

The Effect of Monopoly Learning Media on the Science Learning Outcomes of Third Grade Students at Public Elementary School 091436

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ARTICLE INFO	ABSTRACT
Input : August 19, 2025 Revised : October 05, 2025 Accepted : November 12, 2025 Published : November 26, 2025	This study aims to analyze the effect of the Monopoly Learning Media on the learning outcomes of third-grade students at SD Negeri 091436 Tambun Raya in the topic “Energy Around Us.” The research was motivated by the low achievement in IPAS learning and the dominance of teacher-centered instruction that limited student engagement. A quantitative approach using a One Group Pretest–Posttest design was employed. The sample consisted of 20 third-grade students selected through total sampling. The instrument was a 20-item multiple-choice test that had been validated for its validity, reliability, discrimination index, and difficulty level. Data were analyzed using a paired sample t-test. The findings reveal an increase in the mean score from 56.75 (pretest) to 84.75 (posttest), with a gain of 28 points. The t-test results indicate that $t_{\text{calculated}} > t_{\text{table}}$, confirming that the monopoly media has a significant effect on learning outcomes. Observations also show improvements in students’ motivation, engagement, and social interaction during game-based activities. These findings demonstrate that monopoly media is effective for IPAS learning, particularly for abstract concepts. The study recommends the broader use of educational game media to enhance conceptual understanding and student participation.
Keywords: Monopoly Learning Media, Learning Outcomes, Ipas, Elementary Education, Game-Based Learning	

INTRODUCTION

Basic education is a critical stage in the development of students' cognitive, social, and character skills. At this stage, students need concrete, interactive, and meaningful learning experiences to develop a comprehensive understanding of concepts. UNESCO (2023) in the Global Education Monitoring Report emphasizes that more than 60% of low-income countries still face a learning crisis, especially in basic science literacy. This data shows that the challenge of improving the quality of science learning at the elementary school level is a global issue that must be addressed seriously.

At the regional level, the 2019 Trends in International Mathematics and Science Study (TIMSS) report shows that the science abilities of Indonesian elementary school

How to cite: 16
Damanik D M (2025). The Effect of Monopoly Learning Media on the Science Learning Outcomes of Third Grade Students at Public Elementary School 091436. *Journal Ludi Litterarri*, 2(3), 16-23. DOI: <https://doi.org/10.62872/7c361f40>



students are still below the international average. Indonesia scored 397, far below the global average of 500 (Mullis et al., 2020). These results indicate that science learning in the Merdeka Curriculum, which is integrated into the Natural and Social Sciences (IPAS) subject, still requires innovation and appropriate learning media support so that students can build a better understanding. This is important considering that IPAS not only teaches science concepts but also integrates them with social phenomena around students.

In Indonesia, the implementation of the Merdeka Curriculum still faces challenges at the elementary school level. The Directorate of Elementary Schools of the Ministry of Education, Culture, Research, and Technology (2023) reported that 45% of teachers experienced difficulties in integrating scientific, inquiry, and experiential approaches due to limited learning media. Teachers still tend to use lecture methods that place students as passive recipients of information rather than active learners. Research by Rahmawati & Lestari (2021) found that science and IPAS learning in elementary schools is still dominated by expository methods, making it difficult for students to understand abstract concepts.

This phenomenon is also evident in the IPAS learning conditions at SD Negeri 091436 Tambun Raya. Based on preliminary observations and daily test scores, IPAS learning is conducted conventionally without the use of concrete media or exploratory activities. This has a direct impact on low learning outcomes. Daily test data showed that only 30% of students achieved the Learning Objective Achievement Criteria (KKTP), while the rest were below the passing standard. This condition is in line with the findings of Putri & Jamaluddin (2022), which stated that the low science learning outcomes of elementary school students were largely influenced by the lack of visual and manipulative media.

Third-grade students are at the concrete operational stage of cognitive development according to Piaget, so they need media that makes concepts more tangible (Schunk, 2020). Science and technology materials such as “Energy Around Us” are abstract in nature, covering the concepts of heat energy, light energy, kinetic energy, energy conversion, and energy sources. Without concrete media, students tend to find it difficult to understand these concepts.

In line with this, the theory of embodied cognition states that physical involvement in learning activities can improve conceptual understanding (Glenberg et al., 2019). One approach that is considered relevant to address this issue is the use of game-based learning media. Educational games have been proven to increase student motivation and engagement in the classroom.

