

The Review of Gamification Learning Methods on PE Teaching in Primary School through Adaptive Perspective

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Abstract

The purpose of this study is to explore the value implication and practice path of gamification transformation of primary school physical education under the perspective of adaptive education. From the perspective of adaptive education, the gamified transformation of primary school physical education has many values, such as improving learning motivation, enhancing learning interest, promoting subject exchange, cultivating will quality, promoting independent learning, benefiting physical and mental health and promoting personality development. However, in reality, there are also problems such as lack of differences in teaching content, lack of innovation in teaching methods, lack of integration ability of disciplines, lack of effective evaluation system, lack of teaching resources, high academic pressure, parents' cognitive bias and social cognitive bias. Therefore, we can promote the gamified transformation of primary school physical education by changing teachers' ideas, enhancing teacher training, enriching curriculum design, improving evaluation mechanism, increasing resource input, reducing students' burden, guiding parents' cognition and cultivating social atmosphere, and so on, so as to promote the all-round development of students.

Keywords: *Primary School Physical Education, Physical Education, Adaptive Education, Gamified Transformation.*

Introduction

Primary physical education is of great significance at the national, social and family levels. From the national point of view, physical education in primary schools is an important way to train the country's future healthy talents. Through physical education, students' physical fitness can be enhanced and their teamwork spirit and leadership skills cultivated, thus providing strong support for the country's development. Through physical education, students can experience the joy of competition and cooperation, exercise their endurance and willpower, and cultivate positive qualities and habits. From the perspective of families, physical education in primary schools can provide a platform[1] to promote interaction and communication among family members. By participating in students' sports activities, parents can enhance parent-child relationship and cultivate children's interests and health awareness. In the family, physical education can become a common topic between parents and children, enhance mutual understanding and communication, and promote family harmony and stability. To sum up, physical education in primary schools plays an important role at the national, social and family levels. Through physical education, students' physical and mental health can be cultivated, overall quality can be improved, and positive contributions can be made to the development of the country and the progress of society. At the same time, it also provides a good platform for family members to interact and communicate. Therefore, we should attach importance to physical education in primary schools and promote its better development and implementation[2].

The traditional physical education in primary school often attaches too much importance to the training of technical movements, neglects the interest of students, the single teaching method lacks vitality, and the classroom atmosphere is too serious. In addition, some teachers ignore individual differences and fail to meet students' diversified learning needs. The course content is out of touch with students' real life

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experience, and students may feel boring and boring during the learning process. Excessive competitive education may also lead to students simply advocating victory and ignoring the joy of sports. In the perspective of adaptive education, it is necessary to transform the traditional physical education in primary schools. First of all, gamified physical education can increase students' interest in learning, let children experience the fun of sports in the game, and better participate in it[3]. Secondly, adaptive education emphasizes personality differences, and the game teaching method can design games according to the different needs of students to meet everyone's needs. By combining competition with cooperation, gamified sports teaching can better cultivate students' teamwork spirit and sense of fair competition. Finally, through the gamified teaching method, the traditional teaching content is vivid and visualized to make it more in line with students' actual life, so that students can learn by playing and play in learning, mobilize students' learning enthusiasm, and realize the educational goal of happy learning and good learning.

Research Significance

Theoretical Significance

The theoretical significance of this study is to explore how to integrate the concept of adaptive education into the gamification transformation path of primary school physical education. Adaptive education emphasizes student-centered education and focuses on cultivating students' personality and creativity. By integrating game elements into the teaching process, the gamification transformation path stimulates students' learning interest and active participation, and improves their learning effect and satisfaction. Therefore, gamified transformation of primary physical education teaching from the perspective of adaptive education can better meet students' learning needs and improve their physical and mental development and academic performance. This not only helps to cultivate the comprehensive quality of students, but also promotes the cultivation of students' active participation and teamwork ability, which has important theoretical guidance and practical significance for the growth of students.

Practical Significance

The practical significance of this study is to apply the gamified teaching model to the primary school physical education classroom to better adapt to the development needs of students. Through gamified teaching, students can participate in sports activities in a pleasant atmosphere and improve their enthusiasm and initiative in learning. Gamified teaching can fully mobilize students' interest and motivation, stimulate students' learning enthusiasm and creativity, and promote their physical and mental development and the cultivation of all-round quality. In addition, gamified teaching mode can also provide students with independent and cooperative learning opportunities, and cultivate students' teamwork and communication skills. Through the practice of gamified teaching, the content and methods of physical education teaching in primary schools can be enriched, and an interesting learning environment can be created, so that students can gain knowledge and skills in happiness. Therefore, it is of great significance to explore the practice of gamified transformation of primary school physical education, which can improve the effectiveness and pertinence of physical education, promote the all-round development of students, and promote the continuous innovation and progress of physical education.

Research Methods

Qualitative research methods were adopted in this study to conduct in-depth and comprehensive research. Qualitative research methods can better understand and understand the specific learning and teaching situations and the unique phenomena that emerge from them.

