



## Enhancing social skills through culturally grounded E-San folk play: a quasi-experimental study in primary school Physical Education

*Mejora de las habilidades sociales mediante el juego folclórico E-San con base cultural: un estudio cuasiexperimental en Educación Física de primaria*

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### Abstract

**Introduction:** Culturally grounded folk play has been recognized as a meaningful approach within physical education; however, empirical evidence examining region-specific interventions implemented in formal school settings remains limited.

**Objective:** This study examined the effects of a structured E-San folk play program on social skill development among primary school students in a physical education context.

**Methodology:** A quasi-experimental pretest–posttest control group design was employed with 50 students aged 10–12 years from a public primary school in northeastern Thailand. Participants were assigned to either an experimental group that engaged in an eight-week culturally grounded folk play intervention or a control group that followed routine physical education instruction. Social skills were assessed using a validated self-report questionnaire measuring social interaction, social communication, and cooperation. Data were analyzed using t-tests and effect size estimates.

**Results:** eight-week intervention indicated that students in the experimental group demonstrated significantly greater improvements across all social skill domains compared with the control group. Beyond demonstrating effectiveness, the findings provide theoretical insight into how culturally embedded, cooperative play functions as a pedagogical mechanism for social skill development.

**Discussion/Conclusions:** suggest that social competence is fostered not merely through physical activity, but through culturally meaningful, rule-based interactions that require coordination and shared goal pursuit. Overall, the study contributes to the literature on culturally responsive physical education by highlighting the value of region-specific folk play in promoting social competence in childhood.

### Keywords

Physical Education; traditional games; social skills; cooperative learning; culturally responsive pedagogy.

### Resumen

**Introducción:** El juego folclórico con base cultural se ha reconocido como un enfoque significativo en la educación física; sin embargo, la evidencia empírica que examina intervenciones específicas por región implementadas en entornos escolares formales sigue siendo limitada.

**Objetivo:** Este estudio examinó los efectos de un programa estructurado de juego folclórico E-San en el desarrollo de habilidades sociales en estudiantes de primaria en un contexto de educación física.

**Metodología:** Se empleó un diseño cuasiexperimental de preprueba y postprueba con grupo de control con 50 estudiantes de 10 a 12 años de una escuela primaria pública del noreste de Tailandia. Los participantes fueron asignados a un grupo experimental que participó en una intervención de juego folclórico con base cultural de ocho semanas de duración o a un grupo de control que siguió instrucción rutinaria de educación física. Las habilidades sociales se evaluaron mediante un cuestionario de autoinforme validado que mide la interacción social, la comunicación social y la cooperación. Los datos se analizaron mediante pruebas t y estimaciones del tamaño del efecto.

**Resultados:** La intervención de ocho semanas indicó que los estudiantes del grupo experimental mostraron mejoras significativamente mayores en todas las áreas de habilidades sociales en comparación con el grupo de control. Además de demostrar su eficacia, los hallazgos aportan una perspectiva teórica sobre cómo el juego cooperativo, culturalmente arraigado, funciona como mecanismo pedagógico para el desarrollo de habilidades sociales.

**Discusión/Conclusiones:** Sugieren que la competencia social se fomenta no solo mediante la actividad física, sino también mediante interacciones culturalmente significativas y basadas en reglas que requieren coordinación y la búsqueda de objetivos compartidos. En general, el estudio contribuye a la literatura sobre educación física culturalmente receptiva al destacar el valor del juego folclórico específico de cada región para promover la competencia social en la infancia.

### Palabras clave

Educación Física; juegos tradicionales; habilidades sociales; aprendizaje cooperativo; pedagogía culturalmente sensible.

## Introduction

The development of social skills during the primary school years is widely recognized as a foundational component of children's academic achievement, psychosocial adjustment, and long-term well-being. Core social competencies including effective interaction, communication, cooperation, and conflict management support children's ability to participate productively in learning environments and to establish positive peer relationships. Empirical evidence consistently indicates that well-developed social and emotional competencies are associated with improved academic performance, emotional regulation, and sustained school engagement (Farahani & Mirsafi, 2024).

