CALCULATION AND ANALYSIS OF THE IMPACT OF MICROSOFT SECURITY-ASSISTED PHYSICAL EDUCATION MODEL ON COLLEGE BASKETBALL TEACHING IN THE INTERNET INFORMATION ERA

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ABSTRACT

With the rapid development of information technology in China in recent years, the network-sharing function in social software such as "WeChat" has begun to serve as a safety aid for educational work and promote the emergence of a new teaching model, so this paper proposes a new idea of basketball teaching based on the WeChat safety-aided sports model. Firstly, under the method of research, the importance of the practical part of the teaching content of the basketball specialization course is analyzed by principal component analysis; then the suitability of basketball teaching theory under WeChat safety-assisted is analyzed according to the correlation reliability test, measurement ANOVA and post hoc test of score rate; based on Kinect sensing technology, a basketball teaching model based on Kinect motion capture and joint construction is constructed; finally Obtain weights according to different weight calculation methods and construct a basketball teaching quality evaluation system based on fuzzy synthesis. The results showed that the experimental class achieved 3.16±1.609 (pcs) and 82.38±8.450 (points) in the 4-meter fixed distance passing into the zone; 35.18±9.167 (sec) and 84.72±10.798 (points) in the half-court dribbling and folding marching layup; 4.8-meter fixed distance one-handed over-the-shoulder basketball in the experimental class. The experimental class achieved the standard score of 3.63±2.282 (one) and the technical evaluation score of 82.28±7.857 (points) for the 4.8m fixed distance one-handed over-the-shoulder shot.

KEYWORDS

Weight calculation method; Microsoft safety-assisted sports; Teaching model; Fuzzy evaluation system; College basketball teaching

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1. INTRODUCTION

With the advent of the information age and the rapid development of wireless communication and network, the Internet has become closely connected with people's life, work and study [1]. WeChat, as an instant messaging software, is not limited by time and space, and it is not only widely used for socializing, but also becomes a communication medium and a safety aid for educational work, which has become a new and generally recognized educational approach driven by information technology [2-3]. WeChat has various functions, for example, the WeChat group function can provide a platform for communication between teachers and students and WeChat public number is an effective and fast way to obtain learning resources [4]. Teachers can capture high-quality graphics and explain micro-videos before class and publish them through the WeChat platform, and they can also make online classroom tasks.

In recent years, more and more research on WeChat safety-assisted physical education has been conducted, and its application in different sports has achieved good teaching results. sport education model (SE) model or sports education model, SE model is based on the theory of sports education, which is developed from game theory and game education theory [5-6]. zhu et al. [7] integrated WeChat into the teaching of yoga and found that the WeChat platform could help teachers reasonably arrange the time, intensity, and frequency of practice, and was also beneficial to the improvement of skills and the formation of exercise habits. The experimental study found that the combination of the WeChat platform and PBL teaching was beneficial to the improvement of students' motor skills, and the safety assistance of the WeChat platform could reduce the time of classroom lectures and demonstrations so that students had more time to practice. The students' participation motivation is also greatly improved.

Liu et al [9-11] combined previous research experience on the sports education model to integrate the WeChat platform into the sports education model, taking into account the advantages of both for teaching design, emphasizing the importance of both giving full play to the advantages of online teaching on the WeChat platform and strictly following the teaching structure process of the sports education model to make an effective interface between the two. Wang et al [12] proposed an adaptive analysis based on Kinect of running posture and Meng et al [13-14] proposed that the MU safety-assisted sports education model can solve the problem of students' weak knowledge of sports items and also provide an online channel to solve in-class problems as a way to ensure that the game process is not interrupted while solving students' in-class problems.

In summary, WeChat plays a great role as a safety aid in physical education, and researchers have designed and verified its advantages in teaching through WeChat safety aid teaching. Some scholars have incorporated WeChat into the basketball teaching mode, and the research results found that WeChat can be incorporated into the basketball teaching mode more conveniently and effectively to promote students' overall development and independent learning. This paper addresses the shortcomings of the traditional basketball teaching model in the information age, proposes basketball teaching ideas based on the WeChat safety-assisted sports

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model, constructs a basketball teaching model based on Kinect action analysis, and uses a fuzzy evaluation system to classify and discriminate the proposed method. The SE model is used to emphasize the development of students' sports knowledge, culture and students' initiative. Finally, by understanding the role of the WeChat platform for physical education, and drawing on the experience of previous people in integrating the WeChat platform with other teaching models, the advantages of both are combined and integrated, and basketball teaching in colleges and universities is designed and applied through macro and micro, to be able to provide new teaching ideas and solutions for basketball teaching.

2. THE CURRENT SITUATION AND INNOVATION OF TEACHING CONTENT OF BASKETBALL SPECIALIZATION COURSES IN COLLEGES AND UNIVERSITIES

2.1. INVESTIGATION AND ANALYSIS OF THE IMPORTANCE OF THE PRACTICAL PART OF THE TEACHING CONTENT OF THE BASKETBALL SPECIALIZATION COURSE

Investigations show that basketball specialization courses tend to overemphasize the transmission of existing skills, tactics, and theoretical knowledge and ignore the innovation of existing basketball culture, so the teaching content focuses on the transmission of existing knowledge, skills, and experience. Some teachers of basketball specialization courses take book knowledge as the only teaching content, teaching is simplified to "teaching", learning is equivalent to "learning from books", and teaching activities are limited to experience and cognitive activities [15-16].