First of all, this study uses the case study method to select several specific physical education teaching examples in primary school to describe and analyze the implementation process and results of gamification transformation in detail. The case study method is adopted to deeply understand and understand the situations, challenges and successes of gamification transformation in practical application, as well as the specific transformation strategies and results.

In addition, the interview research method is also used in this study. Interview research is widely used in qualitative research and can be used to obtain the opinions, perspectives and experiences of individuals or groups about specific things. In this study, we conducted in-depth interviews with some of the teachers and students involved in gamification retrofitting to get their views, experiences and feedback on this retrofitting process.

In order to ensure the authenticity and validity of the data, we also adopted the method of data triangulation, which combined multiple data collection methods such as observation, recording, interview and case study. This ensures that we observe and understand the process and results of gamification transformation from multiple perspectives and at multiple levels.

To sum up, this study adopts a holistic and comprehensive qualitative research approach. Through the investigation and understanding of the actual application of gamification transformation, we can explore its operation path and effectiveness more comprehensively and deeply, and provide references for future related research and practice.

Concept and Characteristics of Physical Education in Primary Schools in China

The Concept of Physical Education in Primary Schools

The concept of physical education in primary school refers to comprehensively cultivating students' physical quality, sports skills, cooperative spirit and health awareness[4] through physical education teaching activities in primary school. It aims to improve students' physical coordination, endurance and flexibility by allowing them to fully participate in and experience different sports through planned sports activities, including sports classes and extra-curricular sports activities. At the same time, physical education in primary schools also focuses on cultivating students' sense of teamwork, values of fair play and sportsmanship, and through team sports, students learn to respect each other, help each other and make progress together. In addition, primary school physical education also pays attention to health education to help students understand the importance of physical health, and cultivate healthy lifestyle and good health habits[5]. The concept of physical education in primary school aims to provide students with the opportunity for all-round development, cultivate their physical and mental health, and lay a solid foundation for their further participation in sports activities and healthy living in the future.

Characteristics of Physical Education in Primary Schools in China

The characteristics of physical education teaching in primary schools are mainly reflected in the following aspects. First of all, pay attention to the overall development. Physical education in primary school aims to cultivate students' physical quality, sports skills, cooperative spirit and health awareness, and comprehensively develop students' various abilities[6] through comprehensive training of various sports events. Secondly, it emphasizes interestingness and interactivity. Primary school physical education pays attention to inspiring students' interest. Through gamified and interesting teaching methods, students can actively participate in sports activities and enjoy the happiness[7] brought by sports. At the same time, physical education also emphasizes the interaction between teachers and students, through the good interaction between teachers and students, to create a positive learning atmosphere. In addition, it ADAPTS to the characteristics and development level of students. According to the age characteristics and physical development level of students, the primary school physical education should reasonably design the teaching content and methods, pay attention to individual differences, and promote the development of each student. Physical education in primary school not only pays attention to cultivating students' physical skills, but also pays attention to health education. Through teaching activities, students understand the importance of physical health, learn healthy diet, living habits and the knowledge of preventing sports injuries, cultivate health awareness and a good lifestyle, and promote the development of physical and mental health. To sum up, physical education in primary schools is characterized by comprehensive development, fun interaction, adaptation to students' characteristics and development level, and emphasis on health education[8]. These characteristics provide students with opportunities for all-round development, and also help to cultivate their physical and mental health and all-round development.

Features and Connotation of Adaptive Education

Characteristics of Adaptive Education

Adaptive education is characterized by an educational philosophy and practice based on individual differences and needs of students, which focuses on student-centered development and growth. The characteristics of adaptive education include aspects[9] such as individualized teaching, multiple evaluation, feedback and adjustment, and adaptive design of learning environment. Individualized teaching emphasizes the provision of individualized education and support according to students' different characteristics and abilities, in order to meet their learning needs and interests. Multiple evaluation focuses on students' various abilities and development, and adopts a variety of evaluation methods and tools to comprehensively understand and evaluate students' learning status. Feedback and adjustment emphasize giving students feedback information in a timely manner, adjusting teaching strategies and teaching content according to students' needs and progress. The adaptive design of the learning environment focuses on the individual differences and needs of students, and provides students with a supportive and beneficial learning environment that promotes the development and growth of students. The characteristics of adaptive education embody the educational concept and practice of paying attention to students' individual differences, respecting students' development needs, and providing personalized support.

Connotation of Adaptive Education

The connotation of adaptive education is an educational concept that pays attention to the individual development and growth of students and focuses on meeting their learning needs and interests. It emphasizes providing individualized education and support according to students' different characteristics and abilities, so that each student can maximize their development and realize their potential based on their own abilities. Adaptive education focuses on aspects such as students' learning styles, cognitive strengths, interests and hobbies to understand their individual differences and provide customized learning programs[10] for them. It also focuses on diversified evaluation to understand students' comprehensive abilities and development through multiple evaluation methods, so as to better guide teaching and adjust educational strategies. The core of the connotation of adaptive education is student-centered, paying attention to their overall development and individual differences, and providing specific and targeted education and support for each student to promote the cultivation[11] of students' autonomy, creativity and self-confidence.