Research by Hamari et al. (2016) states that the elements of competition, challenge, and feedback in games can increase intrinsic motivation and engagement. In the context of basic education, games provide learning experiences that are in line with the psychological characteristics of children, namely the desire to move, play, and interact.

One type of game that is increasingly being used in learning is educational monopoly. Empirical research shows its effectiveness. Research by Juwita Retna Gumilang (2019) found that monopoly media significantly improved third-grade students' science learning outcomes because it provided a fun and competitive learning experience. Ahmad Wahyudi (2020) also proved that monopoly in thematic subjects can significantly increase student motivation and engagement.

Meanwhile, recent research by Syahsiayah (2023) shows that monopoly helps increase elementary school students' interest in learning mathematics because of its

simple and interesting mechanism. However, there are important research gaps that have not been widely studied by previous research. First, most studies on monopoly media only focus on single subjects (science, social studies, mathematics), not on integrative IPAS.

In fact, IPAS has unique characteristics because it combines scientific and social aspects in one learning cluster. Second, most of these studies were conducted in higher grades (grades IV–VI), while lower grade students have different cognitive characteristics and require more concrete media and simpler play activities. Third, there has not been much research that specifically uses monopoly media designed based on the IPAS material “Energy Around Us.” The majority of monopoly media are general in nature and therefore not entirely relevant to the learning outcomes of the Merdeka Curriculum. The fourth gap lies in the lack of studies on how social interaction, simple scientific thinking skills, and student motivation develop during the game.

Considering these gaps, this study has novelty in several aspects. First, the monopoly media in this study was specifically designed based on the structure of the third-grade IPAS material, not just a general adaptation of the monopoly game. This media includes integrated questions that connect the concept of energy with students' daily activities. Second, this study was conducted on third-grade students who need concrete media and game-based learning, so the results of the study provide practical contributions to learning in lower elementary school grades. Third, this study not only assesses improvements in learning outcomes but also analyzes the dynamics of the learning process while the media is being used in line with the active learning approach recommended by the Merdeka Curriculum.

In addition, the use of monopoly media in this study is also in line with the OECD (2021) recommendation, which emphasizes the importance of experiential learning activities to improve science literacy in elementary school children. Game-based learning such as monopoly provides a structured playing context, where students not only answer questions but also discuss, make decisions, and help each other in groups. These activities strengthen scientific reasoning and social interaction, two key components in science education.

Thus, this study was conducted to address real needs in the field while expanding on previous research findings. The purpose of this study was to analyze the effect of Monopoly Learning Media on the science and mathematics learning outcomes of third-grade students at SD Negeri 091436 Tambun Raya. The results of this study are expected to contribute theoretically to the development of a game-based learning approach for science and mathematics learning and provide practical recommendations for teachers in designing relevant and effective learning media.

METHODOLOGY

This study used a quantitative approach with a One Group Pretest–Posttest design. This design was used to measure the effect of using monopoly learning media on IPAS learning outcomes by comparing students' scores before and after the treatment was given. The research design was formulated as $O_1 \rightarrow X \rightarrow O_2$, where O_1 is the pretest, X is the treatment in the form of learning using monopoly media, and O_2 is the posttest.

The research was conducted at SD Negeri 091436 Tambun Raya, Pematang Sidamanik District, Simalungun Regency, in the even semester of the 2024/2025 academic year. The research subjects were all 20 third-grade students, and the entire population was sampled using total sampling.

The independent variable in this study was Monopoly Learning Media, which is an educational game modified according to the IPAS material “Energy Around Us.” The media consisted of a game board with 20 squares containing questions, dice, pawns, and star cards as points. The dependent variable was IPAS learning outcomes, which were measured through multiple-choice tests on the pretest and posttest.

The research instrument consisted of 20 multiple-choice questions that had undergone a feasibility test covering: validity (using Product Moment correlation), reliability (KR-20), level of difficulty, and discriminating power. The test results showed that the instrument was valid, reliable, and suitable for measuring student understanding.

The research was conducted in three stages. First, students were given a pretest to determine their initial ability in energy material. Second, students participated in learning with the Monopoly Learning Media, where they played in groups, threw dice, occupied squares, and answered questions according to the game instructions. The learning lasted about 30 minutes and was accompanied by teacher guidance. Third, students were given a posttest to measure changes in understanding after the treatment.

