

Research on Hierarchical Teaching Model in College Tennis Education

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Abstract:

Under the guidance of the new curriculum reform, college physical education teaching models are exhibiting a diversified development trend, with an increasing number of teaching methods being applied to college physical education. Hierarchical teaching has emerged in response to this trend. This paper researches the training model of hierarchical teaching in college tennis education. Based on analyzing the concept and characteristics of hierarchical teaching, it further affirms the positive role of hierarchical teaching in college tennis education, thereby proposing practical and feasible application plans. This aims to provide a feasible reference for current college tennis education innovation and theoretical reform.

Keywords:

Hierarchical Teaching, Tennis Teaching; College Physical Education, Teaching Methods

1. Introduction

With the deepening of college physical education teaching reform, personalized teaching has become an important direction for improving teaching quality. Tennis, as a sport with strong technical requirements and a steep learning curve, is popular among students in college physical education elective courses. However, it also faces prominent problems such as significant individual differences among students and polarized teaching results [1]. The traditional “one-size-fits-all” teaching model struggles to meet the learning needs of students with varying skill levels. This leads to frustration for students with no prior experience due to the technical difficulty, while students with a foundation lose interest due to repetitive training content. This contradiction not only reduces class participation but also hinders the popularization and improvement of tennis. Therefore, exploring a teaching model that can adapt to the differentiated needs of students has become a key issue in the current reform of college tennis teaching.

Hierarchical teaching, as a teaching strategy that caters to individual needs, has demonstrated significant application potential in the field of physical education in recent years. Its core concept is to dynamically group students based on their abilities,

interests, and learning goals, and to design targeted teaching content and methods for students at different levels. In sports such as basketball and track and field, studies have shown that hierarchical teaching can effectively improve students' skill mastery and class satisfaction [2]. Therefore, this paper applies hierarchical teaching, guided by the fundamental teaching principle of adapting to individual needs and the basic teaching philosophy of "people-oriented," to explore the application of hierarchical teaching in college tennis education, aiming to improve the quality of college tennis teaching and better achieve college tennis teaching goals.

2. Hierarchical Teaching and Its Value in College Tennis Teaching

2.1. Definition of Hierarchical teaching

Hierarchical teaching, as a practical teaching method, refers to the practice where, given the existence of certain differences among students, teachers divide students into different levels based on their learning abilities in the actual teaching process. Different teaching methods and approaches are then employed to set different levels of teaching objectives and learning tasks for students, ultimately aiming to improve teaching quality and effectiveness. Due to the influence of factors such as genetic predispositions, family circumstances, learning environments, and social backgrounds, students exhibit varying cognitive understanding and mastery of the learning content taught by teachers. Furthermore, students differ in their psychological and physiological qualities. This necessitates higher demands on teaching methods. Hierarchical teaching fully considers factors such as students' family environment, physical qualities attributable to genetics, and the impact of the social environment [3]. By tailoring reasonable and scientific learning tasks according to different students' learning characteristics, classroom teaching is conducted in a differentiated and organized manner. This ensures that the tennis course content each student is required to learn falls within their capacity, effectively improving learning quality and task completion, thereby promoting the comprehensive development of students' overall qualities [4]. The implementation of Hierarchical teaching in college tennis education requires physical education teachers to consistently adhere to the educational philosophy of teaching students according to their aptitude. Teaching objectives, methods, and content implementation are adapted based on the actual circumstances of different students. Learning tasks and periodic learning assessments that align with each student's individual development are assigned, striving to create a relaxed and active classroom atmosphere. This caters to the learning needs of students with different levels, types, and capabilities, further improving students' sports performance in a targeted manner, effectively enhancing the educational and teaching efficiency of college tennis classes in China, and promoting the optimization and upgrading of tennis classroom teaching effectiveness.

2.2. Advantages of Hierarchical teaching in Physical Education

Hierarchical teaching conforms to the teaching principles of starting from reality and teaching students in accordance with their aptitudes. Each student differs greatly in terms of physical build, physical fitness, and psychological and physiological qualities. A single teaching objective and model cannot meet the needs of all students. Only by differentiating instruction can students of different levels learn something and leverage their strengths.

Hierarchical teaching is conducive to mobilizing students' enthusiasm for learning. In a class, a unified teaching objective is certainly too high for students with slightly weaker learning abilities, and may be too low for excellent students. Both of these situations can easily dampen students' learning enthusiasm. Only by setting appropriate learning goals for students at different levels can motivation be generated.