Definition and Characteristics of Game Teaching Method

Definition of Game Teaching Method

Game pedagogy can be defined as a teaching method or strategy that provides educational content through the application of game elements and game mechanics in order to increase the enjoyment and engagement of learning. Game pedagogy calls for designing the learning process like a game, including elements such as setting goals, rules, rewards, and competition that allow students to acquire knowledge and skills[12] in an environment of active participation, creative thinking, and cooperative competition. In game pedagogy, learners participate as players, and they drive the learning process by completing tasks, solving problems, and earning rewards. Teachers usually design challenging and interesting tasks and activities that stimulate students' initiative and desire to explore. In addition, the game teaching method can also encourage cooperation and competition, through the form of teamwork or individual competition, to stimulate students' motivation and enthusiasm[13]. The definition of game pedagogy can be understood from different dimensions. On the one hand, it is an innovative teaching method that combines learning with entertainment by applying game concepts and design principles to stimulate students' learning interest and initiative. On the other hand, it can also be seen as an educational concept that learning should not only be a process of passively receiving knowledge, but an actively engaged, experiential activity that allows students to enjoy fun and a sense of accomplishment[14] in learning. In conclusion, the definition of game pedagogy is a teaching method based on the use of game elements and game mechanisms, aimed at increasing the enjoyment and participation of learning and stimulating the initiative and enthusiasm of students. It

emphasizes the interaction and experience of learning, advocates the learning mode of students' active exploration, cooperation and competition, and promotes the comprehensive development of knowledge and skills.

Characteristics of Game Teaching Method

Game teaching method is a dynamic and attractive teaching method, which is unique in the field of education with its unique characteristics. First of all, the game teaching method focuses on the participation and interaction of learners. By designing various tasks, activities and challenges, teachers stimulate students' enthusiasm and actively participate in the learning process, so as to achieve effective transmission and reception[15] of knowledge. Secondly, the game teaching method makes up for the monotony of traditional teaching methods with fun and challenge. By designing interesting game elements and levels and providing immediate feedback and reward mechanism, students' learning interest and motivation are greatly promoted. Furthermore, the game teaching method is innovative and sets a series of challenging tasks and goals to encourage students to constantly try, explore and solve problems, thus promoting the development of their thinking ability and the accumulation of knowledge. Cooperation and competition are also valued by the game teaching method. Through group cooperation, team competition and other forms, students can exercise the sense of teamwork and competition, while strengthening the communication and interaction between each other. In addition, the game teaching method provides immediate feedback, so that students can clearly understand their own performance in the learning process, so as to timely adjust their learning strategies and behaviors, and deepen the understanding and application[16] of knowledge. Finally, the game teaching method supports personalized learning, allowing students to learn according to their own interests and learning pace, aiming to meet the various learning needs of students and improve the overall learning effect. To sum up, game teaching method integrates interactivity, fun, challenge, cooperation and competition, instant feedback and personalized learning. Through the integration of game elements, it can fully mobilize the initiative and enthusiasm of students, effectively improve the learning effect and the participation of learners.

The value implication of gamification transformation of primary school physical education from the perspective of adaptive education

Improve Learning Motivation and Interest

From the perspective of adaptive education, gamification of physical education teaching in primary schools can greatly improve the learning motivation of pupils. By designing PE teaching as interesting and challenging games, students' intrinsic curiosity and interest in learning can be stimulated. The gamified teaching method can give primary school students greater autonomy and a sense of participation, making students feel successful and fulfilled, thus enhancing their enthusiasm and motivation for learning. In addition, gamified teaching can also create a positive learning environment, cultivate students' teamwork spirit and sense of competition, and stimulate their learning potential[17]. Through gamified transformation, physical education teaching in primary schools can become an interesting and meaningful learning process, which effectively improves the learning motivation and participation of primary school students.

From the perspective of adaptive education, gamified transformation of primary school physical education can effectively enhance pupils' interest in learning. By combining physical education with game elements, teachers can design a rich variety of game tasks and challenges, so that students can learn in play[18]. This kind of interactivity and interestingness brings more fun and pleasure to primary school students and stimulates their enthusiasm for learning. The teaching of gamification can not only make students feel relaxed and free, but also cultivate their spirit of exploration and innovative thinking. At the same time, through gamified transformation, competitive elements can be introduced into the teaching process to stimulate students' learning motivation and enthusiasm. This positive competitive atmosphere makes students more engaged in their studies, because they want to perform well and win in the game. Therefore, gamified transformation in adaptive education can effectively enhance primary school students' interest in learning and promote their better participation in physical education.

