The Design of Intelligent Classroom Teaching in Table Tennis Forehand Attack

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Abstract: *Intelligent classroom is the inevitable requirement of physical education reform to adapt to the development of the situation, and has unique practical value. Using the research method of literature and logical analysis, the wisdom factor is applied to the specific table tennis teaching. Combined with the characteristics of PE curriculum teaching, the smart classroom is used to formulate teaching objectives and the teaching design of pre-class preview, practice in class and consolidation after class, so as to promote students' smart growth and development. In order to provide theoretical support and practical reference for the construction of smart classroom in table tennis teaching, and promote the development and innovation of smart classroom physical education model.*

Keywords: Smart classroom; Physical education; Table tennis.

1. INTRODUCTION

In the context of the intelligent era, information opening, synchronization, sharing, information technology, artificial intelligence and other digital changes are closely linked to education, which has deeply promoted the reform and development of education, so that digital technology can educate people. In March 2012, the Ministry of Education organized *The compilation of the 10-year Development Plan for Education Informatization (2011-2020)*, and since then the national education digitization strategy has been steadily promoted. In 2016, the Ministry of Education issued a notice on *The "13th Five-Year Plan for Education Informatization"*, in 2018, the Ministry of Education issued a notice on *The "Education Informatization 2.0 Action Plan"*, in 2020, the Ministry of Education proposed guidance on strengthening the application of the "three classrooms", and in 2022, The State Council issued a notice on the "14th Five-Year Plan" for digital economy development. "Plan" proposed: in-depth promotion of wisdom education. Our country continues to advance on the road of digitization of education，In the report of the 20th National Congress of the Party, the General Secretary stressed the need to "promote the digitalization of education, build a learning society and a learning country with lifelong learning for the whole people", develop the leading role of digitalization in the cause of education, and build an education power.

Different scholars have different views on the definition of the concept of wisdom classroom. Ting Chen believes that smart classroom is the inevitable result of school education informatization focusing on classroom teaching, teacher and student activities, and wisdom generation under the background of Internet + education [1]. Jiangbo Luo believes that smart classroom refers to a new classroom presentation form that emphasizes intelligent teaching and efficient education results based on the "Internet +" thinking mode and information technologies such as big data and cloud computing [2]. Zhiting Zhu believes that smart classroom is guided by the new wisdom education concept, actively draws on the successful experience of flipped classroom application practice, and reshapes and upgrades flipped classroom [3]. Zefeng Liu et al concluded that smart classroom is a new type of classroom with wisdom as the core, which cultivates students' comprehensive literacy, uses information technology to create intelligent, efficient, individual-independent, diversified and open teaching environment, and improves traditional teaching methods and evaluation methods [4]. Shuhui Sun proposed that smart classroom should be based on dynamic learning data analysis and the application of "cloud + terminal" to achieve instant evaluation feedback, three-dimensional communication and interaction, and intelligent resource push, comprehensively change the form and content of classroom teaching, and build an information-based classroom teaching model in the era of big data [5].Based on the above views, we can summarize the characteristics of wisdom classroom: it is carried out in the wisdom space;Student-oriented, effectively cultivate students' core quality;Efficient intelligence, attention to individual differences of students;Timely and three-dimensional communication feedback.

The article is supported by Bangqi Liu's viewpoint, "smart classroom" is aimed at the development of students, using the "Internet +" way of thinking and the Internet of Things, big data, cloud computing and other new

generation of information technology construction, to support the whole process of application before, during and after class intelligent and efficient classroom. From the perspective of information technology, according to 《the "Compulsory Education Physical Education and Health Curriculum Standards (2022 edition)" 》 issued by the Ministry of Education as the standard, the basic movement of forehand attack in the technical system of table tennis is selected, and the teaching plan is formulated by using wisdom classroom.

2. CONSTRUCTION OF TEACHING PROCESS

According to Prof. kekang He, teaching mode refers to the theoretical framework and activity program of teaching structure formed to complete teaching objectives and contents under the guidance of certain teaching ideas and theories [6].As for the meaning of teaching mode, there are mainly two understandings. One refers to a specific teaching mode, such as "cooperative teaching mode" and "situational teaching mode". As a teaching mode, teaching mode tends to express teaching concepts and is not operable in itself.The other refers to a specific teaching process, such as "learning-exercise-competition" teaching mode.The teaching mode in the research is inclined to the latter, believing that the teaching mode is a relatively stable teaching activity program established under the guidance of certain teaching ideas and a certain environment, so as to build the activity flow of the smart classroom teaching mode.

Forehand attack in table tennis is one of the main techniques of basic and sports attack.According to the time, the wisdom class divides a lesson into three stages: before class, during class and after class. The teaching process of Table tennis forehand attack is designed. For details, see Table 1 to Table 4.Using the advantages of smart classroom teaching mode, improve students' practice level of table tennis forehand attack, enhance students' theoretical foundation and sports learning interest and other core qualities, and promote the promotion of physical education teachers' information literacy.The combination of online and offline teaching effectively connects static course content with dynamic course content, organically combines theoretical teaching with sports practice teaching, breaks the barriers of time and space, and broadens students' learning vision [7].

