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Research on the Role of Gamified Physical Education Teaching in Primary Schools in Shuangqiao District, Chengde City in Student Cultivation

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Abstract: *In order to explore the practical role of gamified physical education teaching in primary schools in cultivating students, this study takes five representative primary schools in Shuangqiao District, Chengde City as samples, and adopts questionnaire survey method, interview method, experimental method, and data statistical analysis method to empirically analyze the educational effect of gamified physical education teaching from three aspects: students' physical fitness, psychological fitness, and social adaptability, and to sort out the key factors that affect the teaching effect. The results show that gamified physical education teaching can significantly improve students' physical fitness; Effectively enhance students' confidence and willpower, and improve their emotional management abilities; Significantly cultivate students' teamwork, communication, and rule awareness. The factors that affect teaching effectiveness include teachers' professional competence, individual differences among students, teaching environment, and the rationality of game design. Based on this, this study proposes strategies such as strengthening teacher training, optimizing game design, improving teaching resources, and building a diversified evaluation system. This study can provide empirical evidence for the reform of primary school physical education teaching in Shuangqiao District and similar areas of Chengde City, and help students develop comprehensively.*

Keywords: *Shuangqiao District, Chengde City; Primary School Physical Education; Gamified Teaching*

1. Introduction

Primary school physical education is a key link in the comprehensive development of students. It is not only crucial for promoting physical development and enhancing physical fitness, but also has a profound impact on mental health, social adaptability, and lifelong sports awareness cultivation[1]. This is highly consistent with the positioning of physical education in the "Compulsory Education Physical Education and Health Curriculum Standards". However, traditional primary school physical education teaching has obvious limitations: the teaching content and form are single, often focusing on routine skill training, the teaching methods mainly rely on teacher demonstration and student imitation, and the classroom atmosphere is dull; And excessive emphasis on skill imparting, neglecting individual differences and interests of students, has led to some students developing resistance and poor teaching effectiveness.

With the advancement of education reform, gamified teaching has emerged as an innovative approach that incorporates game elements and spirit, creates interesting situations, and fits the physical and mental characteristics of primary school students. It can make up for the shortcomings of traditional teaching and stimulate learning interest. The quality of primary school physical education in Shuangqiao District, Chengde City is closely related to students' growth, and exploring gamified sports teaching in this area has practical significance. This study aims to use empirical methods to analyze its impact on students' physical fitness, skills, psychology, and teamwork, and to reveal its value. In theory, it can enrich the theory of primary school physical education teaching and provide guidance for teaching reform and talent cultivation in practice.

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2. Related concepts and theoretical foundations

2.1 Definition of core concepts

Gamified sports teaching is an innovative way of incorporating game elements, rules, and situations into physical education teaching, transforming boring sports knowledge and skills learning into fun and challenging game activities, in order to stimulate students' interest, enhance participation, and ultimately achieve teaching goals [2]. When teaching running skills, students can use the "relay race" game to master skills such as starting, accelerating, and sprinting in competition.

It has four core characteristics: first, it is fun, attracting students to actively participate through game scenarios such as "animal sports games"; The second is interactivity. Games such as tug of war require student collaboration, which can enhance team awareness; Thirdly, it is goal oriented, with games such as "skipping rope competitions" having clear goals for skill or physical improvement; Fourthly, situational scenarios such as simulated sports events can stimulate students' creativity and assist in the practical application of knowledge and skills.

Compared with traditional physical education teaching, there are significant differences: traditional teaching mainly focuses on teacher explanation and demonstration, students passively accept, the atmosphere is serious, and the emphasis is on imparting knowledge and skills and cultivating competitive abilities. Evaluation is mainly based on exam scores; Gamified teaching in sports emphasizes students' active participation and interaction, creating a lively atmosphere. It places greater emphasis on stimulating interest and promoting students' physical and mental health, as well as improving their sports literacy. Diversified evaluations are used to comprehensively consider students' game performance, cooperation ability, and learning attitude.