Promote Subject Exchange and Independent Learning

In the perspective of adaptive education, gamification of physical education teaching in primary schools can not only help to enhance students' interest in learning, but also promote exchanges among various disciplines. Through the introduction of game elements, physical education teaching can be integrated with other disciplines to create an interdisciplinary learning environment. For example, in a gamified physical education classroom, students may need to apply mathematical knowledge to calculate points, scientific knowledge to understand the principles of body movement, and language skills to communicate[19] with teammates. This integration makes students aware of the connections between disciplines and stimulates their interest in learning across multiple disciplines. In addition, the teaching of gamification also provides opportunities for students to collaborate and communicate. Students need to cooperate with teammates in the game, share strategies and exchange ideas. Such interaction promotes the spirit of cooperation and communication skills among students, not only in sports, but also in other disciplines to increase communication and cooperation between students. Therefore, gamified physical education plays a role in promoting communication among various disciplines in adaptive education.

From the perspective of adaptive education, gamified transformation of physical education teaching in primary schools can promote the improvement of pupils' autonomous learning ability. Through the gamified teaching method, students can freely choose, make decisions and explore in the game, so as to cultivate their independent learning ability[20]. In games, students can learn and grow by choosing different roles, projects or strategies according to their interests and abilities, cooperating or competing with others. Such a game-based pedagogical environment stimulates students' initiative and creative thinking, allowing them to actively participate in autonomous exploration, identify problems and seek solutions. In this process, students can not only acquire knowledge and skills, but more importantly, cultivate their learning interest, motivation and strategies. They learn to self-evaluate and adjust their learning methods to improve their learning results. Therefore, the physical education of gamified transformation provides a positive learning environment for primary school students, and cultivates and promotes the improvement of their autonomous learning ability.

It is beneficial to physical and mental health and personality development

In the perspective of adaptive education, gamification of physical education teaching in primary schools can promote the development of physical and mental health of pupils. Through the teaching with games as a means, students can participate in sports activities in a relaxed and pleasant atmosphere, enjoy the fun of sports, and accumulate relevant motor skills and physical quality in games. The gamified teaching not only increases the participation of students, but also provides them with the opportunity to exercise and promote their physical development. In addition, gamified teaching methods also help students develop their social skills and teamwork spirit. In games, students need to interact, communicate and cooperate with others to solve problems and achieve goals[21] together. Such cooperative experiences not only teach them to respect others and listen to their opinions, but also develop their communication skills and sense of teamwork. Therefore, through the physical education teaching of gamification transformation, primary school students can develop and grow in an all-round way while maintaining physical and mental health.

From the perspective of adaptive education, gamified transformation of physical education teaching in primary schools can promote the growth and development of pupils' personality. The teaching method of gamification pays attention to the development of students' subjectivity and personality, and satisfies the needs and interests of different students by providing diversified game activities. Such teaching methods allow students to participate in sports at their own pace and interests, developing self-confidence and the ability[22] to learn independently. At the same time, the teaching of gamification also pays attention to the development potential of each student. By setting different game rules and tasks, students are encouraged to show their personal strengths and advantages in the game, and enhance their self-awareness and personal accomplishment. Through the gamified transformation of physical education, primary school students can get more successful experiences and challenges, and cultivate a positive attitude and enthusiasm for learning. This kind of teaching method can stimulate students' self-potential and help them better realize personalized growth and development.

The practical problems of physical education teaching in primary schools in China from the perspective of adaptive education

Lack of Differences in Teaching Content

At present, there exists the problem of lack of difference in teaching content in primary school physical education. The setting of physical education curriculum in primary school is often fixed and unified, and the individual differences of students are rarely considered. The content of physical education is usually determined by textbooks and curriculum standards, and is the same for all students, regardless of their sporting skills, interests or physical condition. This "one-size-fits-all" teaching method may make it difficult for some students to find suitable learning points and challenges in physical education classes, thus affecting their enthusiasm and effectiveness in learning. In the teaching process, teachers often only pay attention to the overall progress and the situation of most students, and it is difficult to pay full attention to every student. In the case of large class sizes, it is often difficult for teachers to pay attention to the special needs of each student, and it is also difficult to organize and implement effective differentiated teaching[23]. This phenomenon may leave some students' learning needs and interests unmet.

Finally, the current physical education assessment is often based on the mastery of skills and physical fitness tests, and does not take into account the differences of students. This may have a negative impact on students who have difficulty in individual skills or physical fitness, causing them to have a negative attitude towards sports.

Lack of Innovation in Teaching Methods

In the primary school physical education from the perspective of adaptive education, the practical problem of "lack of innovation in teaching methods" has aroused attention. It is undeniable that the traditional teaching model is no longer in line with today's teaching needs, however, it still occupies a dominant position in many primary school physical education courses. This kind of teaching method pays too much attention to the stereotyped sports skill training and knowledge transfer, and often neglects the cultivation of students' subjectivity, enthusiasm and innovative consciousness. In class, teachers often take demonstration and explanation as the main teaching methods, and lack diversified teaching strategies and sufficient and effective interaction links with students. This single and overly formal teaching mode often leads to a rigid and boring classroom atmosphere, which can't really stimulate students' interest, enhance their creativity and imagination, let them find physical and mental pleasure from it, and may even inhibit students' all-round development[24].