Hierarchical teaching reflects the fairness of education. Every student has the right to receive education, and even more so, the right to receive equal education. Hierarchical teaching is a process-oriented teaching model. Hierarchical teaching enables each student to achieve the predetermined learning objectives at different paces based on their individual learning abilities. Instead of allowing students to develop a fear of unattainable goals from the beginning of learning, which results in students passively giving up the opportunity to receive education, losing confidence in their own learning, and becoming unmotivated.

2.3. Value of Applying Hierarchical Teaching to College Tennis Teaching

Applying hierarchical teaching to college tennis teaching enables tennis teachers to scientifically and rationally design college tennis teaching objectives and specific teaching steps based on the diverse factors of students in the class, such as their mastery of tennis knowledge, their athletic abilities, and their actual physical and psychological conditions. When conducting tennis instruction, tennis teachers select the most suitable teaching methods for students, enabling them to achieve the tennis teaching training goals under the teacher's patient guidance. At the same time, tennis teachers should also comprehensively analyze students' overall characteristics and plan the specific teaching aspects of the tennis course to ensure the smooth implementation of Hierarchical teaching in college tennis teaching. The application of Hierarchical teaching in college tennis teaching has significant value. On the one hand, applying Hierarchical teaching in college tennis teaching can create a relaxed and comfortable learning atmosphere for students. In such a learning environment, students can better exert their subjective initiative and achieve better tennis training results. On the other hand, the application of Hierarchical teaching in college tennis teaching can effectively promote the strengthening of students' athletic abilities and meet the tennis learning needs of students with different athletic levels, maximizing the effectiveness of tennis teaching.

3. Construction of a Tiered Teaching Model for Tennis Courses

Tiered instruction, based on students' learning progress, uses appropriate assessments to group students of similar skill levels and provide corresponding guidance. It establishes short-term goals that align with their abilities, enhances student interest, and fosters a positive learning environment, while also incorporating dynamic, real-time adjustments based on teaching feedback. This approach embodies the principle of adapting instruction to individual needs, ultimately aiming to cultivate lifelong engagement in physical activity [1]. In future teaching, instructors should pay closer attention to students' subjective experiences during learning, setting task objectives that match their skill levels to enable successful learning experiences, thereby creating a positive feedback loop. This, in turn, will increase student interest and ensure that dynamic tiered instruction aligns with psychological principles, promoting students' holistic development.

3.1. Learning Theory Basis of Differentiated Instruction

(1) Constructivist Learning Theory

Behaviorist theory underwent a transformation in subsequent psychology, and cognitive theory further developed into constructivist learning theory from that point. It can be summarized as: student-centered, developing students' learning autonomy, and enabling students to actively seek knowledge answers. It believes that a model for acquiring learning knowledge can be constructed in appropriate situations through collaboration and communication between people. Constructivist learning theory believes that creating a suitable learning environment for students can help them construct efficient learning methods. The four elements of constructivist learning theory are "meaning construction," "collaboration," "conversation," and "situation." Dynamic differentiated instruction can tailor an environment suitable for students' developmental level based on their current level.

(2) Humanistic Learning Theory

Rogers, the main representative of humanistic theory, emphasized that teachers should not only focus on students' cognitive development in the teaching process, but also develop the emotional state displayed by students through learning, and always pay attention to students' psychological changes. Maslow pointed out that humanistic learning theory teaching should be student-centered, create a learning environment suitable for students' learning level, and meet students' intrinsic self-needs. Dynamic differentiated instruction allows students of the same level to learn and communicate in the same group, which greatly improves students' ability to think and solve problems independently, and promotes students' all-round development.

3.2. Design Principles of Dynamic Tiered Instruction

(1) Principle of Adapting Instruction to Individual Needs

Dynamic tiered instruction is based on the principle of adapting instruction to individual needs. Individual differences, influenced by genetic and external factors, are irreversible. Therefore, teachers should pay close attention to students' objective feelings during tennis course instruction and set task goals that match their skill levels to achieve optimal learning outcomes.

(2) Principle of Encouragement and Motivation

Dynamic tiered instruction increases students' confidence and fosters a positive learning environment through tiered levels, thereby achieving the goal of students mastering the content. In teaching, teachers should adopt encouragement and motivation as a fundamental principle, providing guidance to students at different levels. Dynamic tiered instruction extends the learning time for content not yet mastered, creating opportunities for students. By encouraging and motivating students' confidence and learning drive, especially those with weaker foundations and learning abilities, teachers should provide ample affirmation to enable them to experience success and ultimately improve learning outcomes.

