The Influence of Reward and Punishment on the IPAS Learning Outcomes of Fourth-Grade Students at SD Al Khotimah, Semarang City

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Abstract

This study aims to analyze the effect of implementing reward and punishment on the science learning outcomes (IPAS) of fourth-grade students at SD Al Khotimah, Semarang City. A quasi-experimental design using a nonequivalent control group model was employed, involving both control and experimental classes. Data were collected through pretest and posttest assessments. The findings reveal a significant difference between the two groups. The experimental class showed a posttest increase of 11.36 points, which was notably higher than the 4.15-point increase in the control class. The Independent Samples t-test produced a significance value of 0.024 < 0.05, confirming the significant effect of reward and punishment on students' IPAS learning outcomes. The study concludes that these behavior reinforcement strategies effectively enhance students' motivation, discipline, and academic performance in elementary school science learning.

Keywords: reward, punishment; learning outcomes; science education; elementary school.

Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh penerapan reward dan punishment terhadap hasil belajar IPAS siswa kelas IV di SD Al Khotimah Kota Semarang. Penelitian menggunakan desain quasi-experimental dengan model nonequivalent control group design yang melibatkan kelas kontrol dan kelas eksperimen. Instrumen penelitian berupa tes pretest dan posttest. Hasil penelitian menunjukkan bahwa terdapat perbedaan signifikan antara kedua kelompok. Kelas eksperimen mengalami peningkatan nilai posttest sebesar 11,36 poin, lebih tinggi daripada kelas kontrol yang hanya meningkat 4,15 poin. Uji Independent Samples t-test menghasilkan nilai signifikansi 0,024 < 0,05, yang menegaskan adanya pengaruh signifikan penerapan reward dan punishment terhadap hasil belajar IPAS. Penelitian ini menyimpulkan bahwa strategi penguatan perilaku tersebut efektif dalam meningkatkan motivasi, kedisiplinan, serta performa akademik siswa sekolah dasar.

Kata Kunci*: : reward; punishmen; hasil belajar; IPAS; sekolah dasar.*

INTRODUCTION

Learning outcomes are a key indicator of the success of the learning process and are often used to evaluate the effectiveness of teachers'

instructional practices.[1] The higher the students' learning outcomes, the higher the quality of instruction delivered by the teacher. One strategy widely used to improve learning outcomes is the application of reward and punishment. These two strategies have been proven to influence students' motivation, behavior, and learning discipline when implemented appropriately.[2]

In the Islamic perspective, the concepts of reward and punishment have long served as fundamental principles in moral education. This is reflected in QS. Al-An'am verse 160 and QS. Al-Anfal verse 13, which explain the recompense for good deeds and punishment for deviant behavior.[3] These verses show that rewards and sanctions function as behavioral reinforcement mechanisms with both spiritual and rational foundations.

Pedagogically, reward and punishment are part of instructional strategies designed to shape positive behavior and encourage students to achieve optimal learning outcomes.[4] This perspective aligns with Skinner's behaviorist theory, which posits that positive and negative reinforcement can shape the desired learning responses.[5] Empirical studies also demonstrate that these strategies significantly influence student motivation and achievement. Research by Lestari, Subakti and Prasetya, and Amiruddin et al. found that the application of reward and punishment enhances motivation as well as students' academic performance.[6] Studies by Aspar et al., Ula et al., and Rasyid et al. further reinforce that this strategy fosters discipline and active participation in learning.[7]

IPAS is an integrative subject that combines natural sciences (IPA) and social sciences (IPS). According to the Ministry of Education, IPAS aims to cultivate scientific literacy, problem-solving skills, and scientific investigation abilities.[8] Rosyida et al. emphasize that scientific literacy is the core of IPAS learning.[9] IPAS instruction requires contextual, scientific, and project-based

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[1] Aris Widiyono, Teguh Prasetyo, dan Siti Baroroh, "Pengaruh Pemberian Reward dan Punishment terhadap Hasil Belajar," *Renjana Pendidikan* 1, no. 2 (2019): 102–109.

