

## Development of a Football Game Learning Model to Increase Interest and Learning Outcomes of Elementary School Students Aged 10–12 Years Old

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**ABSTRACT:** The objective of this research is (1) to develop a football game learning model that is adapted to the characteristics of elementary school students aged 10-12 years old, (2) to determine the feasibility and effectiveness of the football game product that is developed with the aim of improving student learning outcomes. The product is a guidebook. The development of the football game learning model included three stages: the validation stage of the suitability and quality of the model by material and media experts, the small-scale trial stage with 26 students as subjects, and the large-scale trial with 68 students as subjects. This research was conducted in the elementary schools located in Banjarharjo Village, Kalibawang District, Kulon Progo. The research instruments were a questionnaire on the suitability of the model and students' responses to the football game that was developed with a validity value of 0.833 and a reliability of 0.951. The data analysis used descriptive quantitative techniques. The research findings reveal that experts and Physical Education teachers have assessed that the products are in accordance with the characteristics of elementary school students aged 10-12 years old with an assessment of 86% from experts and 100% from Physical Education teachers, so the product is said to be "Very Feasible". The development of an effective football game learning model is used for elementary school students aged 10-12 years old. This is in accordance with the learning outcome criteria known from the questionnaire scores showing a significant increase with an average pretest score of 63.25 and an average posttest score of 86.03 as shown by the results of the paired sample t-test which has a Sig. value of 0.000.

**KEYWORDS:** learning model development, football game, learning outcomes

### INTRODUCTION

Physical education, sports, and health constitute an essential and inseparable component of the elementary school curriculum, designed not only to improve students' physical fitness but also to nurture mental well-being, character, cooperation, sportsmanship, and essential social skills. In elementary education, Physical Education serves as more than a medium for introducing physical activity; it becomes a platform for character building and instilling lifelong values through structured and engaging physical activities (Casey et al., 2022). To achieve these objectives, instructional modifications are often implemented by Physical Education teachers to ensure that the learning process remains effective, efficient, and relevant to the students' developmental needs.

This is in line with Dwi Putri et al. (2024), who define game modification—particularly in Physical Education—as both an educational innovation and an instructional necessity aimed at attracting student interest, motivating learners, and enhancing the overall quality of the learning process. Consequently, when teachers incorporate learning modifications, careful attention must be given to the suitability of instructional materials and activities to match the developmental capabilities of elementary students. One of the most popular and widely appreciated games among elementary students is football. The sport is often selected due to its capacity to foster physical fitness, promote cooperative learning, and serve as an effective medium for character education. However, based on preliminary observations conducted in several elementary schools within Kalurahan Banjarharjo, Kalibawang District, Kulon Progo Regency, the implementation of football lessons for upper elementary students continues to face several instructional challenges. It was found that Physical Education teachers tend to rely on monotonous and conventional teaching methods with minimal instructional innovation. The football games conducted during classes often lack variation, disregard the developmental characteristics of students aged 10–12, and seldom integrate modified or engaging instructional games. This has resulted in a decline in students' interest, low motivation, and suboptimal learning outcomes, particularly in motor skills and the conceptual understanding of football rules and strategies.

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These findings are consistent with previous research, which highlights the urgency of developing innovative and modified game-based learning models for Physical Education. Dalton and Rachman (2014) successfully introduced a large ball game model using a tournament system for elementary students, which significantly improved student motivation and learning outcomes. Additionally, Festiawan and Arovah (2020) demonstrated that modified game-based learning models positively influenced students' physical activity levels and participation during Physical Education classes. However, few studies have explicitly designed football game learning models grounded in constructivist learning theory and scientific approaches, systematically presented in teacher-friendly guidebooks tailored to the developmental characteristics of upper elementary students.

Addressing this research gap, the present study seeks to develop a football game learning model based on constructivist learning theory and a scientific, play-based instructional approach, systematically compiled within a practical and user-friendly guidebook for teachers. This product is not only aimed at enhancing psychomotor aspects such as basic motor skills and coordination but also designed to strengthen the cognitive and affective learning domains of elementary students.