Primary school represents a particularly sensitive developmental period for the acquisition of these competencies, as children begin to navigate increasingly complex social expectations within structured educational contexts. Research in social and emotional learning (SEL) has demonstrated that targeted interventions during this stage can yield meaningful benefits for both academic and psychosocial outcomes. For example, emotional regulation and stress management have been identified as predictors of academic persistence and achievement (Garner et al., 2025), while structured SEL programs have been shown to improve academic performance and mental health indicators among school-aged children (Van Pham, 2024). These findings underscore the necessity of implementing intentional, developmentally appropriate, and pedagogically structured approaches to social skill development within the primary education curriculum.

Physical education (PE) has been widely acknowledged as a particularly suitable context for fostering social competence, as it naturally involves cooperation, communication, and shared goal pursuit. Unlike classroom-based instruction that often emphasizes individual performance, PE activities require students to engage dynamically with peers, negotiate rules, and coordinate actions in real time. When social learning principles are intentionally embedded within PE instruction through a structured pedagogical framework, the subject functions as a holistic learning environment that simultaneously supports physical, social, and emotional development (Hromek & Roffey, 2009; Lynch, 2019).

In recent years, however, opportunities for direct social interaction through play have diminished due to rapid urbanization and the increasing prevalence of digital and screen-based activities. These societal shifts have significantly altered children's play patterns, often reducing face-to-face interaction and limiting experiential opportunities that promote cooperation and interpersonal problem-solving (Dasmadi et al., 2023). Within school environments, this reduction in spontaneous peer interaction has heightened the pedagogical importance of structured movement-based contexts capable of intentionally restoring opportunities for communication, collaboration, and emotionally meaningful peer engagement.

Traditional, culture-embedded games offer a promising response to these challenges. Such games typically involve shared rules, collective goals, and direct interpersonal engagement, providing structured opportunities for children to practice social interaction and cooperation. Previous studies have established that traditional games support the development of social skills, empathy, and communication by situating learning within meaningful social and cultural contexts (Syamsuddin et al., 2024; Ospankulov et al., 2023). Importantly, the educational effectiveness of these activities is closely linked to their cultural relevance. Interventions that resonate with students' cultural backgrounds have been found to promote psychological safety, interactional trust, and sustained engagement during cooperative activities (García Flores et al., 2026). These culturally familiar interaction structures may therefore increase participation confidence and facilitate authentic peer communication during gameplay.

Despite growing interest in traditional games, existing research has largely focused on generalized forms of play or early childhood populations, often lacking a clearly articulated instructional architecture tailored for upper primary physical education. Moreover, prior studies have tended to examine broad psychosocial outcomes without explicitly examining how culturally structured gameplay shapes discrete interaction processes within routine PE participation. In the Thai context, previous research has predominantly addressed early childhood or broader PE activities (Sinthukhum & Thumsirawat, 2022; Parapim et al., 2025), resulting in limited empirical attention to region-specific folk play models intentionally structured to support differentiated social skill development among upper primary students experiencing increasingly complex peer interaction demands.

Importantly, the present study advances beyond activity-based implementations by introducing a structured pedagogical architecture that intentionally organizes culturally grounded gameplay to support repeated peer interaction and coordinated participation. This approach represents a mechanism-oriented contribution, focusing on how culturally familiar cooperative tasks shape interactional processes within routine physical education rather than merely demonstrating the benefits of traditional play participation.

The present study responds to this need by conceptualizing E-San folk play not solely as a cultural activity but as a structured interactional learning environment characterized by repeated peer negotiation, coordinated action timing, and shared participation regulation. By systematically aligning culturally familiar cooperative gameplay with targeted social competencies, the intervention emphasizes interaction density and participatory responsiveness as central learning mechanisms rather than incidental by-products of physical activity. Rather than introducing novelty at the activity level, the study contributes by examining how culturally grounded gameplay may shape interactional processes that support sustained peer engagement within authentic PE delivery.

