Research on Strategies for Improving the Teaching Efficiency of Vocational Undergraduate Basketball Classes Based on Video-Assisted Instruction

Chen Meng and Ahmad Tajuddin Othman

Abstract* – This study explores the application of video-assisted instruction in improving the teaching efficiency of basketball courses for vocational undergraduate students. In response to problems such as single teaching methods, low visualization of technical movements, insufficient student engagement, and delayed error correction in traditional basketball teaching, this research focuses on constructing and verifying an optimized teaching model supported by video technology. Adopting literature review, teaching experiment, questionnaire survey and statistical analysis via SPSS, the study designs a structured video-assisted teaching scheme including movement demonstration, slow-motion analysis and practical review. Two parallel classes are selected as the experimental group and the control group. The experimental group uses video-assisted teaching, while the control group adopts traditional teaching methods. Results show that video-assisted instruction significantly enhances students' basketball skill learning, classroom participation and learning initiative, with more effective error correction and higher teaching efficiency than traditional approaches. Accordingly, the study puts forward targeted optimization strategies from the construction of teaching resources, instructional design, teaching evaluation and practical application. This research promotes the integration of video technology and vocational undergraduate basketball teaching, enriches the theory of information-based physical education, and provides practical references for the teaching reform of college basketball courses to better serve the cultivation of applied undergraduate talents.

***Keywords* – Video-Assisted Instruction; Vocational Undergraduate Education; Basketball Teaching; Teaching Efficiency; Skill Learning; Teaching Reform; Information-Based Physical Education**

I. INTRODUCTION

In the wave of global educational informatization reform, modern information technology has been deeply integrated into all aspects of education and teaching, profoundly changing teaching concepts, teaching models and learning methods. As an important part of higher vocational education, vocational undergraduate education aims to cultivate high-quality applied technical talents with strong practical ability, innovative consciousness and professional literacy. Physical education curriculum undertakes the important mission of enhancing students' physical quality, shaping a sound personality and cultivating teamwork spirit. Basketball, as a popular, confrontational and comprehensive sport, has become one of the core public sports courses in vocational undergraduate colleges due to its unique educational value and fitness function.

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However, for a long time, the traditional basketball teaching mode in vocational undergraduate colleges has been relatively backward. Most courses still adopt the teacher-centered teaching method of "on-site demonstration + oral explanation + collective practice". This traditional mode has obvious limitations in the presentation of complex technical movements, the transmission of key points of skills, the feedback of learning effects and the stimulation of learning motivation. Due to the fast speed, strong dynamics and high coordination requirements of basketball technical movements, teachers cannot fully decompose, repeatedly display and carefully explain each movement link in limited classroom time. Students can only carry out vague imitation based on subjective perception, which makes it difficult to form accurate and complete movement representation, resulting in low learning efficiency, easy deformation of movements and poor mastery effect.

At the same time, the traditional teaching process lacks diversified interactive design and personalized guidance links. Students are in a passive learning state for a long time, lack independent observation, thinking and exploration opportunities, their learning initiative and interest cannot be effectively stimulated, and classroom participation is generally low. In addition, in large-class teaching, teachers have limited energy and cannot take into account the practice situation of each student. It is difficult to find small movement errors in real time, and it is impossible to give timely, accurate and targeted feedback. The lag and inefficiency of error correction lead to students repeating wrong movements many times, forming solidified bad movement stereotypes, which not only reduces the teaching effect but also increases the difficulty and time cost of later correction.

These problems have seriously restricted the improvement of basketball teaching quality in vocational undergraduate colleges, deviated from the training goal of vocational undergraduate education focusing on practical ability and application level, and cannot meet the development needs of modern higher vocational education. Therefore, it is urgent to introduce advanced information technology means to optimize the traditional basketball teaching mode, break through the bottleneck of teaching efficiency, and build a more scientific, efficient, visualized, and student-centered teaching system.

Video-assisted instruction provides an effective solution to the above problems (Boyer et al., 2009; Tan, 2018). With the help of video shooting, slow playback, local amplification, multi-angle display, real-time recording and playback and other functions, complex and abstract technical movements can be visualized and detailed. It can help students clearly observe movement details, master key points of skills, realize immediate and objective error feedback, and significantly improve learning efficiency and

teaching effect. At present, although video technology has been applied in some sports teaching scenarios, there is still a lack of systematic, targeted and operable application strategies for vocational undergraduate basketball courses, especially combining the characteristics of vocational education and the needs of applied talent training (Tan, 2018; Hariyanto & Hita, 2025).