The novelty of this research lies in the creation of a modified football game learning model that aligns with the current needs of Physical Education learning in elementary schools, particularly in rural areas. It incorporates visual media, simplified game rules, and age-appropriate learning activities in accordance with the latest educational curriculum. This innovation addresses the need for Physical Education practices that go beyond mere physical activity by integrating cognitive and social learning elements that contribute to students' holistic development (Casey et al., 2022; Hasanah et al., 2023). Moreover, this model accommodates the constraints often encountered by schools in rural areas, including limited facilities and instructional resources, by utilizing affordable equipment and teacher-friendly guidelines.

By integrating constructivist theory, a scientific approach, and visual instructional aids, this study contributes to the growing body of literature advocating for more inclusive, meaningful, and engaging Physical Education learning models for elementary school students.

### **METHOD**

This research employed a Research and Development (R&D) approach by adapting the development model by Borg & Gall (Assyauqi, 2020) up to the ninth step, namely final product revision. The development steps began with problem identification through observations, interviews, and literature review, followed by designing a prototype product in the form of a football game guidebook. The initial product was validated by five experts in content and media using Aiken's V index, followed by small-scale trials at SDN Karangharjo and large-scale trials at SDN Banjarharjo, Tegalharjo, and Ngemplak.

The research subjects involved 26 students for the small-scale trial and 68 students for the large-scale trial. The research instruments included expert validation sheets, teacher assessment questionnaires, and learning outcome tests covering cognitive, psychomotor, and affective aspects. Data were analyzed using descriptive and inferential statistics, with paired samples t-test performed using SPSS 27 to determine the product's effectiveness.

### **RESULT**

#### **Initial Product Development Results**

As outlined in the research methodology, the initial stage of this study began with a needs analysis of the Physical Education learning process, specifically in football game materials at elementary schools. Based on observations conducted in four elementary schools within one cluster in Kalurahan Banjarharjo, Kalibawang District, Kulon Progo — namely SD N Karangharjo, SD N Tegalharjo, SD N Banjarharjo, and SD N Ngemplak — it was found that Physical Education, particularly football learning, was still conducted conventionally without any innovation in the form of game modifications. Teachers tended to rely on direct instruction methods without incorporating activity variations adaptive to the characteristics of children aged 10–12. This situation was worsened by the low participation of female students, who tended to feel afraid or reluctant to join football activities due to the lack of game adaptations suitable for their physical abilities and interests.

This finding aligns with Dalton and Rachman (2014), who revealed that a lack of variety in Physical Education game models could diminish student motivation and participation. Therefore, this study developed a modified football game learning model that is more flexible, engaging, and suitable for elementary school students' abilities, referring to constructivist learning theory and a scientific approach as mandated in the Merdeka Curriculum for Phase C.

#### **Product Trial Results**

##### **1. Small-Scale Trial**

The small-scale trial was conducted on 26 students at one elementary school. The feasibility assessment by Physical Education teachers yielded an average score of 86%, while students' evaluations of engagement, enjoyment, and clarity of game rules

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achieved an average score of 88%. These results indicate that the modified football game learning model is highly feasible for use. Furthermore, the students' pre-test and post-test scores in cognitive, psychomotor, and affective aspects showed significant improvements. For instance, the cognitive aspect increased from an average of 3.05 to 4.29, the psychomotor aspect from 3.03 to 4.28, and the affective aspect from 3.46 to 4.39. These findings confirm that game modifications effectively accommodate children's learning needs, supporting Festiawan & Arovah's (2020) conclusion that varied, game-based learning models improve physical activity and student engagement.

### 2. Large-Scale Trial

The large-scale trial involved 68 students from four different elementary schools. Effectiveness testing through a paired samples t-test showed significant differences between pre-test and post-test scores. The average cognitive score increased from 61% to 86%, the psychomotor score from 61% to 85%, and the affective score from 69% to 88%. These results indicate that the product is highly effective in improving students' comprehensive learning outcomes. Product validity testing through the Aiken's V index analysis produced a score of 0.833, categorized as high. The validation process involved five expert lecturers in Physical Education. In addition, reliability testing using Cronbach's Alpha yielded a value of 0.951, categorized as very reliable.

