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Publication details, including author guidelines

URL: <https://jurnal.iicet.org/index.php/jppi/about/submissions#authorGuidelines>

Editor: Nilma Zola

Article History

Received: 20 Oct 2025

Revised: 11 Nov 2025

Accepted: 12 Dec 2025

How to cite this article (APA)

Alfarobi, R., Chaeroni, A., Rifki, M.S., Pranoto, N. W. & Ilham, I. (2025). The influence of traditional games and digital media on students' character values and social skills. *Jurnal Penelitian Pendidikan Indonesia*, 11(3), 489-497
<https://doi.org/10.29210/020256422>

The readers can link to article via <https://doi.org/10.29210/020256422>

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JPPI (Jurnal Penelitian Pendidikan Indonesia)

ISSN: 2502-8103 (Print) | ISSN: 2477-8524 (Electronic)



The influence of traditional games and digital media on students' character values and social skills

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Article Info

Article history:

Received Oct 20th, 2025

Revised Nov 11th, 2025

Accepted Dec 12th, 2025

Keyword:

Physical education,
Traditional games,
Digital media,
Character values

ABSTRACT

This study examines the comparative effects of traditional games and digital media on the development of character values and social skills in elementary school physical education. Motivated by concerns regarding reduced social interaction due to the growing dominance of digital media, the study employed a mixed-methods design involving 69 fifth- and sixth-grade students in Padang, Indonesia. Students participated in interventions using traditional games (Gobak Sodor) and educational digital media (exergames). Data were collected through validated questionnaires and behavioral observation sheets, with quantitative analysis conducted using PLS-SEM and qualitative data analyzed thematically. The findings indicate that traditional games significantly improved students' social skills, while digital media had a significant positive effect on character values. However, traditional games did not significantly influence character values, and digital media did not significantly affect social skills. These results show that each approach has selective strengths, suggesting that an integrated strategy combining cultural and technological elements may offer a more holistic physical education experience.



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Introduction

Physical education today has not yet fully fulfilled its strategic role in comprehensively shaping students' character and social skills (Dyson et al., 2024). Learning activities tend to focus solely on physical aspects, often neglecting the social dimension of education (Jadwiszczak et al., 2025). On the other hand, there has been a shift in children's play habits from physically interactive activities such as traditional games to intensive use of digital media (Kara & Taner Derman, 2025). This change is driven by technological advancements and increased access to gadgets and online games (Torres et al., 2021). As a result, children's opportunities for direct social interaction have diminished, leading to weaker empathy, respect, and social responsibility (Disney & Geng, 2022). Moreover, the internalization of character values such as cooperation, honesty, and sportsmanship has become less naturally developed (Bronikowska et al., 2020). Therefore, a solution is needed that is rooted in local cultural approaches,

which have long proven effective in instilling social values (Temel et al., 2024). Traditional games, as part of cultural heritage, hold great potential to be contextually and meaningfully integrated into physical education (Cheong & Hussain, 2024). This approach allows students to engage in a more holistic learning process that aligns with their social environment (Luchoro-Parrilla et al., 2024).

Physical education holds high urgency as a strategic space for shaping students' character through activities that involve social interaction, cooperation, and respect for rules (Setiawan et al., 2023). Through physical education, moral and social values can be instilled contextually through direct experience (Sindiani et al., 2025). Traditional games carry significant educational potential in fostering values such as sportsmanship, responsibility, and teamwork (Dugas & Ben Ali, 2023). These values are naturally internalized because traditional games emphasize togetherness, shared rules, and strong emotional engagement among players (Alcaraz-Muñoz et al., 2020). On the other hand, digital media should not be viewed as a threat, but rather utilized positively as an educational and interactive learning tool (Zakir et al., 2025). This approach enables the integration of social values into digital platforms, allowing children to remain connected to cultural values while simultaneously becoming technologically literate in a balanced manner (Zort et al., 2023).