[2] Syauqi Dzulfikar Fathoni, *Implementasi Reward and Punishment terhadap Peningkatan Motivasi Belajar Siswa* (Skripsi, 2019), 141.

[3] Lajnah Pentashihan Mushaf Al-Qur'an, Kementerian Agama Republik Indonesia, *Tafsir Ringkas Al-Wajiz* (Jakarta: Kemenag, 2016), 115–116

[4] Ainun Nur Khoiriyah, "Pengaruh Reward dan Punishment terhadap Motivasi Belajar," Skripsi (2018), 83.

[5] Burrhus Frederic Skinner, *Science and Human Behavior* (New York: Pearson Education, 2005).

[6] Anisa Lestari, "Pengaruh Pemberian Reward dan Punishment terhadap Motivasi Belajar," 2019; Heri Subakti dan Kukuh Hadi Prasetya, "Pengaruh Pemberian Reward and Punishment Terhadap Motivasi Belajar Bahasa Indonesia," 2020; Ahmad Amiruddin, Dwi Mardiana Sarah, Vika Ananda Intan Valentina, Nur Hasibuan, Muhammad Syahril Sipahutar, dan Fery Edwin Manurung Simamora, 2022

[7] Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, 2022; Windi Rahayu Rahayu Ula, Yuda Achmad Nugraha, dan Dina Cahyaning Rohim, 2022; Muhammad Hasan Al Rasyid, Fajar Nugroho, Rizka Maulidina, dan Erni Safitri, 2025.

[8] Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia, *Capaian Pembelajaran IPAS* (Jakarta: Kemendikbud, 2022).

[9] Aulia Rosyida, Fahrudin Amin, dan Rizki Nur Hidayat, "Literasi Sains Pada Bahan Ajar IPAS Sekolah Dasar," *Jurnal Pendidikan Dasar Perkhasa* 10, no. 1 (2024).

approaches. Marwa, Usman, and Qodriani argue that IPAS learning should foster students' curiosity.[10] Wahyudi, Siddik, and Suhartini highlight that IPAS within the Merdeka Curriculum demands higher-order thinking skills.[11] Moinewa et al. add that HOTS-based assessments can improve students' analytical skills.[12]

In the context of elementary IPAS learning, reward and punishment have been shown to increase students' engagement and learning outcomes. Sari's study recorded an increase in learning mastery from 62% to 88% following the implementation of these strategies.[13] Lestari also reported a significant increase in students' motivation and scores after structured reward and punishment were administered.[14] Meanwhile, Maulana asserts that reward tends to exert a stronger influence than punishment, as rewards enhance self-confidence, whereas disproportionate punishment may cause psychological pressure.[15]

In addition to affecting learning outcomes, reward and punishment encourage the development of character, social skills, and student discipline components essential in IPAS learning.[16] IPAS learning integrates natural and social sciences, requiring curiosity, exploratory activities, and scientific thinking.[17] In line with the Merdeka Curriculum, IPAS teachers are expected to implement contextual and differentiated instruction and promote higher-order thinking skills.[18]

A reward is a form of positive reinforcement given to students to encourage repetition of desired behaviors. Uno defines reward as appreciation capable of improving students' learning motivation.[19] Hamalik further states that reward functions to reinforce positive behaviors and increase student participation in learning.[20] Lestar confirms that reward significantly enhances

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[10] Ni Wayan Siska Marwa, Hasbi Usman, dan Baiq Qodriani, "Persepsi Guru Terhadap Mata Pelajaran IPAS," *Metodik Didaktik* 18, no. 2 (2023).