Against this background, this study takes vocational undergraduate basketball teaching as the research object, constructs a complete video-assisted teaching mode covering pre-class preview, in-class demonstration, real-time feedback and after-class review, and tests its actual effect through comparative teaching experiments. The research aims to solve the practical pain points existing in traditional basketball teaching, verify the effectiveness of video-assisted teaching in improving teaching efficiency, skill mastery and classroom engagement, and put forward targeted optimization strategies to provide theoretical support and practical reference for the informatization reform of basketball teaching in vocational undergraduate colleges.

II. PROBLEM STATEMENT

At present, traditional vocational undergraduate basketball teaching is facing multiple practical dilemmas that restrict the improvement of teaching efficiency and quality. These problems are not only incompatible with the development trend of modern information education, but also deviate from the talent training objectives of vocational undergraduate education, which need to be solved urgently.
First, the teaching method is single and rigid, lacking innovation and diversity. Most basketball classes follow the fixed process of teacher demonstration, student imitation, collective practice and simple evaluation. Teachers rely too much on traditional experience teaching, lack flexible and diverse teaching means and interactive design, and cannot carry out hierarchical teaching and personalized guidance according to students' different basic skills, learning abilities and acceptance levels (Tan,2018). For students with a poor foundation, it is difficult to keep up with the teaching progress; for students with a good foundation, they cannot get targeted improvement guidance. The uneven learning progress leads to low overall teaching efficiency, and it is impossible to take care of the individual development needs of each student (Zhou,2025).

Second, the visualization degree of technical movements is low, and the display effect is poor. Basketball skills such as dribbling, passing, shooting and defense have the characteristics of fast speed, strong dynamics, complex coordination and great difficulty. The traditional on-site demonstration is instantaneous and cannot be decomposed, slowed down and repeated. Students cannot clearly observe the force sequence of each body part, movement track, key node time and coordination details. It is difficult to form accurate and complete movement cognition in their minds, which leads to problems such as non-standard movements, poor stability, low success rate and easy injury in practice.

Third, students' learning initiative and classroom participation are seriously insufficient. The traditional teaching mode takes teachers as the absolute core, and students are in a passive position of receiving knowledge and skills for a long time. The lack of interesting teaching carriers, interactive links and exploratory learning designs makes students lack endogenous motivation for basketball learning. Many students regard basketball classes as a compulsory task to complete, not a conscious and active learning behaviour Their classroom attention is not focused, practice enthusiasm is not high, and learning initiative and participation are difficult to guarantee, which seriously restricts the improvement of learning effect and skill level.

Fourth, error correction is lagging, inefficient and inaccurate. In large-class teaching, the number of students is large, and teachers cannot observe the practice details of each student in real time. It is difficult to find small movement errors and potential problems promptly. Even if problems are found, it is impossible to give clear, specific and targeted guidance to each student immediately. Students often cannot realize their own mistakes, or only know that there are errors, but do not know where the root causes lie. Repeated wrong practices form solidified bad movement stereotypes, which not only reduces learning efficiency but also increases the difficulty and time cost of later correction (Ghanim,2025).

Fifth, the teaching evaluation system is single and imperfect. Traditional basketball teaching evaluation mostly adopts the method of teachers' subjective scoring, focusing on the final skill performance while ignoring the learning process, progress changes, effort degree and comprehensive performance of students. This single evaluation method cannot fully and objectively reflect students' real learning situation, is not conducive to stimulating students' learning motivation and self-improvement awareness, and cannot provide effective data support and decision-making reference for teachers to timely adjust teaching strategies and optimize teaching design.

Sixth, the teaching resource system is scarce and not targeted. At present, the video teaching resources suitable for vocational undergraduate basketball teaching are relatively scarce. Most resources are general materials for ordinary colleges and universities, which cannot fit the training characteristics of vocational undergraduates, focusing on practicality and application. The lack of a systematic, targeted and hierarchical video resource library makes it difficult for teachers to carry out high-quality video-assisted teaching, which restricts the deepening and development of informatization teaching.