Lack of Discipline Integration Ability

From the perspective of adaptive education, the problem of "lack of discipline integration ability" in primary school physical education is very prominent. At present, most of the physical education in primary schools is still too focused on skill training and improving physical strength, and almost no interdisciplinary subject knowledge is taught. As a result, students' understanding of physical education is limited to physical education itself, and they do not connect it with other subject knowledge for understanding and practice. And PE teachers also lack the frequency of dialogue and communication with teachers of other subjects, which further weakens the possibility of integrating and utilizing subject resources. Therefore, this lack of discipline integration ability undoubtedly restricts the breadth and depth of primary school physical education, and hinders its transition to a comprehensive and comprehensive teaching stage.

Lack of Effective Evaluation System

From the perspective of adaptive education, the main problem of physical education in primary school is that "the evaluation system is not perfect". The current physical education teaching evaluation method mainly focuses on the simple judgment of skill performance, while the evaluation of students' comprehensive quality and attitude is often ignored, which leads to the single evaluation method, which makes the comprehensive, scientific and objective evaluation of students more challenging. In addition, the

evaluation process focuses on qualitative evaluation, but rarely carries out quantitative analysis and develops specific evaluation indicators. The resulting problem is that it can not accurately reflect the actual performance and progress of students in physical education teaching, and it is difficult to provide clear feedback guide[25] for teaching improvement. Thus, the result is that the lack of effective evaluation system squeezes the quality and effect of PE teaching, hindering the development and progress of teachers and students in the process of PE teaching.

Insufficient Teaching Resources

From the perspective of adaptive education, physical education teaching in primary schools often faces the problem of "insufficient teaching resources". The shortage of education funds, facility space and human resources is the main bottleneck, resulting in the lack of necessary sports venues and sports equipment in most schools, which directly affects the quality and quantity of students' participation in sports activities. The shortage of teachers makes this problem even more serious. The lack of material resources increases the work intensity of PE teachers, making them need to distribute their attention among many classes, and it is difficult to provide detailed sports guidance and effective training follow-up[26] for each student. As a result, the practical problem of insufficient teaching resources seriously restricts the effect of physical education in primary schools, and also affects the improvement of students' sports skills and physical literacy, and may even have a negative impact on their long-term sports and health concepts.

Great Academic Pressure

From the perspective of adaptive education, physical education teaching in primary schools often faces the problem of "students' study and life pressure is too great". In modern society, the excessive pursuit of academic results and the increasing pressure of college entrance have led to many primary school students carrying heavy academic burdens and participating in various training classes, which have seriously occupied their time and energy, and can not spare enough time to participate in sports activities[27]. Even after class, some students also need to deal with the pressure of various cram schools or interest classes, and their time is excessively squeezed, and their participation in sports courses and activities is extremely limited. This phenomenon may not only hinder the improvement of students' physical and motor skills, but also have a potential impact on their long-term physical and mental health. Lack of physical activity, especially for developing children, is a very adverse health risk, which may lead to a series of physical and mental health problems, affecting the healthy development of children.

Parental Cognitive Bias

From the perspective of adaptive education, a significant problem often faced by physical education teaching in primary schools is the cognitive bias of some parents. The current situation is that these parents are overly pursuing academic achievement and regard it as the only criterion to measure the success of their children, while ignoring the importance of physical exercise and physical and mental health of their children. They often think that attending various after-school classes can be more helpful to their children's growth, but they show obvious neglect and indifference to the physical education courses in schools. Such cognitive deviation leads to the marginalization of physical education courses, making students in the training of physical education into a blank, not enough exercise and training opportunities[28]. At the same time, some parents pay too much attention to competitive sports, competition results and rankings become the main criteria for them to judge children's ability, which undoubtedly brings great pressure to children, further weakening children's love and enthusiasm for sports, in the long run, children may have a resistance to sports and have a negative impact on their physical and mental growth.

Social Cognitive Bias

From the perspective of adaptive education, the social cognitive bias of primary school physical education is a problem to be solved. In the current social environment, people regard academic achievement as an important criterion to measure children's success, while physical education achievement is generally ignored, resulting in students and parents' misunderstanding of physical education classroom. They often

regard sports teaching as a time to relieve pressure, relieve fatigue, rest and entertainment, and lack of awareness of the educational value[29] of sports in children's physical and mental development, as well as cultivating team spirit and social adaptability. At the same time, some students also have a mentality of pursuing quick success and lack lasting enthusiasm and patience for sports activities. This kind of social cognitive deviation leads to students' perfunctory learning attitude, lack of interest in sports teaching, and decline in various indicators of physical fitness. It may even hinder their contribution and development in the future sports career.