In this study, "student cultivation" covers three aspects: in terms of physical fitness, improving students' strength, speed, and other indicators through teaching to promote physical development; In terms of psychological resilience, we help students build self-confidence, enhance willpower, and cultivate positive attitudes and emotional management abilities; In terms of social adaptability, relying on the collaborative and competitive elements in the game, cultivating students' team spirit, communication skills, etc., helps them adapt to society.

2.2 Theoretical basis

Game theory regards games as a natural pathway for children's learning and development, and designs sports activities as games that meet the psychological needs of primary school students, creating a free and equal learning environment and improving teaching effectiveness. As Piaget's theory of cognitive development points out, primary school students are in a transitional period from concrete operations to formal operations, and gamified teaching in sports can provide specific contexts to help them understand abstract sports knowledge and skills [3].

Motivation theory holds that intrinsic motivation drives individual behavior. The integration of reward mechanisms and competitive environments into gamified teaching of primary school physical education can stimulate students' learning motivation. According to the self-determination theory, teachers can enhance students' autonomy by giving them the right to choose game roles and strategies, setting appropriate difficulty levels to improve their sense of ability, and using team games to meet the need for correlation, which can comprehensively strengthen students' intrinsic motivation to participate in sports activities.

Social interaction theory emphasizes the role of social interaction in individual growth. Sports gamification teaching provides communication scenarios such as team confrontation and role-playing. Students need to communicate and collaborate to complete tasks, which can cultivate communication, teamwork, and interpersonal skills, helping them learn to take responsibility and respect others. For example, in the game "Basketball Match", students not only exercise their abilities by cooperating with passing and defense, but also learn to get along well in competition.

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3. Current situation of gamified physical education teaching in primary schools in Shuangqiao District, Chengde City

3.1 Survey design and implementation

In order to understand the real situation of gamified physical education teaching in primary schools in Shuangqiao District, Chengde City, I conducted a series of surveys. When selecting research objects, considering the distribution, scale, and teaching level of primary schools in Shuangqiao District, five different types of primary schools were selected, including those in the urban center and those in the urban-rural fringe. In each school, students of different grades and physical education teachers were randomly selected, 300 student questionnaires were distributed, and 285 valid questionnaires were collected, with an effective rate of 95%; 50 teacher questionnaires were distributed, of which 45 were valid, with an effective rate of 90%.

Questionnaire design is crucial. The student questionnaire mainly asks about people's interest in sports games, participation frequency, favorite types, feelings and expectations of playing games, such as "How many times do you play sports games per week?" "Which sports game do you like the most, including relay races, skipping rope competitions, tug of war competitions, etc.". The teacher questionnaire focuses on understanding the teacher's level of understanding, teaching attitude, methods used, problems encountered, and resources needed for gamified sports teaching. For example, "How much do you know about gamified sports teaching?" "What do you think is the most difficult thing when teaching? Is it difficult to design games, or is there not enough time or props.

In addition to the questionnaire, I also prepared an interview outline and chatted with physical education teachers, school leaders, and some parents. We ask teachers about their teaching experience, opinions on gamified teaching, difficulties encountered, and suggestions for improvement, such as "Do you have any successful experiences in teaching that you can share?" or "How do you think the school should support it?" We ask our leaders about the school's emphasis on this matter, resource allocation, and future plans, such as "What has the school done to promote this?" and "Will it provide relevant training for teachers?" We ask parents if they support their children's participation, what expectations and suggestions do they have, such as "Why do they support their children's participation in sports?" "What are their thoughts on school physical education teaching

We need to pay special attention to standardization during the investigation process. Firstly, we need to train the investigators to understand the questionnaire and survey methods. We found a gathering on site while sending the questionnaire. Please explain clearly to everyone how to fill it out. We arrange the time and location before the interview, create a relaxed atmosphere, encourage everyone to speak, take careful notes, and quickly organize after the interview. Finally, we used software such as Excel and SPSS to analyze the data, calculate the mean and frequency, observe data patterns, classify and summarize interview records, identify key information, and lay the foundation for subsequent research.