Table 1. Questions, structure and reliability test of the questionnaire of the practical part of the teaching content of the basketball specialization course

Title	Component	
	Practical ability	Technical and tactical skills
Teaching the game	895	
Practice of field command and refereeing	745	
Basketball special physical training	741	
Basketball tactics teaching and training	667	514
Teaching and training of basketball techniques		895
Teaching and training skills practice		480
Characteristics Root	2.416	1.377
Cumulative explanation rate of variance (62.555%)	40.271 %	22.284 %
Cronbach's alpha coefficient (0.730)	751	464

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Using principal component analysis with Varimax orthogonal rotation [17], two factors with characteristic roots greater than 1 were extracted to explore the structure of the practical part of the teaching content of the basketball specialization course.

In the 2-factor structure, the Kaiser-Meyer-Olkin value for the 6 topics was 0.671 and Bartlett's Test of Sphericity Approximate (15) = 100.197 ($p < 0.001$), indicators that the topics are suitable for exploratory factor analysis. 2 The cumulative variance explained by the 2 factors reached 62.555%. The topic of basketball tactical instruction and training was highly loaded in both factors, but basketball tactical instruction and training was categorized as the second factor based on previous teaching experience. 2 factors measured the practical part of the basketball specialization course content in terms of f1 practical ability and f2 technical and tactical ability, respectively.

The total score of each factor is then calculated, followed by the normalized score of the factor score according to the following algorithm: normalized score = (x-min)/(max-min); the normalized score takes the value of each factor score to be between 0 and 1, which is the scoring rate of each factor.

Practical ability is 1=(practical ability-3)/12. There are 3 questions in this factor, each question has a minimum value of 1 point and a maximum value of 5 points, so the minimum value of this factor is 3 points and the maximum value is 15 points.

Technical and tactical ability is 1 = (technical and tactical ability - 3)/12. There are 3 questions in this factor, each question has a minimum value of 1 point and a maximum value of 5 points, so the minimum value of this factor is 3 points and the maximum value is 15 points.

The mean value after normalization was 0.10417, and the practical ability was significantly greater than the technical and tactical ability, with p less than 0.001. The three topics consisting of practical ability of teaching and competition, the practice of clinical command and refereeing, and basketball special physical fitness training were relatively favored by basketball special teachers. The three topics of teaching and training of basketball tactics, teaching and training of basketball techniques and practice of teaching and training ability, which consisted of technical and tactical ability, were relatively unpopular, and the reasons for this may be related to the training objectives of basketball specialization courses in each school, where teachers pay more attention to the cultivation and education guidance of students' practical ability.

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2.2. STUDY ON THE ADAPTABILITY OF THE THEORETICAL PART OF BASKETBALL TEACHING WITH THE ASSISTANCE OF WECHAT SECURITY

Table 2. Questions, structure and reliability test of the questionnaire of the theoretical part of the teaching content of the basketball specialization course

Title	Component		
	1 Quality of athletes	2 Athlete management	3 Athlete Theory Basketball Injuries
Basketball sports scientific research work	908		
Nutrition and recovery of basketball players	837		
Mental training of basketball players	819		
Basic quality and coaching requirements for senior basketball coaches	737		624
Basic quality and development of high-level referees	676		
Basketball awareness and its cultivation	644		815
Organization and management of basketball competition	606		
Basketball rules and referee law		831	
Selection and training of children and youth basketball players		877	
Theory and methods of basketball teaching		631	901

The structure of the theoretical part of the teaching content of the basketball specialization course was explored by using principal component analysis with Varimax orthogonal rotation and extracting three factors with characteristic roots greater than one.

In the 3-factor structure, the KAISER-MEYER-OLKIN value for 13 questions was 0.838 and Bartlett's Test of Sphericity Approximate (78) = 541.460 ($p < 0.001$), indicating that the questions were suitable for exploratory factor analysis. The cumulative variance explained by the 3 factors reached 70.992%. f1 Athlete quality, f2 Athlete management and f3 Athlete theory were measured in 3 aspects of the theoretical part of the basketball specialization course content. Factor 1 Athlete quality consists of 7 topics such as basketball injury, prevention and rehabilitation, scientific research work in basketball, nutrition and recovery of basketball players, psychological training of basketball players, basic quality and coaching requirements of senior basketball coaches, basic quality and development of high-level referees and basketball awareness and its development, which require students to have high advanced quality in research and training [18-20]. Factor 2 Athlete management, on the other hand, consists of three topics such as organization and management of basketball competitions, basketball rules and officiating law and selection and training of children and youth basketball players, requiring students to be able to be not only a qualified referee, but also to approach management-oriented personnel for youth

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selection and training. Factor 3 Athlete Theory is composed of three topics such as basketball teaching theory and methods, basic basketball theory and basketball training theory and methods, etc. Factor 3 tends to the theoretical knowledge of basketball teaching and training.

Then, based on the above factors, the total score of each factor is calculated, and then the normalized score of each factor is calculated according to the following algorithm: Normalized score = (x-min)/(max-min); the normalized score takes the value of each factor score to be between 0 and 1, which is the scoring rate of each factor.

The athlete quality is 1=(athlete quality-7)/28. There are 7 questions in this factor, and each question has a minimum value of 1 point and a maximum value of 5 points, so the minimum value of this factor is 7 points and the maximum value is 35 points.

Athlete Management 1 = (Athlete Quality - 3)/12. There are 3 questions in this factor, each question has a minimum value of 1 point and a maximum value of 5 points, so the minimum value of this factor is 3 points and the maximum value is 15 points.

