

# INTEGRATION OF ARTIFICIAL INTELLIGENCE-BASED INTERACTIVE LEARNING MEDIA IN ELEMENTARY SCHOOL TEACHER TRAINING IN MAKASSAR

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## ABSTRACT

This study aimed to develop and evaluate a Sports Education learning model based on traditional games of Tug of War and Hopscotch to improve creativity and sportsmanship among elementary school students. The study employed Research and Development (R&D) methodology adapted from Borg and Gall's model, consisting of preliminary research, needs assessment, product development, expert validation, field testing, revision, and dissemination. Participants included physical education experts, curriculum specialists, elementary school teachers, and students from selected elementary schools. Data were collected through observations, questionnaires, interviews, creativity assessments, and sportsmanship evaluation instruments. Quantitative data were analyzed using descriptive statistics, N-Gain analysis, and paired sample t-tests, while qualitative data were analyzed through thematic interpretation. Results indicated that the developed model was highly valid (92.7%), practical (90.4%), and effective in enhancing student creativity and sportsmanship. Creativity scores improved significantly from pretest (67.83) to posttest (88.75), while sportsmanship scores increased from 70.21 to 91.34. The findings demonstrate that integrating traditional games into Sports Education creates meaningful learning experiences that simultaneously foster physical competence, creative thinking, cultural awareness, and positive character development. The model provides an innovative and culturally relevant alternative for elementary physical education.

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## INTRODUCTION

The twenty-first century educational landscape requires schools to cultivate not only academic competencies but also creativity, collaboration, communication, critical thinking, and character development. Physical education contributes significantly to these educational goals by providing experiential learning opportunities that integrate cognitive, affective, and psychomotor domains.

Despite the recognized importance of physical education, many elementary school programs remain dominated by teacher-centered approaches emphasizing technical skill acquisition rather than creativity and character formation. Consequently, students often experience limited opportunities to engage in meaningful physical activities that foster innovation, teamwork, and ethical behavior.

Simultaneously, traditional games that once played a central role in children's social and physical development are gradually disappearing due to technological advancement, urbanization, and changing recreational preferences. The decline of traditional games threatens not only cultural heritage preservation but also valuable educational opportunities embedded within these activities.

Traditional games such as Tug of War and Hopscotch possess significant educational potential. Tug of War promotes cooperation, teamwork, communication, leadership, and collective responsibility. Hopscotch encourages balance, coordination, agility, concentration, creativity, and strategic decision-making. These games naturally facilitate social interaction and provide authentic contexts for character development.

The Sports Education Model introduced by Siedentop emphasizes authentic sporting experiences that develop competent, literate, and enthusiastic sports participants. Integrating traditional games within Sports Education may provide a promising pedagogical innovation capable of simultaneously preserving cultural heritage and enhancing student creativity and sportsmanship.

Therefore, this study aims to develop and evaluate a Sports Education learning model based on Tug of War and Hopscotch for elementary school students.

## 1. Conceptual Framework

The conceptual framework of this study assumes that traditional games provide meaningful contexts for learning, while Sports Education offers structured pedagogical principles that enhance student engagement and responsibility.

### a. Independent Variable

Sports Education Learning Model Based on Traditional Games

Components:

- 1) Tug of War Activities
- 2) Hopscotch Activities
- 3) Team Affiliation
- 4) Season Structure
- 5) Competition Events
- 6) Reflection Activities

### b. Dependent Variables

Creativity

Indicators:

- 1) Fluency
- 2) Flexibility
- 3) Originality
- 4) Elaboration

### c. Sportsmanship

Indicators:

- 1) Respect
- 2) Fair Play
- 3) Responsibility
- 4) Cooperation
- 5) Self-Control
- 6) Honesty

The model hypothesizes that meaningful participation in traditional games through Sports Education will positively influence creativity and sportsmanship.

## 2. Research Hypotheses

- a. **H1:** The Sports Education learning model based on Tug of War and Hopscotch significantly improves students' creativity.
- b. **H2:** The Sports Education learning model based on Tug of War and Hopscotch significantly improves students' sportsmanship.
- c. **H3:** The developed model is valid, practical, and effective for elementary school physical education implementation.

## **LITERATUR REVIEW**

### **1. Sports Education Theory**

Sports Education seeks to provide authentic and educationally rich sport experiences. According to Siedentop (1994), effective sports participation develops competent performers, literate participants, and enthusiastic sportspeople. The six defining features include:

- a. Seasons
- b. Team Affiliation
- c. Formal Competition
- d. Record Keeping
- e. Festivity
- f. Culminating Events

These features foster student ownership, responsibility, and social development.

### **2. Traditional Games and Physical Education**

Traditional games embody cultural knowledge and educational values developed through generations. Research demonstrates that traditional games promote:

- a. Physical fitness
- b. Social competence
- c. Emotional regulation
- d. Cultural identity
- e. Moral development

Tug of War and Hopscotch are particularly appropriate for elementary school students due to their accessibility and developmental suitability.

### **3. Creativity Development in Physical Education**

Creativity involves generating novel and useful ideas, actions, or solutions. Within physical education, creativity manifests through:

- a. Movement exploration
- b. Tactical innovation
- c. Problem-solving
- d. Adaptability

Constructivist learning theory suggests that creativity flourishes when learners actively construct knowledge through meaningful experiences.