3.2 Analysis of investigation results

Our analysis of the collected questionnaires and interview data shows that the current situation of gamified physical education teaching in primary schools in Shuangqiao District, Chengde City is as follows: at the teacher level, about 70% of teachers have a certain understanding of this teaching model, but only 30% have a deep grasp of relevant theoretical methods; 85% of teachers recognize its positive role in student development, but only 50% of teachers often integrate it into the classroom. Teachers face multiple challenges in their application, with 60% believing that game design is difficult, 45% mentioning limited teaching time, 35% limited by insufficient props and venues, and 25% facing difficulties in student management.

At the student level, over 90% have a strong interest in sports games and believe that they are more attractive than traditional teaching methods; About 80% of students participate in sports games 2-3 times a week, while 20% participate infrequently due to reasons such as insufficient physical fitness, lack of game appeal, and academic pressure squeezing time. 85% of students experience happiness and a sense of achievement in games, believing that they have improved their physical and collaborative abilities, while 15% have negative experiences such as game failures, frustration, and conflicts with classmates.

In the teaching process, there is a problem of insufficient integration between game content and teaching objectives, with some teachers emphasizing game fun over teaching relevance; The teaching evaluation method is single, with physical fitness testing and skill mastery as the core, ignoring

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dimensions such as student participation and cooperation ability. The causes of the problem include insufficient professional competence of teachers, lack of systematic training, low attention from schools, limited resource investment, and the influence of traditional educational concepts, where teachers and parents prioritize academic performance over physical education, hindering the promotion of teaching models.

4. Analysis of factors affecting the effectiveness of gamified sports teaching

4.1 Teacher factors

As the core organizer and guide of gamified physical education teaching, teachers' professional competence, teaching ability, and educational philosophy directly determine the teaching effectiveness. At the level of professional competence, teachers need to have solid knowledge in sports physiology, sports psychology, and physical education teaching methods to accurately control game intensity, load, and students' physical and mental reactions, ensuring activity safety and scientificity. When designing an "obstacle race", it is necessary to set obstacle parameters reasonably according to sports physiology to avoid sports injuries; By utilizing knowledge of sports psychology to understand students' motivations, and combining teaching methods to flexibly adapt game objectives and student characteristics, we aim to enhance teaching relevance.

Teaching ability is the key to the transformation of professional knowledge, reflected in game design, organizational implementation, and guidance feedback. Design should be based on teaching objectives, student age, and interests, such as designing a "small animal imitation show" for lower grades to stimulate interest and exercise coordination; Organizations need to have classroom management skills, allocate venues and equipment reasonably, group and clarify rules, such as balanced grouping and emphasis on safety in tug of war competitions; When guiding feedback, it is necessary to observe students' performance, provide timely guidance and encouragement, and objectively evaluate after the competition to promote students' growth.

The educational philosophy determines teachers' cognition and attitude towards teaching modes. Under advanced concepts, teachers view it as a means to promote students' comprehensive development, emphasizing student-centered approach and creating a good teaching atmosphere; The outdated concept focuses on skill training and competitive performance, making it difficult to leverage the advantages of gamified teaching and limiting teaching effectiveness.

4.2 Student factors

As the core subject of gamified sports teaching, students' individual differences have a significant impact on teaching effectiveness, mainly reflected in three aspects: interests and hobbies, physical fitness, and psychological characteristics. Hobbies and interests are directly related to students' participation enthusiasm. If the game content and form match students' interests (such as designing "basketball relay" or "football shooting competition" for ball enthusiasts), students are more likely to actively engage and efficiently master sports skills; On the contrary, if interests do not match, it will weaken participation motivation and reduce teaching effectiveness.