To address this gap, the present study examined the effects of a structured, culturally grounded E-San folk play intervention on social skill development among upper primary school students. Using a quasi-experimental pretest–posttest control group design, the study focused on three core dimensions of social competence social interaction, social communication, and cooperation within an authentic physical education setting. By empirically evaluating a region-specific folk play model implemented through intentional pedagogical structuring, this research provides context-sensitive evidence regarding how culturally meaningful movement experiences may influence peer coordination patterns, communication opportunities, and cooperative participation within contemporary school-based PE environments.

## Method

### *Research Design*

This study employed a quasi-experimental pretest–posttest control group design to examine short-term associations between participation in a culturally grounded E-San folk play intervention and social skill development among upper primary school students. This design was selected to balance methodological rigor with ecological validity, allowing the intervention to be implemented within an authentic school setting while minimizing disruption to routine instructional practices.

Although random assignment was not feasible due to administrative and ethical constraints within the school context, baseline equivalence between groups was examined to reduce potential selection bias. The use of intact classroom grouping was considered methodologically appropriate for preserving instructional continuity and maintaining natural peer interaction patterns that were central to the pedagogical objectives of the intervention. Preserving intact peer structures was also considered essential for capturing the interaction-based mechanisms through which culturally grounded cooperative play was expected to influence social skill development. The design is consistent with educational and physical education research evaluating school-based interventions under naturalistic conditions.

### *Participants and Setting*

Participants were 50 upper primary school students (Grades 4–6; aged 10–12 years) enrolled in a public primary school in northeastern Thailand. The school was selected through purposive sampling based on accessibility, administrative cooperation, and willingness to integrate a structured intervention into the existing physical education curriculum. Students were assigned to either an experimental group ( $n = 25$ ) or a control group ( $n = 25$ ) based on existing class groupings to preserve instructional continuity.

Preliminary analyses indicated no statistically significant differences between groups in demographic characteristics or baseline social skill scores ( $p > .05$ ), supporting initial group comparability. Although the sample size was limited to the available student population within the selected school, the relative homogeneity of participants and the confirmation of baseline equivalence supported the sensitivity of the design for detecting context-specific developmental change. This sampling strategy prioritized ecological authenticity and cultural coherence, both of which were considered integral to evaluating the socially mediated learning processes embedded within traditional play contexts.



Prior to participation, written informed consent was obtained from parents or legal guardians. Ethical approval was granted by the Institutional Review Board of Thailand National Sports University (Approval No. TNSU-EDU 014-2566).

## **Procedure**

### *Development of the E-San Folk Play Intervention*

The E-San folk play intervention was developed through a structured three-phase process to ensure cultural relevance, pedagogical coherence, and content validity. The iterative development approach was intended to strengthen both cultural authenticity and pedagogical alignment with targeted social interaction outcomes.

#### Phase 1: Needs Analysis

Semi-structured interviews and informal group discussions were conducted with classroom teachers, physical education teachers, parents, and community representatives to identify common social interaction challenges among upper primary students and to document locally meaningful play practices.

#### Phase 2: Theoretical and Cultural Integration

Findings from the needs analysis were integrated with established theoretical frameworks related to social learning, cooperative learning, and culturally responsive pedagogy. Traditional E-San folk games were reviewed and mapped onto key dimensions of social skill development, including social interaction, communication, and cooperation.

#### Phase 3: Expert Validation and Refinement

A panel of experts in physical education, child development, and cultural studies reviewed the preliminary intervention framework. Content validity was assessed using the Index of Item Objective Congruence (IOC), yielding an overall IOC value of 0.90, indicating strong alignment between activity design and intended social skill outcomes. Feedback from the panel informed refinements to activity sequencing, instructional clarity, and developmental appropriateness.

## **Intervention Procedures**

The intervention was implemented over an eight-week period, with three sessions per week, resulting in a total of 24 sessions. Each session lasted approximately 50–60 minutes and followed a standardized instructional structure:

1. Warm-up activities (10 minutes): light movement and preparatory games designed to promote readiness and group engagement.
2. Core E-San folk play activities (35–40 minutes): structured games emphasizing cooperation, communication, shared rule adherence, and coordinated movement.
3. Cool-down and guided reflection (5–10 minutes): brief facilitated discussions encouraging students to reflect on interpersonal behaviors observed during play.