Empirical research indicates that traditional games significantly contribute to the reinforcement of character values such as honesty, responsibility, and cooperation within the context of physical education. A study conducted by (Lavega-Burgués et al., 2023) in the *Journal Frontiers in Psychology* revealed that traditional game activities consistently enhance students' empathy and discipline. Similarly, research by (Rodríguez-Ferrer et al., 2023) in the *Journal Frontiers in Psychology* affirmed that culturally based games strengthen social bonds and foster mutual respect among individuals within the school environment. On the other hand, developments in educational technology indicate that educational digital media also holds great potential in fostering children's social skills. In addition, research by (Petousi et al., 2022) in the *Journal Frontiers in Education* demonstrated that interactive learning applications can enhance children's active social engagement within virtual learning environments. However, these studies have not yet comprehensively integrated or compared the effectiveness of traditional games and digital media within a single, cohesive physical education approach. There exists a conceptual and methodological gap concerning the synergy between local cultural values and technological advancement in shaping students' social skills through physical education (Primo et al., 2023). Therefore, a comparative-integrative approach is needed to address the complexity of current and future educational demands.

The learning process employed in this study involves two main approaches: traditional games rooted in local culture and interactive educational digital media (Lewis et al., 2024). These two approaches are directly compared within the context of physical education to assess their effectiveness in developing children's social skills. This study adopts a mixed-methods methodology, combining both quantitative and qualitative data to obtain a comprehensive understanding of the outcomes of the implemented learning models (Farič et al., 2021). Evaluation is conducted through validated instruments, including social behavior observation sheets and social skills questionnaires. This solution was chosen because traditional games embody local values that support the reinforcement of cultural identity (Lin et al., 2024). A culturally based approach is believed to enhance the relevance of physical education by aligning it with the children's social environment (Ferrari et al., 2025).

This study aims to compare the effects of traditional game-based learning and digital media on the development of children's character values and social skills within the context of physical education (Kucirkova et al., 2024). This approach is expected to identify the most effective model for instilling social values in students (Rakha, 2025). The first specific objective is to measure the extent to which traditional games and digital media can foster character dimensions such as discipline and responsibility (Saura & Zimmermann, 2021). These aspects are assessed through behavioral observation of students during the learning process. The second specific objective is to evaluate children's ability to establish positive social interactions. The assessment of social skills focuses on aspects such as cooperation and self-regulation, examined through structured learning interventions designed for this purpose.

Physical education today faces increasing challenges in nurturing students' character values and social skills, as children's shifting preference from culturally rooted traditional games to digital media

has reduced opportunities for direct social interaction. Although traditional games like Gobak Sodor have the potential to build cooperation, discipline, and empathy, their effectiveness often depends on structured implementation and students' familiarity with the activities. Meanwhile, educational digital media can promote character development through interactive and well-designed content, yet its impact varies according to the quality of engagement. Previous studies have generally examined these approaches in isolation, leaving a gap in understanding how cultural and technological strategies compare in shaping socio-emotional competencies. This study therefore seeks to address this gap by analyzing the differential effects of traditional games and digital media within physical education, providing evidence on how each approach contributes selectively to children's character formation and social skill development.

Method

This study employs a mixed methods approach that integrates both quantitative and qualitative data to evaluate the effectiveness of two distinct learning models in physical education: traditional games rooted in local culture and interactive educational digital media. The scope of this research focuses on classroom-based physical education activities designed to instill character values and social skills through culturally and technologically driven intervention models. Each variable is measured using two indicators: traditional games (X1) with respect and teamwork ; digital media (X2) with literacy and communication ; character values (Y1) with discipline and responsibility; and social skills (Y2) with cooperation and self-regulation. The following presents the research design.

This study was conducted in upper-grade elementary school settings in Padang City, specifically in schools with access to physical education and technology facilities. The population consisted of all V and VI grade students, totaling 150 individuals. A sample of 69 students was selected purposively based on their active participation in physical education classes. The primary data source came from the students as research subjects, using instruments such as behavior observation sheets and questionnaires on traditional games, digital media, character values, and social skills. These instruments had undergone validity and reliability testing and included a total of 44 statements. Data collection was carried out through direct observation during Gobak Sodor and exergame activities. Questionnaire responses were filled out by physical education teachers at the participating schools. Quantitative data were analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method to test relationships among variables, while qualitative data were analyzed using a thematic approach to strengthen the contextual interpretation of the research findings.

Results and Discussions

Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis was used to examine the relationships between latent variables and their indicators in this study. This technique was chosen due to its ability to handle complex models with multiple indicators and to accommodate data that do not meet normality assumptions.