Athlete Theory 1 = (Athlete Quality - 3)/12. There are 3 questions in this factor, each question has a minimum value of 1 point and a maximum value of 5 points, so the minimum value of this factor is 3 points and the maximum value is 15 points.

Table 3. Descriptive statistics of the three factors of the theoretical part of the teaching content.

Factor 1	Mean value	Standard deviation
Athlete Quality	247	25
Athlete Management	152	20
Athlete Theory	128	17

Table 4. Repeated-measures ANOVA for the mean score rate of the three factors

Error source	Sum of squares	df	mean square	F	Sig.
Intra-group variation	505	2	253	19.032	0
Error variation	1.672	126	13		

Table 5. Post hoc test of the mean score rate of the three factors

(I) Factor 1	(J) Factor 1	Difference of means (I-J)	Standard error	Sig.b
1	2	94	20	0
	3	119	22	0
2	3	25	20	629

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Table 3 shows that the highest mean value is the athlete quality factor and the lowest mean value is the athlete theory factor; the repeated measures ANOVA in Table 4 shows that there is a significant difference between at least one pair of the three-factor means in the two-way comparison; the two-way post hoc comparison in Table 5 shows that there is a significant difference between the mean values of Factor 1 and Factor 2 and Factor 3, and there is no significant difference between the mean values of Factor 2 and Factor 3.

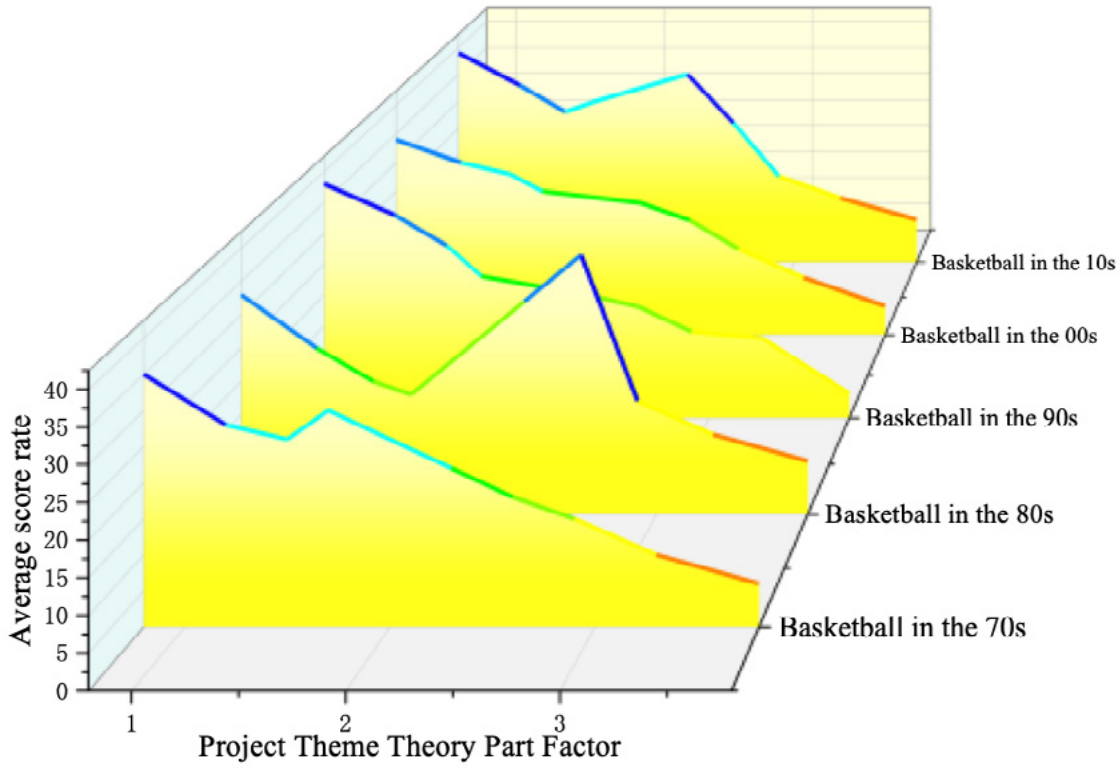

Figure 1. The trend of the average score of the factor of the theoretical part of the teaching content of the basketball specialization course

To sum up, we can see that the factor of athlete quality is very important content for basketball teachers in the teaching process. In different basketball eras, along with the rapid development of social and political economy, the demand of society for talent tends to be diversified, and no longer stays in single talent demand. Factor 2 and factor 3, on the other hand, are old-fashioned contents, which is less and less valued by teachers and students.

2.3. BUILDING A BASKETBALL TEACHING MODEL BASED ON KINECT MOTION CAPTURE AND JOINTS

The Kinect sensor uses Prime Sense's illumination encoding technique to acquire depth information, Light Coding uses infrared light to measure space, and CMOS sensors to read the encoding of light. These encodings are then analyzed by chip decoding calculations to eventually produce a depth image information [21-22]. Light

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Coding differs from traditional TOF and structured light measurement techniques by using light waves instead of the previous pulses, and no special photosensitive chip is required, only a common CMOS photosensitive chip, a change that reduces the cost of the solution. Light Coding uses light waves to measure a specific region of space, so Light Coding is essentially a structured light technique [23-24]. However, unlike conventional structured light, the light emitted is not a periodic variation of image coding, but an encoded light source with three-dimensional depth [25].