To enhance implementation fidelity, all sessions were delivered using a standardized activity guide, and the same instructor facilitated all sessions. The control group participated in the school's regular physical education curriculum, which emphasized general physical fitness and skill practice but did not include structured cooperative or culturally specific activities.

## **Measures**

### *Social Skills Assessment*

Social skills were assessed using a researcher-developed self-report questionnaire comprising 15 items across social interaction, communication, and cooperation. The context-specific nature of the instrument enabled the assessment of culturally grounded interaction experiences that may not be fully captured by standardized measures.

Content validity was established through expert review (IOC 0.80–1.00), and internal consistency reliability was satisfactory across subscales (.85, .81, and .88). The instrument was designed to capture perceived social engagement within culturally familiar interaction contexts, thereby aligning measurement with the ecological characteristics of the intervention.

While self-report measures may be influenced by social desirability, they were considered appropriate for capturing students' lived interaction experiences during cooperative gameplay. Future research incorporating observational and multi-informant approaches is recommended to further strengthen construct validity and triangulate interaction outcomes.

### **Data Collection and analysis**

Data were collected pre-intervention and post-intervention. Analyses included descriptive statistics, independent-samples t-tests, and paired-samples t-tests. Effect sizes were calculated using Cohen's *d*.

Given the quasi-experimental design and context-specific measurement approach, effect sizes were interpreted cautiously as indicators of practical developmental change reflecting alignment between cooperative gameplay demands and targeted social competencies.

### **Methodological Considerations**

Several methodological considerations should be acknowledged. The quasi-experimental design and single-site sampling limit generalizability beyond the study context. In addition, reliance on self-reported outcomes may introduce response bias. However, baseline equivalence, structured intervention delivery, and fidelity controls contribute to internal coherence and support cautious interpretation of context-specific group differences.

## **Results**

### **Outcome of the Northeastern Thai Folk Games Model Development**

The development process resulted in a structured Northeastern Thai folk games-based model grounded in established principles of social skills development, social behavior, physical development, and culturally embedded play. Through systematic synthesis of relevant theories and prior empirical studies, the model was designed to function as a pedagogical framework for promoting social interaction, social communication, and cooperation among primary school students.

The finalized model comprised six traditional E-San folk games: Kratheng Kratoi, Khee Ma Fan Dab, Khee Ma Lang Pok, Kho Kwean, Ten Chang Cha, and Wing Sam Kha. Each game was intentionally aligned with specific dimensions of social skill development, particularly social responsibility, interactive engagement, and cooperative participation. Rather than operating as isolated activities, the games were organized into a coherent instructional sequence implemented over eight weeks, with three sessions per week and a session duration of approximately 50 minutes.

Content validation through expert review yielded an overall Index of Item-Objective Congruence (IOC) value of 0.90, indicating a high degree of alignment between the game activities and their intended social skill objectives. Feedback from experts was incorporated to refine the structure and implementation of the model. A preliminary try-out with a group comparable to the study sample further demonstrated the feasibility of implementing the model within a regular school-based physical education schedule. The alignment between individual folk games and targeted social skills is presented in Table 1 and illustrated in Figures 1–6.

Table 1. Content structure of the Northeastern Thai folk games-based model and targeted social skills

Northeastern Thai Folk Games	Targeted Social Skills
Kratheng Kratoi	Social responsibility; Social interaction; Social communication
Khee Ma Fan Dab	Social responsibility; Social interaction
Khee Ma Lang Pok	Social responsibility; Social interaction
Kho Kwean	Social responsibility; Social interaction; ; Social communication
Ten Chang Cha	Social responsibility; Social interaction; Social communication
Wing Sam Kha	Social responsibility; Social interaction; Social communication



Figure 1. Kra Teng Kra Toi exhibits rhythmic hopping and collective synchronization that enhance social responsibility, social interaction and social communication.