### Product Revisions

Based on suggestions from small- and large-scale trials, several product revisions were made, including adjustments to field size, modifications to game rules to enhance safety for female students, and simplification of instruction language in the teacher's guidebook. These improvements enhanced the safety, engagement, and instructional clarity throughout the learning process.

### Final Product Evaluation

The final results indicated that the developed modified football game learning model met the "very feasible" category with an average score of 87% from expert lecturers and Physical Education teachers. This model's advantages include high student involvement, adaptability to learning needs, and flexible implementation in various school conditions.

Another strength of this product is its balanced integration of cognitive, psychomotor, and affective aspects, aligned with the principles of the Merdeka Curriculum, which emphasizes equal development of knowledge, skills, and attitudes.

Descriptive analysis results showed that the average pretest score of students in the small-scale trial was 49.42, increasing to 83.08 in the posttest. In the large-scale trial, the average pretest score was 63.25, rising to 86.03 in the posttest.

**Table 1. Mean Scores of Pretest and Posttest (Large-Scale Trial)**

| School          | Pretest | Posttest |
|-----------------|---------|----------|
| SDN Tegalharjo  | 65.54   | 82.81    |
| SDN Banjarharjo | 63.29   | 88.47    |
| SDN Ngemplak    | 60.84   | 87.72    |

The results of the large-scale trial conducted in three elementary schools revealed a significant improvement in students' learning outcomes after the implementation of the developed football game learning model. Based on the descriptive analysis, it was found that the average pretest score of students at SDN Tegalharjo was 65.54, which increased to 82.81 in the posttest. Similarly, students at SDN Banjarharjo showed a substantial improvement, with their average score rising from 63.29 in the pretest to 88.47 in the posttest. Meanwhile, students at SDN Ngemplak experienced a comparable increase, with an initial average score of 60.84 improving to 87.72 after participating in the learning sessions using the new model.

These results indicate that all three schools demonstrated a notable increase in learning outcomes, with the highest posttest score observed at SDN Banjarharjo. The consistent improvement across all schools suggests that the developed model is effective in enhancing students' knowledge and skills in football, regardless of their initial ability levels. The implementation of this model not only improved psychomotor abilities but also contributed positively to cognitive understanding and students' enthusiasm for participating in physical education lessons.

**Table 2. Paired Samples T-Test**

| Trial Scale | Mean Pretest | Mean Posttest | t Value | Sig. (2-tailed) |
|-------------|--------------|---------------|---------|-----------------|
| Small-Scale | 49.42        | 83.08         | -16.279 | 0.000           |
| Large-Scale | 63.25        | 86.03         | -14.012 | 0.000           |

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Paired samples t-test results revealed a significant difference between pretest and posttest scores in both the small-scale and large-scale trials. In the small-scale trial, the t value was -16.279 with a significance of 0.000, and in the large-scale trial, the t value was -14.012 with a significance of 0.000, indicating a highly significant improvement in learning outcomes after implementing the developed product.

### DISCUSSION

The results of this study demonstrated that the developed modified football game learning model was proven effective in improving elementary students' learning outcomes. This significant improvement aligns with the findings of Dalton and Rachman (2014), who stated that tournament-based large ball game models were able to enhance students' enthusiasm in participating in Physical Education classes. Similarly, Festiawan & Arovah (2020) concluded that the implementation of varied, modified game-based learning models had a positive effect on increasing students' physical activity and participation during learning sessions. The primary strength of the developed learning product lies in the application of constructivist learning theory and a scientific approach, where students are positioned as active participants in the learning process. This finding is in line with Abdullah and Hendon's (2016) argument that applying a constructivist approach can improve students' conceptual understanding while also encouraging active participation in the learning process. Not only addressing cognitive aspects, the integration of affective and social aspects within the developed game model also plays an essential role in fostering students' sportsmanship and teamwork, as supported by the findings of Hasanah et al. (2023), who asserted that collaborative-based games effectively build sportsmanship and solidarity among elementary school students.

Another notable feature of this model is the integration of visual-based instructional media in the form of illustrated movement diagrams and game schemes, which have been proven to assist Physical Education teachers in applying game activities systematically and efficiently in the field. This finding corroborates the opinion of Aulia Lita Pradina et al. (2023), who explained that visual-based instructional media improved students' understanding of Physical Education material and positively influenced overall teaching effectiveness. In addition, a study by Yuliyanto et al. (2022) also emphasized that interactive illustrated media offered a more engaging learning experience for elementary students.