To build an efficient basketball teaching and training safety aid system, image processing techniques can be used to mark the joint points of the arm and analyze the athletes' movement trajectory to recover the athletes' technical movements and obtain the required parameters. Therefore, athlete modeling consists of 2 stages as described above. In stage (1), focus on the shot preparation, raising the arm, squatting and extending; in stage (2), mark the speed and angle of the shot. The optimal shot data can be calculated so that the same shot data can be used to continuously train the athlete to develop muscle memory and can effectively improve shot accuracy [26-27]. The pitcher's arm joint model is shown in Figure 2.

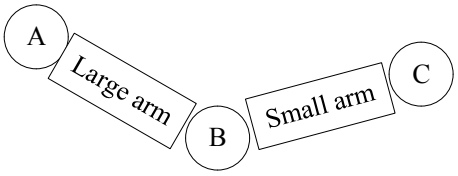

Figure 2. Arm joint model

Assume that the shoulder joint A, elbow joint B and wrist joint C are represented by $M_i(i=1,2,3)$. The pixel area of each marker is represented by $G_i(i=1,2,3)$, and the number of pixel points of the corresponding pixel block $L_i(i=1,2,3)$. The pixel block G_i is as follows:

$$G_i = \{(x_1, y_1), (x_2, y_2), (x_3, y_3), \cdots (x_n, y_n)\} \tag{1}$$

In the above equation, x_i and y_i represent the coordinates of the pixels marked in the video image, respectively. The coordinates of the center of mass of each pixel block can be used as the coordinates of the 3 joints in the shooting process. The formula is as follows:

$$P_m(x,y) = C(x_c, y_c) \tag{2}$$

$$X_c = \frac{1}{n_i}\sum_{i=1}^{n_i} x_i \tag{3}$$

$$Y_c = \frac{1}{n_i}\sum_{i=1}^{n_i} y_i \tag{4}$$

Y_c Change over time:

$$y_c = f(t) \tag{5}$$

According to the above equation, the objective function is defined as:

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$$\arg\max \|y_0\|_1 \, s.t. \|y_c - y_0\|_2 < \varepsilon \tag{6}$$

Where, ε represents the residual error and $\| y_0 \|_1$ represents the regular term. It can be obtained by differential equations, matching tracking, etc. y_0. The time from preparation to shooting can be expressed by the following equation:

$$t_0 = \int^{-1}(y_0) \tag{7}$$

where $\int^{-1}$ indicates an inverse take. In the training safety aid system, the number of frames should be an integer. In the coordinate axis system, the maximum number of frames, T, on the axis y is denoted as $\int^{-1}(y_0)$.

$$T = g(t_0) + 1 \tag{8}$$

For the recognition and characterization of human curves, the Hough transform algorithm is used [28-29]. The Hough transform algorithm is a parametric aggregation algorithm for voting through the point-to-point pairwise and Hough parameter spaces in image space, which transforms image detection into a parametric computational problem, thus making the problem more intuitive and accurate. The Hough transform algorithm has been widely used in video image processing, and after years of research, the application range is even wider. It plays an important role not only in video image processing, but also in access control systems, industrial inspection and even military activities. It can effectively reduce the influence of external factors such as noise and solve the problem of incomplete and interrupted video. For example, the equation of the circle is as follows:

$$(x-a)^2 + (y-b)^2 = r^2 \tag{9}$$

a and b are the centers of the circle, while r is the radius. In the coordinate system of the safety-assisted training system, the point (x, y) is unknown. And (a, b) and radius r are the input conditions, then the equation of the above circle can be rewritten as:

$$(a-x)^2 + (b-y)^2 = r^2 \tag{10}$$

In the above equation, there is an exchange between (x, y) and (a, b), while (a, b) and r are unknown, so (x, y) is converted to a known number. It is known by calculation that in the whole image space, when there are valid feature points (x, y), there exists a cone space with corresponding threshold values. Each effective feature point (x, y) in the image space corresponds to a cone in the parameter space. The difference at the same point in the image space corresponds to the cone in the parameter space, and the two cones will inevitably intersect at the same point. The process records the variables of repeated points with the same parameters by initializing the 3D accumulator in the parameter space.

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2.4. BASKETBALL TEACHING QUALITY EVALUATION SYSTEM BASED ON THE FUZZY SYNTHESIS

First, the set of evaluation indicators (thesis domain) Y, which describes the indicators or criteria for the comprehensive evaluation of various evaluation factors, denoted as:

$$Y = (y_1, y_2, \cdots, y_n) \tag{11}$$

Where $y_1, y_2, \cdots, y_n$ is each evaluation indicator or criterion and n is the number of evaluation indicators.

The set of evaluation metrics can also be a collection of multilevel recursive structures [30-31].

For different evaluation indicators, the weight F domain can be calculated according to different weight calculation methods, such as hierarchical analysis, weighted average method, Delphi method, expert estimation method, etc., and the weight F domain is noted as

$$F = (f_1, f_2, \cdots, f_n) \tag{12}$$

Second, the set of evaluation scales G, which describes the scale used to evaluate each evaluation indicator, is denoted as

$$G = (g_1, g_2, \cdots, g_m) \tag{13}$$

Where m is the number of evaluation scales in the evaluation scale set.

