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THE EFFECT OF DIRECT INSTRUCTION-BASED LEARNING ON STUDENTS' LEARNING OUTCOMES IN SHOT PUT MATERIAL AT SMA NEGERI 1 BELITANG

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Abstract

(1) This study aimed to determine the effect of Direct Instruction-based learning on students' learning outcomes in shot put material at SMA Negeri 1 Belitang. (2) This study used a quantitative pre-experimental method with a one-group pretest-posttest design. The participants were 30 tenth-grade students selected using purposive sampling. The learning intervention was implemented through Direct Instruction stages, including explanation of learning objectives, teacher demonstration, guided practice, corrective feedback, and independent practice. Data were collected using cognitive tests, affective observation sheets, and psychomotor performance tests. The data were analyzed using descriptive statistics, the Shapiro-Wilk normality test, and the paired sample t-test. (3) The findings showed that students' mean learning outcome score increased from 42.50 in the pretest to 87.00 in the posttest. The Shapiro-Wilk test indicated that both pretest and posttest data were normally distributed, with significance values of 0.103 and 0.120, respectively. The paired sample t-test showed a significant difference between pretest and posttest scores, with $t = 29.975$, $df = 29$, and $p < .001$. (4) Direct Instruction-based learning significantly improved students' learning outcomes in shot put material. The structured stages of explanation, demonstration, guided practice, feedback, and independent practice helped students understand shot put concepts, perform the technique correctly, and participate more actively in physical education learning.

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A - Conception and design of the study; B - Acquisition of data; C - Analysis and interpretation of data; D - Manuscript preparation; E - Obtaining funding

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INTRODUCTION

Physical Education, Sports, and Health is an important subject in schools because it supports students' physical, cognitive, social, and affective development (Donnelly et al., 2016). Through physical education, students are expected not only



to improve physical fitness but also to develop movement skills, discipline, self-confidence, cooperation, responsibility, and positive attitudes toward lifelong physical activity (Teraoka et al., 2020). Therefore, learning outcomes in physical education should be understood as an integrated achievement involving knowledge, attitudes, and psychomotor competence.

One of the athletic materials taught in senior high school physical education is shot put (Mirzaei et al., 2017). Shot put is a throwing event that requires students to understand and perform a sequence of technical movements, including holding the shot, preparing the body position, pushing the shot from the shoulder, coordinating the legs and trunk, releasing the shot, and maintaining balance after release (Zhao et al., 2023). Because the movement is technical and procedural, students often experience difficulty when the learning process is not delivered in a clear and structured way.

Initial observation at SMA Negeri 1 Belitang showed that many students had not achieved the expected learning mastery in shot put material. Several students still made technical errors, especially in holding the shot, positioning the body, coordinating the feet and hands, and executing the push movement. These problems indicate that students need a learning model that provides explicit explanation, direct demonstration, repeated practice, and immediate correction.

Direct Instruction is considered suitable for teaching technical skills because it emphasizes structured learning, teacher modeling, guided practice, corrective feedback, and gradual movement toward independent practice. Stockard et al. (2018) reported that Direct Instruction curricula produced positive effects across a broad range of educational outcomes. Similarly, Kirschner et al. (2006) argued that guided instruction is more effective and efficient than minimally guided instruction, especially when learners are acquiring new or complex knowledge and skills. In physical education, this principle is relevant because students need clear movement examples, structured practice, and continuous feedback when learning technical motor skills.

Feedback also plays a central role in Direct Instruction. Hattie & Timperley (2007) explained that feedback is one of the most powerful influences on learning and achievement when it helps learners understand their current performance and how to improve it. In shot put learning, feedback allows students to correct technical errors before incorrect movement patterns become habitual. Therefore, Direct Instruction may help students improve not only their cognitive understanding of shot put but also their affective engagement and psychomotor performance.

Based on these considerations, this study was conducted to examine the effect of Direct Instruction-based learning on students' learning outcomes in shot put material at SMA Negeri 1 Belitang. The novelty of this study lies in its focus on integrating cognitive, affective, and psychomotor assessment in shot put learning

through a structured Direct Instruction approach in senior high school physical education.

METHOD

This study used a quantitative pre-experimental method with a one-group pretest–posttest design. In this design, one group of students was given a pretest before the intervention, received Direct Instruction-based learning treatment, and was then given a posttest after the intervention. The design can be described as O1–X–O2, where O1 represents the pretest, X represents the Direct Instruction-based learning intervention, and O2 represents the posttest.

The population of this study consisted of tenth-grade students at SMA Negeri 1 Belitang. The sample consisted of 30 students selected using purposive sampling. The selection was based on the relevance of the class to shot put learning material and the students' availability to participate in the complete learning process.

The intervention was carried out using the Direct Instruction learning model. The learning process consisted of five main stages. First, the teacher explained the learning objectives and introduced the basic concept of shot put. Second, the teacher demonstrated the correct technique, including how to hold the shot, body position, pushing movement, release, and final balance. Third, students practiced the movement under teacher guidance. Fourth, the teacher provided direct feedback and correction when students made technical errors. Fifth, students performed independent practice to strengthen their understanding and movement mastery.

Data were collected using three types of instruments. Cognitive learning outcomes were measured using a written test related to shot put concepts, rules, and basic techniques. Affective learning outcomes were measured using an observation sheet covering students' discipline, confidence, responsibility, and participation during learning. Psychomotor learning outcomes were measured through a practical shot put performance test based on the correctness of movement technique.