(3) Principle of Dynamism

When using dynamic tiered instruction in tennis courses, teachers should establish an assessment mechanism for level adjustments based on students' actual situations and adjust the tiers accordingly. Reasonable adjustments, both upward and downward, can stimulate students' competitive spirit and increase their learning motivation. This encourages students in lower tiers to practice diligently in order to advance to a higher

level, while students in higher tiers will practice seriously to avoid falling to a lower level. This initially creates a positive learning atmosphere, allowing students to understand their goals and what they need to do next, ultimately achieving the goal of mastering the content.

(4) Principle of Student Agency

Teachers set goals for each level and provide instruction and guidance according to the tennis elective syllabus. This allows students to understand and recognize themselves through continuous learning. The competitive nature of differentiated instruction motivates students to consciously and actively practice in order to advance or avoid being demoted. Instruction should adhere to the principle of student agency. Enhanced student agency indicates significant teaching effectiveness, and a student-centered approach promotes holistic student development.

(5) Principle of Comprehensiveness

The principle of comprehensiveness in dynamic differentiated instruction is reflected not only in acquiring knowledge and practicing skills, but also in attending to the psychological changes resulting from individual student differences. Students who successfully advance a level should be appropriately praised, with a reminder not to become arrogant. Students who do not advance or are demoted should be encouraged, and their efforts and progress should be acknowledged. Introducing heroic deeds, such as the Red Army's Long March and their spirit of hard work and struggle, through ideological and political education can enhance students' patriotism and encourage them to face failures and setbacks bravely. The aim is to reduce the psychological gap caused by advancement or demotion, transform perceived "shortcomings" into learning motivation, and cultivate a "remain humble in victory, undaunted in defeat" mentality, enabling students to comprehensively improve themselves through the process of learning tennis.

3.3. Construction of Hierarchical Teaching Mode

3.3.1. Tiered Assessment

Based on the results of physical fitness tests and tennis skill assessments conducted before the experiment, students are divided into three levels: A, B, and C. Student tiering is comprehensively evaluated based on the combined results of physical fitness indicators (30% of the total score) and tennis skill indicators (70% of the total score). The three tiers differ in tennis skill level, physical fitness, and feel for the ball: students scoring 70 points or higher are assigned to Level A; these students have a certain foundation in tennis skills and physical fitness, surpassing other students. Students scoring between 50 and 69 points are assigned to Level B; these students have some feel for the ball and average physical fitness. Students scoring below 49 points are assigned to Level C; these students have essentially no prior experience with tennis, and their feel for the ball and physical fitness are weaker than those in Levels A and B. Tiering is implemented implicitly, without publicizing student test scores. Students in Levels A, B, and C are assigned role-playing identities. Level A (Excellent) students are assigned the role of helpful "Woodpeckers," assisting the teacher in leading and organizing student practice and competitions. Level B (Intermediate) students are assigned the role of diligent and meticulous "Smart Robots," and are rotated to lead warm-up activities during class, setting an example of conscientious learning for other students. Level C (General) students are assigned the

role of hardworking and optimistic “Sunflowers”, helping the teacher with ball carts and equipment, and assisting in checking assigned homework, which can reduce feelings of loss resulting from tier adjustments.

3.3.2. Tiered Instruction

Throughout the teaching process, targeted teaching objectives and content are set for students at different levels. This enables Level A students to continuously improve their technical skills and athletic abilities, Level B students to skillfully master technical movements, and Level C students to accurately grasp the essential elements of technical movements. For students at Levels A, B, and C, the teaching objectives established by the teacher for each level are achievable through effort. Therefore, students can complete teaching tasks and achieve teaching objectives through effort, thereby increasing their learning interest and enthusiasm. However, to achieve ideal teaching outcomes in dynamic tiered instruction, it is also necessary to manage and implement the process scientifically for students at different levels.

3.3.3. Tiered Guidance

Within the same group, guidance is provided to students with different needs, using both individual and collective correction methods. The teacher provides tiered guidance, and experienced students within the group lead practice. Level A students are managed using high standards and high requirements, with an emphasis on heuristic and guided teaching methods. Students are encouraged to master the taught technical movements and skills through mutual exploration and discussion, and are appropriately taught more difficult technical movements to stimulate their continuous learning and exploration. Level B students are managed according to relatively high standards and requirements, and are encouraged to emulate students at the higher level. Teaching employs a combination of positive guidance, guided methods, and encouragement, and some of the teaching standards and requirements for higher-level students are applied to middle-level students to increase their learning enthusiasm. For Level C students, the teacher should dedicate most of their energy to this level, as these students have relatively poor physical fitness and athletic skills. Compared to students at other levels, these students are more likely to experience feelings of inferiority and aversion to learning. Therefore, in the process of teaching athletic techniques, the teacher needs to use more encouragement and positive reinforcement in their teaching management, starting by enhancing students' self-confidence and self-improvement to stimulate their interest and motivation in learning. Depending on the learning situation of these students, individual cases can be appropriately praised to motivate them to learn from higher-level students.

