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IMPLEMENTATION OF DIGITAL TELEVISION MEDIA TO IMPROVE STUDENTS' COGNITIVE ABILITIES IN SHOT PUT LEARNING AMONG FIFTH-GRADE STUDENTS AT SDN RANDEGAN 03

Widia Febriani[1]*, Sandra Arhesa[2], Ali Priyono[3]
[1,2,3] Physical Education Study Program, Faculty of Teacher Training and Education, Universitas Majalengka, Indonesia
Corresponding Author: widiafebriani@gmail.com

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ABSTRACT

This study examined the implementation of interactive PowerPoint media delivered through digital television and supplemented with educational games to support fifth-grade students' learning in shot put at SDN Randegan 03. The study employed a Classroom Action Research approach using a spiral design consisting of planning, action, observation, and reflection. The participants were 30 fifth-grade students. The research was conducted in two cycles, with each cycle consisting of two meetings. Data were collected through a 20-item multiple-choice cognitive test, structured observations of teacher and student activities, shot put performance assessment, and documentation. Quantitative data were analyzed using descriptive statistics and classical learning mastery, while qualitative data were analyzed through data reduction, data display, and conclusion drawing and verification. The results showed that the mean cognitive score increased from 60.80 in the pre-action stage to 72.33 in Cycle I and 82.33 in Cycle II. Classical cognitive mastery increased from 20.0% to 83.3% and then to 100.0%. The mean shot put performance score increased from 72.33 in Cycle I to 82.90 in Cycle II, with classical skills mastery increasing from 86.7% to 100.0%. Teacher activity increased from 3.15 to 3.79, while student activity increased from 3.08 to 3.72. The predetermined success indicators were achieved at the end of Cycle II. These findings indicate that the implemented combination of interactive PowerPoint, digital television, teacher explanation and demonstration, practice activities, educational games, and cycle-based reflection was accompanied by improvements in students' cognitive learning outcomes, shot put performance, and classroom activity within the research context.

INTRODUCTION

Physical Education is an integral component of elementary education that provides students with opportunities to develop physical and motor competencies through structured learning experiences. In elementary school contexts, the quality of physical education learning is also influenced by how learning activities are organized to facilitate students' active participation and understanding of movement concepts. Research on elementary physical education shows that instructional approaches emphasizing active and collaborative learning can support students' learning outcomes (Endrawan & Aliriad, 2023; Dyson et al., 2010). Therefore, physical education learning requires instructional strategies and learning resources

that are appropriate to students' developmental characteristics and the nature of the movement skills being taught.

Athletics is one of the movement domains taught in physical education and includes fundamental activities that require students to understand movement sequences and perform them appropriately. Shot put is one such activity that involves coordinating several technical components, including the preparation position, movement execution, and release. Previous research has examined efforts to improve shot put learning among elementary school students through instructional media, indicating the relevance of media-supported learning in this context. More recent research has also examined improving shot put learning outcomes through demonstration-based instruction combined with a deep learning approach (Dzairobi et al., 2026). These studies indicate that shot put instruction needs to provide students with clear representations and opportunities to observe and practice the movement.

Visual and observational representations are particularly relevant to movement learning because students need to connect information about a movement with its physical execution. A systematic review by Han et al. (2022) reported that observational learning has supported motor skill learning in physical education, providing a basis for considering visual observation as part of movement instruction. In elementary physical education, researchers have also investigated multimedia as a means of supporting learning achievement. Nuraini et al. (2024), for example, examined a multimedia mobile application in fifth-grade physical education classes, while Budiman et al. (2024) developed audio-visual learning media for volleyball techniques. Although these studies addressed different content areas, they provide relevant evidence that multimedia and audio-visual resources have been incorporated into physical education instruction to support students' learning processes.

Recent literature further indicates growing interest in digital technology in elementary physical education. A systematic literature review by Putri and Bhakti (2025) examined technology use in elementary physical education, while Rizqullah Al Yassar et al. (2025) reviewed the use of audiovisual media in physical education learning and its relationship to student learning outcomes. Other studies have investigated specific digital media, including digital platform-based learning media in elementary physical education (Aksir et al., 2024) and digital comics for elementary athletics learning (Da'i & Apriyanto, 2025). Taken together, these studies suggest that digital and audiovisual resources constitute an increasingly explored component of physical education instruction. However, interpret the findings within the specific learning contexts, media types, and instructional designs examined in each study.