Figure 2. Khee Ma Fan Dab exemplifies dual play to promote social responsibility and social interaction



Figure 3. Khee Ma Lang Pok exemplifies dual play to promote social responsibility and social interaction



Figure 4. Kho Kwean is a collaborative initiative aimed at fostering social responsibility social interaction and social communication



Figure 5. Ten Chang Cha illustrates collaborative and competitive engagement that fosters social responsibility social interaction and social communication



Figure 6. Wing Sam Kha is a collaborative initiative aimed at fostering social responsibility social interaction and Social communication



### ***Baseline Equivalence of the Experimental and Control Groups***

Independent-samples t-tests indicated no statistically significant differences between groups at pre-test ( $p > .05$ ). This baseline comparability strengthens the internal coherence of subsequent analyses by suggesting that observed post-intervention differences were unlikely to reflect pre-existing disparities in social competence.

#### *Post-intervention Between-group Differences*

Following the eight-week intervention, statistically significant post-test differences were observed across all domains of social skills ( $p < .05$ ). The experimental group demonstrated consistently higher post-test mean scores than the control group in social interaction, social communication, cooperation, and overall social skills.

Post-test mean scores for the experimental group ranged from 3.55 to 3.59, whereas corresponding scores for the control group ranged from 2.55 to 2.66. The consistency of these differences across domains suggests a generalized pattern of enhanced perceived social engagement associated with participation in structured culturally grounded cooperative activities.

#### *Within-group Changes across the Intervention Period*

The experimental group demonstrated statistically significant improvements across all social skill domains from pre-test to post-test ( $p < .05$ ), with mean increases ranging from +1.14 to +1.18.

In contrast, the control group exhibited only modest and non-significant changes. This divergence indicates that the intervention context may have provided more frequent and structured opportunities for peer communication, coordination, and cooperative problem-solving than those typically encountered in routine physical education participation.

#### *Integrated Interpretation of Social Skills Outcomes*

Table 2 presents a comprehensive overview of social skill outcomes, including pre-test and post-test means, standard deviations, mean change values, post-test between-group t-statistics, and corresponding effect sizes (Cohen's d). Across all domains, the experimental group demonstrated pronounced improvements relative to the control group.

Table 2. Changes in Social Skills across Time and Group Conditions

Social Skills Domain	Group	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Change ( $\Delta$ )	t (Post-test)	Cohen's d
Social Interaction	Experimental (n = 25)	2.45 $\pm$ 0.32	3.59 $\pm$ 0.25	+1.14	15.28*	4.61
	Control (n = 25)	2.43 $\pm$ 0.23	2.55 $\pm$ 0.23	+0.12	—	—
Social Communication	Experimental (n = 25)	2.39 $\pm$ 0.29	3.56 $\pm$ 0.26	+1.17	12.81*	4.60
	Control (n = 25)	2.43 $\pm$ 0.24	2.66 $\pm$ 0.24	+0.23	—	—
Cooperation	Experimental (n = 25)	2.37 $\pm$ 0.27	3.55 $\pm$ 0.19	+1.18	15.30*	5.45
	Control (n = 25)	2.39 $\pm$ 0.28	2.62 $\pm$ 0.23	+0.23	—	—
Overall Social Skills	Experimental (n = 25)	2.40 $\pm$ 0.17	3.57 $\pm$ 0.11	+1.17	24.19*	8.23
	Control (n = 25)	2.42 $\pm$ 0.12	2.61 $\pm$ 0.16	+0.19	—	—

Note: Values are presented as mean  $\pm$  standard deviation. (Mean Change) represents post-test minus pre-test scores. t values reflect independent-samples t-tests comparing experimental and control groups at post-test. Cohen's d indicates standardized effect size for post-test between-group differences. Interpretation labels are provided to facilitate substantive understanding of effect magnitude and do not imply long-term causal impact.  $p < .05$ .

The experimental group demonstrated pronounced improvements relative to the control group across domains. For example, social interaction increased from  $2.45 \pm 0.32$  to  $3.59 \pm 0.25$ , with similar patterns observed for communication and cooperation.

The corresponding effect sizes were large across all domains (Cohen's d ranging from 4.60 to 8.23). However, the magnitude of these effects should be interpreted within the pedagogical and methodological characteristics of the intervention.

First, the close correspondence between cooperative gameplay demands and the specific social competencies assessed may have increased sensitivity to short-term behavioral change during the intervention period.