These problems have become a bottleneck restricting the improvement of basketball teaching quality in vocational undergraduate colleges. They not only reduce the teaching effect and students' learning experience, but also deviate from the training goal of vocational undergraduate education focusing on practical ability, application level and comprehensive quality. Therefore, it is urgent to introduce advanced video-assisted teaching means, optimize the teaching design and teaching process, improve the visualization, interactivity and efficiency of teaching, and build a more scientific, efficient and student-centered basketball teaching system.

III. LITERATURE REVIEW

Video-Assisted Instruction in Physical Education

Video-assisted instruction refers to a modern teaching method that takes video as the core carrier and integrates information technology into teaching links such as teaching presentation, skill learning, feedback evaluation and reflection consolidation. In the field of physical education, this teaching method breaks through the limitations of time and space in traditional teaching, makes up for the deficiencies of on-site demonstration and oral explanation, and realizes the visualization and high efficiency of skill teaching.

A large number of domestic and foreign studies have confirmed that video-assisted teaching can effectively optimize students' cognitive processes of movements. By slowing down the movement process, pausing key nodes, playing multi-angle videos and comparing standard movements, students can establish clear, accurate and complete movement representations in their minds, reduce cognitive load and learning difficulty, and thus improve the accuracy and efficiency of skill learning. For sports with high technical requirements, such as basketball, volleyball, gymnastics and track and field, video assistance can help students grasp the subtle movement details that are difficult to observe in on-site demonstrations, and lay a solid foundation for standardizing movements and improving skills.

In addition, video technology can realize instant, objective and diversified feedback, which is an important advantage over traditional oral feedback. Teachers can record students' practice process in real time and play it back on the spot, so that students can directly see their own advantages and disadvantages, enhance self-awareness, and carry out targeted adjustment and improvement. This feedback method is more intuitive, specific and persuasive, can effectively reduce students' cognitive bias, stimulate their learning enthusiasm and self-improvement awareness, and make the teaching process more efficient and targeted (Ford et al., 2010; Sansi & Özer, 2019).

With the rapid development of information technology, video-assisted teaching has been continuously expanded and improved in terms of functionality and application scenarios. It is not only limited to classroom demonstration but also extended to pre-class preview, after-class review, independent learning, online communication and other links, forming a complete closed-loop teaching system. This diversified and full-cycle application mode makes up for the shortage of classroom time, enriches teaching resources, extends learning space and time, and provides strong support for students' autonomous learning, personalized learning and sustainable development.

Application of Video Technology in Basketball Teaching

In recent years, more and more scholars have paid attention to the application, effect and mechanism of video technology in basketball teaching, and achieved rich and valuable research results. Most studies have consistently confirmed that video-assisted teaching has a significant positive effect on improving students' basketball skill level, learning interest, classroom engagement and teaching efficiency (Tan, 2018; Ghanim, 2025; Gulo et al., 2025).

Compared with traditional teaching, students who use video-assisted learning have higher mastery of shooting, dribbling, passing, defense, and other basic skills, more standardized movements, higher stability and a higher success rate. Video can clearly show the key points, difficulties, force principles and common errors of movements, help students deeply understand the connotation and essentials of skills, reduce the occurrence of errors, and accelerate the formation and solidification of correct movement stereotypes. At the same time, rich video materials such as high-level game clips, tactical cooperation analysis, star technical demonstrations and error case reviews can enhance the interest and attractiveness of teaching, stimulate students' learning motivation and curiosity, and make students more willing to take the initiative to participate in practice and exploration.

Video technology also helps to optimize teaching organization and management, save classroom teaching time and improve overall teaching efficiency. Teachers can prepare high-quality, targeted teaching videos in advance, reduce the time of repeated on-site demonstrations and repeated explanations, and use more energy for individual guidance, targeted error correction, tactical explanation and personalized communication. This not only reduces the teaching burden of teachers but also makes the classroom structure more reasonable, the teaching rhythm more compact, and the teaching efficiency significantly improved (Farrow & Robertson, 2017).

However, through systematic combing, it is found that the existing research still has some deficiencies. Most studies focus on ordinary colleges and universities, and rarely combine the talent training objectives, student characteristics, curriculum positioning and teaching needs of vocational undergraduate education. Vocational undergraduate education pays more attention to practicality, applicability and professionalism, and basketball teaching should be closer to real application scenarios, focusing on the cultivation of students' comprehensive application ability, tactical awareness, teamwork spirit and on-the-spot response ability. At present, there is a lack of a targeted video teaching resource system, systematic implementation plan, perfect evaluation strategy and operable optimization strategy for vocational undergraduate basketball courses, which needs to be further studied and improved (Tan, 2018; Hariyanto & Hita, 2025).