The grading of the evaluation scale can be done in a graded manner or a score manner, such as

$$G = (0.8, 0.6, 0.4, 0.2) \tag{14}$$

Third, the affiliation degree v_{ij}^s, describes the degree of possibility of making an evaluation scale g_j with an evaluation index y_i for the evaluation factor A_s. The affiliation degrees of all evaluation indicators for the scenario A_s from the affiliation matrix V_s, which is a fuzzy relationship matrix, denoted as

$$V_s = \begin{bmatrix} V_{11}^s & V_{12}^s & V_{1j}^s & V_{1m}^s \\ V_{21}^s & V_{22}^s & V_{2j}^s & V_{2m}^s \\ V_{i1}^s & V_{i2}^s & V_{ij}^s & V_{im}^s \\ V_{n1}^s & V_{n2}^s & V_{nj}^s & V_{nm}^s \end{bmatrix} \tag{15}$$

In the matrix V_s, the element v_{ij}^s can be calculated based on the evaluation results made by the experts participating in the evaluation, i.e.

$$v_{ij}^s = \frac{b_{ij}^s}{b} \tag{16}$$

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where b denotes the number of experts participating in the evaluation, and b_{ij}^{s} denotes the number of experts who make g_j evaluation scales for the i-th evaluation indicator y_i of the program A_s. Obviously, $\sum_{j=1}^{m} v_{ij}^{s} = 1$.

3. OVERALL EXPERIMENTAL SCHEME DESIGN

3.1. EXPERIMENTAL SUBJECTS AND GROUPING

The pre-tests of basic basketball skills and physical fitness were conducted in two classes of public physical education basketball elective course of Inner Mongolia Normal University in the first semester of academic years 2021-2022, and 32 healthy students, without special diseases and with no statistically significant differences in basic basketball skills and physical fitness were selected as experimental subjects in the two classes respectively. The two classes were randomly divided into the control group and the experimental group for teaching experiments, and the experimental group adopted the reciprocal teaching method with the assistance of WeChat security, while the control group adopted the traditional teaching method for teaching experiments[32-33].

3.2. MACRO AND MICROSTRUCTURAL DESIGN OF WECHAT SAFETY-ASSISTED CAMPAIGN EDUCATION MODEL

The physical education teaching process is a structure and procedure for carrying out various effective teaching activities in a planned and purposeful manner to achieve the teaching objectives. The design of the teaching process directly affects the implementation of the teaching model, therefore, the effectiveness of teaching depends on the scientific and operational design of the teaching process. In the process of the theoretical exploration of the SE model, Gao Rong made the top-level design from macro and micro levels to enhance the operability of the model to make it more in line with the actual situation of Chinese school sports, and this study will also make the top-level and detailed design from both macro and micro aspects. From the macro perspective, the SE model differs from the conventional teaching model in the setting of teaching units. The sports education model divides the whole semester teaching into several phases, which is the setting of the sports season in the SE model, and the sports season includes 5 phases, which are sports season preparation, pre-game season, in-game season, post-game season and celebration activities. The micro perspective mainly includes the setting of classroom teaching structure, the allocation of classroom teaching time in different teaching phases of the sports season, the design of the sports season teaching plan, the design of teaching evaluation and the preparation of lesson plans.

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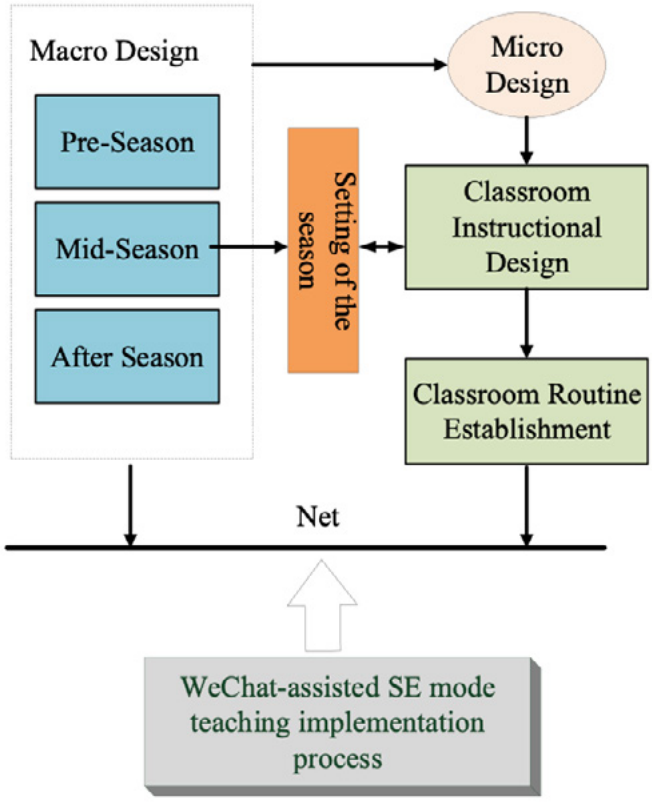

Figure 3. Teaching structure of WeChat safety-assisted movement education model

3.3. CONTENT SCHEDULE OF TEACHING EXPERIMENTS

In addition to the test week, the design of the teaching experiment includes basketball skills practice, physical fitness class practice, etc. The total number of 10 weeks of the teaching experiment, the detailed arrangement of the teaching lesson plan is as follows:

1. Physical fitness pre-test (30s push-ups, standing long jump, five-lane folding run on the basketball court).
2. basic basketball skills test (30s double pass and catch, half-court folding and dribbling, 1min shooting from outside the reasonable rushing zone).
3. Ballistic exercises, newly taught learning principles of two-handed chest passing and catching.
4. Learning to pass the ball in situ with both hands on the ground, physical drills.
5. Introduction to learning the two-handed chest pass between rows.
6. Learning in situ one-handed over-the-shoulder shooting.
7. Review the marching one-handed over-the-shoulder shot.
8. Review of the in-situ one-handed shoulder shot.
9. Physical fitness post-test, classroom contextual interest survey.