Second, the culturally familiar nature of the activities may have reduced interactional anxiety and facilitated sustained participation, thereby increasing opportunities for observable peer engagement.

Third, given the quasi-experimental design, modest sample size, and reliance on perception-based measurement, the observed effect sizes are best interpreted as indicators of contextually bounded developmental change rather than generalized population-level effects.

### ***Item-level Consistency of Intervention Effects***

Post-test comparisons indicated significant differences across all 15 items assessing social skills ( $p < .05$ ). The distribution of improvements across all indicators suggests that the observed effects reflected broad changes in perceived social behavior rather than isolated item-level shifts.

### ***Summary of Results***

Participation in the Northeastern Thai folk games program was associated with higher post-test levels of social skills and greater improvements compared with routine physical education activities. The convergence of domain-level, item-level, and effect size patterns provides coherent evidence of short-term associations between structured culturally grounded play and enhanced perceived social competence within the study context.

## **Discussion**



The present study provides empirical evidence that a structured E-San folk play intervention implemented within a physical education (PE) context was associated with short-term improvements in social interaction, social communication, and cooperation among upper primary school students. The consistency of improvements across domains suggests that structured cooperative gameplay may have increased opportunities for peer engagement within routine PE participation rather than reflecting isolated behavioral change. The domain-wide and item-level consistency reported in the Results further strengthens the interpretation that observed improvements reflected a generalized pattern of perceived social engagement within the intervention context. Rather than indicating discrete behavioral gains, this pattern suggests that the intervention may have modified the interactional climate of PE lessons by increasing the frequency of reciprocal participation and shared task involvement. This shift in interactional climate may represent a process-level change in how students experienced peer collaboration during PE rather than solely an outcome-level improvement in social skills. These findings are consistent with culturally responsive education literature indicating that culturally meaningful learning experiences may enhance students' motivational engagement and sense of belonging during cooperative activities. Beyond confirming effectiveness, the findings offer insight into how culturally embedded cooperative play may function as a pedagogically structured mechanism for social skill development within formal schooling. The results underscore that social competence may be supported not merely through physical activity participation but through intentionally structured psychosocial engagement, a concept shown to produce stronger interpersonal outcomes than routine PE instruction (Julianti et al., 2024).

At a conceptual level, the findings align with social constructivist and social learning perspectives, where social competencies develop through participation in socially mediated activities. The E-San folk games examined such as Kho Kwean and Wing Sam Kha required rule negotiation, coordinated movement, and reciprocal interaction, reflecting established evidence that cooperative play environments promote peer-mediated social learning (Irmansyah et al., 2020). The progressive sequencing of activities reported in the results likely strengthened this interactional process by creating repeated opportunities for shared task engagement across sessions. This repeated exposure may have allowed students to progressively refine communication timing, anticipate peer behavior, and regulate cooperative responses, thereby supporting the gradual stabilization of interactional competence. Such stabilization may reflect the development of interaction routines, in which students become more efficient in coordinating actions and negotiating roles during repeated cooperative tasks. This pedagogical intentionality applied through traditional games transforms gameplay into a systematically structured learning environment that supports sustained interaction practice (Julianti et al., 2024). From a cognitive-social perspective, such interaction-rich movement experiences may facilitate the integration of social behavior with executive control processes, supporting adaptive peer coordination during gameplay (Samakphol et al., 2026).

A key contribution of this study lies in its emphasis on cultural grounding as an active pedagogical component rather than a contextual backdrop. Learning activities that resonate with students' cultural identities promote psychological safety and intrinsic motivation (García Flores et al., 2026). In this study, the familiarity of E-San folk narratives may have reduced participation barriers and facilitated more authentic interpersonal exchange. This culturally mediated interactional comfort may have supported the emergence of interactional trust, allowing students to engage more confidently in cooperative risk-taking such as negotiation, role switching, and shared decision-making. The development of interactional trust may be particularly relevant in PE contexts where performance anxiety and peer evaluation can otherwise limit participation. The interpretation aligns with evidence that culturally meaningful traditional games foster social connectedness (Syamsuddin et al., 2024; Ospankulov et al., 2023). Moreover, culturally grounded game environments have been shown to enhance personal and social development within inclusive school settings (Afridawati et al., 2025). Consistent with holistic traditional game models, the integration of cooperative tasks, movement coordination, and shared rule structures may also support broader behavioral and developmental engagement (Sunanto et al., 2024). Additionally, the attentional control and behavioral inhibition demands embedded within cooperative gameplay may contribute to executive functioning and coordinated peer responsiveness during interaction (Mao et al., 2024). From a pedagogical perspective, this suggests that cultural familiarity may operate as a facilitator of interactional trust, thereby increasing students' willingness to participate in cooperative learning situations.