Practice path of gamification transformation of primary school physical education from the perspective of adaptive education

Changing Teachers' Ideas

In order to solve the problem of lack of difference in the content of physical education in primary school, we can further carry out the gamification reform of physical education in primary school, starting from the following aspects. First, education departments and schools should strengthen the training and guidance of teachers to improve their understanding and mastery of the game teaching method. Teachers need to learn how to use gamification methods to design classroom activities, so that students can experience sports in games, improve learning interest and active participation. Second, schools can establish a variety of sports activity organization mechanisms to organize sports classes in a gamified way. For example, different game tasks and levels are set up to allow students to complete the training and challenges of various sports skills in the game. At the same time, by setting up clubs, associations and other forms, provide different sports options, so that students can choose to participate in their favorite sports according to their interests and talents. Third, teachers can explore and introduce new teaching tools and methods, such as using multimedia technology to assist teaching and using gamification platforms and applications to design interactive teaching activities. By introducing gamified elements and technologies, teachers can create virtual characters, set tasks and reward mechanisms in the classroom to stimulate students' enthusiasm for learning and engagement. Fourth, schools should be encouraged to cooperate with the society, parents and other parties to jointly promote the gamified transformation of primary school physical education. Cooperate with professional institutions, community organizations and other partners to carry out seminars and training lectures on game teaching methods, and jointly develop gamified teaching materials and resources. Work closely with parents to make them aware of the benefits of gamification, and support schools to promote the concept of sports gamification in the home and community. Through the above measures, the problem of lack of differences in the content of physical education in primary schools can be effectively solved and the all-round development of students can be promoted. The joint efforts of education departments, schools, teachers, society and parents will bring more possibilities for the development and innovation of primary physical education. Through gamified transformation, physical education teaching in primary schools will be made more interesting and interactive, stimulating students' learning motivation and enthusiasm, and cultivating their comprehensive quality and physical and mental health.

Strengthen Teacher Training

In order to solve the problem of lack of innovation in primary school physical education teaching methods, gamification of primary school physical education teaching can be further promoted from the perspective of strengthening teacher training. In order to improve teachers' teaching level and innovation ability, we should start from the following aspects. First, teachers should constantly learn and master new teaching concepts and methods. Education departments and schools can organize relevant training and seminars, invite experts and scholars to share the latest research results and teaching experience, help teachers understand and master advanced teaching concepts and methods such as reverse teaching and task-based teaching, and further update and expand teaching ideas. Second, teachers should be encouraged to have diverse interactions with students to make teaching more interesting and engaging. Teachers can use the means of game teaching method to design challenging and interactive teaching activities, and stimulate students' enthusiasm and motivation for active learning through group cooperation, gamified teaching and role playing. Teachers can also use task-based teaching such as problem solving and case analysis to cultivate students' thinking ability and creativity. Third, multimedia technology and educational resources should be

introduced to enrich teaching content. Teachers can make use of multimedia teaching tools such as teaching videos and online resources to make teaching more lively and interesting. They can stimulate students' curiosity and thirst for knowledge by displaying wonderful videos of sports games and demonstrations of sports skills. Teachers can also make use of modern scientific and technological means, such as virtual reality and augmented reality, to simulate and practice sports in an immersive environment for students, creating more interactive experiences and learning opportunities for students. Fourth, schools and education authorities should be encouraged to give teachers more autonomy and support and provide better training and development opportunities for teachers. Education departments and schools can set up special teacher training teams or committees responsible for developing training plans and providing appropriate training resources and financial support. At the same time, teachers should be encouraged to actively participate in teaching and research activities, exchange and share teaching experience with their peers, and stimulate their innovative ability and enthusiasm for teaching. Through the above measures, we can effectively solve the problem of lack of innovation in primary school physical education teaching methods, improve teaching quality and promote the all-round development of students. The joint efforts of education departments, schools and teachers will bring more opportunities and possibilities for the innovation and development of physical education teaching in primary schools, and train more excellent students who love sports and pay attention to health.

