the content of the teaching materials and the available technology.

[C65]Teachers can identify problems, analyze them, interpret them logically, and use other creative thinking skills.

[D] Student's Intelligent Learning Ability

[D1] Students' Intelligent Learning Effectiveness

[D11]The student acquires basic professional knowledge and skills in orienteering.

[D12]Students can actively apply the knowledge and skills acquired in orienteering.

[D13] The orientation program enhances students' independent learning ability.

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[D14] The Orienteering program enhances students' teamwork skills.
[D15]Students can direct their exercise.
[D16] Students' interest in sports has been stimulated.
[D17] Students' attitudes towards sports have changed, and their awareness of sports has increased.
[D18]Students enjoy participating in sports with others.
[D2]Student Intelligent Learning Application Competence
[D21]In the process of intelligent learning, students establish connections between new knowledge and original knowledge, thus mastering unstructured knowledge such as complex concepts and deep knowledge, and ultimately achieving the meaningful construction of knowledge.
[D22]Students connect their knowledge of various sports with the current problems in orienteering and synthesize their knowledge to solve and analyze the problems.
[D3]Student Intelligent Learning Analytical Competence
[D31]Students' learning model is active rather than passive learning, and the teaching and learning parties reach a unified reflection ability according to the goals and concerns of education and teaching.
[D32]Students can reflect and summarize their learning styles, exercise methods, and training ideas in the learning process.
[D33]Students can identify problems and make improvements through reflection.
[D34]Students are oriented because of their requirements, not because of external pressure, as in the case of superficial learning.
[D4]Student Intelligent Learning Synthesis Competence
[D41]Students are good at observing and thinking about orienteering problems from a unique perspective.
[D42]They can use certain learning strategies to improve their speed and performance.
[D43]Able to develop an orienteering training program based on goals, with good coordination.
[D5]Student Intelligent Learning Evaluation Competence
[D51]Have new feelings at the end of each lesson.
[D52]Make a scientific and objective evaluation of their orienteering process.

The Construction Model for Intelligent Indicators of Teaching Orienteering Courses in Universities

In this study, through two rounds of expert questionnaires and one round of hierarchical analysis questionnaires, the evaluation indicator system of Intelligent Teaching in orienteering courses in universities and the weight value of each indicator were finally determined. According to the results, the first-level indicators ‘Intelligent Courses’, ‘Intelligent Equipment’, ‘Teachers Intelligent Teaching Ability’, ‘Students Intelligent Teaching Ability’, and ‘Students Intelligent Learning Ability’ are 0.466, 0.130, 0.133, 0.136, 0.136, 0.133, 0.134, 0.134, 0.136, 0.134, 0.136, 0.136, 0.136, 0.136, 0.136, 0.136 and 0.138 respectively. The weight value of ‘Intelligent Teaching’ is 0.466, 0.130, 0.219, and 0.181, respectively, among which, ‘Intelligent Courses’ accounts for the largest weight value, reaching 0.466. Therefore, according to the evaluation indexes of Intelligent Teaching of university-oriented courses, the teaching model is constructed, which is shown in Figure 2.

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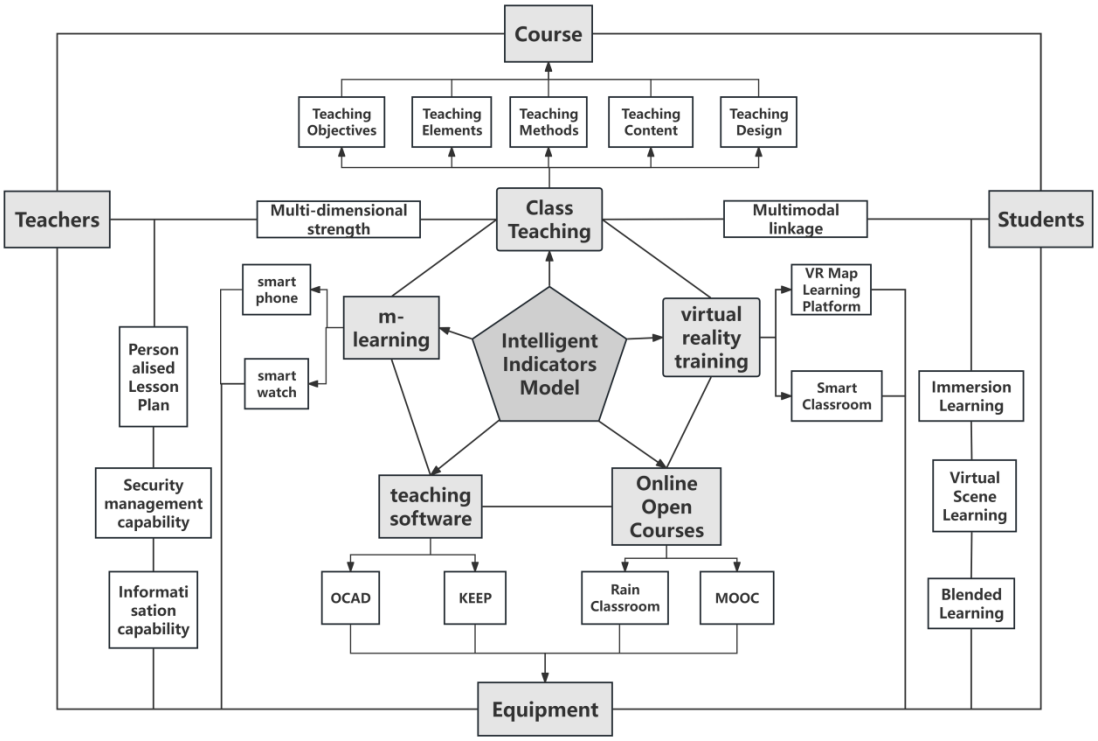