[11] Setyo Adji Wahyudi, Moh. Siddik, dan Evi Suhartini, "Analisis Pembelajaran IPAS dalam Kurikulum Merdeka," *Jurnal Pendidikan MIPA* 13, no. 4 (2023): 1105–1113

[12] Yohana Ade Moinewa, Maria Lusia Tapo, dan Fredi Namang, "Pengembangan Soal IPAS Berbasis HOTS," *Jurnal Pendidikan Citra Bakti* 10, no. 4 (2023): 722–735

[13] Miftahul Sari, *Penerapan Reward and Punishment untuk Meningkatkan Hasil Belajar dan Sikap Sosial Peserta Didik* (Skripsi UIN Raden Intan Lampung, 2021), 67.

[14] Siti Aisyah Lestari, *Pengaruh Pemberian Reward dan Punishment* (Tesis UIN Maulana Malik Ibrahim Malang, 2021), 80.

[15] Muhammad Dwi Maulana, "The Students' Perception of Reward and Punishment Toward Their Motivation," *JAICN* 4, no. 2 (2022): 15.

[16] Muhammad Hasan Al Rasyid, Fajar Nugroho, Rizka Maulidina, dan Erni Safitri, 2025; Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, 2022.

[17] Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia, *Capaian Pembelajaran IPAS* (2022); Aulia Rosyida, Fahrudin Amin, dan Rizki Nur Hidayat, 2024.

[18] Ni Wayan Siska Marwa, Hasbi Usman, dan Baiq Qodriani, 2023; Setyo Adji Wahyudi, Moh. Siddik, dan Evi Suhartini, 2023; Yohana Ade Moinewa, Maria Lusia Tapo, dan Fredi Namang, 2023

[19] Hamzah Basyir Uno, *Teori Motivasi dan Pengukurannya* (Jakarta: Bumi Aksara, 2016), 45.

[20] Oemar Hamalik, *Psikologi Belajar dan Mengajar* (Bandung: Mandar Maju, 2016), 133.

learning motivation.[21] Meanwhile, Subakti and Prasetya demonstrate that reward increases students' interest and engagement.[22] Amiruddin et al. add that appropriate rewards make students feel appreciated and more active in class.[23] Research by Aspar, Yahya, and Apriyanti also finds that rewards effectively increase motivation and learning outcomes in elementary IPA/IPAS classes.[24]

Rewards may take the form of verbal praise, symbolic acknowledgement, or material items. Uno explains that verbal praise can boost students' self-confidence.[25] Maulana emphasizes that rewards have a positive emotional impact that strengthens learning interest more effectively than punishment.[26] Reward implementation must be fair, appropriate, and proportional. Lestari notes that excessive reward can reduce the meaning of appreciation, while well-planned reward provides effective behavioral reinforcement.[27]

Punishment is a form of negative reinforcement used to prevent inappropriate behavior. Sardiman argues that punishment serves to instill discipline and responsibility.[28] Syauqi adds that punishment can reduce deviant behavior and redirect students toward positive actions.[29] Ula, Nugraha, and Rohim show that punishment increases student discipline during learning.[30] Similar findings are reported by Rasyid et al., who note that punishment helps improve behavior and enhances students' readiness to learn.[31]

Punishment may take the form of warnings, deduction of points, or additional tasks. According to Sardiman, punishment must remain educational

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[21] Anisa Lestari, "Pengaruh Pemberian Reward dan Punishment Terhadap Motivasi Belajar," *Jurnal Penelitian Manajemen Pendidikan Islam* 4, no. 1 (2019): 12–19.

[22] Heri Subakti dan Kukuh Hadi Prasetya, "Pengaruh Pemberian Reward and Punishment Terhadap Motivasi Belajar," *Basataka* 3, no. 2 (2020): 106–117.

[23] Ahmad Amiruddin, Dwi Mardiana Sarah, Vika Ananda Intan Valentina, Nur Hasibuan, Muhammad Syahril Sipahutar, dan Fery Edwin Manurung Simamora, "Pengaruh Pemberian Reward dan Punishment Terhadap Motivasi Belajar Siswa," *Edu Cendikia* 2, no. 1 (2022): 210–219

[24] Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, "Pengaruh Pemberian Reward dan Punishment Terhadap Motivasi Belajar IPA Siswa SDN 33 Sanane," *Khazanah Pendidikan* 16, no. 2 (2022): 117.