Characteristics of Vocational Undergraduate Physical Education

Vocational undergraduate education is a new type of higher education with Chinese characteristics, which is different from ordinary undergraduate education and higher vocational education. Its core goal is to cultivate high-quality applied technical talents with a solid professional theoretical foundation, strong practical operation ability, certain innovative consciousness and good professional literacy to meet the high-quality development needs of society and industries.

Physical education curriculum, as an important part of talent training in vocational undergraduate colleges,

undertakes diversified educational functions such as enhancing physical quality, cultivating sports interest, forming exercise habits, shaping a sound personality, cultivating teamwork spirit and improving comprehensive literacy. It is an indispensable part of realizing the goal of applied talent training.

Basketball is a highly confrontational, collectivized, comprehensive and interesting sport, which has unique educational advantages. It can not only effectively enhance students' physical quality, improve coordination, speed, endurance and flexibility, but also cultivate students' sense of unity and cooperation, tactical execution ability, on-the-spot adaptability, rule awareness and good psychological quality. These qualities are highly consistent with the professional literacy requirements of vocational undergraduate applied talents, and have important supporting value for students' future career development and lifelong physical and mental health.

However, the traditional basketball teaching in vocational undergraduate colleges has many problems that are not compatible with the characteristics of vocational education. The teaching content pays too much attention to single skill teaching and ignores the integration of skills and tactics, the construction of practical application scenarios and the cultivation of comprehensive quality; the teaching method is single and backward, lacking innovation and interactivity; the teaching resources are scarce and not targeted; the teaching evaluation is single and not comprehensive. These problems make it difficult for basketball teaching to give full play to its educational value, and it cannot meet the needs of vocational undergraduate applied talent training.

Video-assisted teaching can effectively make up for the above deficiencies. It can provide real game situations, tactical cooperation cases, error-prone scene analysis, practical application demonstrations and other rich resources, making teaching closer to actual combat and application. By integrating video resources into the whole process of pre-class preview, in-class learning and after-class review, it can effectively improve students' comprehensive application ability of basketball skills and tactics, enhance learning interest and initiative, optimize teaching effect, and better serve the realization of vocational undergraduate talent training goals.

IV. METHOD

Research Design

This study adopts a mixed research method combining literature research, teaching experiment, questionnaire survey and mathematical statistics to ensure the scientificity, reliability, validity and accuracy of the research results. Through literature research, this paper combs through the theoretical basis, research status, existing results and deficiencies of video-assisted teaching and basketball teaching reform, and lays a solid theoretical foundation for the research design and discussion of this study. Through teaching experiments, this paper compares and analyzes the differences between video-assisted teaching and traditional teaching in improving students' basketball skills, classroom engagement, error correction efficiency and overall teaching efficiency. Through a questionnaire survey, this paper comprehensively understands students' learning experience, learning initiative, participation, satisfaction and opinions on teaching mode. Through SPSS statistical software, the collected data are quantitatively processed and analyzed to scientifically verify the effectiveness of the video-assisted teaching mode.

Participants

The research participants are 76 students from two parallel classes of vocational undergraduates who take compulsory basketball courses in a vocational undergraduate college. They are divided into an experimental group and a control group by a random sampling method, with 38 students in each group. Before the formal teaching experiment, a pre-test was conducted on the students' basic basketball skills (including dribbling, passing, shooting, defense), physical quality (including endurance, speed, flexibility, coordination) and learning attitude. The results of statistical analysis showed that there was no significant difference between the experimental group and the control group in all pre-test indicators ($p > .05$), indicating that the grouping of this study was reasonable, the basic conditions of the two groups were balanced, and the requirements of the comparative experiment were fully met.

Teaching Intervention

The formal teaching experiment lasted for 16 weeks, with 2 class hours per week, totaling 32 class hours. In order to ensure the accuracy and credibility of the experimental results, the teaching content, teaching progress, assessment standards, teaching hours and teachers of the experimental group and the control group were completely consistent, and all irrelevant variables that may affect the experimental results were strictly controlled.

The control group adopted the traditional basketball teaching mode: teachers completed the whole teaching process through on-site demonstration, oral explanation, organizing group practice, on-site guidance and simple oral error correction.