3.3.4. Tiered Communication

The teacher selects Level A students who have mastered the learned content to share their learning experiences and insights with Level B and C students. This allows Level B and C students to gain additional learning experience. If Level A students encounter difficulties or unexplained knowledge points during their presentations, they can consult with the teacher. In this way, Level A students can passively review the learned content again in the process of presenting, encountering problems, and solving problems, thereby greatly improving learning efficiency. Level B and Level C students engage in intra-level communication. If they encounter problems, they can directly consult the teacher, or they can first seek help from Level A students. If the

problem cannot be solved, they then seek the teacher's help. This way, encountering problems, asking questions, and solving problems unconsciously deepens their understanding. Because it is an elective course, students come from different majors and are not familiar with each other. Communication between students at all levels can quickly allow students to become acquainted, enhance friendship through tiered communication, and learn in a pleasant and familiar environment, gaining a positive learning experience. This fosters mutual progress between levels, promoting students' holistic development.

4. Implementation Suggestions for Differentiated Instruction Model

The differentiated instruction model, as a personalized teaching method tailored to individual student differences, possesses significant application value in technical training for novice tennis players. However, its implementation involves multiple factors, including scientific stratification, dynamic adjustment, resource allocation, and psychological intervention, necessitating a systematic strategy to address potential challenges.

4.1. Construction and Implementation of a Scientific Stratification System

The primary step in differentiated instruction is establishing a scientific and rational stratification system, which requires comprehensive consideration from multiple dimensions. In terms of technical assessment, a systematic evaluation plan should be designed, encompassing both static technical movement assessment and dynamic practical performance assessment. Static assessment can employ video analysis technology to decompose and score trainees' basic movements, such as forehand, backhand, and serve, focusing on key technical elements like the backswing amplitude, contact point, and follow-through. Dynamic assessment requires designing practical simulation scenarios, such as setting up incoming balls with varying trajectories and speeds, to evaluate trainees' technical application ability while moving. It is recommended to use a percentage-based scoring system, detailing technical assessment into 15-20 specific indicators to ensure the objectivity and comprehensiveness of the evaluation results.

Physical fitness testing should include various quality indicators closely related to tennis. Speed testing can adopt the "baseline-to-net sprint shuttle run" method, recording the time taken for trainees to complete the prescribed number of repetitions. Endurance testing can be conducted through continuous multi-ball training, observing changes in the stability of trainees' technical movements during a 15-minute training cycle. Coordination testing can design complex test items including a combination of various footwork patterns, such as side shuffles and crossover steps. It is recommended to introduce professional fitness testing equipment, such as speed radar and heart rate monitors, to obtain more accurate test data.

Psychological assessment is an indispensable component of the stratification system. In addition to the conventional learning motivation questionnaire survey, it is recommended to use situational simulation testing, observing trainees' psychological resilience and adaptability by setting up pressure situations such as score deficits and crucial points. Furthermore, professional sports psychology assessment tools, such as the "Athletic Coping Skills Inventory," can be introduced to quantitatively assess trainees' psychological qualities. Regarding the assessment cycle, it is recommended to adopt a "three-stage assessment method": baseline assessment at the beginning of

the semester, formative assessment in the middle of the semester, and summative assessment at the end of the semester, ensuring the dynamic accuracy of the stratification results.

4.2. Design and Implementation of Differentiated Teaching Plans

Teaching plans should be designed with specific focus to cater to the characteristics of students at different levels. Elementary-level teaching should focus on establishing correct movement patterns, recommending the “decomposition-integration” teaching method. Technical movements are broken down into several key steps, and correct motor sensations of each part are reinforced through specialized practice, which are then gradually integrated into a complete technical movement. For example, the forehand stroke can be broken down into four steps: ready position, torso rotation and backswing, moment of impact, and follow-through, with specific training methods designed for each step. In terms of teaching methods, visual aids, such as demonstration videos and movement breakdown diagrams, can be used extensively to help trainees establish clear movement representations.

Intermediate-level teaching should focus on improving the stability and consistency of technical movements. The “combination training method” is recommended, organically integrating technical training with footwork training. For example, a “baseline movement and hitting combination drill” can be designed, requiring trainees to complete alternating forehand and backhand strokes while moving continuously. Simple tactical awareness training can also be introduced, such as line variation drills and deep-shallow ball combination drills. In terms of teaching organization, the “rotation drill method” can be adopted, setting up multiple training stations, with trainees rotating in groups to practice different technical combinations, ensuring both training intensity and increasing the fun of practice.

