**The influence of teaching method innovation on students' participation in volleyball course in physical education**

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Abstract: With the advancement of the "Healthy China" strategy and the deepening of quality-oriented education, physical education has gained increasing attention. Innovative teaching methods have become crucial for enhancing both the quality of volleyball course instruction and student engagement. This study investigates the relationship between innovative teaching approaches in volleyball courses and student participation, exploring how gamified instruction, differentiated instruction, and digital pedagogy enhance student motivation and improve learning outcomes. Through empirical research, we verify the practical impact of these innovative methods on student engagement, providing theoretical references and practical guidance for optimizing volleyball course instruction and elevating the overall quality of physical education.

Key words: volleyball curriculum; teaching method innovation; student participation; physical education; teaching effect

Within the sports education framework, volleyball courses serve as a primary vehicle for developing students' athletic skills, teamwork capabilities, and physical fitness. As educational philosophies evolve and teaching technologies advance, innovating instructional methods has become crucial for stimulating student engagement and enhancing classroom vitality. This article explores how pedagogical innovations impact student participation, aiming to provide actionable insights for promoting high-quality implementation of volleyball curricula.

**First, the strategy of innovation of teaching methods in volleyball course in physical education**

(1) Innovation of gamified teaching method

The gamified teaching approach integrates engaging games into volleyball skill training, effectively stimulating students 'learning interest and participation enthusiasm while enhancing classroom effectiveness. Its theoretical foundation stems from constructivist learning theory and gamification theory, emphasizing learners' active construction of knowledge and skills through interactive experiences and exploratory processes[1]. In volleyball instruction, students often find basic drills monotonous and tedious. Gamified teaching transforms these exercises into fun activities, allowing students to "learn through play."

For instance, when teaching volleyball bumping techniques, instructors could design a "volleyball relay race" game. Students are divided into teams standing in a line. The first student holds the ball and passes it to the next through bumping skills until the last student successfully catches it. They then return to the starting point using the same method. The team with the shortest time wins. During the competition, students actively practice bumping techniques to honor their team's reputation, refining their posture and force application for precise and swift execution. This gamified approach not only helps students master bumping skills in a relaxed atmosphere but also fosters teamwork and competitive spirit. Meanwhile, teachers can provide timely guidance and encouragement based on students' actual performance, which facilitates continuous improvement of technical movements and enhances teaching quality.

(2) Innovation of information-based teaching methods

Innovating digital teaching methods has become an inevitable trend of our times. Driven by modern information technologies such as multimedia, the internet, and virtual reality, these innovations have enriched the presentation of teaching content, expanded educational resources, and enhanced the intuitiveness and interactivity of instruction[2]. For volleyball courses specifically, digital teaching approaches can transcend time and space limitations, providing students with more diverse learning experiences.

When teaching volleyball serving techniques, instructors can utilize multimedia courseware to break down the serving motion into multiple stages, presenting them through images, animations, and videos. By incorporating professional athletes' serving videos, students gain intuitive understanding of key technical elements. With sports analysis software, teachers can record and analyze student performances, comparing them with standard techniques. Data and visualizations highlight common issues like inaccurate contact points or improper force application sequences, while providing targeted guidance. Students can also engage in self-directed learning through online platforms, watch instructional videos, and exchange insights with peers. This digital pedagogy makes instruction more vivid and tangible, helping students better grasp volleyball serving techniques.

(3) The construction of hierarchical progressive teaching mode

The Tiered Progressive Teaching Model organizes students into differentiated instructional groups based on their physical fitness, athletic foundation, and learning capacity. By setting tailored objectives and content through varied teaching methods and assessment approaches, it enables every student to achieve comprehensive development within their existing capabilities[3]. Grounded in theories such as Multiple Intelligences Theory and Zone of Proximal Development (ZPD), this model emphasizes respecting individual differences, addressing diverse learning needs, and unlocking students' potential for growth.

Taking volleyball spiking as an example, during teaching processes, instructors can categorize students into three groups based on their jumping ability, strength, and technical proficiency: Basic Group, Advanced Group, and Elite Group. For the Basic Group, instruction focuses on standardizing fundamental spiking techniques, such as proper running-up rhythm and arm-swinging mechanics, while helping students establish correct movement concepts through repeated breakdown drills and basic spiking exercises. The Advanced Group not only masters these basics but also enhances spiking difficulty and intensity by practicing directional variations and height adjustments to develop adaptability and technical skills. Elite Group members participate in tactical spiking training, including coordinated plays with setters to execute complex maneuvers, thereby improving tactical awareness and competitive performance. In evaluation, differentiated standards are applied to assess progress across levels, encouraging continuous self-challenge and achieving tiered progressive learning objectives.