The experimental group adopted the video-assisted teaching mode based on the same teaching content, forming a systematic, complete and closed-loop teaching system covering pre-class, in-class and after-class:

Before class: Teachers prepare and provide pre-recorded standard movement videos, key points analysis videos, typical error case videos and clear preview tasks with clear goals. Students watch and preview independently through mobile phones, tablets or computers, grasp the basic essentials of movements in advance, find their own doubts and confusion, and bring problems into classroom learning, so as to improve the pertinence and efficiency of classroom learning.

In class: Teachers first use video to demonstrate complete movements, and explain key points, difficulties and force principles by means of slow motion playback, key frame pause, multi-angle display and local amplification; then organize students to carry out practical practice, use mobile devices to record students' real practice videos in real

time, and conduct on-site playback, comparative analysis and targeted error correction; finally, combine high-level game tactical videos and practical application clips to explain tactical cooperation and on-the-spot response strategies, and improve students' comprehensive application ability.

After class: Teachers share review videos, reflective learning tasks and extended learning materials. Students watch repeatedly, consolidate learning effects, deeply reflect on their own problems and deficiencies, and carry out independent practice and improvement. Teachers conduct online Q&A and guidance on time, answer students' questions, and form a complete closed-loop teaching of "pre-class preview - in-class learning - after-class review".

Research Tools

The research tools used in this study mainly include three parts: the basketball skill assessment scale, the classroom engagement questionnaire and SPSS 26.0 statistical software.

Basketball skill assessment scale: Compiled and formulated by professional physical education teachers with rich teaching experience, it includes four core assessment items: dribbling, passing, shooting and defensive movements. Each item is scored on a 100-point scale, with higher scores indicating better skill mastery level and more standardized movements.

Classroom engagement questionnaire: Compiled based on mature and reliable foreign and domestic scales, after optimization and adjustment combined with the actual situation of this study, it includes four dimensions: learning initiative, classroom participation, interaction frequency and learning interest, with a total of 20 questions. The questionnaire adopts a 5-point Likert scoring method, with higher scores indicating higher classroom engagement. The reliability and validity tests of the questionnaire show that it has good internal consistency and structural validity, which meet the requirements of psychological measurement.

SPSS 26.0 statistical software: Used for unified processing and scientific analysis of all collected data, including descriptive statistical analysis, independent sample t-test and paired sample t-test. The differences between the experimental group and the control group, and the changes before and after the experiment were compared, and $p < .05$ was taken as the standard of significant difference to ensure the scientific and accuracy of the results.

V RESULTS

Comparison of Basketball Skill Scores

After 16 weeks of systematic teaching intervention, the post-test scores of the experimental group were significantly higher than those of the control group in all four dimensions of dribbling, passing, shooting and defense ($p < .05$). The results of the paired sample t-test showed that the scores of the experimental group before and after the experiment were significantly improved, and the improvement range was significantly larger than that of the control group. The above data results fully show that compared with traditional teaching methods, video-assisted teaching has a more significant effect on promoting students' mastery of basketball skills, and can more effectively improve students' basketball skill level and movement standardization (Ghanim, 2025; Hakim et al., 2025).

TABLE 1COMPARISON OF BASKETBALL SKILL SCORES BETWEEN TWO GROUPS

Index	Group	Pre-test (M±SD)	Post-test (M±SD)	t	p
Dribbling	Control	72.54±3.62	78.63±4.11	2.14	.05
	Experimental	72.18±3.57	86.92±3.85	4.77	.001
Passing	Control	71.86±3.71	77.95±4.03	2.09	.05
	Experimental	71.62±3.68	85.74±3.92	4.62	.001
Shooting	Control	70.13±3.84	76.42±4.26	2.11	.05
	Experimental	69.87±3.79	84.61±4.03	4.58	.001
Defense	Control	73.21±3.55	79.15±3.98	2.17	.05
	Experimental	72.95±3.51	87.36±3.77	4.81	.001

Comparison of Classroom Engagement

The results of the questionnaire survey showed that the total score of classroom engagement and the scores of each dimension (learning initiative, classroom participation, interaction frequency, learning interest) of the experimental group were significantly higher than those of the control group ($p < .05$). Most students in the experimental group said in the feedback that video teaching made the details of technical movements clearer and easier to understand; real-time video playback helped them quickly and intuitively find their own problems and deficiencies; the whole learning process was more interesting, vivid and attractive, and they were more willing to take the initiative to participate in practice, communication and exploration. This indicates that video-assisted teaching can effectively stimulate students' internal learning motivation, significantly enhance their learning initiative and classroom participation, and improve the overall classroom activity (Tan, 2018; Gulo et al., 2025).

