

Innovative Recreational Game Development: Sport Monopoly Game for Enhancing Physical-Fitness Learning in Elementary Students

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ABSTRACT

Background: This study developed and evaluated an innovative recreational sport-based board game, the Sport Monopoly Game Physical Fitness, as a learning medium to enhance Grade V elementary students' engagement and understanding of physical-fitness material during Physical Education (PJOK) lessons..

Methods: research and development (R&D) design adapted from the Borg & Gall model included needs analysis, data collection, product design, expert validation, small-group trials, iterative revisions, large-group field testing, and dissemination. Participants were Grade V students (classes VA/VB) at SDN Balongsari I/500, Surabaya (small group n = 14; large group n = 60). Data were collected through observation, needs-analysis questionnaires, student-response questionnaires, and documentation. Descriptive statistics (means and feasibility percentages) were calculated using Microsoft Excel, and qualitative comments were summarized. .

Results: Small-group testing produced a total score of 893, a mean of 4.30 ("good"), and 86.9% feasibility. Large-group testing produced a total score of 1,595, a mean of 4.55 ("good"), and 91.15% feasibility. Prior expert validations showed feasibility values of 82.7% (material expert) and 83.6% (media expert).

Conclusions: The Sport Monopoly Game Physical Fitness as an innovative recreational game, along with its guidebook, is feasible and suitable as supplementary media for Grade V PJOK physical-fitness lessons, and can enhance students' enthusiasm for recreational sport-based learning and physical activity.

Keywords: recreational games; sport monopoly; learning media; physical fitness; elementary students

1. Background

Physical Education, Sports, and Health (PJOK) is an integral part of holistic education (Hasana et al., 2021). It develops motor skills, emotional balance, social competence, physical fitness, and healthy habits through structured movement experiences and age-appropriate games (Ali Wahyudi et al., 2024). In the 21st century, PJOK teachers are expected to be creative instructional designers who can blend practical activities with clear concepts so learning supports growth and development, not just "doing exercise" (Hamzah et al., 2023). A preliminary classroom observation at SDN Balongsari I/500 (Grade V) revealed that learning media were used infrequently and lacked variety (Anggraini & Kristin, 2022). As a result, many students were not enthusiastic during PJOK lessons (Yusfi & Sriwijaya, 2023). Time constraints for preparing media and the perceived cost of materials were common reasons for underuse (Adawiyah et al., 2022). Yet, well-designed media help deliver content more clearly and make activities easier for students to understand (Yanti et al., 2022). A simple needs analysis confirmed this gap. Most students (97.7%) reported liking PJOK, but only 47.7% felt lessons offered interesting variation; 52.3% did not (Baharuddin, 2020). An overwhelming 93.2% wanted more creative and varied activities (Fauziyah & Anugraheni, 2020). While 68.2% disagreed with using drill-type fitness (e.g., push-ups, sit-ups) as the core of fitness lessons, 100% agreed that integrating games into fitness lessons would be appealing (Putra et al., 2020). These findings align with developmental theory for primary school children: play

is central to motivation, social interaction, imagination, and creativity, and it can meaningfully support physical, cognitive, and affective growth (Hamzah et al., 2023).

To address this gap, we propose a game-based learning medium Sport Monopoly Game: Physical Fitness for the Grade V “Physical Fitness Activities” unit. The concept adapts the familiar Monopoly board into a large, classroom-friendly format (banner board) and replaces money transactions with fitness movements and points (Setyaningrum, 2019). Teams (4–6 students) take turns moving around the board, “buying” countries with points and prescribed movements, paying “taxes” with points or brief exercises, and drawing Chance and Community cards that include short questions on fitness concepts (Utomo, 2023). The winner is the team with the highest total points from purchases and correctly answered questions (Purwanto, 2023). This design differs from common Monopoly-style media in two important ways (Fernanda et al., 2023). First, the transaction currency is movement, which keeps children active and turns fitness components into short, safe bouts integrated within play (Wiratama, 2022). Second, beyond psychomotor participation, the game deliberately embeds cognitive (concept questions) and affective (fair play, honesty, cooperation) elements, so learning is not limited to “just moving” (Fikri et al., 2024). To foster teamwork and healthy competition, the activity is organized with a cooperative Teams-Games-Tournament (TGT) flow: brief teacher explanation, team formation, guided gameplay/mini-tournaments, and recognition for teams that demonstrate both performance and fair play (Costarica, 2022). The scope of this initial product targets Grade V and focuses on two fitness components flexibility and strength to keep activities safe, time-efficient, and manageable in typical school spaces (Prabowo, 2022). Other components (e.g., endurance, agility, balance) can be added in future iterations once feasibility and classroom management are established (Gholy et al., 2022).

