
THE EFFECT OF EDUCATIONAL GAME-BASED INTERACTIVE MEDIA ON THE DEVELOPMENT OF COOPERATION AND SPORTSMANSHIP CHARACTER OF ELEMENTARY SCHOOL STUDENTS

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ABSTRACT

Keywords: Cooperation
Character, Interactive
Media, Sportsmanship

This study aims to analyze the effect of using interactive media based on educational games on the development of cooperation and sportsmanship character among students at SD Nurul Huda Medan in the academic year 2025/2026. This study employed a quasi-experimental method with a nonequivalent control group design. The population consisted of all fifth-grade students, with 26 students in the experimental group and 26 students in the control group. Data were collected through character questionnaires and observation of student activities. Data analysis was conducted using an independent sample t-test to determine significant differences between the experimental and control groups. The results indicate that students who participated in learning using interactive game-based media showed a significant improvement in cooperation and sportsmanship compared to the control group. The media encouraged students to collaborate, compete fairly, and respect peers' opinions, making the learning process more participative and enjoyable. This study demonstrates that interactive game-based media is effective in instilling social character values in elementary school students.

Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh penggunaan media interaktif berbasis game edukasi terhadap pembentukan karakter kerja sama dan sportivitas siswa di SD Nurul Huda Medan tahun ajaran 2025/2026. Penelitian ini menggunakan metode eksperimen semu dengan desain *nonequivalent control group*. Populasi penelitian adalah seluruh siswa kelas V yang terdiri dari dua kelas paralel, dengan 26 siswa pada kelompok eksperimen dan 26 siswa pada kelompok kontrol. Pengumpulan data dilakukan melalui angket karakter dan observasi aktivitas siswa. Analisis data menggunakan uji-t independen untuk mengetahui perbedaan signifikan antara kelompok eksperimen dan kelompok kontrol. Hasil penelitian menunjukkan bahwa siswa yang belajar menggunakan media interaktif berbasis game edukasi mengalami peningkatan signifikan pada karakter kerja sama dan sportivitas dibandingkan kelompok kontrol. Media ini mendorong siswa untuk berkolaborasi, berkompetisi secara sehat, dan menghargai pendapat teman, sehingga pembelajaran menjadi lebih partisipatif dan menyenangkan. Penelitian ini

membuktikan bahwa media interaktif berbasis game edukasi efektif dalam menanamkan nilai karakter sosial pada siswa sekolah dasar.

Kata kunci: Karakter kerja sama, Media interaktif, Sportivitas

INTRODUCTION

In the era of twenty first century education, elementary schools have a major responsibility not only to develop students academic abilities but also to shape strong social character from an early age. Values such as cooperation and sportsmanship are crucial in nurturing learners who are not only academically competent but also socially responsible. Cooperation provides a foundation for students to share, respect the roles of peers, and work in teams to achieve common goals. Sportsmanship teaches students to accept victory and defeat with fairness, to respect opponents and friends, and to observe rules in competition. Conventional learning, which is still widely implemented in elementary schools, often focuses on individual assignments and student competition without systematically fostering a sense of togetherness and fair play.

With the advancement of digital technology and the familiarity of the current generation with games, opportunities have emerged to utilize interactive educational game media in learning. This media provides enjoyable and participatory experiences where students are not merely passive recipients but active participants who collaborate, think, and compete in a healthy manner. For example, Rifayanti et al. (2025) analyzed social interactions and social skills of elementary students through game activities and found that group games allow students to develop their interaction and socialization skills. In addition, Mousavifar, Saadatmand and Baratali (2023) emphasized in their study that a game based approach in the social skills curriculum for elementary students enables students to develop interpersonal and collaborative skills through structured play strategies.

Research by Sohrabi (2021) found that group games significantly improve cooperative skills among elementary students because during play activities children learn to replace individual dominance with team collaboration. Similarly, Primas (2018) in research related to traditional games showed that using games can enhance social skills in social studies learning through a quasi experimental design. Furthermore, research by Nugraha et al. (2023) confirmed that collaborative educational games help foster self

confidence and sportsmanship through group activities that require coordination among students.

