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Video Supported Basketball Dribbling Instruction in Secondary Physical Education

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Abstract

Objectives: To examine changes in basketball dribbling performance and classroom learning processes during two cycles of video-supported instruction among Grade 10 students.

Materials and Methods: Classroom action research was conducted with 40 students in class X.3 at SMA Negeri 14 Palembang, Indonesia. Each cycle involved planning, action, observation, and reflection. Video demonstrations were combined with movement-problem discussion, practical tasks, and teacher feedback. Students completed a 3-m out-and-back dribbling task assessed across stance, execution, ball-control continuity, and forward gaze. Four domain scores of 1–4 were converted to a 100-point scale. Individual attainment required a score of at least 75, and the class-level target was 85%. Scores were recalculated from the individual records and analysed descriptively.

Results: Mean dribbling scores increased from 74.06 ± 11.01 in Cycle I to 86.41 ± 9.79 in Cycle II, a difference of 12.34 points. Attainment increased from 28 of 40 students (70.00%) to 38 of 40 (95.00%), exceeding the class-level target. All four domain means increased. Teacher implementation and student-activity checklists showed more endorsed items in Cycle II; these percentages describe checklist completion rather than proportions of active students.

Conclusions: Video-supported instruction, combined with guided practice and feedback, was accompanied by improved assessed dribbling performance across cycles. The findings support its use as a classroom teaching option, while the absence of a comparison group and retention testing limits causal and long-term interpretations.

Keywords: basketball; dribbling; video tutorial; classroom action research; physical education

Introduction

Learning to dribble a basketball requires students to control the ball while coordinating body position, movement, and visual attention. Beginners often direct their gaze towards the ball, stiffen the wrist, or lose control when changing direction. These difficulties can limit their ability to practise confidently and use the skill in more demanding situations. School instruction therefore needs to make the movement understandable while providing enough time for students to attempt, evaluate, and adjust it. Demonstrations can serve this purpose when they are closely connected to practical tasks rather than presented as a substitute for movement practice.

Video tutorials offer a repeatable visual example that teachers can revisit when students encounter specific errors. They may help students notice how the fingers guide the ball, how the body remains balanced, and how the head is positioned during movement. Han et al. (2022b) reviewed observational learning in physical education and found support for its contribution to motor skill development, while also identifying uncertainty about the relative value of different

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models and verbal cues. This evidence provides a rationale for using demonstrations purposefully, without assuming that simply watching a video is sufficient for learning.

Research on basketball provides more specific examples. Tannoubi et al. (2023) examined four weeks of video modelling with novice young players and reported benefits in selected technical and collective performance outcomes. Their findings support the instructional potential of video, although they do not establish an identical effect for every basketball skill. In Indonesia, Jaya et al. (2023) developed a dribbling tutorial for Grade 10 students using the ADDIE framework and reported favourable expert and user evaluations. That study demonstrates the feasibility of a learning resource; it does not by itself establish improvement in measured dribbling performance.

Relevant evidence has also been published in Musamus Journal of Physical Education and Sport. Meirizal et al. (2023) reported improved lay-up movement scores following flip book-based audiovisual instruction in a one-group study of university physical education students. The study links visual learning materials with practical basketball instruction, but its participants, skill, and design differ from the present classroom. Together, these studies make a case for investigating how visual resources are used during teaching and how students respond to successive instructional adjustments.

The wider literature cautions against treating technology as an independent solution. Mödinger et al. (2022) reviewed video-based visual feedback in physical education and emphasised the influence of class size, lesson time, equipment, and teaching conditions. Jastrow et al. (2022) likewise identified both opportunities and barriers in digital technology use. Findings are not uniformly favourable: Zali and Mohammadzade (2024) reported that live models outperformed video models for basketball skill learning in their sample of adolescent girls. Effective lesson design therefore requires attention to the model, task, and learner rather than relying on the medium alone.