### **4. Sportsmanship Development**

Sportsmanship represents ethical conduct during physical activity and competition. Major dimensions include:

- 1) Respect for rules
- 2) Respect for opponents
- 3) Fair competition
- 4) Integrity
- 5) Responsibility
- 6) Cooperation

Character education scholars emphasize that sportsmanship must be intentionally cultivated through structured learning experiences.

## **METHOD**

### **1. Research Design**

This study employed Research and Development (R&D) methodology adapted from Borg and Gall (2003).  
Development Stages

- a. Research and information gathering.
- b. Planning.
- c. Preliminary product development.
- d. Expert validation.
- e. Small-scale field testing.
- f. Product revision.
- g. Large-scale field testing.
- h. Final revision.
- i. Dissemination.

### **2. Participants**

#### **a. Expert Validation**

- 1) 3 Physical Education Experts
- 2) 2 Curriculum Experts
- 3) 2 Educational Technology Experts

#### **b. Field Testing**

- 1) Small-scale trial: 30 students
- 2) Large-scale trial: 120 students
- 3) Physical Education Teachers: 6

### **3. Instruments**

#### **a. Creativity Instrument**

Measured:

- 1) Fluency
- 2) Flexibility
- 3) Originality
- 4) Elaboration

Reliability coefficient:

Cronbach Alpha = 0.89

#### **b. Sportsmanship Instrument**

Measured:

- 1) Respect
- 2) Responsibility
- 3) Cooperation
- 4) Fair Play
- 5) Honesty
- 6) Self-Control

Reliability Coefficient:

Cronbach Alpha = 0.91

## RESULTS AND DISCUSSION

### 1. Expert Validation Results

**Tabel 1-Validation Results**

ASPECT	SCORE (%)	CATEGORY
Content Feasibility	94.3	Vary Valid
Learning Design	92.8	Vary Valid
Language	91.7	Vary Valid
Practicality	92.0	Vary Valid
Average	92.7	Vary Valid

### 2. Creativity Improvement

**Tabel 2-Pretest & Posttest Creativity Improvement**

Variable	Pretest	Posttest	N-Gain
Creativity	67.83	88.75	0.65

Category: Moderate to High Improvement

Paired Sample t-Test:

$t = 10.87$

$p < 0.001$

### 3. Sportsmanship Improvement

**Tabel 3-Pretest & Posttest Sportsmain Improvement**

Variable	Pretest	Posttest	N-Gain
Sportsmanship	71.21	91.34	0.71

Category: High Improvement

Paired Sample t-Test:

$t = 12.42$

$p < 0.001$

## DISCUSSION

The findings indicate that the developed learning model effectively improves creativity and sportsmanship among elementary school students.

The creativity improvement may be explained by opportunities for students to modify game strategies, invent movement patterns, and collaboratively solve challenges during game participation. These findings align with constructivist perspectives emphasizing active learning and experiential exploration.

The substantial improvement in sportsmanship reflects the social nature of traditional games. Tug of War requires teamwork, communication, and collective responsibility, while Hopscotch promotes honesty, discipline, and respect for rules.

The Sports Education framework further strengthens these outcomes through structured team affiliation, role responsibility, reflection activities, and authentic competition experiences.

Compared with conventional physical education lessons, the developed model creates a more student-centered and culturally relevant learning environment. This contributes not only to physical competence but also to character development and cultural preservation. The study therefore supports previous international research highlighting the effectiveness of culturally responsive pedagogy and game-based learning in promoting holistic student development.

## **Educational Implications**

### **1. For Teachers**

- a. Alternative innovative teaching model.
- b. Improved student engagement.
- c. Enhanced creativity development.
- d. Stronger character education.

### **2. For Schools**

- a. Preservation of local cultural heritage.
- b. Strengthened school-based character education.
- c. Improved quality of physical education.

### **3. For Policymakers**

- a. Evidence for integrating traditional games into curriculum.
- b. Support for culturally responsive education policies.
- c. Promotion of sustainable educational innovation.

## **CONCLUSION**

The Sports Education Learning Model based on Tug of War and Hopscotch was successfully developed and validated. The model demonstrated high validity, practicality, and effectiveness in improving creativity and sportsmanship among elementary school students. By integrating traditional games within Sports Education principles, the model offers a culturally responsive, student-centered, and character-oriented approach to physical education.

The model contributes significantly to educational innovation, traditional game preservation, and holistic student development. Future research should investigate long-term implementation, integration with digital technologies, and adaptation across diverse educational contexts.

**Novelty and Contribution Statement.** This study offers several novel contributions to the field of physical education & elementary education. First, while previous studies have examined traditional games as learning media and Sports Education as a pedagogical model separately, this study integrates both approaches into a comprehensive learning model specifically designed to improve creativity and sportsmanship among elementary school student. Second, the model combines indigenous cultural heritage (Tug of War and Hopscotch) with modern Sports Education principles, creating a culturally responsive and pedagogically innovative learning framework. Third, unlike traditional physical education programs that primarily focus on motor skill development, the developed model simultaneously targets movement creativity and character development through sportsmanship values. Fourth, the study contributes a validated learning syntax, implementation guide, assessment instruments, and evaluation procedures that can be adopted by physical education teachers in elementary schools. Thus, this research bridges the gap between traditional game preservation, character education, and innovative physical education pedagogy.

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