Table 1. Output for Construct and Reliability and Validity

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Character Values (Y1)	0,889	0,897	0,910	0,504
Digital Media (X2)	0,809	0,809	0,862	0,511
Social Skills (Y2)	0,872	0,886	0,900	0,509
Traditional Games (X1)	0,881	0,886	0,906	0,521

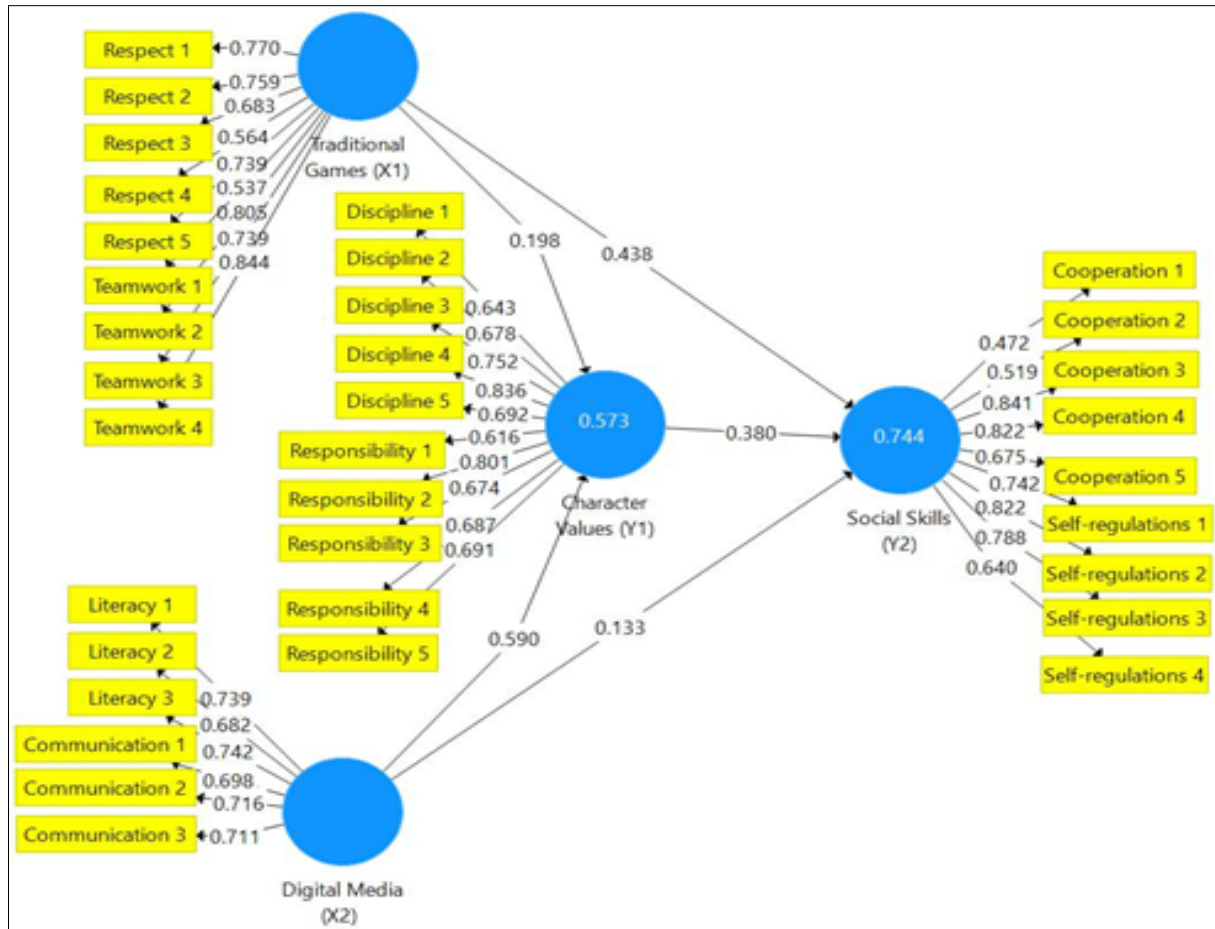


Figure 1. The Relationship or Correlation Between Indicators and Variables

Based on the figure 1, it can be explained that most indicators exhibit strong correlations with their respective variables, with factor loading values ranging from 0.472 to 0.844 (Shela et al., 2023). These values indicate that the relationships between the indicators and the constructs fall within the moderate to very strong correlation category, in line with the interpretation of correlation values between 0.5 and 0.8 (Ciavolino et al., 2022). This finding suggests that the indicators used in the study validly represent the constructs and support the robustness of the measurement model in the PLS-SEM analysis (Cheung et al., 2024).