Figure 2 The model of Intelligent Indicators of Teaching Orienteering course in University students

Physical education plays an essential role in the cultivation of talents for comprehensive development, and it is a crucial component of the modern education system. In light of the rapid advancements in science and technology, the integration of advanced technology in physical education is becoming increasingly prevalent. The construction of an Intelligent Indicators Model for Teaching orienteering in universities represents an innovative exploration in line with this trend.

First and foremost, the determination of the teaching objectives serves as the foundation for the construction of an Intelligent Indicators Model of Teaching Orienteering in colleges and universities. In the context of the current era, characterized by the pervasiveness of information technology, the conventional teaching paradigm is proving inadequate in meeting the evolving needs of the modern learner. The construction and implementation of the curriculum must therefore be more nuanced and personalized to align with the diverse learning characteristics and interests of the student body. By integrating artificial intelligence, virtual reality, and other cutting-edge technologies, the orienteering course can create more realistic training scenarios, provide an immersive learning experience, and stimulate students' interest in learning and desire for exploration.

Secondly, the intelligent teaching ability of educators entails the necessity for both teachers and students to meet elevated standards. In addition to a firm grasp of professional expertise, educators must also possess the capacity to utilize a plethora of innovative technological pedagogical tools. This necessitates that teachers assume the responsibility of pursuing continuous learning, maintaining currency with contemporary developments, and continually enhancing their information literacy and pedagogical expertise. Concurrently, students must cultivate the capacity to utilize scientific and technological tools for the acquisition of knowledge, to engage in independent inquiry, collaborative communication, and the construction of knowledge systems in practice. The implementation of the intelligent teaching model facilitates the cultivation of students' innovative consciousness and problem-solving ability, thereby establishing a foundation for their comprehensive development.

Ultimately, the maintenance and updating of intelligent equipment is essential to ensure the uninterrupted advancement of intelligent teaching. In light of the ongoing evolution of orienteering, teaching equipment must undergo regular upgrades and updates to align with the evolving pedagogical requirements. Furthermore, it is essential to reinforce the daily maintenance and management of

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equipment, establishing an effective monitoring and feedback system. This enables the prompt identification and resolution of issues that may arise during the teaching process, thereby ensuring the seamless execution of instructional activities.

In conclusion, the construction of the Intelligent Indicators Model of Teaching Collegiate Orienteering, CTSE, represents a significant undertaking that aligns with the demands of an evolving educational landscape and facilitates pedagogical transformation. The implementation of this model will infuse the physical education classroom with new vitality and vigor. It is incumbent upon educators to embrace this trend, embrace innovation, and reinforce the construction of intelligent teaching to cultivate a greater number of excellent talents who have undergone comprehensive development in the realms of morality, intelligence, physicality, aesthetics, and labor. Furthermore, this process will facilitate broader prospects for the development of physical education.

Discussion

The development of the Intelligent Indicators Model of Teaching Orienteering can better promote orienteering in university curricula, aligning with Liu's (2019) thesis, which highlights the positive effect of orienteering on students' quality of education. Liang (2012) found that orienteering in China started in sports colleges in schools. The Intelligent Indicators Model of Teaching Orienteering can expand teaching content by developing various curriculum resources and addressing insufficient teaching resources, as mentioned by Jiang (2017), who also emphasized the importance of improving the teaching system.

Intelligent equipment in orienteering teaching can protect student safety, consistent with Liang's (2012) findings that student safety is the biggest limitation in developing orienteering courses on campus. The Intelligent Indicators Model of Teaching Orienteering can also improve teachers' self-cultivation and professional ability, coinciding with Wang and Zhang's (2007) concept of strengthening teachers' professional ability, developing orienteering sports resources, and using professional equipment and multimedia teaching. Gu (2012) found that orienteering in China started late, with low publicity and popularity, weak professional teachers, and a lack of attention from leaders at all levels, suggesting the need to introduce professional sports talents to improve teachers' abilities.