(4) Exploration of interdisciplinary integrated teaching methods

The interdisciplinary teaching approach integrates volleyball courses with knowledge, skills, and methodologies from other disciplines. By transcending disciplinary boundaries, it broadens students 'learning perspectives, develops comprehensive literacy, and fosters innovative capabilities. The theoretical foundation primarily combines educational integration theory with core competency theory, emphasizing how interdisciplinary convergence enhances students' holistic understanding and application of knowledge while improving their problem-solving abilities in real-world contexts.

For instance, integrating mathematical logic and data analysis into volleyball tactics instruction. Teachers guide students to apply mathematical knowledge in analyzing match statistics, such as calculating offensive success rates and identifying defensive weaknesses. Through collecting and organizing game data, students use charts and formulas to develop scientifically sound tactical strategies. By combining this with Chinese language studies, students are required to write tactical analysis reports and reflections during matches, enhancing their verbal communication and writing skills. Additionally, incorporating mechanics principles from sports and physics—such as force application and counteraction during ball strikes, or parabolic motion—helps students better understand volleyball techniques. This interdisciplinary approach not only teaches volleyball knowledge and skills but also applies multidisciplinary knowledge to solve real-world problems, achieving knowledge transfer and skill enhancement.

**2. The influence of teaching method innovation in volleyball curriculum on students' participation in physical education**

(1) To improve students' enthusiasm for classroom participation

In traditional volleyball classes, repetitive foundational drills like mechanical ball-handling gestures and fixed-route passing runs often leave students in a passive "task-completing" role. The teacher-centered one-way teaching model stifles student engagement and creates a dull classroom atmosphere. However, innovative teaching methods have completely transformed this situation: gamified instruction transforms tedious technical training into exciting competitions. For instance, in the "Volleyball Points Challenge Cup," teachers divide the court into scoring zones where students compete in serving challenges. Hitting the high zone earns double points. This level-based challenge subtly reinforces serving angles and striking power through competition, turning passive skill training into an exciting "challenge game." Some students even actively seek technical guidance from teachers to find optimal force application points, significantly increasing class participation. Digital teaching methods bring a strong tech-driven vibe to the classroom. Teachers use multimedia equipment to play professional volleyball match clips, pausing to explain tactical coordination details while breaking down techniques like spikes and blocks through slow-motion replays. During the "diving save" technique learning process, students watch HD videos clearly demonstrating athletes' full-body movements and landing cushioning. They then practice in groups under teacher guidance. This kind of visual impact and interactive learning makes students pay close attention. In the past, students would easily be distracted in class, but they would also be fascinated by the wonderful event pictures and novel learning methods, and put all their energy on the imitation and practice of technical movements.

(2) The intention to affect students' autonomous learning

In traditional volleyball instruction, the one-size-fits-all training model often leaves weaker students frustrated by falling behind, while stronger players lose motivation due to lack of challenge. The tiered progressive teaching approach breaks this cycle by dividing students into three groups based on physical fitness and skill levels: Basic, Intermediate, and Advanced. For beginners, instruction starts with stationary ball handling and fixed-distance passing fundamentals. Once proficient, teachers introduce advanced concepts like moving ball handling and directional passing. Intermediate students, after mastering basic tactics, form study groups to learn complex strategies such as "speed ball screens" and "back-row penetration." During free time, they watch volleyball instructional videos to mimic professional players 'positioning and coordination. Teachers proactively recommend specialized tactical books and game analysis articles to further stimulate curiosity. The interdisciplinary integration of teaching methods proves particularly effective in igniting intellectual passion. In the "Volleyball and Physics" course, instructors explain parabolic principles during spikes and the forces involved at impact points. To verify these theories, students capture and analyze their own spike videos frame by frame using smartphones. In the "Volleyball Tactics and Mathematics" course, students actively study probability statistics to develop optimal offensive strategies while conducting in-depth analyses of opponents' defensive tactics. These teaching methods, which break through the boundaries of disciplines, make students realize the intercommunication of knowledge and encourage them to actively consult materials after class and try to use different disciplinary knowledge to solve practical problems encountered in volleyball training, so that learning changes from passive acceptance to active inquiry.