The reliability testing results (Table 1) show that all variables in the model have Cronbach's Alpha, rho_A, and Composite Reliability values exceeding the threshold of 0.80 (Nabila et al., 2023). Specifically, the variable Character Values (Y1) recorded a Cronbach's Alpha of 0.889 and a Composite Reliability of 0.910; Digital Media (X2) obtained 0.809 and 0.862; Social Skills (Y2) achieved 0.872 and 0.900; and Traditional Games (X1) reached 0.881 and 0.906. These findings indicate that all constructs demonstrate excellent internal consistency and are appropriate for use in the structural model measurement (Mukhtar et al., 2022).

In addition, the Average Variance Extracted (AVE) values for all constructs exceed the minimum threshold of 0.50, ranging from 0.504 to 0.521 (Hair, Hult, et al., 2021). This indicates that convergent validity has been achieved, and each construct is capable of adequately explaining more than 50% of the variance in its indicators.

Table 2. The Outputs of Collinearity Assessment (VIF)

No	Indicator	VIF	No	Indicator	VIF
1	Communication 1	1,684	18	Respect 2	3,160
2	Communication 2	1,657	19	Respect 3	1,822
3	Communication 3	1,448	20	Respect 4	1,492
4	Cooperation 1	1,418	21	Respect 5	2,450
5	Cooperation 2	1,454	22	Responsibility 1	1,921
6	Cooperation 3	3,156	23	Responsibility 2	2,657
7	Cooperation 4	3,178	24	Responsibility 3	1,685
8	Cooperation 5	1,809	25	Responsibility 4	2,306
9	Discipline 1	1,711	26	Responsibility 5	1,921
10	Discipline 2	1,835	27	Self-regulations 1	2,357
11	Discipline 3	2,126	28	Self-regulations 2	3,428
12	Discipline 4	3,010	29	Self-regulations 3	2,881
13	Discipline 5	1,911	30	Self-regulations 4	1,619
14	Literacy 1	1,776	31	Teamwork 1	1,532
15	Literacy 2	1,552	32	Teamwork 2	3,403
16	Literacy 3	2,102	33	Teamwork 3	2,159
17	Respect 1	3,157	34	Teamwork 4	3,536

Multicollinearity analysis using the Variance Inflation Factor (VIF) revealed that most indicators had VIF values below the critical threshold of 5 (Kalnins & Praitis Hill, 2025). Although some indicators, such as Cooperation 3 (3.156), Self-regulation 2 (3.428), and Teamwork 4 (3.536), showed relatively high VIF values, they remained within a statistically acceptable range. Overall, there were no indications of significant collinearity issues within the model.

Table 3. Discriminant validity (Fornell-Larcker criterion)

Variable	Character Values (Y1)	Digital Media (X2)	Social Skills (Y2)	Traditional Games (X1)
Character Values (Y1)	0,710			
Digital Media (X2)	0,747	0,715		
Social Skills (Y2)	0,771	0,765	0,714	
Traditional Games (X1)	0,666	0,793	0,797	0,722

Discriminant validity was assessed using the Fornell-Larcker Criterion, where the square root of the AVE for each construct was found to be greater than its correlations with other constructs (Streukens & Leroi-Werelds, 2023). For example, the square root of the AVE for the Social Skills construct (0.714) was higher than its correlations with Character Values (0.771), Digital Media (0.765), and Traditional Games (0.797). This indicates that each construct in the model demonstrates adequate discriminant validity in relation to the other constructs (Hair, Astrachan, et al., 2021).