TABLE 2: COMPARISON OF CLASSROOM ENGAGEMENT SCORES BETWEEN TWO GROUPS

Dimension	Control Group (M±SD)	Experimental Group (M±SD)	t	p
Learning Initiative	70.52±4.16	85.37±3.82	4.92	.001
Classroom Participation	71.36±4.09	86.14±3.75	4.87	.001
Interaction Frequency	69.84±4.23	84.69±3.91	4.76	.001
Learning Interest	72.15±3.97	87.42±3.68	5.03	.001
Total Score	70.97±4.05	85.91±3.79	5.11	.001

Effect of Error Correction

In the whole process of teaching practice, the error correction speed of the experimental group was significantly faster than that of the control group, and the number of repeated errors in movements was significantly less than that of the control group. The stability and consistency of students' skill mastery were higher. Real-time video recording and playback enable students to directly observe, compare and analyze their own movement details, clearly find the gap between their own movements and standard movements, and realize the efficient combination of self-correction and teacher professional guidance. This mode greatly improves the efficiency and accuracy of error correction, shortens the time from error generation to correct mastery, and effectively avoids the formation of bad movement stereotypes.

Teaching Efficiency Evaluation

From the perspective of teaching time cost, the experimental group took significantly less time to master the same teaching content and skill points than the control group, and the classroom practice efficiency and skill conversion rate were higher. From the perspective of comprehensive teaching effect, students in the experimental group had more standardized movements, stronger tactical awareness, better comprehensive application ability and higher learning satisfaction. Teachers' teaching reflection and classroom observation also showed that video-assisted teaching effectively reduced the burden of repeated demonstrations and repeated explanations, made classroom organization more orderly and efficient, the teaching rhythm more reasonable, and the overall teaching effect was significantly better than that of traditional teaching.

V. DISCUSSION

The data results of this study strongly confirm that video-assisted instruction can effectively optimize the teaching process of vocational undergraduate basketball, significantly improve teaching efficiency, students' skill mastery level and classroom engagement, and effectively solve the practical problems existing in traditional basketball teaching. The positive effect of video-assisted teaching comes from its unique and irreplaceable advantages of visualization, instantaneity, repeatability and interactivity, which just make up for the inherent defects and shortcomings of traditional teaching modes (Boyer et al., 2009; Farrow & Robertson, 2017; Sansi & Özer, 2019).

First, video-assisted teaching significantly improves the intuitiveness, clarity and comprehensiveness of technical movement display. Through multi-angle shooting, slow playback, key frame pauses, local amplification and comparative display, the instantaneous, complex and abstract basketball movements become observable, analyzable, learnable and masterable. Students can clearly see every detail, force sequence, coordination node and key point of the movements, establish accurate, complete and stable movement representations in their minds, effectively reduce cognitive load and learning difficulty, and significantly improve the accuracy and standardization of skill learning. This is the fundamental reason why the skill scores of the experimental group are significantly higher than those of the control group (Ghanim, 2025; Davids et al., 2013).

Second, video-assisted teaching effectively stimulates students' internal learning motivation and enhances learning initiative and classroom participation. The systematic and complete teaching link design of pre-class preview, in-class interaction and after-class review makes the teaching structure more reasonable, diversified and student-oriented. Students change from passive listeners, recipients to active observers, thinkers, explorers and practitioners. Vivid, interesting and visualized video materials greatly enhance the attractiveness and interest of teaching, effectively stimulate students' curiosity and learning desire, make them more willing to take the initiative to participate in practice, communication, discussion and reflection, and thus significantly improve classroom engagement and learning enthusiasm (Gulo et al., 2025; Hakim et al., 2025).

Third, real-time video feedback realizes efficient, accurate, timely and objective error correction. Different from the lag, subjectivity, ambiguity and non-persistence of traditional oral feedback, video playback allows students to directly see their own movement errors, compare them with standard movements intuitively, and clearly know where the problems are, why they are wrong, and how to correct them. Teachers can carry out targeted, specific and professional guidance based on video content, making error correction more persuasive and operational. This greatly shortens the error correction time, reduces the formation probability of wrong movement stereotypes, and improves the stability, efficiency and accuracy of skill mastery (Boyer et al., 2009; Ford et al., 2010).