Regarding the magnitude of effects, while Cohen's  $d$  values were substantial, cautious interpretation is warranted. As reflected in the Results, the large effect sizes may be influenced by the close correspondence between structured cooperative gameplay and the self-reported social competencies assessed, which can increase sensitivity to short-term perceived change. This measurement sensitivity is likely amplified when intervention tasks directly require the behaviors being assessed, particularly within short intervention windows. Furthermore, the progressive instructional sequencing may have concentrated opportunities for observable interaction, thereby amplifying perceived behavioral change within the assessment timeframe. Similar patterns have been reported in intentionally structured psychosocial PE interventions targeting interpersonal outcomes (Afridawati et al., 2025). Nevertheless, short-term psychosocial improvements may require continued reinforcement to support long-term behavioral stability (Xu et al., 2025). The perception-based nature of the outcome measures further suggests that observed effects reflect changes in students' perceived interaction competence within the intervention setting rather than definitive behavioral generalization across contexts. The ecological delivery of the intervention within regular PE lessons simultaneously enhances practical relevance while limiting experimental control. Accordingly, the present findings should be interpreted as context-specific developmental gains within the intervention setting rather than evidence of generalized long-term transformation.

Collectively, the results suggest that region-specific folk play can be systematically integrated into formal schooling as a theoretically grounded and pedagogically feasible approach. From a practical PE perspective, the intervention demonstrates that culturally familiar cooperative games can be incorporated into existing lesson structures without extensive curricular modification while increasing opportunities for peer communication and cooperative participation. Importantly, the structured sequencing of cooperative tasks provides PE teachers with an actionable instructional strategy for embedding social learning objectives within movement-based lessons rather than treating social development as an implicit by-product of participation. This instructional feasibility is particularly important in school systems where PE teachers face time constraints and limited curricular flexibility. By situating social learning within culturally meaningful activities, this program provides a contextually relevant framework through which PE teachers may enhance interactional trust and inclusive engagement. Importantly, the feasibility of implementation within regular PE scheduling indicates that such approaches may be adopted without substantial resource demands, enhancing their potential classroom applicability. The convergence of cultural familiarity, pedagogical intentionality, and cooperative gameplay supports the potential scalability of such approaches in culturally diverse school environments (Sunanto et al., 2024; Julianti et al., 2024).

## Conclusions

This study provides empirical evidence that a structured E-San folk play program integrated into physical education was associated with short-term improvements in social interaction, communication, and cooperation among upper primary students. Convergent domain- and item-level gains suggest that the intervention influenced the interactional climate of lessons by increasing reciprocal participation rather than producing isolated behavioral change, positioning culturally embedded play as a structured mechanism for social skill development.

The findings indicate that social competence may develop through pedagogical intentionality, reflected in the integration of psychosocial objectives and progressive sequencing within traditional gameplay. In this context, E-San folk games function as embodied social learning environments in which cultural familiarity may support interactional trust and sustained cooperative engagement during lessons.

Despite limitations related to the quasi-experimental design and self-reported measures, the study demonstrates context-specific developmental gains within an authentic educational setting. The relatively large effect sizes should be interpreted cautiously as reflecting measurement sensitivity and task-measure alignment rather than generalized behavioral transformation.

Overall, the findings suggest that region-specific folk play can be feasibly integrated into school curricula to enhance communication, shared responsibility, and inclusive participation, supporting the role of traditional games as structured learning experiences engaging motor, social, and cognitive domains.



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