In summary, the problem is low enthusiasm linked to limited, drill-like fitness instruction and underused media; the opportunity is game-based PJOK that is developmentally appropriate and engaging; and the solution is a Monopoly-inspired game that integrates short fitness movements with concept checks and team play (Almada et al., 2020). The purpose of this study is to develop and evaluate the feasibility of the Sport Monopoly Game: Physical Fitness and its teacher guidebook for Grade V PJOK, with the expectation that it will increase student enthusiasm and support more active, varied, and meaningful learning during the “Physical Fitness Activities” unit.

2. Methods

Design

This study used a Research & Development (R&D) approach following the Borg & Gall model. The goal was to develop a game-based learning medium (Sport Monopoly Game—Physical Fitness) and evaluate its feasibility through expert validation and field testing.

Table 1. Schematic of Research Steps

Step	Description
1	PJOK lessons on physical-fitness activities are too monotonous, leading to student boredom and low enthusiasm.
2	Elementary students need engaging learning media to stimulate interest in physical-fitness activity materials.
3	RESEARCH PLANNING
4	Develop a learning-media product: Sport Monopoly Games Physical Fitness to raise student interest in PJOK physical-fitness activities.
5	Initial product creation: Sport Monopoly Games Physical Fitness (learning media).
6	Product Trial – Phase I (Small group): Grade VI, SDN Balongsari I/500 Surabaya, $n = 10$.

Step	Description
7	Product Revision – Phase I: Based on Phase I trial results.
8	Product Trial – Phase II.
9	Final product: Sport Monopoly Games Physical Fitness (learning media).

Setting and Participants

Research took place at SDN Balongsari I/500, Surabaya (Grade V).

- a. Small-group pilot: $n = 14$ students.
- b. Large-group field test: $n = 60$ students.
- c. Class splits were balanced across Grade V classes (VA and VB).

Product (Intervention)

The product is a Monopoly-style fitness game designed for the Grade V “Physical Fitness Activities” unit. Key elements include:

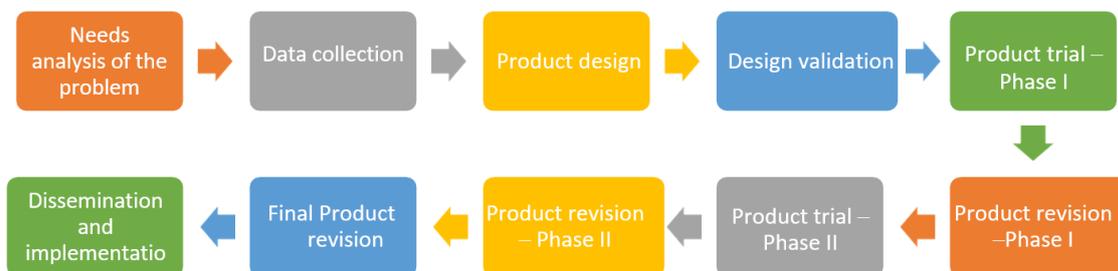


Figure 1. Research and Development (R&D) Procedure According to Borg & Gall

Validation and Field Testing

- a. Expert validation:
 - 1) Material expert reviewed content accuracy, suitability to curriculum, clarity.
 - 2) Media expert reviewed design quality, usability, safety, durability, and class management fit. Both used structured rating sheets plus open comments/suggestions.
- b. Field testing:
 - 1) Small-group pilot to check clarity of rules, timing, engagement, and safety; followed by a short reflection and questionnaire.
 - 2) Large-group test to evaluate feasibility at class scale (engagement, clarity, practicality) and to gather student responses.

Instruments and Data Collection

- a. Needs-analysis questionnaire (students): interest in PJOK, preferences for drills vs. games, novelty/variation needs.
- b. Expert validation sheets (material & media): 5-point Likert items + comment boxes.
- c. Student response questionnaire after pilot and field test: attractiveness, clarity, usefulness, motivation, and perceived learning.