The hypothesis testing results using linear regression in PLS-SEM revealed significant relationships between Character Values (Y1) and Social Skills (Y2) ($p = 0.000$), as well as between Traditional Games (X1) and Social Skills (Y2) ($p = 0.000$). In addition, Digital Media (X2) also showed a significant influence on Character Values (Y1) ($p = 0.000$). However, the relationships between Digital Media (X2) and Social Skills (Y2) ($p = 0.196$), as well as Traditional Games (X1) and Character Values (Y1) ($p = 0.192$), were found to be not significant, as the p-values exceeded 0.05 (Zetian et al., 2024). Therefore, not all hypotheses were supported by the empirical data obtained.

Table 4. Linear Regression Hypothesis Test

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Character Values (Y1) Social Skills (Y2)	0,380	0,374	0,096	3,962	0,000
Digital Media (X2) Character Values (Y1)	0,590	0,600	0,150	3,946	0,000
Digital Media (X2) Social Skills (Y2)	0,133	0,136	0,103	1,293	0,196
Traditional Games (X1) Character Values (Y1)	0,198	0,202	0,151	1,306	0,192
Traditional Games (X1) Social Skills (Y2)	0,438	0,442	0,099	4,426	0,000

The hypothesis testing results using linear regression in the PLS-SEM approach revealed both significant and non-significant relationships among the variables studied. Several relationships between indicators and both independent and dependent variables showed no significant effects, as presented in Table 4, where the p-values exceeded the 0.05 threshold.

These findings align with previous studies highlighting the importance of character-building factors and the role of traditional activities in the development of children's social skills. For instance, research by (Koundourou et al., 2021) emphasized that traditional games not only enhance social interaction but also reinforce moral values among school-aged children. Furthermore, a study (Zuo, 2023) revealed that digital media can strengthen character values when accompanied by structured and educational content. The results of the present study reinforce their argument, particularly in confirming that digital media has a positive influence on character development. On the other hand, the non-significant relationship between Traditional Games and Character Values can be explained by the quality and frequency of implementation. As noted by (García-Monge et al., 2021), the positive effects of traditional games depend on the extent to which values are clearly embedded within the gameplay activities.

More profoundly, these findings indicate that the influence of variables such as traditional games and digital media is not uniform, but rather contextual shaped by the social and cognitive conditions of the learners. Among students with high exposure to educational digital content, the positive effect of digital media on Character Values tends to be more prominent compared to interventions based on traditional games. This aligns with the findings of (Ukenova & Bekmanova, 2023), who emphasized that the effectiveness of technology-based learning media is highly dependent on the quality of user interaction and the meaning derived from the content. Meanwhile, the non-significant relationship between traditional games and character values may be influenced by the current generation's greater inclination toward digital media over group-based physical activities. Therefore, this study highlights the necessity for an integrative approach one that does not rely solely on the type of media or activity, but also considers the personalization and relevance of values embedded in each learning approach.

This study has several limitations that should be acknowledged. First, the scope of respondents was limited to 69 students in the city of Padang, which may not adequately represent the geographical, cultural, and technological diversity present in other regions. Second, the use of questionnaires as the primary data collection method poses a risk of response bias, particularly in interpreting abstract constructs such as character values and social skills. Third, the structure of variables and indicators employed in the study remains limited, thereby not fully capturing the complexity of interactions among variables. Therefore, future research is recommended to expand the regional coverage, increase

the number of respondents, and incorporate interviews and direct observations to enrich the contextual depth and reliability of the data collected.

Based on these findings, it is recommended that future educational approaches integrate traditional games and digital media more flexibly, adapting to the specific needs of children. Schools and teachers can design learning activities that embed character values into both digital content and traditional games, depending on the students' context and background. For children in urban or suburban areas, technology-based interactive approaches may be more effective, while for those in rural or remote regions, traditional games can still be developed by incorporating social value components. Future research should also explore the influence of factors such as age, gender, and socio-economic background on how each approach impacts the development of children's character and social skills.

Conclusions

This study concludes that not all hypothesized relationships are empirically supported. Significant relationships were found between Character Values and Social Skills, Traditional Games and Social Skills, as well as Digital Media and Character Values. However, the influence of Digital Media on Social Skills and Traditional Games on Character Values was found to be statistically insignificant. These findings highlight that both traditional and digital learning approaches have selective impacts on the development of students' character and social competencies, indicating the need for a more thoughtful integration of both in physical education learning strategies (Capella-Peris et al., 2021).

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