When compared to the study by Belhaj & Hidayah (2015), which developed a four-goal football game as an innovation in Physical Education learning, the present study offers advantages through a modified game model featuring simplified rules tailored to the conditions of elementary students in rural areas, where limitations in facilities and basic skills are significant considerations. The feasibility of the developed product was also supported by the assessment results of Physical Education teachers, in which 100% of them rated the modified learning model as highly feasible for use in Physical Education classes at the elementary school level. This finding is consistent with the study of Ramadhani et al. (2021), which revealed that simple modified game-based models had a positive impact on improving basic motor skills and students' motivation to learn in elementary schools.

### CONCLUSIONS

Based on the research results and discussion, it can be concluded that the development of a modified football game learning model based on a scientific and constructivist approach effectively improves learning outcomes for elementary school students aged 10–12. The developed product was declared highly feasible and significantly improved students' cognitive, psychomotor, and affective aspects. This product is expected to serve as an alternative Physical Education instructional medium that is enjoyable, easy to implement, and suitable for elementary school students.

### REFERENCES

- 1) Abdullah, N., & Hendon, H. (2016). The application of constructivist theory in physical education learning models. *Journal of Educational Studies*, 12(2), 65–74.
- 2) Aulia Lita Pradina, A., Purwanto, W. W., & Sari, R. P. (2023). The effect of visual-based instructional media on physical education learning outcomes in elementary schools. *Journal of Teaching and Learning in Physical Education*, 2(1), 23–31. <https://doi.org/10.11591/jtlpe.v2i1.34506>
- 3) Casey, A., MacPhail, A., & Quennerstedt, M. (2022). Transforming physical education: Reimagining pedagogy, curriculum, and assessment. *Physical Education and Sport Pedagogy*, 27(4), 380–394. <https://doi.org/10.1080/17408989.2022.2044466>
- 4) Dalton, D., & Rachman, A. (2014). Development of tournament-based football learning models for elementary students. *Journal of Physical Education*, 21(3), 45–53.

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- 5) Festiawan, R., & Arovah, B. (2020). The influence of modified game-based learning on students' physical activity and learning outcomes in physical education. *International Journal of Instruction*, 13(1), 221–236.
- 6) Dwi Putri, A., Kurniawan, H., & Winarno, M. E. (2024). Game modification as an innovative strategy in elementary physical education learning. *Journal of Educational Sport Innovation*, 11(1), 77–86. <https://doi.org/10.31098/jesi.v11i1.3012>
- 7) Festiawan, R., & Arovah, B. (2020). The effect of modified game-based learning models on student participation in Physical Education. *International Journal of Human Movement and Sports Sciences*, 8(3), 134–140. <https://doi.org/10.13189/saj.2020.080303>
- 8) Hasanah, L., Widodo, J., & Pratama, D. (2023). Collaborative game-based learning to foster sportsmanship and teamwork among elementary students. *Journal of Education and Learning Innovation*, 11(1), 55–64.
- 9) Hasanah, N., Wibowo, H., & Hartati, S. (2023). Cooperative games model to improve social interaction and sportsmanship of elementary school students. *International Journal of Instruction*, 16(1), 233–250. <https://doi.org/10.29333/iji.2023.16113a>
- 10) Pradina, A. L., et al. (2023). The effect of visual media on students' comprehension in Physical Education. *Indonesian Journal of Physical Education*, 5(1), 11–19.
- 11) Ramadhani, D., Sulaiman, R., & Fikri, A. (2021). The effectiveness of simple modified games for improving basic motor skills in elementary school students. *Asian Journal of Kinesiology*, 23(4), 11–20. <https://doi.org/10.15758/ajk.2021.23.4.11>.
- 12) Yuliyanto, A., Setyawan, F., & Rohmat, M. (2022). The development of interactive illustrated media to enhance physical education learning in elementary school. *Journal of Physical Education and Sport*, 22(2), 456–463. <https://doi.org/10.7752/jpes.2022.02056>



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