Initial classroom observations at SMA Negeri 14 Palembang identified frequent downward gaze, rigid palm contact, and difficulty maintaining ball control during a short dribbling task. Video tutorials were introduced alongside discussion of movement problems, practical attempts, and teacher feedback. The purpose of this study was to examine changes in rubric-assessed dribbling performance and the classroom learning process across two cycles of this instruction. The study offers a local account of teaching refinement, with a particular focus on maintaining control and forward gaze over a 3-m out-and-back route.

Materials and Methods

Study Design

The study used classroom action research to address a practical teaching problem in an intact physical education class. Two cycles followed the sequence of planning, action, observation, and reflection. Cycle I observations informed the adjustments implemented in Cycle II. This iterative approach is consistent with the classroom action research procedures described by Machali (2022). The intervention was not randomised, and there was no comparison class. The analysis therefore describes changes within the participating class rather than estimating a causal effect of video tutorials.

Study Participants

Participants were 40 Grade 10 students in class X.3 at SMA Negeri 14 Palembang, South Sumatra, Indonesia. The class was selected because the teacher had identified difficulties in basketball dribbling during regular physical education. Forty individual assessment records were available for each cycle and were linked across cycles using the same student order. Student names were excluded from the analysis presented here. Age and sex distributions were not

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available in the study report and are not inferred from names. The study took place during the first semester of the 2026/2027 academic year, with observation sheets dated September and October 2026.

Study Organization

The teaching approach combined video tutorials with elements of problem-based learning. Students observed examples of dribbling, discussed movement difficulties, attempted the task, and received feedback. The main outcome remained practical dribbling performance rather than a questionnaire measure of interest. Equipment included basketballs, cones, a marked practice route, and video presentation facilities. Observation sheets describe four learning groups, but do not specify whether their sizes were equal. The report does not consistently document the number or duration of teaching sessions, the video length, or the number of repetitions, so these are not assigned numerical values here.

In Cycle I, planning focused on the observed technical difficulties and the preparation of teaching materials, a dribbling rubric, and observation checklists. During instruction, students watched examples of correct and incorrect execution and discussed how to improve ball control. They then practised dribbling along the 3-m route while attempting to keep their gaze forward. The teacher provided corrections on hand contact and movement control. A collaborating mentor teacher observed the lesson process, and individual performance was assessed at the end of the cycle.

Reflection identified continuing downward gaze, stiff hand contact, and difficulties with the left hand during direction changes. The report also noted that some students needed more time between video demonstration and practice. Cycle II therefore included repeated viewing of wrist and hand placement, more left-hand practice, and modifications to visual route markers. Students again discussed the movement task and practised before reassessment. Because video use, practice conditions, and teacher support were refined together, the intervention is described as a combined teaching approach. It does not isolate video exposure from other instructional components.

Performance Assessment

The task required students to dribble a basketball along a 3-m route and return while maintaining continuous control and looking ahead. Four domains were assessed: preparation or stance, finger-led execution, continuity of ball control, and visual orientation. Each domain was scored from 1 to 4, giving a maximum total of 16. The score calculation, reconstructed from the completed assessment sheets, was: final score = (sum of four domain scores ÷ 16) × 100. Thus, the attainable scale ranges from 25 to 100 when every domain has a minimum score of 1. A score of at least 75, equivalent to 12 of 16 rubric points, indicated individual learning attainment.

Table 1. Domains assessed in the basketball dribbling task

Domain	Focus of assessment
Stance	Balanced starting position, feet approximately shoulder-width apart, and flexed knees.
Execution	Controlled finger-led contact rather than rigid palm slapping.
Continuity	Stable possession and continuous dribbling over the 3-m out-and-back route.
Visual orientation	Head upright and gaze directed forwards rather than continuously towards the ball.

Note. Each domain was scored from 1 to 4. Complete domain-specific descriptors for every score level were not provided in the report. The task was assessed by movement quality rather than completion time.