Data collection techniques used tests, observation, and documentation. The data were analyzed using a normality test to ensure data distribution, then a t-test (paired sample t-test) was performed to determine the significance of the increase in learning outcomes. The results of the analysis showed that the average pretest score of 56.75 increased to 84.75 on the posttest, and the t-count was greater than the t-table, so H_0 was rejected and H_a was accepted. Thus, the use of monopoly learning media had a significant effect on the IPAS learning outcomes of third-grade students.

RESULTS AND DISCUSSION

The results of the study indicate that the use of Monopoly Learning Media has a significant effect on improving the science learning outcomes of third-grade students at Tambun Raya Public Elementary School 091436. This is evidenced by an increase in the average score from 56.75 on the pretest to 84.75 on the posttest. This finding reinforces the theory that concrete and interactive learning media are essential for students at the concrete operational stage of development according to Piaget, especially when the learning material tends to be abstract, such as the concept of energy in IPAS. At the pretest stage, many students still misinterpreted the concepts of heat energy, kinetic energy, and light energy. This was evident from the students' answers, which tended to be guesswork and failed to relate the concept of energy to everyday phenomena. This limitation occurred because previous learning was dominated by a one-way lecture method (Wahyuni et al., 2022).

Learning using Monopoly Learning Media significantly changed the classroom dynamics. When this media was applied, students no longer sat passively but were actively involved in the process of playing while learning. The game board with 20 squares, question cards, pawns, and star cards creates an environment that motivates students to answer questions more seriously. Every time students roll the dice and move to a certain square, they must read and understand the question, discuss the answer, and present a brief argument to their groupmates. This activity reinforces conceptual understanding through repetition, discussion, and direct experience. According to Kurniawati et al. (2021), learning media essentially serves as an important bridge in stimulating students' attention and improving their understanding, and the results of this study support this view.

In addition, game-based learning has been proven to increase students' intrinsic motivation. Students become more enthusiastic about learning, show more active participation, and appear more confident when giving answers. This is in line with the findings of Permatasari et al. (2024), who stated that monopoly media encourages student activity, creativity, and social interaction. Research by Wahyuni et al. (2022) also confirms that IPAS learning that still uses conventional methods makes students passive and less interested, so the use of interactive media is very important.

In addition to the motivational aspect, these findings also show how monopoly media helps improve students' cognitive abilities. Students are able to remember concepts better because they associate them with concrete experiences they had during the game. For example, when entering a square containing questions about heat energy, students naturally recall their experiences using an iron, playing in the sun, or boiling water. This connection between concepts and experiences makes the learning process more meaningful. Endang & Made in Lubis & Harahap (2016) emphasize that learning media helps clarify concepts and makes material easier to understand, and the results of this study provide clear evidence to support this statement.

The effectiveness of monopoly media is further strengthened by the quality of the test instruments used. The instruments have been tested for validity, reliability, discriminating power, and level of difficulty. The validity test results show that most of the questions are valid (Table 4.1 in the thesis), while the reliability is in the high category (Table 4.2). The difficulty level of the questions was mostly in the moderate category, so students had a fair chance to demonstrate their actual abilities. With valid and reliable instruments, the significant increase in posttest scores can be considered to reflect a real increase in ability, rather than chance or instrument bias (Simaremare et al., 2021; Sihombing Lisbet, 2018).

The findings of this study are also in line with various previous studies. Juwita Retna Gumilang's (2019) study shows that monopoly effectively improves science learning outcomes because the game element makes students more motivated. Ahmad Wahyudi's (2020) study also shows that monopoly media significantly increases student motivation and participation in thematic subjects. Meanwhile, Syahsiayah's (2023) research reinforces these findings through an increase in students' interest in learning mathematics when monopoly games are applied as educational media. The consistency of these research results with previous studies shows that educational game media has a positive influence across subjects and grade levels.

In the context of IPAS learning, monopoly media not only helps students understand the concept of energy, but also increases social interaction and cooperation within groups. Each group must discuss before determining the answer, so that students learn to share knowledge and improve their understanding. This is in line with Vygotsky's theory of the Zone of Proximal Development (ZPD), where more capable students provide scaffolding to less capable friends. Group discussions in the monopoly game allow for a natural transfer of knowledge.

Overall, the improvement in learning outcomes was evident not only in the average scores but also in the distribution of student scores. After the treatment, there were no longer any students in the very low category. Even the lowest score increased from 35 to 70, indicating that the monopoly media had an even and significant impact on all categories of student ability.