2.1 Teaching Objectives

In the physical education class, we should optimize the intelligent structure and information structure, adhere to the orientation of curriculum education, and integrate the wisdom factor into all aspects of teaching.Guide students to make effective use of network resources, carry out relevant learning and operation, pay attention to sports events, briefly analyze and evaluate high-level competitions, form a more comprehensive understanding of sports events, rules, skills, etc., form a positive attitude towards sports, and improve students' information retrieval ability.Through timely feedback of information and interactive teaching, students have the right to speak and autonomy in the learning process, so that students can learn independently and creatively.Pay attention to the individual differences of students, adopt a variety of teaching methods and evaluation methods to promote the development of students evaluation.To develop students' creative thinking as the goal, guide students to ask questions, find problems, solve problems, and promote students' wisdom growth.

In terms of athletic ability, students can understand the basic principles of table tennis movement technology, understand the rules of table tennis competition, and be able to act as judges in classroom teaching competitions.Master the technical movements of table tennis forehand attack, establish the consciousness of moving step, and improve cardiopulmonary endurance through moving stroke.In terms of health behavior, cultivate good physical fitness, mentality and habits, and strengthen the ability to judge the ball in different situations.Can easily deal with strains, sprains and other accidents.Can use the knowledge learned, make table tennis weekly learning and training plan.In terms of sports morality, there is a sense of compliance with the rules, respect for opponents and respect for referees in the game.Through cooperative exercises, students are trained to cooperate with each other, persevere in good quality and dare to challenge the spirit, and feel the charm of team sports.

2.2 Preview before class

According to the specific teaching objectives and the characteristics of students' learning situation, teachers should assume that there are differences in students' physical quality and acceptance ability.The preview content is designed, the preview materials are made, and the expansion resources are provided to provide reference for students' preview activities before class.Preparation of preview materials is an important part of preview design,

which usually includes micro-course resources, rich media resources, excellent MOOCs and preview test questions.Teachers select appropriate wisdom resources that are easy for students to learn and understand, and upload them through a fixed technology platform.Students receive course resources from mobile devices, preview the courses to be learned independently, and share their learning experiences through online communication and discussion if they do not understand.Teachers comprehensively analyze the learning situation, make statistics on the key and difficult points of actions in the preview process, have a preliminary grasp of students' learning status through background data, urge and supervise students who have not completed the preview in time, make teaching notes, and optimize the course design again.

2.3 Practice in Lesson

Teaching reform requires physical education curriculum to be based on knowledge and skills and to be based on student development. How to better achieve students' active learning and active practice, instead of teachers' demonstration and students' imitation.Compared with the traditional classroom interaction, the wisdom classroom is not only the verbal interaction between teachers and students in the classroom, the biggest difference is that it uses the relevant information technology learning platform, so as to achieve three-dimensional, diversified, continuous and efficient interaction between teachers and students.

Teachers and students review the teaching video together, and teachers can import the learning content of this class by setting questions, creating rich and interesting teaching scenarios, practice tests, etc.After a stage of practice, different learning objectives are set according to the students' mastery level, and learning tasks are assigned through the platform for in-class tests.Preview the theoretical knowledge learned before class and put it into class practice to deepen, effectively transform sports cognition into sports ability, strengthen the understanding of theoretical knowledge and build a deep impression.Students work in groups, and teachers give guidance on tour. For students who have difficulties in practice, they can use schematic drawings and videos to imitate and observe, and teachers can also demonstrate and correct, and solve problems through diversified interactive communication combining online and offline.The teacher then explains the weak and error-prone links in the exercises according to the test feedback, and achieves the organic combination of individual learning and training, group learning and collective learning and training in class, and the integration of church, diligent training and regular competition.

2.4 After-School consolidation

In the after-school stage, we can use the wisdom classroom to promote students to do physical exercise, review and consolidate the physical knowledge and skills learned in class.By punching in time and uploading practice videos, students can develop a sense of exercise, improve physical fitness, gradually master basic motor skills, and strengthen special motor skills.Let students understand the importance of physical exercise, actively participate in physical exercise, and transfer good physical morality to daily study and life.Through the homework submitted, teachers can have a more detailed and comprehensive understanding of students, find students' physical learning problems, push personalized learning resources, remove learning obstacles or encourage students, and promote students' learning progress.In this way, students can be taught according to their aptitude and give timely feedback.

According to the three aspects of sports ability, health behavior and sports morality, teachers make full use of different evaluation methods.In combination with the evaluation inside and outside the classroom and throughout the process, the comprehensive evaluation is enriched, and the development process and level of students' core literacy is effectively evaluated, and written records are made on the wisdom platform.Students can analyze and compare the videos and photos taken in class, and based on the data analysis results, they can recognize where they have done well and where they need to improve, and evaluate themselves and others objectively and accurately.The two-way evaluation of teachers and students is also the consolidation and expansion of knowledge.