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The report proposed expert review of the assessment instruments but did not provide a numerical content-validity index or inter-rater reliability estimate. Their measurement properties therefore remain a limitation. The two students who did not attain the score threshold in Cycle II were not assigned a medical or developmental explanation because no supporting assessment was supplied.

Observation of the Learning Process

Teacher implementation and student activity were documented using separate 10-item yes/no checklists. Teacher items covered lesson opening, objectives, presentation of the movement problem, group organisation, discussion, questions, practical guidance, feedback, reflection, and closure. Student items concerned attention, questions, answers, discussion, cooperation, willingness to attempt the movement, enthusiasm, following instructions, presenting discussion outcomes, and remaining involved until the lesson ended. A checklist percentage was calculated as endorsed items divided by 10, multiplied by 100. These are lesson-level summaries and do not indicate the percentage of individual students who were active.

Field notes were read descriptively to identify recurring movement difficulties and areas for instructional adjustment. No interview-based thematic analysis or independent qualitative coding procedure was documented. Inconsistent wording in the Cycle II observation comments was treated cautiously, and checklist endorsements were not used as evidence that every student demonstrated every desired behaviour.

Statistical Analysis

Descriptive statistics were recalculated from the 40 student-level records for each cycle. Domain scores were summed and converted to the final scale, and the resulting values were checked against the recorded totals and attainment classifications. All individual totals and final scores agreed with this calculation. Results are presented as means and sample standard deviations, minimum and maximum values, and frequencies with percentages. The class-level success criterion was at least 85% of students scoring 75 or higher, equivalent to at least 34 of 40 students. Changes in proportions are expressed in percentage points. No inferential significance tests were added because the study was designed as descriptive classroom action research.

Results

Changes in Dribbling Performance

Table 2. Dribbling performance and learning attainment across cycles

Outcome	Cycle I	Cycle II
Students assessed, n	40	40
Mean score ± SD	74.06 ± 11.01	86.41 ± 9.79
Minimum–maximum	56.25–93.75	68.75–100.00
Students attaining ≥75, n (%)	28 (70.00)	38 (95.00)
Students below 75, n (%)	12 (30.00)	2 (5.00)
Class-level target ≥85% attained	No	Yes

Note. Statistics were recalculated from the individual assessment sheets, using final score = total rubric points ÷ 16 × 100. SD denotes sample standard deviation.

The class mean increased by 12.34 points from Cycle I to Cycle II. Learning attainment increased by 25.00 percentage points, from 70.00% to 95.00%, and exceeded the class-level target in Cycle

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II. Of the 12 students initially below the threshold, 10 attained it in Cycle II and two remained below it. All 28 students who had attained the threshold in Cycle I retained that classification. Every student had a higher total score in Cycle II, although improvement alone did not guarantee attainment.

Table 3. Mean domain scores on the 1–4 rubric

Domain	Cycle I	Cycle II	Difference
Stance	3.23	3.60	0.38
Execution	2.93	3.53	0.60
Continuity	2.95	3.53	0.58
Visual orientation	2.75	3.18	0.43

Note. Domain means and differences were calculated before rounding. Accordingly, a difference can vary slightly from subtraction of the displayed rounded means. Scores describe movement quality in the assessment task.

Mean scores increased in all four domains. Execution showed the largest numerical increase, followed by continuity of ball control. Visual orientation remained the lowest-scoring domain in Cycle II, despite improvement from Cycle I. The pattern indicates that maintaining forward gaze continued to require attention after other elements of the task had improved.

Classroom Observations and Instructional Refinement

Table 4. Endorsed items on the classroom observation checklists

Checklist	Cycle I	Cycle II
Teacher implementation	8/10 items (80%)	10/10 items (100%)
Student activity	7/10 items (70%)	10/10 items (100%)

Note. Percentages refer to endorsed checklist items, not to individual student participation rates. Cycle II comments contain repeated or inconsistent wording; these summaries should therefore be read with the field-note limitations in mind.