Interactive presentation media represent another possible form of digital support for elementary learning. Wirawan and Gading (2022) developed interactive PowerPoint learning media for fifth-grade elementary school students, while Nurwindasari et al. (2025) and Delita et al. (2025) reported research concerning interactive PowerPoint in other elementary learning contexts. These studies provide support for the use of interactive PowerPoint as a learning medium in elementary education. Nevertheless, the existing studies identified above have predominantly addressed subject areas or learning contexts different from shot put in physical education. Thus, the potential use of interactive PowerPoint to support students' learning of shot put warrants further examination.

The need for such instructional support is particularly relevant in the context of SDN Randegan 03. Preliminary observation of 30 fifth-grade students showed that only 6 students (20.0%) achieved the established Kriteria Ketercapaian Tujuan Pembelajaran (KKTP), with a mean cognitive learning score of 60.80. Students had difficulty understanding several components of shot put learning, including how to hold the shot, the initial position, the execution of the putting movement, and the final position. At the same time, instruction relied primarily on conventional explanation and direct demonstration, without technology-based visual media. This condition provided the practical basis for introducing a more structured visual and interactive learning medium in the classroom.

Based on the preceding literature, previous studies have addressed collaborative learning in elementary physical education, observational learning for motor skills, multimedia and audiovisual media in physical education, digital technology in elementary physical education, and interactive PowerPoint in elementary learning. However, the literature identified for this study has insufficiently documented the specific application of interactive PowerPoint delivered through digital television and supplemented with educational games for fifth-grade students learning shot put. The present study therefore aimed to examine and describe the implementation of interactive PowerPoint media delivered through digital television and supplemented with educational games to improve fifth-grade students' learning outcomes in shot put at SDN Randegan 03.

METHOD

Research Design

This study employed a Classroom Action Research (CAR) approach using a spiral design. Each cycle consisted of four interconnected stages: planning, acting, observing, and reflecting. The reflection stage results were used to refine the action plan for the next cycle. The study proceeded to the next cycle when the predetermined success indicators had not yet been achieved.

Setting and Participants

The study was conducted at SDN Randegan 03, Losari District, Brebes Regency, over six months, from December 2025 to May 2026. The participants were 30 fifth-grade students: 9 female and 21 male. The study began with a pre-action stage to obtain baseline data on students' learning outcomes. The intervention was subsequently implemented in two cycles, with each cycle consisting of two meetings. Each meeting lasted 2 × 35 minutes. Each cycle followed the stages of planning, action, observation, and reflection. The results of the observations and reflection in Cycle I were used to refine the intervention implementation in Cycle II.

Data Collection Techniques and Instruments

Data were collected through four techniques: learning achievement tests, observation, performance assessment, and documentation. The learning achievement test consisted of 20 multiple-choice items designed to assess cognitive learning. The researchers used a structured observation sheet to assess teacher and student activities during the learning process. Students' skills were assessed through a performance assessment using a rubric for basic shot put

techniques. Documentation provided supporting data in the form of photographs, videos, and field notes. The test instrument underwent content validation through expert judgment by a physical education subject-matter expert and a learning evaluation expert. The researchers also conducted a readability test with students with characteristics similar to those of the study participants.

Data Analysis

Quantitative data were analyzed using descriptive statistics, including the class means and the percentage of students achieving classical learning mastery. The results were compared across the pre-action stage, Cycle I, and Cycle II to describe changes in students' learning outcomes following the intervention. Qualitative data obtained from observations, field notes, and documentation were analyzed through data reduction, data display, and conclusion drawing and verification.

Success Indicators

The study was considered successful when all predetermined success indicators were achieved: (1) at least 75% of students obtained a cognitive score of ≥66, based on the established learning achievement criterion (KKTP); (2) at least 70% of students obtained a skills score in at least the Fair category (≥60); and (3) the mean teacher performance observation score reached the Good category (≥3.0 on a 4-point scale), accompanied by increased active student engagement.

RESULT

The findings are presented across the pre-action stage, Cycle I, and Cycle II, covering cognitive learning outcomes, skills performance, teacher activity, and student activity. At the pre-action stage, the mean cognitive score was 60.80, and only 6 of 30 students (20.0%) achieved the established cognitive learning criterion. Thus, the proportion of students achieving the criterion was below the predetermined target of 75%. This result provided the baseline for implementing the classroom action in Cycle I. In Cycle I, the mean cognitive score increased from 60.80 to 72.33, representing an increase of 11.53 points. The number of students meeting the cognitive criterion increased from 6 to 25, corresponding to an increase in classical mastery from 20.0% to 83.3%. The cognitive mastery rate therefore increased by 63.3 percentage points compared with the pre-action stage.