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3.4. TEACHING PROCEDURES OF TRADITIONAL TEACHING METHOD AND RECIPROCAL TEACHING METHOD WITH THE ASSISTANCE OF MICROSOFT SECURITY

The traditional teaching method and the reciprocal teaching method with the assistance of micro-video security are similar in terms of organization and method in the early stage of the class, mainly the teacher organizes the formation and explains and demonstrates, but the biggest difference between the two is mainly in the organization of students' practice and the correction and guidance of wrong movements.

(1) In the traditional teaching method, when teaching technical movements, teachers first explain and demonstrate and then let students imitate and practice, correct errors and help, and finally teach through reinforcement exercises, students mainly practice collectively in groups and independently, and teachers' feedback to students is mainly language tips and individual error cases focused on explaining.

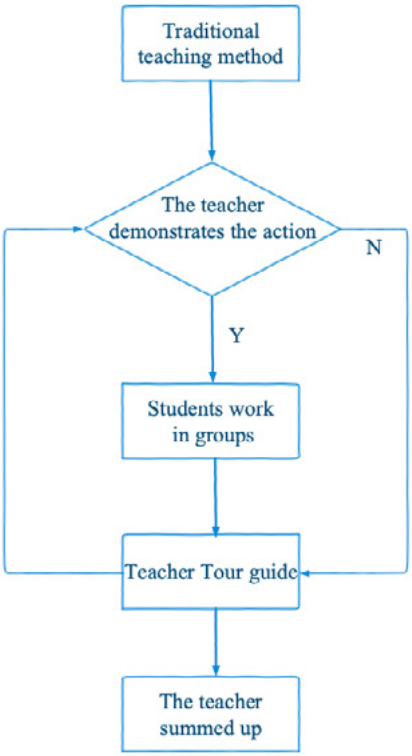

Figure 4. Flow chart of traditional model teaching

(2) Under the teaching method of reciprocal teaching method with the aid of micro-video safety, the teacher first conducts a centralized demonstration and explanation of technical movements during the teaching process, and after the students carry out collective consolidation exercises to deepen their memory, the teacher distributes the standard movement videos designed in advance according to the teaching content to the students, and explains to them how to use the standard movement videos, introduces the roles of students and teachers, and then organizes the students to

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practice according to The teacher will then organize students to practice in free teams according to the learning content. This is shown in Figure 5.

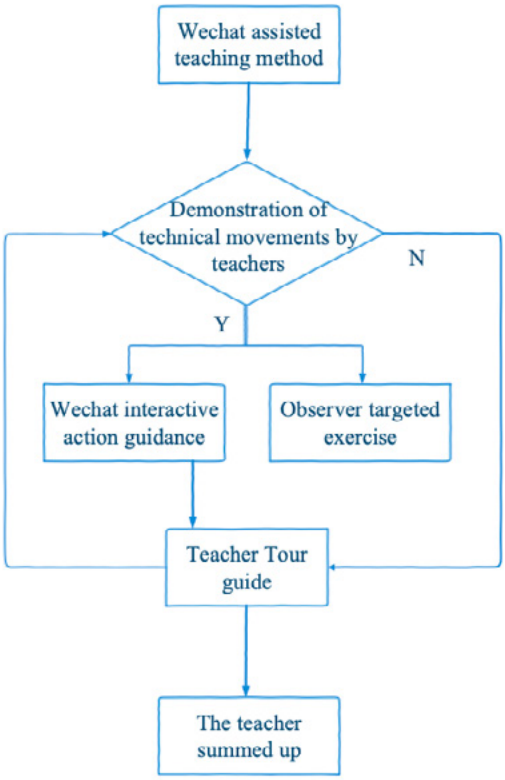

Figure 5. Flowchart of teaching and learning under WeChat security-assisted campaign

3.5. SCHEMATIC DIAGRAM OF TEACHER-STUDENT COMMUNICATION STYLES FOR DIFFERENT TEACHING METHODS

In traditional teaching methods, the teacher usually communicates directly with the practitioner and gives direct feedback to the student on the problems that arise during practice. Students are usually divided into groups of two or more, and given the roles of practitioner and observer. During the practice, the teacher walks around and communicates with the observer, and the observer gives feedback to the practitioner based on his or her observation and communication with the teacher. The specific communication style is shown in Figure 6:

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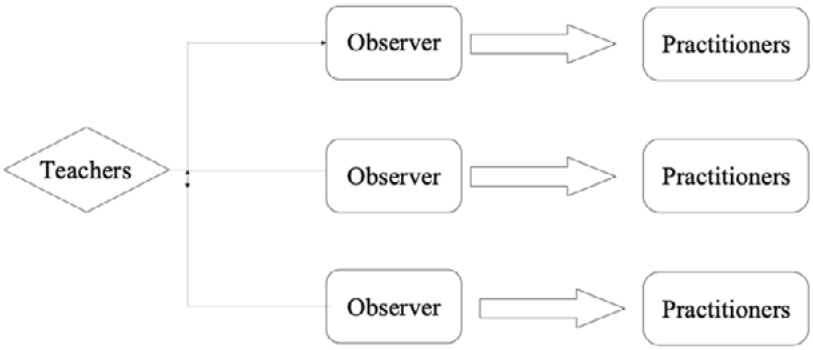

Figure 6. Diagram of teacher-student communication style

3.6. ANALYSIS OF EXPERIMENTAL RESULTS

3.6.1. COMPARATIVE ANALYSIS OF TWO-HANDED CHEST PASS PERFORMANCE

From the data in Figure 7, we can see that the experimental class achieved 3.16±1.609 (passes) and 82.38±8.450 (points) in the 4-m fixed distance pass into the zone, while the control class achieved 2.19±1.401 (passes) and 77.88±8.958 (points). t number=2.067, t technical evaluation=2.569; P number=0.043<0.05, P technical evaluation=0.013<0.05. In conclusion, there were significant differences between the experimental class and the control class in the experimental post-test scores of the two-handed chest pass technique, both in terms of standard scores and technical evaluation scores, and the experimental class had better scores than the control class.