Enrich the Curriculum Design

In order to solve the problem of lack of discipline integration ability in primary physical education teaching, it is necessary to further carry out gamification transformation in primary physical education teaching from the perspective of enriching curriculum design. In order to improve teachers' ability of discipline integration and innovation, we should start from the following aspects. First, teachers should strengthen the study and research of subject knowledge. Teachers should pay attention to the teaching content and teaching requirements of related subjects, and strive to master the methods and skills of interdisciplinary integration. Teachers can participate in subject seminars and educational training, communicate and share with their peers, and constantly update their subject knowledge and teaching practice. Second, teachers should be encouraged to cooperate with teachers of other disciplines. Teachers can actively seek opportunities to cooperate with teachers of Chinese, mathematics, geography and other subjects to explore the possibility of subject integration. Exchanges and integration among disciplines should be promoted by organizing cross-disciplinary teaching and research activities, cooperating in lesson preparation, and jointly conducting research projects. Teachers can group different disciplines and design teaching activities for interdisciplinary cooperation to cultivate students' interdisciplinary thinking and innovation ability. Third, diversified teaching activities should be designed to organically combine the subject content. Teachers can innovate teaching methods and design joint teaching activities between PE and Chinese, mathematics, geography and other subjects. For example, sports games should be played in PE class, combined with Chinese teaching, and joint writing activities should be designed to encourage students to write through sports experience. In sports skills training, combined with mathematics teaching, design the task of data analysis, so that students can master mathematics knowledge and skills in sports; We can also use the physical sports field and equipment in sports class, combined with geography teaching, to explore and study sports geography, and cultivate students' understanding of geographical environment and sports characteristics. Fourth, schools and education departments should give more support and resources to teachers. Schools can set up interdisciplinary teaching teams, invite experts, scholars or teachers of other disciplines to participate in teacher training, and provide training and resource support for integration of disciplines. Education departments can organize research and exchange activities on subject integration to provide a platform for teachers to cooperate and exchange. Fifth, schools can also encourage teachers to participate in disciplinary innovation projects and subject research, provide scientific research funds and time support, and stimulate teachers' innovation ability and teaching passion. Through the above measures, the discipline integration ability of primary school physical education teachers can be improved, the development of interdisciplinary teaching can be promoted, and the comprehensive quality and learning effect of students can be improved. Primary school PE teachers will be able to better integrate multi-disciplinary knowledge into PE teaching, enrich PE curriculum design, cultivate students' comprehensive ability and innovative thinking, and lay a solid foundation for students' all-round development.

Improve the Evaluation Mechanism

In order to solve the problem of the lack of effective evaluation system in primary physical education teaching, we can start from the perspective of improving the evaluation mechanism and further promote the gamification of primary physical education teaching. First, establish a scientific and objective evaluation index system. This evaluation index system should include the evaluation criteria of skill performance, physical quality, cooperative spirit and other aspects, and set corresponding quantitative indicators and scoring standards according to different grades and students' levels. This can make the evaluation more comprehensive and objective, and can accurately reflect the performance and development of students in physical education class. Secondly, diversified evaluation forms should be adopted. The evaluation should include both qualitative evaluation and quantitative evaluation. In the evaluation process, the individual differences of students should be fully considered and personalized feedback should be given. Secondly, students and parents should be encouraged to participate in the evaluation process, and an evaluation system of teachers, students and families should be established to eliminate subjectivity in the evaluation process and evaluate students more objectively. Thirdly, the timely feedback and application of evaluation results should be strengthened. The evaluation results should provide students with specific development direction and improvement suggestions to help them carry out self-cognition and self-regulation. Teachers can provide personalized feedback to students through one-on-one tutoring, group discussions and other means to help them recognize their strengths and weaknesses, and guide them in making improvement plans. Fourth, teachers' evaluation ability training should also be strengthened. Schools can provide relevant professional training and experience exchange platforms to help teachers improve their evaluation awareness and skills. Teachers can participate in class evaluation activities, observe the evaluation practice of excellent teachers in other schools, and constantly improve their own evaluation ability. Through the above measures, a scientific, objective and comprehensive evaluation system of primary school physical education teaching will be established to promote the improvement of teaching quality and the all-round development of students' ability. The evaluation of physical education in primary school will be of more reference value, able to accurately evaluate the performance and progress of students, and provide them with targeted guidance and support, so as to achieve the goals and requirements of physical education in primary school.

Increase Resource Input

In order to solve the problem of insufficient teaching resources in primary physical education, we should further promote the gamification reform of primary physical education from the perspective of increasing resource investment. First, the government and education departments should increase the investment in the construction of school sports facilities and equipment. Ensure that every school has appropriate venues and equipment for students to carry out sports activities. The government and education departments can help schools improve the conditions of sports venues and equipment through financial investment, upgrade the sports training environment for students, and promote the full utilization of sports teaching resources. Second, the way of resource sharing can be adopted to promote cooperation and exchange among schools. In this way, the waste of resources and the duplication of construction can be avoided, and the resources can be allocated and utilized more reasonably. For example, schools can cooperate with community sports venues, sports clubs, etc., to allow students to go to external venues for sports training and competitions. This can expand the activity space of students, give them more opportunities to participate in various sports activities, and have access to more professional facilities and equipment. Third, online teaching resources can be developed and used by means of information technology. Through the establishment of online physical education courses and training materials, to provide students with rich teaching content and resources. Students can carry out online learning and training through the online platform, which can not only make up for the shortcomings of classroom teaching, but also learn and explore independently. Schools can invest resources and provide network equipment and teaching platforms to provide students with more learning opportunities and resource support. Fourth, we should strengthen the construction of PE teachers and provide opportunities for professional training and further study. By improving the teaching level and professional quality of teachers, they can better guide students to take part in sports activities, and improve students' sports skills and physical literacy. Schools can provide training courses,

seminars and practical opportunities for teachers so that they can master new teaching methods and concepts in a timely manner and improve their own teaching abilities. Through the above measures, the problem of insufficient teaching resources in primary physical education will be improved, teaching quality will be improved, and students will be able to enjoy better physical education. Every student will be able to develop their sports interests and skills with the support of good sports facilities and resources to promote all-round development.