Lu (2013) believes that teachers should change traditional teaching concepts, focus on students' physical and mental health, and pay attention to humanistic care and the educational environment. Orienteering courses can promote students' active participation in sports, lifelong sports awareness, teamwork, and social adaptability. Xi et al (2017) found that orienteering courses effectively promote college students' mental and physical health development and enhance their willpower.

Recommendation

Application of research results

Formulate a comprehensive guideline for the Intelligent Teaching of Orienteering in universities, and clarify the division of responsibilities and the coordination mechanism between the academic department, the sports department, and the orienteering teaching administrators.

Comprehensively assess the facilities, equipment, and resources required for Intelligent Teaching of Orienteering in universities, and ensure that every university has the infrastructure for Orienteering teaching, including a suitable outdoor environment, Intelligent Equipment, and training space.

Provide additional support to universities with a relative lack of teaching resources, and explore diversified channels for obtaining teaching resources, such as school-enterprise cooperation and social sponsorship, to ensure the smooth implementation of Intelligent Teaching of Orienteering.

Incorporate the content of Intelligent Teaching of Orienteering into the physical education curriculum and syllabus, and emphasize the value of comprehensive education of orienteering. Establish a perfect safety management system, conduct regular safety inspections of teaching venues and equipment, and create a safe and intelligent teaching environment for teachers and students.

Establish a sound teaching quality evaluation and feedback mechanism, carry out regular evaluation of teaching effectiveness and research on learning conditions, and dynamically adjust and optimize Intelligent Teaching strategies according to feedback from teachers and students.

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Provide sufficient resource support and intelligent services for teachers and students. Implement Teachers' Intelligent Teaching Ability training and provide students with personalized and intelligent learning experiences and practice opportunities.

Recommendation for future study

Carry out a one-year practice of applying the Intelligent Teaching indicators in universities, track the feedback from teachers and students, and systematically analyze the key factors affecting the effectiveness of Intelligent Teaching in orienting.

It is recommended that the Researcher focus on the theme of 'Analysis of Key Factors Affecting the Effectiveness of Intelligent Teaching in Universities' to conduct an in-depth study, and systematically analyze the internal and external factors constraining or facilitating the effectiveness of Intelligent Teaching based on the application practice, and put forward targeted optimization strategies.

Reference

Cui, Y.K., Guo, H., & Lu, L.J. (2022). Objectives, Standards, and Practical Orientation of Compulsory Education Curriculum Reform (Written) - Interpretation of Compulsory Education Curriculum Programs and Curriculum Standards (2022 Edition). *Modern Education Management*, 9, 6-19.

Gu, Y. M. (2012). Research on the Current Situation and Countermeasures of Nanjing Colleges and Universities Offering Orienteering Sports Courses. *Journal of Nanjing Institute of Physical Education (Natural Science),* 11(5), 92-95.

Jiang, Y. L. (2017). *Status quo and optimization countermeasures for the development of foot orienteering courses in Changchun colleges and universities.* Jilin University.

Liang, J.F. (2012). Research on the current situation of developing orienteering sports in universities. *Journal of Xianning College,* 4, 99-100.

Liu, X. H. (2019). *Opinions of the CPC Central Committee and State Council on deepening education and teaching reforms to comprehensively improve the quality of compulsory education.* Ministry of Education of the People's Republic of China of People's Daily.

Liu, Y. (2019). Visual search characteristics of precise map reading by orienteering. *Peer J.* 7, 1-15.

Liu, Y.Y. (2023). *Research on the Establishment and Application of the Evaluation Index System of Orienteering Development Level in Universities*. Guangzhou Sports University.

Lu, C.H. (2013). Experimental research on the introduction of orienteering courses into physical education teaching in universities. *Journal of Liaodong College*. 3, 226-229.

Ning, B.X. (2023). *Research on the construction of evaluation indicator system of blended teaching in general physical education courses in universities.* Tianjin Sports Institute.

Sun, P. (2018). Research on the construction of evaluation indicator systems of intelligent teaching in primary and secondary schools. Northeast Normal University.

Wang, M. L., Zhang, Y. H. (2007). Countermeasures and Suggestions for the Development of Orienteering in School Sports in China. *Journal of Hebei Institute of Physical Education Journal*, 1, 41-44.

Xi, Y. H., Lin, S.M., Yuan, Y.J., et al. (2017). Research on the effect of orienteering programs on the physical and mental health of contemporary college students. Science and Technology Perspectives World, 217(31), 49-68. DOI:10.19694/j.cnki.issn2095-2457.2017.31.030.

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