The data were analyzed using SPSS version 26. Descriptive statistics were used to describe the pretest and posttest scores. The Shapiro–Wilk test was used to examine data normality because the sample size was fewer than 50 students. After the data were confirmed to be normally distributed, the paired sample t-test was used to determine whether there was a significant difference between pretest and posttest scores. The level of significance was set at $p < .05$.

RESULTS

The descriptive analysis showed a substantial improvement in students' learning outcomes after the implementation of the Direct Instruction learning model. The mean score increased from 42.50 in the pretest to 87.00 in the posttest,

indicating that students achieved considerably better mastery of shot put knowledge and skills after participating in the intervention.

Table 1.
Descriptive Statistics of Students' Learning Outcomes

Variable	N	Mean
Pretest	30	42.50
Posttest	30	87.00

The increase in the average score indicates that the structured instructional stages enabled students to understand theoretical concepts while simultaneously improving the practical execution of shot put techniques. Before hypothesis testing, the data distribution was examined using the Shapiro–Wilk test. Both pretest and posttest scores were normally distributed because the significance values were greater than 0.05.

Table 2.
Shapiro–Wilk Normality Test

Variable	Sig.	Decision
Pretest	0.103	Normal
Posttest	0.120	Normal

These findings indicate that the assumption of normality was fulfilled, allowing the use of parametric statistical analysis. A paired sample t-test was performed to determine whether Direct Instruction significantly influenced students' learning outcomes.

Table 3.
Paired Sample t-Test Result

Variable	t	df	Sig. (2-tailed)	Decision
Pretest–Posttest	29.975	29	< .001	Significant

The paired sample t-test revealed a statistically significant improvement in students' learning outcomes. The calculated t-value of 29.975 was higher than the critical t-table value of 1.699. This result indicates that the implementation of Direct Instruction significantly improved students' performance in shot put learning.

DISCUSSION

The present study demonstrated that Direct Instruction significantly improved students' learning outcomes in shot put material. The mean score increased from 42.50 in the pretest to 87.00 in the posttest, indicating that students achieved better cognitive understanding, affective participation, and psychomotor performance after the intervention. This finding suggests that structured and sequential instruction effectively supports students in learning technical athletic skills.

One explanation for these findings is that Direct Instruction emphasizes explicit teaching, teacher modeling, guided practice, immediate feedback, and

independent practice. These sequential instructional phases reduce students' cognitive load while enabling them to gradually master complex movement patterns. For technical athletic skills such as shot put, where correct body positioning, coordination, and movement sequence are essential, systematic guidance is particularly beneficial. This finding is consistent with Kirschner et al. (2006), who stated that guided instruction is more effective than minimally guided learning when students are learning new or complex skills.

The findings also support the work of Stockard et al. (2018), who found that Direct Instruction has positive effects on student achievement across different learning domains. In the present study, Direct Instruction provided students with clear learning objectives, visible movement examples, repeated guided practice, and corrective feedback. These elements helped students understand the shot put technique more clearly and perform the movement with fewer errors.

Feedback was an important factor in the learning improvement observed in this study. During the intervention, students received immediate correction when they made mistakes in holding the shot, body alignment, pushing movement, or final balance. Hattie and Timperley (2007) emphasized that effective feedback helps learners identify the gap between current performance and expected performance. In shot put learning, this type of feedback is essential because students need to correct technical errors quickly before they become repeated habits.

From a motor learning perspective, repeated practice supported by feedback helps students build more stable and efficient movement patterns. Wulf & Lewthwaite (2016) explained that motivation, attention, and goal-directed action are important factors in optimizing motor learning. In this study, students were guided through clear stages and given opportunities to practice independently after receiving teacher feedback. This process likely increased their confidence and attention during learning.

Besides improving psychomotor performance, Direct Instruction also contributed to students' cognitive understanding. Students became more capable of explaining shot put rules, basic concepts, and movement phases after receiving explicit explanations before practical activities. This indicates that conceptual understanding and motor skill development can support each other in physical education. When students understand why a specific technique is required, they are more likely to perform the movement correctly.

The affective aspect also improved because Direct Instruction created a learning environment with clear expectations and structured activities. Students were encouraged to participate actively, follow instructions, practice responsibly, and receive feedback positively. In physical education, affective engagement is important because students' discipline, confidence, and participation influence the quality of learning activities.

Overall, the findings of this study reinforce the relevance of Direct Instruction in contemporary physical education. Although student-centered learning approaches are widely promoted, teacher-directed instruction remains valuable when students are introduced to technical skills that require accuracy, safety, and sequential movement execution. Shot put is one example of a learning material that benefits from clear demonstration, guided correction, and repeated practice.

However, this study has limitations. First, it used a one-group pretest–posttest design without a control group, so the findings should be interpreted carefully. Second, the participants were limited to 30 tenth-grade students from one school. Third, the study focused only on shot put learning outcomes and did not compare Direct Instruction with other instructional models. Future studies are encouraged to use control groups, larger samples, and comparative designs involving other learning models such as cooperative learning, peer teaching, or inquiry-based learning.

CONCLUSION

This study demonstrates that Direct Instruction is an effective instructional approach for teaching shot put in senior high school physical education. Its structured instructional sequence, combining explicit explanation, demonstration, guided practice, corrective feedback, and independent practice, provides an effective learning environment for developing students' knowledge, attitudes, and movement competence. Therefore, Direct Instruction may be recommended as an evidence-based pedagogical strategy for teaching technical athletic skills in secondary school physical education.

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