Reduce the Burden on Students

In order to alleviate the problem of high school students' study and life pressure in primary school physical education, we should further promote the gamification reform of primary school physical education from the perspective of reducing students' class load and study pressure. First, schools and parents should be aware of the importance of physical education to the comprehensive development of students, and give it enough attention. In the curriculum setting, schools should arrange students' curriculum reasonably, ensure that there is a fixed time of physical education every week, and incorporate it into students' daily learning plan. This will ensure that students have enough time for physical activity every week and reduce the pressure on other subjects. Second, schools can also encourage students to participate in after-school sports clubs or activities, so that they can have a positive experience and development in their interests. Thirdly, parents can actively support students to participate in physical exercise in family education. Parents should give students enough time and environment, encourage them to do outdoor activities in their spare time, and accompany them to do sports together. Doing sports together through the family can foster students' interest and love for sports, as well as promote communication and interaction among family members. Fourth, communication and cooperation between schools and families also need to be strengthened. Schools can hold regular parent-teacher meetings to introduce physical education teaching plans and activity arrangements, so that parents can understand the school's efforts and emphasis on physical education. Fifth, parents should also communicate with schools to jointly pay attention to and coordinate students' learning and sports development. In this way, excessive academic demands and pressure can be avoided, and the balanced development of students in different disciplines and fields can be maintained. Through the above measures, students can reduce the pressure of study and life, and provide them with more opportunities and space to participate in sports activities. Students can do physical exercise in a limited time, relax the mood and body, adjust the learning state, and improve the learning effect. At the same time, sports activities can also help develop students' teamwork ability, self-confidence and tenacity. Students can enjoy all-round physical and mental health development, laying a solid foundation for future study and life.

Guide Parents to Understand

In order to solve the problem of parents' cognitive bias in primary school physical education, we need to take the following measures. First, schools should strengthen parents' education and constantly improve parents' cognition and understanding of physical education. Schools can regularly organize parent-teacher meetings, symposiums and other forms to introduce the importance and value of physical education to parents, and have an open dialogue with parents to listen to their opinions and suggestions. In this way, schools can correct parents' misunderstanding and deviation of physical education and let them understand the important role of physical education in students' comprehensive development from a deep level. Second, the communication between schools and parents is also very important. Schools can regularly introduce the setting of school sports curriculum and activities to parents, and encourage parents to participate in the organization of sports activities and volunteer work. Through communication and cooperation with parents, schools can enhance parents' sense of participation and identity in sports and enable them to have a deeper understanding of the content and objectives of physical education. Third, schools can use parent-teacher meetings and other occasions to share students' progress and achievements in sports with parents, so that they can witness their children's growth and harvest in sports activities. In these ways, parents can have a more comprehensive understanding of the importance of sports to children's all-round development and change their cognitive bias towards physical education. Through the above measures, parents' cognitive bias can be changed, their cognition and understanding of physical education can be improved, and schools can jointly pay attention to and support students' physical development. The interaction and cooperation between schools and parents will promote better physical education

implementation and provide more opportunities for students to participate in sports activities and develop their physical and mental health in an all-round way. At the same time, parents' understanding and support will also stimulate students' interest and enthusiasm, enabling them to become more actively involved in sports learning, thus achieving better development and growth.

Cultivate A Social Climate

In order to solve the problem of deviation of the overall social environment and atmosphere in primary school physical education, we need to take the following measures. First, schools and the whole society should strengthen the publicity and popularization of physical education, so as to improve the public's cognition, understanding and attention to physical education. The media can report the deeds and achievements of sports role models, so that people can understand the importance of sports to health and all-round development. Through publicity, society will pay more attention to the value of physical education, form a good social atmosphere and encourage more people to take an active part in sports activities. Second, schools can increase the time and content of physical education courses, guide students to actively participate in sports activities, and carry out targeted sports training to improve students' sports skills and interests. By designing rich and diverse sports courses, students can experience the fun of sports in a pleasant atmosphere and stimulate their enthusiasm and motivation. Third, schools can also organize sports competitions, community activities, etc., so that students can communicate and compete with others, and enhance the competitive atmosphere and sense of identity in sports. In such an environment, students will participate in sports activities more actively and cultivate good sports habits and spiritual qualities. Through the above measures, the deviation of the overall social environment and atmosphere can be changed, and the social cognition and emphasis on physical education can be improved. When the society regards sports as an important part of all-round development, students and parents will pay more attention to and support physical education. The joint efforts of the school and the society will promote the all-round development of students and improve the overall physical education level, and create a positive social atmosphere that focuses on health and sports. Such a social atmosphere will provide a solid foundation for the gamified transformation of primary school physical education, so that more students can learn sports in happiness and grow up healthily.

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