The mean skills performance score in Cycle I was 72.33, with 26 of 30 students (86.7%) achieving the established skills criterion. The mean teacher activity observation score was 3.15, categorized as Good, while the mean student activity observation score was 3.08, also categorized as Good. Although the cognitive and skills mastery criteria were achieved in Cycle I, observations identified aspects of the implementation that required further refinement, particularly practice time management and the clarity of instructions during the educational games activity. Therefore, the classroom action was continued in Cycle II with adjustments based on these observations. In Cycle II, the mean cognitive score increased further from 72.33 to 82.33, representing an additional increase of 10.00 points. The number of students meeting the cognitive criterion increased from 25 to 30, raising classical mastery from 83.3% to 100.0% (16.7 percentage points).

The mean skills performance score increased from 72.33 in Cycle I to 82.90 in Cycle II, representing an increase of 10.57 points. The number of students achieving the skills criterion increased from 26 to 30, and classical skills mastery increased from 86.7% to 100.0%, an increase of 13.3 percentage points. The mean teacher activity observation score increased from 3.15 to 3.79, an increase of 0.64 points, with the category changing from Good to Very Good. The mean student activity observation score increased from 3.08 to 3.72, an increase of 0.64 points, also changing from Good to Very Good. The results indicate that the predetermined success criteria were achieved by the end of Cycle II. Cognitive mastery reached 100.0%, skills mastery reached 100.0%, and the mean teacher activity observation score reached 3.79, exceeding the minimum criterion of 3.0. Student activity also increased from Cycle I to Cycle II. Based on the achievement of the predetermined indicators, the classroom action research was concluded after Cycle II.

Table 1. Comparison of Learning Outcomes and Learning Process Indicators Across Research Stages

No.	Aspect Measured	Pre-Action	Cycle I	Cycle II	Change
1	Mean cognitive score	60.80	72.33	82.33	+21.53*
2	Classical cognitive mastery (%)	20.0	83.3	100.0	+80.0 pp*
3	Mean skills performance score	–	72.33	82.90	+10.57**
4	Classical skills mastery (%)	–	86.7	100.0	+13.3 pp**
5	Mean teacher activity observation score	–	3.15	3.79	+0.64**
6	Mean student activity observation score	–	3.08	3.72	+0.64**

DISCUSSION

The findings indicate progressive improvements in students' learning outcomes and classroom activity across the action cycles. The mean cognitive score increased from 60.80 in the pre-action stage to 72.33 in Cycle I and 82.33 in Cycle II, while classical cognitive mastery increased from 20.0% to 83.3% and then to 100.0%. The improvement occurred within an instructional design that combined interactive PowerPoint media delivered through digital television with teacher explanation, demonstration, practice activities, and educational games. Interactive PowerPoint provides a relevant basis for interpreting the improvement in students' cognitive learning outcomes, as Al Fajar and Mayar (2023) examined interactive PowerPoint media in elementary school learning. The visual component may also have helped students connect explanations with representations of shot put movements. Trabelsi et al. (2022) showed the relevance of video modeling and repeated observation in physical education learning, while Rekik et al. (2021) examined video modeling and static pictures for learning movement-related information. These studies provide contextual support for using visual representations, although they do not directly establish that interactive PowerPoint delivered through digital television causes the cognitive improvement observed in the present study.

Shot put performance improved between Cycle I and Cycle II, with the mean score increasing from 72.33 to 82.90 and classical skills mastery increasing from 86.7% to 100.0%. Because skills performance was not measured at the pre-action stage, interpret this result as improvement during the implementation cycles rather than as a pre- and post-intervention gain. Visual and audiovisual representations are relevant to this finding because students were required to understand and perform a sequence of shot put movements. Kok et al. (2020) specifically investigated self-controlled video feedback in a physical education setting using shot put as the motor-learning task, while Ramadhan et al. (2026) examined an audiovisual method in learning the sideways shot put technique. Trabelsi et al. (2025) also examined direct and video observation in motor learning and reported differences in peer-feedback dynamics between observation conditions. Although these studies used different participants, tasks, and instructional arrangements, they provide contextual evidence that observation and audiovisual resources are relevant components of motor-skill learning. In the present study, however, peer feedback was not measured, and the intervention contained several instructional components; therefore, the observed improvement cannot be attributed specifically to video or audiovisual media.