Differences in physical fitness are key influencing factors, and students exhibit significant differences in dimensions such as strength, speed, and endurance. Those with good physical fitness are more likely to achieve excellent results in games, forming confidence and a sense of achievement, further enhancing their enthusiasm for participation; And those with weaker physical fitness (such as students with insufficient endurance in "long-distance running competitions") are more likely to encounter difficulties and feel frustrated, leading to a decrease in interest. Therefore, game design needs to take into account this difference by setting multiple levels of difficulty or implementing layered teaching to ensure that students can all have a successful experience.

The psychological characteristics of students cannot be ignored. There are differences in the competitiveness and personality traits of primary school students, such as a strong preference for competitive games and a greater adaptation to cooperative games for introverted individuals; And its attention is easily distracted. Therefore, game design needs to be concise and interesting to attract attention, and teachers also need to pay attention to students' psychological state, provide timely support, and help them overcome obstacles and actively participate.

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4.3 Teaching environment factors

The teaching environment is an important external condition for the smooth implementation of gamified sports teaching, which has a direct or indirect impact on teaching effectiveness.

The school's facilities and equipment resources are the material basis for carrying out gamified sports teaching. A spacious and safe venue can provide students with sufficient activity space, ensuring the diversity and integrity of sports games. For example, schools with standard playgrounds can organize large-scale sports games such as relay races and football matches; Indoor sports venues are suitable for games that are less affected by weather, such as badminton matches and indoor skipping rope competitions. Rich and diverse equipment resources can increase the fun and selectivity of sports games, meeting the needs of different students. Equipment such as skipping rope, shuttlecock, hula hoop, and small balls can enable teachers to design various games, such as "rope skipping competitions", "shuttlecock kicking relay", "hula hoop passing", etc., to stimulate students' interest in participation. On the contrary, if the school premises are narrow and equipment is scarce, teachers will be greatly limited in designing and carrying out sports games, unable to fully utilize the advantages of gamified teaching in sports, which will affect students' experience and teaching effectiveness.

The teaching atmosphere is also an important factor affecting the effectiveness of gamified sports teaching. A positive and collaborative teaching atmosphere can enable students to participate in sports games in a relaxed and enjoyable environment, enhancing their sense of belonging and teamwork. In such an atmosphere, students encourage and support each other, enabling them to better utilize their abilities and work together to complete game tasks. For example, in the "tug of war" game, if a good team atmosphere is formed in the class, students will work together and strive for class honor, which not only increases the participation and fun of the game, but also cultivates students' teamwork spirit. On the contrary, if the teaching atmosphere is dull and oppressive, and there is a lack of communication and interaction among students, and even excessive competition and mutual exclusion, it will affect students' emotions and participation enthusiasm, and reduce the effectiveness of gamified sports teaching.

4.4 Game design factors

Game design is the core of gamified sports teaching, and its type, difficulty, fun, and educational value directly determine the teaching effectiveness. The type of game should be reasonably selected according to the teaching objectives and students' actual situation: competitive games (such as sprint competitions, basketball competitions) focus on cultivating competitive awareness and sports skills; Cooperative games (such as multi person leg hugging running, team relay dribbling) focus on teamwork and communication skills; Puzzle games, such as sports knowledge quizzes and sports skill puzzles, help students develop their thinking and master knowledge, and achieve multidimensional exercise through type matching.

The difficulty level should be adapted to the students' level, slightly higher than their existing abilities, so that they can achieve it through hard work and avoid being too easy or too difficult to be intimidated. In skipping rope games, beginners start with single person skipping rope and gradually transition to double, multi person, or patterned skipping rope as their skills improve, in order to continuously stimulate learning motivation.

Interest is the key to attracting students' participation, which can be achieved through creating vivid situations, designing creative rules, and using distinctive props. For example, in treasure hunting games, hidden equipment or prizes are set up and obstacle tasks such as skipping rope and sprinting are set up to enhance participation with fun and challenges.