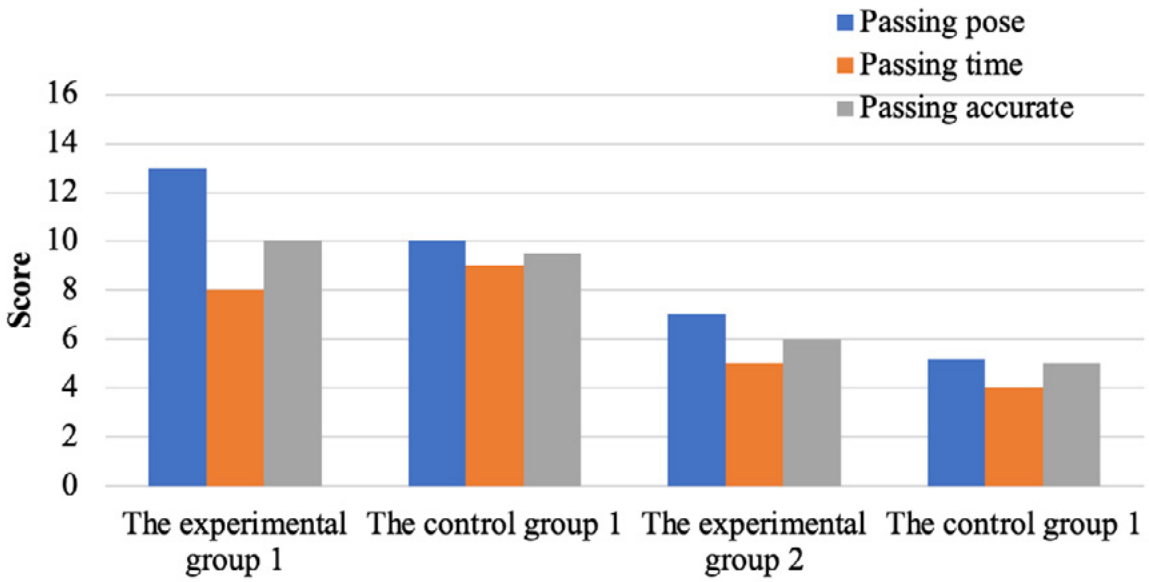

Figure 7. Comparison of two-handed chest pass performance

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The ratio of males to females in the experiment is 1:3, with more girls. For girls, it is difficult to pass the basketball into the hoop flatly and quickly by upper limb strength alone, so the three technical aspects of stirrups, extensions and paddles must be consistent to fully transform the power of lower limb stirrups into the power of passing, and then improve the power, direction and speed of passing. In the traditional teaching method, students can only think about the technical movements from the practitioner's perspective, but in the reciprocal teaching method, students can learn the technical movements from different perspectives and have a deeper understanding of the technical movements while observing their teammates' practice, which has a good promotion effect on mastering the power and coherence of the technical movements of the passing ball.

3.6.2. COMPARATIVE ANALYSIS OF MARCHING LAYUP PERFORMANCE

After the experiment, the learning effect of marching one-handed over-the-shoulder shooting in the experimental and control classes was tested by using half-court dribble folding marching layup as the test index, and the specific test results were tested by SE independent sample t-test as shown in Figure 8:

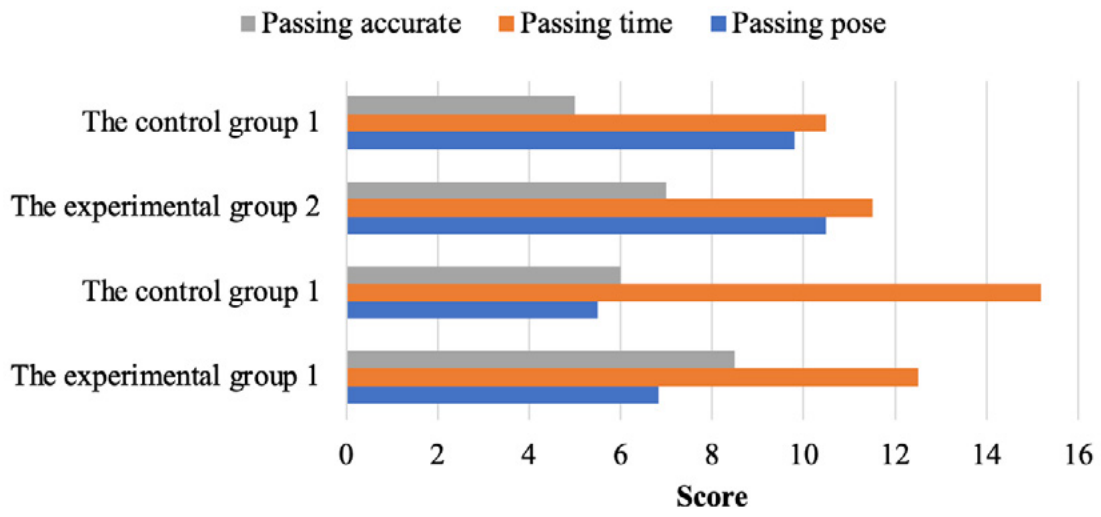

Figure 8. Comparison chart of marching layup scores

The data in Figure 8 shows that the experimental class achieved 35.18±9.167 (seconds) and 84.72±10.798 (points) in the half-court dribbling fadeaway layup, while the control class achieved 41.27±11.723 (seconds) and 78.63±11.370 (points). t values were t time=-2.316, t technical evaluation=2.198, t time=0.024<0.05, t technical evaluation=0.032<0.05. In conclusion, there were significant differences between the experimental class and the control class in the experimental post-test scores of the marching lay-up technique, both in the attainment scores and the technical evaluation scores, and the experimental class had better scores than the control class.