Table 1. Comparison of Students' Learning Outcomes (Pretest and Posttest)

Assessment Type	Mean Score	Highest Score	Lowest Score	Improvement
Pretest	56.75	75	35	—
Posttest	84.75	100	70	+28 points

Based on the overall analysis, it can be concluded that Monopoly Learning Media is a very effective medium used in third-grade IPAS learning, especially energy material that requires concrete understanding. This medium not only improves learning outcomes but also student motivation, social interaction, and self-confidence. These findings support modern learning theory and enrich previous research results on the effectiveness of educational game media.

Although this study shows a significant improvement in science learning outcomes through the use of monopoly media, its effectiveness can be further examined through the perspective of modern game-based learning. According to Plass, Mayer, & Homer (2020), educational games designed with a clear goal structure, proportional challenges, and direct feedback have been proven to increase cognitive engagement. The IPAS monopoly has all three of these characteristics: challenges come from questions on the game board, goals are clear through the acquisition of star cards, and feedback is provided through brief discussions and direct assessment of students' answers. This type of game model triggers long-term memory activation because students process information actively, not passively. Thus, the use of monopoly in the context of IPAS learning can be seen as a practical application of active learning strategies recommended in science education today.

In addition, the effectiveness of the Monopoly medium is also in line with the principle of embodied cognition, which is the idea that physical activity plays a role in processing information and improving conceptual understanding. Research by Glenberg et al. (2019) shows that when students engage in physical activity during learning, such as moving objects or manipulating media, their conceptual understanding increases significantly. The mechanics of the monopoly game, which involve light movements such as throwing dice, moving pawns, or taking question cards, contribute to students' cognitive processes. These simple activities help connect abstract concepts with meaningful experiences, making them particularly suitable for elementary school students who still need concrete experiences in learning.

Furthermore, from a science literacy perspective, monopoly media also supports the strengthening of students' scientific reasoning. The OECD (2021) in its PISA report states that science literacy in 9-12 year olds develops optimally when students are involved in activities that require simple situation analysis, decision making, and context interpretation. The Monopoly game provides an environment that allows students to not only answer questions but also reason why the answers are correct or incorrect. When students discuss with group members, a process of scientific argumentation occurs, which, according to Osborne (2019), is an important foundation in modern science education. Thus, the Monopoly media not only improves learning outcomes quantitatively but also strengthens the foundation of students' scientific thinking skills.

From a broader theoretical perspective, the findings of this study also confirm that the integration of games in learning can improve students' self-regulated learning. Zimmerman (2020) explains that students become more engaged in learning when they can control their own learning pace, strategies, and focus. In the Monopoly game, students

determine their moves by rolling dice, choose group strategies, and learn from their mistakes when answering questions. This autonomy increases a sense of ownership of the learning process (learning ownership), which according to Ryan & Deci (2020) is a crucial factor in maintaining long-term motivation. This means that monopoly media is not only useful when the game is being played, but also has the potential to instill valuable independent learning skills in students.

CONCLUSION

The results of this study confirm that the use of Monopoly Learning Media has a significant effect on improving the science learning outcomes of third-grade students at Tambun Raya Public Elementary School 091436. The increase in the average score from 56.75 on the pretest to 84.75 on the posttest shows that this media is effective in helping students understand the concept of “Energy Around Us,” which was previously abstract and difficult to understand through lecture methods. The process of playing through activities such as throwing dice, reading question cards, discussing, and moving squares is able to encourage active engagement, increase motivation, and strengthen cooperation among students so that the learning process becomes more meaningful. Pedagogically, the Monopoly media is in line with the cognitive development characteristics of students who are in the concrete operational stage, as it provides direct learning experiences and helps connect the concept of energy with everyday phenomena. Considering its effectiveness, it is recommended that teachers use the Monopoly media as a variation of science learning to improve students' conceptual understanding and activity. Schools are expected to support educational game-based learning innovations by providing simple facilities and creative space for teachers. Future researchers are encouraged to use experimental designs that compare treatment and control classes and expand the focus of the study to aspects such as science literacy, learning motivation, and critical thinking skills. In addition, the development of digital-based monopoly media can be an innovative alternative that is relevant to the development of educational technology. These findings confirm that educational games such as monopoly not only improve learning outcomes but also provide a fun learning experience that is in line with the spirit of active learning in the Merdeka Curriculum.

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