(3) The influence on the degree of students' participation in teamwork

In traditional volleyball classes, students focus primarily on improving individual skills, while team collaboration remains limited to basic group drills lacking deep interaction. Innovative teaching methods redesign classroom dynamics through collaborative tasks. For example, in the "Volleyball Drama Creation" activity, teachers had students form groups to develop scenario plays incorporating technical demonstrations and teamwork strategies based on volleyball rules and tactics. To showcase the "double block" tactic, team members explored plot development: who initiates serves to create opportunities, who uses feints to draw defenders, and who executes crucial blocks. Each role underwent multiple rounds of trial-and-error adjustments. During rehearsals, students not only learned to listen to feedback but also actively shared tactical insights, even voluntarily practicing over weekends to achieve peak performance. The final performance earned thunderous applause for seamless teamwork and flawless execution. This collaborative journey of overcoming challenges significantly strengthened team cohesion. Digital tools provided a new platform for teamwork: teachers assigned "volleyball tactic optimization" tasks via online platforms, enabling students to collaborate through virtual discussions and document editing. During an inter-school match analysis, teams used annotation features to identify defensive weaknesses, created mind maps for offensive strategies, and engaged in lively video conference debates. Some students proposed using the "cross attack" strategy to break through opponents' defenses, while others advocated employing "back-row attacks" to avoid block attempts. This clash of perspectives sparked innovative thinking. Ultimately, students synthesized diverse approaches to develop a comprehensive tactical plan that proved effective in subsequent matches. Through this cross-temporal and multi-format collaboration, they deeply appreciated the power of team wisdom, significantly boosting their enthusiasm for active participation in cooperative endeavors.

| **classroom activities** | **content** | **Student interaction** |
| --- | --- | --- |
| Volleyball drama creation | Students work in groups to write a situational play to demonstrate volleyball skills and teamwork | Students explore the plot in depth, trial and error and adjustment |
| During rehearsals | Students learn to listen to suggestions, share tactical knowledge, and practice spontaneously | Students actively communicate and improve their enthusiasm for cooperation |
| perform | The two cooperated smoothly and the performance was applauded | Team cohesion is enhanced |
| Online collaboration platform | Teachers assign tasks, students discuss online and edit documents | Students use the annotation function to analyze the video and sort out the attack strategy |
| Video conference discussion | Students discuss the strategies of "cross attack" and "back row attack" | The clash of ideas inspires innovative thinking and leads to tactical solutions |

Table 1: The influence of students' participation in teamwork

(4) The role of cultivating students' interest in long-term exercise

Traditional volleyball instruction has overemphasized skill mastery and physical fitness assessments, confining students 'understanding of the sport to mere "physical education activities" that fail to sustain lasting interest. Innovative teaching methods aim to ignite passion through immersive experiences. The introduction of VR technology provides students with an on-site athletic experience: Once VR equipment is installed, it creates a virtual arena where spectators cheer from the stands, the sound of sneakers rubbing against the floor fills the ears, and players must react swiftly to complete receiving and passing maneuvers. A student exclaimed excitedly after trying it out: "I feel like an Olympic athlete! That tension and excitement drive me to keep competing!" This immersive experience completely breaks down students' preconceived notion of volleyball as "boring and monotonous." Many have voluntarily joined school volleyball clubs, initiating long-term training programs with tiered teaching and personalized feedback mechanisms, while continuously reinforcing their learning interest. Teachers maintain individual "volleyball growth portfolios" for each student, documenting their journey from initial awkwardness to mastering techniques: snapshots capture their first successful spike, videos record moments of group collaboration in scoring, and commentaries motivate continuous self-improvement. When students see their growth trajectory in the records—from "always making mistakes with ball placement" to becoming "key players on the school team" —a profound sense of achievement emerges. This realization fuels their determination to refine techniques through dedicated practice. These immersive learning experiences allow students to develop a multidimensional understanding of volleyball, transforming fleeting classroom interest into lasting passion for the sport. Such cultivation lays the foundation for nurturing lifelong sports engagement.

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Innovations in volleyball course teaching methods significantly boost student engagement. By implementing diverse and innovative instructional approaches, educators can effectively stimulate learners' interest and enhance classroom vitality. Moving forward, we must deepen research on pedagogical innovation to bridge theory with practice. This integration will inject fresh momentum into volleyball education, helping students achieve holistic development.

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