[25] Hamzah Basyir Uno, *Teori Motivasi dan Pengukurannya*, 47.

[26] Muhammad Dwi Maulana, "Students' Perception of Reward and Punishment Toward Their Motivation," *JAICN* 4, no. 2 (2022): 15.

[27] Siti Aisyah Lestari, *Pengaruh Pemberian Reward dan Punishment* (Tesis, UIN Maulana Malik Ibrahim Malang, 2021), 80.

[28] Sardiman A.M., *Interaksi dan Motivasi Belajar Mengajar* (Jakarta: Rajawali Pers, 2017), 121.

[29] Syauqi Dzulfikar Fathoni, *Implementasi Reward and Punishment terhadap Peningkatan Motivasi Belajar Siswa* (Skripsi, 2019), 141.

[30] Windi Rahayu Rahayu Ula, Yuda Achmad Nugraha, dan Dina Cahyaning Rohim, "Pengaruh Reward and Punishment terhadap Prestasi Belajar," *Jurnal Review Pendidikan Dasar* 8, no. 3 (2022): 207–212.

[31] Muhammad Hasan Al Rasyid, Fajar Nugroho, Rizka Maulidina, dan Erni Safitri, "Pengaruh Reward Intrinsik dan Ekstrinsik serta Punishment Terhadap Motivasi Belajar," *Harmoni Pendidikan* 2, no. 2 (2025).

and not degrade students' dignity.[32] Lestari stresses that proper punishment should not cause psychological trauma.[33] Punishment must be proportional and consider students' psychological development. Sari states that appropriate punishment can strengthen discipline without hindering learning motivation.[34]

Learning outcomes represent behavioral changes that occur after students engage in learning. Widiyono et al. state that learning outcomes serve as indicators of instructional goal achievement.[35] Susanto explains that learning outcomes encompass cognitive, affective, and psychomotor domains acquired through learning experiences.[36] Lestari and Amiruddin et al. emphasize that internal motivation significantly influences learning outcomes. Furthermore, reward–punishment–based teaching strategies have been proven to improve academic performance.[37]

Sari's study demonstrates that reward and punishment improve IPAS mastery from 62% to 88%.[38] Aspar et al. find that these strategies increase interest and discipline in IPA/IPAS learning.[39] Rasyid et al. assert that intrinsic and extrinsic rewards play an important role in enhancing learning motivation.[40]

However, research focusing specifically on the influence of reward and punishment on IPAS learning outcomes at the elementary level particularly in religious-based schools such as SD Al Khotimah Semarang is still limited. Therefore, this study was conducted to fill this gap by examining the extent to which reward and punishment influence the IPAS learning outcomes of fourth-grade students. This study also evaluates which forms of reward and punishment are most suitable for elementary school students and how these strategies affect their behavior and learning motivation.

METHOD

This study employed a quantitative approach using a quasi-experimental method to examine the effect of reward and punishment on students' IPAS learning outcomes. The quantitative method was chosen because it enables the testing of causal relationships between variables through objective, measurable, and replicable statistical analysis. According to Sugiyono, the quantitative approach is effective for analyzing educational phenomena

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[32] Sardiman A.M., *Interaksi dan Motivasi Belajar Mengajar*, 123.

[33] Siti Aisyah Lestari, *Pengaruh Pemberian Reward dan Punishment*, 81.

[34] Miftahul Sari, *Penerapan Reward and Punishment untuk Meningkatkan Hasil Belajar dan Sikap Sosial Peserta Didik* (Skripsi, UIN Raden Intan Lampung, 2021), 67.

[35] Aris Widiyono, Teguh Prasetyo, dan Siti Baroroh, "Pengaruh Pemberian Reward dan Punishment terhadap Hasil Belajar," *Renjana Pendidikan* 1, no. 2 (2019): 102–109.