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Due to the limited practice time, the teacher can only correct some students or collectively correct them according to the common problems in the process of practice, which makes some students' problems in the process of practice not solved in time, and at the same time, students' attention may be distracted in the independent practice, so the frequency of violation or poor hit rate in the final test is higher than that of the experimental class, resulting in lower average scores in the standard and technical evaluation than the experimental class.

3.6.3. COMPARATIVE ANALYSIS OF ONE-HANDED OVER-THE-SHOULDER SHOOTING PERFORMANCE

The data in Figure 9 shows that the experimental class achieved 3.63±2.282 (shots) and 82.28±7.857 (points) for the 4.8 m fixed distance one-handed over-the-shoulder shot, while the control class achieved 3.09±1.957 (shots) and 74.72±8.224 (points). t number=1.000, t technical evaluation=3.757. This shows that there is a statistically significant difference between the technical evaluation scores of the experimental class and the control class in the post-test of one-handed over-the-shoulder shooting, and the experimental class has better scores than the control class; however, there is no statistically significant difference between the attainment scores of the experimental class and the control class, so the students are learning the one-handed over-the-shoulder shooting technique. However, there was no statistically significant difference between the experimental class and the control class in terms of attainment scores.

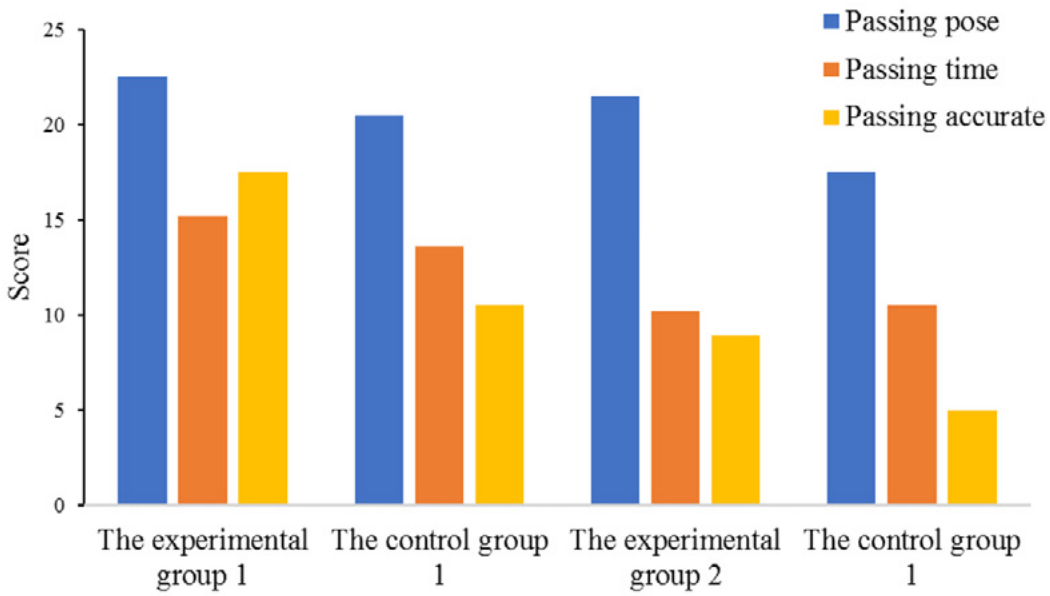

Figure 9. Comparison of one-handed over-the-shoulder shooting performance

The one-handed shoulder shot has the advantage of a high shooting point and is not easy to be targeted by the defense, but it is also the most difficult to learn. The one-handed shoulder shot consists of several technical aspects such as basic

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standing posture, bending knee and stirrups, top elbow, arm extension and wrist paddle, etc. The technical aspects are interconnected, and any disconnection in the shooting process will lead to deformation of the shooting action, which will affect the shooting action. The standardization of the shooting action is affected. The study confirmed that timely feedback among students in learning basketball one-handed over-the-shoulder shooting can significantly improve students' performance in shooting skills.

4. CONCLUSION

This paper addresses the shortcomings of the traditional basketball teaching model in the Internet era, proposes a new idea of basketball teaching based on the WeChat safety-assisted sports model, constructs a basketball teaching model based on Kinect motion capture and joint behavior, and uses a fuzzy evaluation system to classify and discriminate the proposed method. Analysis using multiple experimental control groups shows that the Microsoft safety-assisted sports education model proposed in this paper has stronger motivation for students to learn basketball compared with the traditional teaching model; students learn to understand and master basketball through teamwork, team communication and role-playing strengthen students' emotional experience; the creation of real game atmosphere and game creation enrich students' game experience. All of these are conducive to meeting students' basic psychological needs, thus contributing to the enhancement of internal motivation and the internalization of motor motivation.

DATA AVAILABILITY

The data used to support the findings of this study are available from the corresponding author upon request.

CONFLICTS OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this paper.

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