- d. Observation & documentation during sessions to note logistics, timing, and class management.

Scoring and Decision Rules

- a. Likert scale (1–5): 1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very Good.
- b. Feasibility percentage:

$$\text{Feasibility (\%)} = \frac{\text{Obtained score}}{\text{Maximum possible score}} \times 100$$

where *Maximum possible score* = (highest Likert score) × (number of items) × (number of respondents).

- a. Feasibility categories (Likert-based):
 - 1) ≤30% = Not feasible (revise)
 - 2) 31–55% = Less feasible (revise)
 - 3) 56–73% = Fairly feasible (revise)
 - 4) 74–86% = Feasible (no major revision)
 - 5) 87–100% = Highly feasible (no revision)

Data Analysis

All quantitative ratings were summarized as means and feasibility percentages in Microsoft Excel. Qualitative comments from experts and students were coded thematically to guide iterative revisions (content clarity, rule wording, safety, timing, and layout).

3. Results

The development output comprised a banner-format Sport Monopoly Game, Physical Fitness board with supporting items (country cards, Chance and Community cards, an answer key, a score board, dice, houses/hotel) and a teacher guidebook. Prior to trials, two experts validated the product. The material expert scored 91 across 20 indicators (mean 4.1/5), yielding a feasibility of 82.7%. The media expert scored 92 across 22 indicators (mean 4.2/5), yielding a feasibility of 83.6%.

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Table 2. Student Questionnaire Results — Small-Group Trial

Class	Total Score	Mean	Category	Feasibility (%)	Decision
VA (7 students)	423	4.3	Good	86.3%	Feasible
VB (7 students)	425	4.3	Good	86.7%	Feasible
Average	848	4.3	Good	86.5%	Feasible

Table 3. Student Questionnaire Results — Large-Group Trial

Class	Total Score	Mean	Category	Feasibility (%)	Decision
VA (25 students)	1,590	4.5	Good	90.9%	Highly Feasible
VB (25 students)	1,600	4.6	Good	91.4%	Highly Feasible
Average	1,595	4.55	Good	91.15%	Highly Feasible

Both results indicated readiness for classroom piloting. Revisions were carried out directly from the expert comments. Content was narrowed to Grade V with a focus on flexibility and strength; motivating prompts and brief concept questions were inserted into the Chance and Community cards; card backs were labeled and redesigned; the guidebook text was condensed; layout and typography were cleaned up; and the guidebook was finalized with a laminated soft cover. A small-group pilot was then conducted with 14 Grade V students (7 from VA and 7 from VB). Class VA produced a mean rating of 4.3/5 and feasibility 86.3%, while class VB produced a mean of 4.3/5 and feasibility 86.7%. The combined small-group mean was 4.3/5 with overall feasibility 86.5%, meeting the internal criterion for use without further major revision. A large-group field test followed with 50 Grade V students (25 VA, 25 VB). Class VA achieved a mean rating of 4.5/5 and feasibility 90.9%; class VB achieved 4.6/5 and 91.4%.

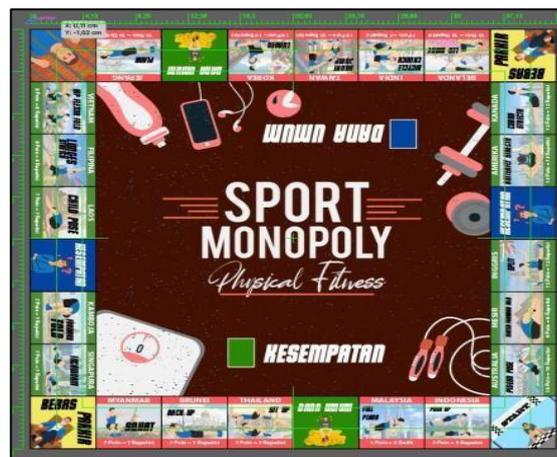


Figure 2. Monopoly Board Design



Figure 3. Chance Card Design



Figure 4. Community Chest Card Design

Combined results were a mean of 4.55/5 and overall feasibility 91.15%, indicating the product performed consistently at class scale. The final product retained the 5 m × 5 m banner board with 28 squares (20 task squares: 10 strength and 10 flexibility; two Chance; two Community; two Jail; one Free Parking; one Start) and color coding to distinguish task types. Country cards specified point costs and required repetitions for “purchases,” Chance and Community cards contained short fitness questions with rewards/penalties aligned to the answer key, and the score board recorded point income and transactions. The teacher guidebook included equipment lists, provisions for buying–selling–tax, player roles, the game flow, and step-by-step instructions in a concise, classroom-ready format.