Cycle I notes described downward gaze, rigid hand contact, and difficulty controlling the ball with the left hand. Uneven support during group discussion and limited time for reflection were also recorded. These observations informed the additional video review and practice adjustments in Cycle II. Later notes described better finger-led control and more consistent forward gaze. However, the rubric scores and continued non-attainment of two students do not support a claim that every technical difficulty disappeared. The qualitative account is therefore interpreted as observed improvement rather than complete correction for the entire class.

Discussion

Meaning of the Improvement Across Cycles

The main finding was an increase in rubric-assessed dribbling performance between the two teaching cycles. The mean rose from 74.06 to 86.41, while 10 additional students reached the learning threshold. The second cycle therefore met the classroom target of 85% attainment. These changes matter for the local teaching objective because they reflect more students demonstrating the assessed movement criteria. They do not establish that video tutorials alone caused the improvement: students also received further practice, revised route cues, discussion, and teacher feedback.

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The domain results provide a more specific account than the overall attainment percentage. Finger-led execution and ball-control continuity improved most, while forward gaze remained comparatively difficult. This pattern is consistent with the teaching emphasis on wrist placement and repeated control practice, although the study did not test a mechanism linking those activities to the score changes. A student may control the bounce more consistently while still relying on visual monitoring of the ball. The remaining difficulty with gaze therefore gives the teacher a practical focus for subsequent lessons rather than supporting an undifferentiated claim of complete mastery.

Comparison with Basketball Video Studies

The closest comparison is Putra et al. (2024), who combined problem-based learning and audiovisual media in two cycles of high-school basketball instruction. Attainment in their class of 36 students rose from 75% in Cycle I to 100% in Cycle II. The present class showed the same direction of change, from 70% to 95%. This similarity concerns the teaching approach and descriptive pattern, rather than an equivalent intervention effect: the rubrics and lesson conditions were not established as identical. Both studies also lack the comparison needed to separate the contributions of media, practice, and discussion.

Tannoubi et al. (2023) provide a useful comparison because their quasi-experimental study also used video modelling with basketball beginners. Their results favoured video modelling for selected outcomes, including passing and aspects of collective performance. The present findings extend the classroom discussion to a short dribbling assessment, but they should not be treated as a replication of a controlled dribbling effect. The participants, exposure period, tests, and comparison conditions differ. Both studies nevertheless support examining how visual demonstrations are integrated with physical practice.

The Indonesian development study by Jaya et al. (2023) is closely aligned with the present educational level and skill. Its favourable expert and user evaluations suggest that a dribbling tutorial can be an acceptable resource for Grade 10 instruction. The contribution here is different: performance was assessed across successive teaching cycles using student-level records. Keeping these types of evidence separate is important. A well-rated video may be suitable for use, but performance improvement must still be assessed rather than inferred from a feasibility percentage.

Meirizal et al. (2023), in MJPES, reported improved lay-up movement performance after audiovisual instruction delivered through a flip book. That study reinforces the relevance of visual learning resources in Indonesian basketball education. Its outcome involved a different coordination sequence, and its participants were university students. Its one-group design also shares an attribution problem with the present research. Accordingly, the most defensible connection is that visual resources can support an organised practical lesson, while the size and cause of improvement require stronger comparative evidence.

Evidence that favours other instructional formats also deserves attention. Zali and Mohammadzade (2024) found live demonstrations more effective than video demonstrations in their study of basketball skills among adolescent girls. Their findings show why the current improvement cannot be interpreted as proof that video is superior to live teaching. The present intervention retained teacher guidance and practical correction rather than replacing them. Choice of demonstration format should remain responsive to the students, the task, and the teacher's ability to connect an example with the next attempt.