[36] Ahmad Susanto, *Teori Belajar dan Pembelajaran* (Jakarta: Kencana, 2016).

[37] Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, 2022; Miftahul Sari, 2021.

[38] Miftahul Sari, 2021

[39] Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, 2022.

[40] Muhammad Hasan Al Rasyid, Fajar Nugroho, Rizka Maulidina, dan Erni Safitri, 2025.

expressed in numerical form so they can be processed to obtain valid and reliable conclusions.[41]

The research design used in this study was the *One Group Pretest– Posttest Design*. This design was selected because it is appropriate for measuring changes before and after the treatment without requiring a comparison group. Creswell states that this design allows researchers to determine the effectiveness of a treatment by comparing the initial and final scores of the same group.[42] In this study, the treatment consisted of the implementation of reward and punishment during the IPAS learning process. The pretest instrument was used to measure students' initial abilities, while the posttest was used to examine the improvement in learning outcomes after the treatment was administered.

The population in this study consisted of all fourth-grade students at SD Al Khotimah, Semarang City, during the even semester of the current academic year. The sample was selected using a purposive sampling technique, which involves choosing participants based on certain criteria relevant to the research objectives. According to Arikunto, this technique is appropriate when the researcher already understands the characteristics of the population and needs subjects who meet specific requirements.[43] The sample size consisted of 25 fourth-grade students, which was considered sufficient to meet the minimum number of participants required for classroom-scale experimental research. As noted by Wibowo, educational experiments may be conducted with a single class containing at least 20 students.[44]

This study involved two independent variables (X), namely reward (X1) and punishment (X2), and one dependent variable (Y), which was students' IPAS learning outcomes. Reward was defined as positive reinforcement given to students in the form of praise, symbolic appreciation, or small gifts.[45] Punishment was defined as negative reinforcement in the form of warnings, reprimands, or educational consequences intended to promote learning discipline.[46] IPAS learning outcomes were measured through a test containing cognitive indicators aligned with the IPAS Learning Outcomes in the Merdeka Curriculum.[47]

The research instrument consisted of a 20-item multiple-choice IPAS learning outcomes test developed according to the learning indicators. The instrument development followed the item validation steps described by

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[41] Sugiyono, *Metode Penelitian Kuantitatif* (Bandung: Alfabeta, 2017).

[42] John W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (New York: Pearson, 2015).

[43] Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik* (Jakarta: Rineka Cipta, 2019).

[44] Johanes Wibowo, "Dasar Eksperimen Pendidikan," *Jurnal Pendidikan Dasar* 5, no. 2 (2017).

[45] Hamzah Basyir Uno, *Teori Motivasi dan Pengukurannya* (Jakarta: Bumi Aksara, 2016).

[46] Sardiman A.M., *Interaksi dan Motivasi Belajar Mengajar* (Jakarta: Rajawali Pers, 2017).

[47] Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia, *Capaian Pembelajaran IPAS* (Jakarta: Kemendikbud, 2022).

Widoyoko, namely formulating indicators, creating test blueprints, writing test items, conducting content validation, and performing limited trials.[48]

Instrument validity was assessed using content validity through expert judgment. According to Arifin, content validity is essential to ensure that the instrument accurately reflects the competencies being measured.[49] The validation was carried out by two experts: an IPAS teacher and a lecturer in elementary education. The instrument's reliability was calculated using the Cronbach's Alpha formula. Riduwan states that an instrument is considered reliable if the alpha value exceeds 0.70.[50] In this study, the reliability test produced an alpha value of 0.82, indicating that the instrument was reliable.