Figure 5. Country Card Design

4. Discussion

The implementation of the Sport Monopoly Game—Physical Fitness shows that a game-based, movement-as-currency format is feasible and well-received by Grade V students (Hanjani & Firdiansyah, 2022). Using brief fitness tasks and simple concept questions inside a familiar Monopoly frame appears to address low enthusiasm typically observed in drill-heavy lessons while keeping activities safe and age-appropriate (Julia et al., 2018). In the small-group pilot (7 VA + 7 VB), student responses indicated good perceptions of the media (VA total = 423; mean = 4.3/5; feasibility = 86.3%; VB total = 425; mean = 4.3/5; feasibility = 86.7%). Combined, the pilot produced a total of 848, a mean of 4.4/5, and feasibility of 86.5%, supporting classroom use without major revision (Lumbantobing et al., 2022). Observation notes during this stage highlighted clear rules, manageable timing, and strong interest—an early signal that the design effectively couples activity with understanding (Ningsih et al., 2023).



Figure 6. Small-Group Trial

Scaling to a large-group field test (25 VA + 25 VB) maintained—and modestly improved—these outcomes. Class VA reached a mean of 4.5/5 with 90.9% feasibility; class VB reached 4.6/5 with 91.4% feasibility. The combined mean was 4.55/5 with overall feasibility 91.15%, indicating that the product not only withstands class-scale delivery but may benefit from the social dynamics of team play (Patmasari et al., 2023). Taken together, the upward shift from $\approx 86.5\%$ to $\approx 91.15\%$ suggests that once routines are established, the activity flows smoothly and sustains engagement at scale. Two practical issues emerged during implementation (Rohmah, 2018). First, turn-waiting occasionally created queues during dice rolls. Second, scorekeeping accuracy dipped when inexperienced students handled the ledger (Sela et al., 2023). Both are solvable with routine management: (1) run two stations/boards in parallel for large classes; (2) rotate roles (roller, reader, mover, scorer) so every student stays active; (3) use a pre-printed score template to reduce tally errors; and (4) time-box turns ($\approx 30\text{--}45$ s) with a visible timer. These refinements preserve the motivational core of the game while smoothing logistics.



Figure 7. Large-Group Trial

The present version targets two fitness components only flexibility and strength to ensure safety and manageability; results therefore should not be generalized to endurance, agility, or balance until those components are integrated (Thalita et al., 2019). All movement tasks must be calibrated to Grade V capacity (volume, intensity, and technique cues) to avoid undue fatigue (Tuswanl, 2023). Finally, effective delivery required classroom conditioning (clear briefing, role assignment, and turn discipline), especially when multiple teams operated simultaneously (Yustiyati et al., 2024). Overall, the discussion of implementation indicates that the Sport Monopoly Game, Physical Fitness is classroom-ready for Grade V PJOK. The pattern of results good-to-high feasibility in both pilots, rising at full scale supports continued use and incremental expansion. Future iterations can broaden fitness components, embed brief pre-post knowledge checks or simple fitness tasks for effectiveness evaluation, and formalize the operational tweaks above as part of the teacher guide.

5. Conclusions

Based on the analysis, the Sport Monopoly Game, Physical Fitness and its teacher guidebook demonstrated clear feasibility and classroom readiness. Expert validations reached 82.7% for material and 83.6% for media, satisfying pre-trial requirements. Student implementation at SDN Balongsari I/500 (Grade V) showed strong acceptance and enthusiasm, with a small-group feasibility of 86.5% (feasible) and a large-group feasibility of 91.15% (highly feasible). Implementation also produced positive psychological effects greater learning motivation, reduced boredom, enhanced social interaction, stronger teamwork, and improved emotional development—indicating that the game-based, movement-as-currency approach is suitable for Grade V PJOK “Physical Fitness Activities” and ready for adoption.

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