Observation and Feedback as Plausible Explanations

Observational learning provides a reasonable explanation for the role of the tutorial: the visual example gives students information about an intended movement that they can attempt to

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reproduce. Han et al. (2022b) found evidence supporting observational learning in physical education, but their review did not establish one universally best model format. The present study assessed performance, not attention, memory, or motor imagery. Claims that the videos accelerated neural adaptation or created motor memory would therefore go beyond the measurements.

Feedback may have contributed alongside the demonstrations. Zhou et al. (2021) reviewed evidence on feedback in physical education and found support for its use while identifying uncertainty about differences between forms and content. Han et al. (2022a) subsequently reported a positive pooled effect for feedback in a meta-analysis. These findings support the instructional logic of combining an example with correction after practice. They do not identify the separate contribution of feedback in the present class, because practice opportunities and lesson organisation changed at the same time.

It is also necessary to distinguish video modelling from video feedback. The intervention described here involved tutorial examples and repeated viewing; it did not document a systematic procedure in which each student reviewed a recording of their own performance. Mödinger et al. (2022) discuss both model-based and self-referential visual approaches within school physical education. Their review supports careful planning of viewing, explanation, and practice under everyday constraints. It should not be used to imply that self-modelling occurred in this study when that procedure was not established.

Implications for Teaching and Assessment

The practical implication is to connect each viewing episode with a clear movement problem and an immediate opportunity to practise. For this class, hand contact, control during the return movement, and forward gaze were concrete targets. Brief teacher prompts and repeated attempts may help keep the video connected to the task. This recommendation is consistent with the broader review by Jastrow et al. (2022), which emphasised that digital resources offer possibilities within a teaching context rather than automatically improving every learning outcome. Viewing should be planned so that it supports physical practice within available lesson time.

Improvement on a 3-m controlled route should also be distinguished from performance during a basketball game. The task did not assess decision-making under defensive pressure, movement speed, or successful passing after a dribble. Rekik et al. (2021) investigated basketball tactical learning from dynamic and static visualisations and found that responses differed across learners. Their work illustrates that learning a tactical sequence is a separate outcome from meeting a technical dribbling rubric. Further teaching should therefore examine whether improved control and gaze transfer to changing game situations.

The observation results require equally careful interpretation. Endorsement of all 10 activity items in Cycle II indicates a favourable lesson-level checklist record, not universal participation by all 40 students. Some comments remained inconsistent with their associated endorsements, which weakens detailed claims about classroom engagement. The performance records provide a clearer basis for the attainment conclusion, while the process observations are most useful for identifying areas to improve and documenting the teacher's reflection.

Limitations and Future Research

The findings concern one intact class over two action cycles and do not establish general effectiveness across schools. No comparison group, random allocation, independent blinded scoring, or retention assessment was reported. Familiarity with the test, additional practice, and teacher expectations could contribute to higher scores. The four-domain rubric is directly relevant to the lesson, but detailed score-level anchors and inter-rater reliability evidence were unavailable. The reporting of instructional dose and video characteristics was also incomplete.

These limitations restrict replication and prevent claims about durable motor learning or the independent effect of the tutorial.

Future research should retain the classroom relevance of the task while strengthening measurement and design. A stable rubric, trained independent assessors, documented viewing and practice time, and a comparison condition would improve interpretability. Delayed reassessment and a game-based transfer task could establish whether the observed gains persist and support basketball play. Students below the threshold should receive further diagnostic teaching based on their performance rather than an assumed explanation about physical or developmental limitations.

Conclusions

Two cycles of video-supported basketball instruction were accompanied by improved dribbling assessment scores and greater learning attainment in one Grade 10 class. Mean performance increased from 74.06 to 86.41, and attainment rose from 70.00% to 95.00%, exceeding the 85% classroom target. The strongest domain improvement concerned execution, while forward gaze remained an instructional priority. Video tutorials can be considered as part of guided practice and feedback, but this uncontrolled classroom study cannot establish their independent causal effect or the persistence of the gains.

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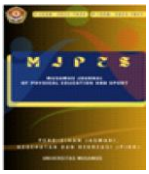
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