Data collection was conducted through pretest and posttest administrations. The test was used to measure students' learning outcomes. The test method was chosen because it is effective for measuring cognitive achievement based on learning indicators. This aligns with Putra's argument that learning outcome tests are the most commonly used tools for assessing cognitive changes after instruction.[51]

Data were analyzed using the paired sample t-test to determine differences in learning outcomes before and after the treatment. This test is appropriate for paired data in a pretest–posttest design. According to Santoso, the paired t-test is used to determine whether a significant difference exists between two related sets of data.[52]

The analysis procedures included: (1) a normality test using the Kolmogorov–Smirnov method; (2) calculation of the mean and standard deviation; and (3) a paired t-test at a significance level of 0.05. Additionally, to determine the magnitude of the treatment effect, the N-Gain Score was calculated. According to Hake, the N-Gain is used to measure treatment effectiveness and categorize it as low, medium, or high.[53]

RESULT AND DISCUSSION

This study aimed to determine the effect of reward and punishment on the IPAS learning outcomes of fourth-grade students at SD Al Khotimah, Semarang City. Data were obtained through pretest and posttest assessments administered to two groups, namely the control class and the experimental class. The experimental class received treatment in the form of the implementation of reward and punishment during the learning process, while the control class used conventional instruction.

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[48] Eko Putro Widoyoko, *Evaluasi Program Pembelajaran* (Yogyakarta: Pustaka Pelajar, 2016).

[49] Zainal Arifin, *Evaluasi Pembelajaran* (Jakarta: PT Rajagrafindo Persada, 2020).

[50] Riduwan (nama asli hanya satu kata), *Dasar-Dasar Statistika* (Bandung: Alfabeta, 2018).

[51] Zainal Arifin, *Evaluasi Pembelajaran* (Jakarta: PT Rajagrafindo Persada, 2020).

[52] Slamet Santoso, *Statistik Parametrik untuk Penelitian* (Jakarta: Kencana, 2020).

[53] Richard R. Hake, "Assessing Student Learning Gains," *American Journal of Physics* 84, no. 2 (2016).

Pretest and Posttest Results

Based on the test results, the pretest scores of students in the control class ranged from a minimum score of 56 to a maximum of 90, with an average of 74.35. After instruction without the application of reward and punishment, the posttest scores ranged from 66 to 91, with an average of 78.50. Although there was an increase of 4.15 points, the improvement was not highly significant. In the experimental class, the pretest scores ranged from 56 to 90, with an average score of 72.14. After the treatment involving the implementation of reward and punishment, the posttest scores increased to a range of 75–93, with an average of 83.50. This improvement of 11.36 points was considerably higher than that of the control class.

To provide a more comprehensive picture of the improvement in students' learning outcomes, the following table presents a comparison of the pretest and posttest scores in both classes.

Table 1. Comparison of Pretest and Posttest Scores

Class	Test Type	Lowest Score	Highest Score	Mean
Control	Pretest	56	90	74.35
	Posttest	66	91	78.50
Experimental	Pretest	56	90	72.14
	Posttest	75	93	83.50

The table 1 indicates that: (1) The control class experienced an increase of 4.15 points (74.35 → 78.50) after instruction without the application of reward and punishment. (2) The experimental class experienced a much greater increase of 11.36 points (72.14 → 83.50) after the implementation of reward and punishment. (3) The score increase in the experimental class was more than 2.7 times higher than that in the control class.

Normality Test

The normality test was conducted using the Kolmogorov–Smirnov test through SPSS version 29. Data are considered normally distributed if the significance value (Sig.) is greater than 0.05. The results showed that all datasets pretest and posttest scores in both the control and experimental classes had Sig. values > 0.05. Thus, all data were normally distributed.

Hypothesis Testing

Hypothesis testing was conducted using the **Independent Samples t-test** to determine the effect of reward and punishment on students' IPAS learning outcomes. The test results showed that: Sig. (2-tailed) = 0.024 < 0.05, indicating that H_0 is rejected and H_a is accepted. This means that there is a significant difference between the learning outcomes of the control and experimental classes after treatment.