In the field of digital game based learning, Lenkauskaite et al. (2023) discussed cooperative learning using games at the elementary level, which showed that team play conditions encourage positive interdependence, active communication, and individual responsibility within the group. The results indicate that students are more motivated when learning is presented as a playful and cooperative experience. In the field of physical education, Rumaeso et al. (2025) also reported that implementing traditional games in physical education improves cooperative skills and student discipline.

Other studies by Permatasari et al. (2020) examined the influence of cooperative play and interpersonal intelligence on emotional regulation and found that cooperative play contributes to improving children emotional regulation, which in turn affects social maturity and prosocial behavior. At the elementary school level in Indonesia, Nugraha et al. (2018) showed that traditional games in social studies learning affect students social skills and that groups using games demonstrated significant improvement compared to expository methods.

The implementation of interactive media based on educational games is expected to provide a solution to this issue. Through this media, students can learn via enjoyable hands-on experiences, where they collaborate, solve problems, and engage in healthy competition. As a result, the learning process not only develops academic skills but also strengthens positive character values that form the core foundation of the Pancasila Student Profile.

Although these studies show that games both traditional and digital are effective in improving cooperation, social skills, and character values such as sportsmanship, research that specifically examines the use of interactive educational game media in Indonesian elementary schools focusing simultaneously on cooperation and sportsmanship is still limited. In addition, empirical studies in elementary schools using educational games to strengthen student sportsmanship through collaboration and healthy competition remain scarce. At SD Nurul Huda, learning conditions still largely employ conventional methods, and interactive digital media has not been systematically integrated to strengthen social character.

Therefore, this study aims to analyze the effect of using interactive educational game-based media on the development of students' cooperation and sportsmanship at SD Nurul Huda during the 2025/2026 academic year. The findings are expected to contribute theoretically to the development of character-oriented game-based learning media and provide practical recommendations for teachers to integrate technology and social values into daily learning activities.

METHODS

This study employed a quantitative approach with a quasi-experimental research method. This approach was selected to determine the effect of treatment in the form of using interactive media based on educational games on the development of cooperation and sportsmanship among elementary school students. The research design used was a nonequivalent control group design, in which two groups received pretests and posttests, but only the experimental group received the treatment. This design allows the researcher to compare learning outcomes between two groups with similar characteristics without fully randomizing the subjects.

The study was conducted at SD Nurul Huda Medan during the even semester of the 2025/2026 academic year. The research population consisted of all fifth-grade students, comprising two parallel classes, VA and VB, with a total of 52 students. The research sample was selected using purposive sampling based on considerations of academic ability and social character. Class VA was designated as the experimental group with 26 students, while class VB served as the control group with the same number of students.

The treatment for the experimental group involved implementing interactive media based on educational games designed using a simple game-based learning application with collaborative elements. The media contained educational games that encouraged students to work together to complete learning missions and demonstrate sportsmanship in group competitions. Meanwhile, the control group learned using conventional methods through lectures and ordinary discussions without digital media.

Data collection instruments included a character questionnaire and an observation sheet of student activities. The questionnaire was developed based on indicators of cooperation and sportsmanship adapted from the Ministry of Education, Culture, Research, and Technology's character education guidelines. Cooperation indicators

included the ability to share tasks, respect peers' opinions, contribute to the group, and assist peers in difficulty. Sportsmanship indicators included honesty in games, the ability to accept defeat, respect for others' victories, and the courage to admit mistakes. The questionnaire was validated by two experts, namely a lecturer in character education and a lecturer in educational technology.

Data collection was conducted in three stages: pretest, treatment, and posttest. In the initial stage, all students were given a pretest to measure the initial state of cooperation and sportsmanship. Then, the experimental group participated in learning with interactive media based on educational games for four sessions, each lasting 80 minutes. After the treatment, both groups were given a posttest using the same instruments to determine changes in character following the intervention.