Table 1: Teaching process of lesson 1

Practical factors in class	Intelligent classroom factor
1. Explain the basic movements of table tennis forehand attack, including the five basic structures of preparation posture, handle lead racket, swing stroke, swing with the trend and action restoration, and pay attention to the four points of racket face, swing trajectory, hitting time and hitting point. 2. Learn the clapping hand type and standing posture,	1. Teachers and students review the teaching videos in the group together, watch the videos slowly, explain the movements in detail, guide students to think and ask why they can't hit the ball when they do swing actions? 2. Take photos or record videos with the help of pictures to observe whether the elbow joint is controlled, whether the forearm is contracted, whether the shot is

repeatedly remind students to lower their center of gravity, and ask students to lower their center of gravity when preparing for the posture, and develop good habits. 3. Practice swinging the racket to the mirror with free hands. Students are required to watch whether their racket face is in a proper position when preparing for the posture and then practice without the ball until they are proficient. 4. Familiar with the ball sense, then two people in a group have the ball practice, one throw one dozen, the teacher tour guidance.	taken, whether the reduction is made, etc., and correct each other. 3. The teacher uploads the motion aid sketch and video to provide effective reference and facilitate students' observation and learning after class. 4. Divide study groups and set up online discussion groups. Students should upload practice videos within the effective time, which are required to have three angles of front, back and side.

Table 2: Teaching process of class 2

Practical factors in class	Intelligent classroom factor
1. Learn the basic foot movements of table tennis, stride, parallel step, cross step, and other steps, combined with the non-ball swing practice. 2. Forehand attack from throwing the ball, swing the racket to hit the bouncing ball.Work in pairs. Practice with multiple balls. 3. In a team of two, one serves the flat run, one forehand attack.It is required to swing coherently, coordinate the upper and lower limbs, move the pace in time for the ball, and the teacher tour guidance. 4. Physical fitness exercise, after 30 seconds of high leg lifting, do foot movements according to the learning content of this lesson.	1. Classroom presentation and communication. The teacher analyzed the practice video of last class, pointed out irregular movements and error-prone points, and the students corrected them accordingly. 2. When is the best time to hit table tennis?The teaching video plays in slow motion, explaining the hitting point of forehand attack. 3. The teacher records the video, points out the wrong actions for the playback of the slow frame of the video, clarifies the correct technical points, and the students can correct them in the following exercises. 4. Video recording after class, two people in a group one throw one dozen practice, the success rate of 70% within one minute.

Table 3: Teaching process of class 3

Practical factors in class	Intelligent classroom factor
1. Consolidate the forehand attacking technical movements, one person serves the flat running ball, one person attacks the forehand ball, do not point practice. 2. Two people play against each other, practice attacking the ball, pay attention to the quality of attacking the ball. 3. Group PK practice, each group adopts round-robin, two wins from three games and 11 points system, requiring only to attack the left half of the opponent. 4. Physical training, touch the table to run back and forth.Two pushers, each back and forth.	1. Teachers praise excellent practice videos, evaluate each other among groups, point out shortcomings and make improvements. 2. Why did the ball come out?Is the clapper Angle correct?Students answer questions online and discuss with each other. 3. The teacher records the video in a timely manner, points out the wrong actions for the playback of the slow frame of the video, clarifies the correct technical points, and the students can correct them in the following exercises. 4. Sit up in one minute, students upload videos daily and punch in for a week.

Table 4: Teaching process of lesson 4

Practical factors in class	Intelligent classroom factor
1.1000m endurance test. 2. Special test, investigate the number of shots and the quality of shots, each accounting for 50%. 3.Evaluate classroom activity, attention and communication. 4.Self-evaluation: Students make objective evaluation of their self-learning status.	1. Online theoretical assessment and questionnaire survey by teachers to master students' learning level. 2. Summarized online check-in rate and submission of chapter assignments. 3. Review online transcripts, learning experiences, and answers to in-class tests. 4. Examine learning engagement, teacher-student interaction, student-student interaction, and positive feedback.

3. CONCLUSION

Smart classroom teaching in the "Internet +" era is the inevitable trend of the current PE curriculum reform. PE discipline has the characteristics of fitness, practicality, complexity and comprehensiveness, and not every content is suitable for smart classroom, so it is necessary to scientifically plan and reasonably design the practical factors and smart classroom factors in class.Also consider the degree of freedom students have to use intelligent tools in the classroom, and whether changing teaching methods will increase students' learning burden.Develop learning resources more in line with students' individual needs, attach importance to students' comprehensive learning evaluation, and promote students to achieve their learning goals.At the same time, young PE teachers should continue to learn, actively participate in lesson research and discussion, and improve the ability and level of design thinking and collaborative innovation.At present, the opportunities and challenges facing the wisdom classroom still need to be reflected, updated and explored by scholars in combination with the reality.

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