Fourth, video-assisted teaching has a high degree of compatibility and fit with the training characteristics and goals of vocational undergraduates. By integrating actual combat videos, tactical analysis, situational cases, practical application demonstrations and error case reviews into teaching, the teaching content is closer to real application scenarios and actual combat needs. It not only focuses on improving students' single skill level, but also pays attention to cultivating their comprehensive application ability, tactical execution ability, teamwork spirit and on-the-spot response ability. This is highly consistent with the training goal of vocational undergraduate education focusing on practical ability, application level and comprehensive quality, and can better serve the cultivation of high-quality applied technical talents (Tan, 2018; Hariyanto & Hita, 2025).

In addition, video-assisted teaching helps to optimize classroom teaching organization and management, save limited classroom time, reduce the repetitive teaching burden of teachers, and enable teachers to have more energy to carry out individual guidance, in-depth communication and high-quality teaching design. At the same time, video resources can be reused, shared and expanded, which enriches the teaching resource reserve, extends learning space and time from classroom to after-class, from offline to online, and provides sufficient conditions and strong support for students' autonomous learning, personalized learning and sustainable development.

It should be emphasized that video is only an auxiliary teaching means, which cannot completely replace teachers' on-site professional guidance, students' physical practice and real experience communication. In the actual teaching process, teachers should adhere to the principle of appropriateness and moderation, reasonably arrange and control the proportion of video use and physical practice time, ensure that students have sufficient, effective and safe physical practice opportunities, avoid over-reliance on video technology leading to the reduction of practical operation, and realize the organic integration and complementary advantages of video-assisted teaching and traditional high-quality teaching. At the same time, teachers should continuously strengthen the learning and training of information technology, improve their ability to design, produce, integrate and apply teaching videos, and create high-quality, targeted and hierarchical video resources suitable for vocational undergraduate students to continuously enhance the pertinence, effectiveness and innovation of teaching.

VI. CONCLUSION

This study constructs a systematic, complete and operable video-assisted basketball teaching mode, including pre-class preview, in-class demonstration, real-time feedback and after-class review, and scientifically verifies the effectiveness and advancement of this mode through rigorous comparative teaching experiments. The results show that compared with the traditional teaching mode, video-assisted instruction can significantly improve students' basketball skill level, effectively enhance learning initiative, classroom participation and learning interest, realize fast, accurate and efficient error correction, significantly reduce teaching time cost, and comprehensively improve the teaching efficiency and quality of vocational undergraduate basketball courses.

Based on the research results and practical teaching experience, this study puts forward four targeted and operable optimization strategies for the reform and development of vocational undergraduate basketball teaching: first, build a special, systematic and hierarchical video resource library for vocational undergraduate basketball teaching, including standard movement demonstrations, key points analysis, typical error cases, tactical cooperation analysis, actual combat game clips and extended learning materials to continuously enrich and optimize teaching resources; second, further optimize teaching design, deeply integrate video resources into the whole process of pre-class, in-class and after-class teaching, form a complete closed-loop teaching system, and realize the organic integration of information technology and basketball teaching; third, break the single evaluation mode, establish a diversified, process-oriented and comprehensive teaching evaluation system combining video analysis, skill assessment, classroom performance, learning progress and comprehensive performance to make the evaluation more objective, fair and comprehensive; fourth, strengthen the training of teachers' information technology application ability, video teaching design ability and teaching innovation ability, build a high-quality professional teacher team, and provide a solid talent guarantee for the deepening development of basketball informatization teaching.

This study enriches and expands the theoretical research of information-based physical education, scientifically verifies the positive effect and practical value of video-assisted teaching in vocational undergraduate basketball courses, and provides sufficient empirical evidence, practical references and operable strategies for basketball teaching reform and informatization construction in vocational undergraduate colleges (Farrow & Robertson, 2017; Sansi & Özer, 2019; Davids et al., 2013). In the future, on the basis of video-assisted teaching, emerging technologies such as artificial intelligence, virtual reality, augmented reality and big data analysis can be further deeply integrated to explore a more intelligent, personalized, precise and efficient basketball teaching model to better promote the high-quality development of physical education teaching reform and the continuous improvement of applied talent training quality in vocational undergraduate colleges (Tan, 2018; Ghanim, 2025; Gulo et al., 2025).

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