The findings also show that the instructional components involving explanation and demonstration remained important in the learning process. Shot put requires students to understand the relationship between body position, movement sequence, and release, so direct explanation and demonstration gave students opportunities to observe and practice the movement. Fatkhurrohman et al. (2026) examined direct instruction-based learning in shot put, while Firmansah (2025) investigated direct learning strategies using demonstration methods to develop students' motor skills in elementary physical education. These studies are relevant to the instructional process rather than to establishing an identical effect in the present study. In this classroom action research, demonstration was not implemented independently but was integrated with interactive presentation media, guided practice, and educational games. Therefore, the increase in skills performance from Cycle I to Cycle II is better interpreted as resulting from the combined instructional arrangement and its refinement.

Student and teacher activity also increased from Cycle I to Cycle II. The mean student activity score increased from 3.08 to 3.72, while the teacher activity score increased from 3.15 to 3.79. The improvement followed reflection on Cycle I, which identified difficulties in practice-time management and the clarity of instructions during the educational games. The Cycle II implementation incorporated adjustments to these aspects, providing a more organized learning process. The use of educational games is relevant to the observed student activity because Wardani and Kiptiyah (2024) examined game-based learning using Baamboozle in elementary education and reported outcomes related to student engagement and learning outcomes. However, the present study did not isolate the educational game as an independent component or measure engagement using the same instrument. Thus, interpret the increase in student activity within the overall learning design rather than as an effect of the game alone. The concurrent increase in teacher activity suggests that improvements in instructional organization may have accompanied the increased student participation during Cycle II.

This pattern across cycles aligns with the reflective structure of classroom action research, in which observations from one cycle inform subsequent implementation. Qing-li et al. (2019) discussed action research as a process involving reflective practice in which classroom experiences can inform subsequent instructional decisions. In the present study, Cycle I results were used to refine practice-time management and the delivery of educational-game instruction in Cycle II, after which higher cognitive achievement, skills performance, teacher activity, and student activity were observed. Taken together, the findings suggest that implementing interactive PowerPoint delivered through digital television, combined with explanation, demonstration, practice, educational games, and cycle-based reflection, provided a classroom context in which improvements were observed across the research cycles. Nevertheless, because the study did not use a comparison group or separate the effects of individual instructional components, the findings should be understood as improvements observed within the specific classroom action research context rather than evidence that any single component independently caused the changes.

CONCLUSION

This study examined the implementation of interactive PowerPoint media delivered through digital television and supplemented with educational games in fifth-grade shot put learning at SDN Randegan 03. The findings showed progressive improvements in students' cognitive learning outcomes across the action stages. The mean cognitive score increased from 60.80 in the pre-action stage to 72.33 in Cycle I and 82.33 in Cycle II, while classical cognitive mastery increased from 20.0% to 83.3% and subsequently to 100.0%. Improvement was also observed in shot put performance during the action cycles. The mean skills performance score increased from 72.33 in Cycle I to 82.90 in Cycle II, while classical skills mastery increased from 86.7% to 100.0%. In addition, teacher activity increased from 3.15 to 3.79, and student activity increased from 3.08 to 3.72. Refining practice-time management and educational-game instructions after Cycle I reflection was accompanied by improved implementation indicators in Cycle II. Overall, the predetermined success indicators were achieved at the end of Cycle II. The findings indicate that the implemented combination of interactive PowerPoint delivered through digital television, teacher explanation and demonstration, practice activities, educational games, and cycle-based reflection provided a structured classroom context in which improvements in cognitive learning outcomes, shot put performance, teacher activity, and student activity were observed. However, because this study used classroom action research without a comparison group and did not isolate the contribution of each instructional component, interpret the findings within the specific classroom context of SDN Randegan 03 rather than as evidence that any single component independently caused the observed improvements.

ADDITIONAL INFORMATION

Authors should provide the following information where applicable. Statements that are not relevant to the manuscript may be omitted.

Statement	Description
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Conflict of Interest	The authors declare that there are no financial or non-financial conflicts of interest related to this research or its publication.
Data Availability Statement	The data generated and analyzed during this study are available from the corresponding author upon reasonable request. The data are not publicly available because the study involves individual fifth-grade students from a specific elementary school, and unrestricted disclosure could compromise participants' confidentiality.

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