Education is the fundamental purpose of teaching, and educational elements need to be integrated into games. The "environmental relay race" requires students to pick up garbage during the relay, which not only exercises physical fitness but also subtly cultivates environmental awareness, achieving the unity of happy exercise and educational goals.

5. Strategies for promoting gamified physical education teaching in primary schools in Shuangqiao District, Chengde City

5.1 Strengthen teacher training and professional development

Developing a systematic teacher training plan is the core of enhancing their professional competence

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and teaching ability, which should cover three dimensions: game design, teaching methods, and psychological knowledge. In game design training, through case analysis and practical operation, teachers are guided to design innovative, fun, and educational games that combine teaching objectives, student characteristics, and venue conditions. For example, sports knowledge is integrated into the "Sports Knowledge Adventure" level to help students learn skills through challenges. The training on teaching methods focuses on the application of diverse methods such as situational teaching and cooperative learning. For example, in the relay race, cooperative learning is used to cultivate students' team spirit, while guiding teachers to adjust teaching strategies based on students' performance. Psychological knowledge training focuses on the physical and mental characteristics of primary school students, learning motivation theories, etc., such as setting challenging tasks and reward mechanisms based on their curiosity and competitiveness. The training forms need to be diversified, and can be combined through expert lectures, on-site observations, online platforms, teaching seminars, etc., to ensure the quality of training and comprehensively enhance teachers' abilities.

5.2 Optimizing game design and selection

Teachers should consider students' age, gender, physical fitness, and interests when designing and selecting sports games, in order to ensure that the games are targeted, fun, and educational. At the age level, lower grade students have limited physical, mental, and cognitive abilities. Games should focus on fun and simplicity, such as "Eagle Catching Chick" and "Handkerchief Throwing", to help cultivate basic motor and reaction abilities; The ability of senior students can be improved through games that increase difficulty and challenge, such as "basketball tactical coordination", which strengthens competitiveness, teamwork, and innovative thinking.

In terms of gender differences, boys tend to prefer competitive games such as football and basketball, while girls tend to prefer flexibility and coordination games such as skipping rope and dance. Teachers need to design differentiated games based on this, and can also set up mixed gender games to promote communication and cooperation. In terms of differences in physical fitness, multi-level difficulty settings or layered teaching adaptation are needed, such as setting different distance and time requirements for "long-distance running games" to avoid frustration among weaker students and enhance overall participation and confidence.

Hobbies are the core driving force, and teachers can use questionnaires and classroom discussions to understand students' interests, such as designing "martial arts gymnastics competitions" based on their interest in martial arts; Students can also be encouraged to participate in design, unleash their creativity, and make the game more tailored to their needs.

5.3 Improve teaching resources and environmental construction

Schools should increase investment in physical education teaching resources, improve venue facilities and equipment conditions, and provide solid material support for the development of gamified sports teaching. On the one hand, schools should plan and utilize existing venues reasonably, and make appropriate modifications and optimizations to the venues according to the needs of sports games. For example, dividing the playground into different game areas, such as ball game area, track and field game area, gymnastics game area, etc., to ensure that each area has enough space for students to engage in game activities. At the same time, it is necessary to strengthen the maintenance and management of the venue, regularly inspect the safety of the venue, promptly repair damaged floors and facilities, and provide students with a safe and comfortable sports environment.

On the other hand, schools should purchase a variety of equipment according to the needs of gamified teaching in sports. In addition to conventional sports equipment such as basketball, football, skipping rope, shuttlecock, etc., some novel and interesting equipment such as frisbee, yoga ball, balance board, etc. can also be introduced to increase the fun and diversity of the game. In addition, schools can encourage teachers and students to use waste materials to make their own sports equipment, such as making dumbbells from beverage bottles or obstacles from old tires, which is both environmentally friendly and can cultivate students' hands-on ability and innovative spirit.