Advanced-level teaching should focus on cultivating practical combat capabilities. The “situational simulation teaching method” is recommended, designing various game scenarios for targeted training. Examples include “break point situation training” and “tie-break situation training,” helping trainees improve their psychological qualities and technical application ability in simulated games. Emphasis should also be placed on technical combination training, such as compound technical drills like “serve and volley combination” and “baseline offense-defense transition.” The “competitive teaching method” can be appropriately introduced, organizing trainees to participate in teaching games, testing and improving their technical level in actual combat.

4.3. Construction and Implementation of Dynamic Management Mechanisms

Establishing a robust dynamic adjustment mechanism is crucial for ensuring the effectiveness of differentiated instruction. Firstly, clear standards for advancement and demotion need to be established. It is recommended to use a comprehensive evaluation method combining “quantifiable metrics + subjective assessment.” Quantifiable metrics include objective parameters such as technical test scores and physical fitness test data. Subjective assessment is conducted by the coaching team based on factors such as the student’s daily training performance and progress. A “buffer zone” should be implemented, meaning that students who achieve 80%-90% of the upgrading standard enter an observation period, followed by 1-2 weeks of intensive training before the final assessment.

Regarding the frequency of adjustments, a “small-cycle fine-tuning + large-cycle restructuring” model is recommended. Small-scale adjustments should be made every 2-3 weeks, primarily targeting students who have made significant progress or regressed noticeably. A large-scale restructuring should be conducted every 8-10 weeks, re-evaluating and re-stratifying all students. This adjustment frequency ensures the relative stability of the stratification while promptly reflecting student progress.

Establishing a comprehensive student growth profile system is essential. The profile content should include: baseline assessment data, periodic test scores, training attendance records, technical video materials, coach’s comments, etc. It is recommended to use an electronic management system for long-term data storage and analysis. Regular analysis of the growth profiles can help identify students’ technical bottlenecks in a timely manner and adjust training plans accordingly.

4.4. Building a Psychological Support System

Establishing a comprehensive psychological support system is an important guarantee for the smooth implementation of differentiated instruction. First, psychological preparation should be conducted before stratification. Through class meetings, individual conversations, and other formats, the purpose and significance of differentiated instruction should be explained to students to dispel any potential misunderstandings and concerns. Senior students can be invited to share their experiences to help new students correctly understand differentiated instruction.

During the implementation of stratification, a regular psychological counseling mechanism should be established. Each level should be equipped with a psychological counselor to conduct regular group psychological counseling activities. Tailored guidance programs should be designed to address potential level-related anxiety. For example, a “Most Improved Star” selection activity can be organized for students in the beginner level; for students in the advanced level, a “Peer Assistance” program can be implemented.

A positive teaching feedback system should be established. The “sandwich feedback method” should be used, which involves first affirming progress and strengths, then pointing out areas for improvement, and finally providing encouragement and expectations. It is recommended to use a variety of incentive methods, such as setting up special awards like the “Fastest Progress Award” and the “Best Technique Award” to stimulate students’ training enthusiasm.

4.5. Quality Monitoring and Continuous Improvement

Establishing a multi-level quality monitoring system is a necessary measure to ensure the effectiveness of differentiated instruction. First, clear teaching quality standards should be established, including technical achievement standards, teaching progress standards, and classroom organization standards. Then, a three-dimensional evaluation system consisting of teaching supervision, peer review, and student feedback should be established.

The teaching effect should be evaluated regularly. Adopt a combination of quantitative and qualitative evaluation methods. Quantitative aspects include students’ technical test scores, changes in physical fitness indicators, etc. Qualitative aspects include student satisfaction surveys, parental feedback, etc. It is recommended to conduct a comprehensive assessment every semester and generate an assessment report.

A continuous improvement mechanism should be established. Adjust teaching plans promptly based on the assessment results, replacing or improving teaching methods that are not effective. At the same time, establish a teaching innovation incentive mechanism to encourage coaching teams to try new teaching methods and techniques. Regularly organize teaching demonstrations and experience exchange activities to promote the overall improvement of teaching quality.

5. Conclusions

Differentiated instruction in tennis teaching courses can effectively reflect the humanistic concern of education for students, achieve the healthy and stable development of all students, and truly make education student-centered, reflecting the leading role of students in the learning process under the relevant management models of differentiated education. Students have tremendous development potential; respect for students' personality and individual development is essential. This further improves students' usual performance and enhances their skills in tennis course education, promoting the reform and development of tennis course teaching in universities in China.

Conflicts of Interest

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

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