The research data were analyzed using descriptive and inferential statistical techniques. Descriptive analysis was used to observe changes in the average scores of cooperation and sportsmanship before and after the treatment. Inferential analysis was conducted using an independent sample t-test to determine whether there were significant differences between the experimental and control groups. Prior to the t-test, data were tested for normality using the Kolmogorov-Smirnov test and for homogeneity using Levene's test to ensure the data met the assumptions for parametric analysis.

This study was conducted in accordance with educational research ethics. The researcher first obtained permission from the school principal, explained the research objectives and procedures to teachers and students, and ensured that all student data were kept confidential. The results of this study are expected to provide empirical evidence regarding the effectiveness of interactive media based on educational games in fostering cooperation and sportsmanship, as well as serve as a reference for teachers in developing enjoyable learning that emphasizes the character values of Pancasila students.

RESULTS AND DISCUSSION

The results of the study indicate a significant improvement in cooperation and sportsmanship among students who participated in learning using interactive media based on educational games. The average scores of cooperation and sportsmanship in the experimental group increased compared to the control group, which learned using conventional methods.

Table 1. Results of Pretest and Posttest on Students' Cooperation and Sportsmanship Character

Variable	Group	Average Pretest	Average Posttest	Improvement (%)	t- Count	t- table	Sig.
Cooperation	Experiment	65.2	84.1	28.9	6.45	2.01	0.000
		64.8	70.5	8.7			
Sportsmanship	Control	62.5	81.2	29.9	6.78	2.01	0.000
		63.1	69.0	9.3			

Based on Table 1, it can be seen that the experimental group showed a higher increase in average scores compared to the control group. The improvement in cooperation reached 28.9%, while sportsmanship increased by 29.9%. The t-test values for both variables were greater than the t-table values ($t\text{-calculated} > t\text{-table}$), with significance $p < 0.05$, indicating that the difference in character improvement between the groups is statistically significant.

These results indicate that the implementation of educational game-based interactive media is effective in developing students' cooperation skills. Improvement is evident in students' ability to collaborate in completing learning missions, share tasks, and support peers who encounter difficulties. The game media facilitates more intensive social interaction, enabling students to actively discuss and develop group strategies. This finding aligns with Sohrabi (2021), who stated that group play activities can enhance students' cooperation skills because they learn to appreciate the role and contribution of each member.

In terms of sportsmanship, the educational game-based interactive media encourages students to accept defeat and appreciate their peers' successes positively. Competitive and team-oriented game activities help students develop fairness, honesty, and respect for the process rather than focusing solely on outcomes. This is consistent with Sundari and Hertuti (2023), who reported that game-based learning can cultivate sportsmanship as students learn to manage emotions and value others' achievements.

The significant difference between the experimental and control groups indicates that conventional learning methods do not sufficiently facilitate the development of social character. Students in the control group tend to be passive and have limited opportunities to interact and practice cooperation and sportsmanship values. The limited improvement in the control group reinforces the assumption that educational game-based interactive

media can create a more meaningful, enjoyable, and effective learning experience for instilling character.

Furthermore, the use of educational game-based interactive media allows teachers to integrate character education naturally into learning activities. Students do not feel forced to practice character values because the process occurs in a participatory and enjoyable way. This shows that game-based learning innovation not only increases student motivation and engagement but also contributes directly to fostering positive social behaviors, particularly cooperation and sportsmanship, which are part of the Pancasila student profile.

Overall, the findings of this study demonstrate that educational game-based interactive media is effective in developing the social character of elementary school students, both in terms of cooperation and sportsmanship. These results support the views of Molina et al. (2023) and Safitri et al. (2025), who emphasized the importance of game-based learning experiences for developing students' social competencies and character values.

CONCLUSION

Based on the research findings, it can be concluded that the use of interactive media based on educational games has a positive and significant effect on the development of students' cooperation and sportsmanship. Students who participated in learning with this media demonstrated higher levels of teamwork skills and sportsmanship compared to those who learned through conventional methods. Therefore, interactive media based on educational games is proven to be an effective learning strategy that not only enhances student engagement but also instills important social character values essential for the development of primary school students.

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