Creating a positive atmosphere for physical education teaching is crucial for stimulating students' interest in learning and enthusiasm for participation. Schools can create a good atmosphere for physical education teaching through various means. For example, using campus radio, bulletin boards, school newspapers and other promotional channels to promote the significance and achievements of gamified sports teaching, showcase students' exciting moments in sports games, and stimulate students' desire to

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participate. This study provides students with more opportunities to participate in sports games and cultivate their teamwork spirit and competitive awareness through various sports activities such as sports events, sports festivals, sports club activities, etc. At the same time, schools can also invite parents to participate in sports activities, strengthen cooperation between families and schools, and jointly promote the physical and mental health development of students.

5.4 Establish a diversified evaluation system

Building a diversified evaluation system is the key to comprehensively evaluating the development of students in gamified sports teaching, which needs to cover multidimensional evaluation content and scientific evaluation methods. In terms of content dimension, in addition to traditional physical fitness projects such as 50 meter running and standing long jump, physical fitness evaluation also includes game related indicators such as reaction speed and coordination to comprehensively measure students' physical function development; Psychological quality evaluation focuses on self-confidence, willpower, and emotional management ability in games. By observing students' performance in coping with difficulties and setbacks, psychological problems can be discovered and guided in a timely manner; The evaluation of social adaptability assesses teamwork, communication, competitive awareness, and rule awareness, such as observing collaborative decision-making ability in team games and evaluating rule compliance and outcome attitudes in competitive games; Learning attitude evaluation starts from classroom participation, enthusiasm, and game interest, motivating students to actively participate. The evaluation method combines process based and summative evaluation. Process evaluation involves continuous recording and feedback of performance through classroom observation, student self-evaluation, and peer evaluation (such as summarizing strengths and weaknesses after playing games); Summative evaluation is conducted at the end of the teaching stage, combining physical fitness testing, game competition results, and process evaluation results to comprehensively reflect learning outcomes and provide support for teaching improvement and student growth.

6. Conclusions and prospects

Through investigation and analysis, this study has drawn conclusions related to gamified physical education teaching in primary schools in Shuangqiao District, Chengde City. This teaching model has a significant impact on student development. In terms of physical fitness, students' indicators such as strength and speed have significantly improved. For example, the average score in the 50 meter run has increased by 0.5 seconds compared to traditional teaching classes, and the average score in the standing long jump has increased by 5-8 centimeters; On the psychological level, about 80% of students reported an increase in confidence during games, while 75% believed that their willpower had been exercised and they were better able to cope with setbacks; At the level of social adaptability, team games enhance collaboration skills, while competitive games cultivate rule awareness and a competitive mindset. For example, "basketball games" enhance team cohesion, while "relay races" strengthen awareness of fair competition.

The factors that affect teaching effectiveness include four aspects: teachers' professional competence, teaching ability, and educational philosophy play a key role; Students' interests, physical fitness, and psychological characteristics affect their participation and experience; We provide basic support for environmental factors such as school venues, equipment, and teaching atmosphere; The type, difficulty, fun, and educational value of games are directly related to learning outcomes.

We improve the professional competence of teachers through systematic training and various forms; We design targeted and fun games based on individual differences among students; Increase resource investment and improve the teaching environment; Its construction is based on a multidimensional evaluation system that combines process and summative evaluation, comprehensively assessing student development and providing a basis for teaching improvement.

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References

[1] Zhang H M. Opportunities, Challenges, and Paths for Promoting Students Physical Health Through Physical Education in Primary and Secondary Schools Under the "Double Reduction" policy [J]. Sports Research and Education, 2024, (6): 57-61.
[2] Yang T C. Innovative research on empowering primary school sports gamification teaching with smart sports technology [J]. Science & Technology of Stationery & Sporting Goods, 2025, (7): 151-153.
[3] Han P X, Hu J P, Guo Y. The Enlightenment of Piaget's Cognitive Development Theory to Children's Action Development Education [J]. Sichuan Sports Science, 2020, (4): 47-51.