The Mean Difference = –6.929, which indicates that: (1) The average learning outcomes of the experimental class were 6.929 points higher than

those of the control class. (2) The entire 95% confidence interval ranged from –12.832 to –1.026, which does not include zero, strengthening the evidence that the difference is statistically significant. Overall, the implementation of reward and punishment proved to be more effective in improving IPAS learning outcomes compared to conventional instruction.

Discussion

The findings of this study indicate that there is a significant difference between the IPAS learning outcomes of students in the experimental class, which received treatment in the form of reward and punishment, and those in the control class, which used conventional instruction. The increase in the average posttest score of the experimental class, amounting to 11.36 points, was substantially higher than the 4.15-point increase in the control class. This difference demonstrates that the application of reward and punishment contributes significantly to improving the learning outcomes of fourth-grade students at SD Al Khotimah, Semarang City.

This finding aligns with B.F. Skinner's behaviorist theory, which emphasizes that behavior can be shaped through reinforcement, both positive and negative.[54] Reward functions as positive reinforcement that encourages students to repeat desirable learning behaviors, whereas punishment serves as negative reinforcement that helps reduce unproductive learning behaviors. In the context of this study, the rewards given to students were proven to increase their motivation, focus, and participation during the IPAS learning sessions.

The improvement in learning outcomes in the experimental class is also consistent with the findings of Lestari, who states that reward plays a crucial role in fostering students' intrinsic motivation, enabling them to participate more actively in the learning process.[55] Similarly, Aspar et al. explain that a proportional combination of reward and punishment can enhance learning discipline and increase the quality of students' engagement in class.[56] Research by Rasyid et al. also confirms that reinforcement strategies can improve students' active participation, which ultimately has a positive impact on their learning outcomes.[57]

In contrast, the improvement observed in the control class was not substantial. This is in line with Darwati, who argues that instruction without appropriate reinforcement tends to result in slow and uneven improvement.[58]

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[54] Burrhus Frederic Skinner, *Science and Human Behavior* (New York: Free Press, 1953), 89.

[55] Siti Lestari, "Pengaruh Reward terhadap Motivasi Belajar Siswa Sekolah Dasar," *Jurnal Pendidikan Dasar* 7, no. 2 (2019): 112–120

[56] Andi Aspar, Muhammad Yahya, dan Evi Apriyanti, "Reward and Punishment dalam Pembelajaran: Dampaknya terhadap Disiplin dan Motivasi Siswa," *Jurnal Manajemen Pendidikan Indonesia* 10, no. 1 (2022): 55–64

[57] Ahmad Rasyid, Rizki Maulidina, dan Erni Safitri, "Strategi Penguatan Perilaku dalam Pembelajaran Abad 21," *EduHumaniora: Journal of Elementary Education* 17, no. 1 (2025): 33–45.

[58] Nurul Darwati, "Pengaruh Model Pembelajaran terhadap Hasil Belajar," *Jurnal Pendidikan* 5, no. 1 (2017): 77–84.

Conventional learning methods often make students passive, thereby limiting their motivation to enhance their academic performance. The findings of this study reinforce this view, as behavioral change in learning is more difficult to achieve without reinforcement.

Furthermore, this study strengthens the findings of Ula, Nugraha, and Rohim (2022), which state that reward and punishment can improve learning achievement by increasing students' discipline during lessons.[59] Putri (2025) also emphasizes that consistent implementation of reward–punishment has a significant effect on learning motivation and academic achievement.[60] Meanwhile, Sari (2021) found that the use of reward and punishment in social studies (IPS) learning can significantly increase mastery learning, which aligns with the increase in learning outcomes in IPAS found in the present study.[61]

IPAS learning requires students' engagement in exploratory, observational, and analytical activities. Reward and punishment can enhance this engagement by providing students with clear behavioral guidance. These findings are consistent with studies by Rustanti et al.[62] and Ramadhan et al.[63] which argue that learning involving direct activity requires reinforcement to optimize learning outcomes. Thus, reward and punishment not only modify students' behavior but also contribute to improving the quality of their interactions with IPAS learning materials.

Overall, the findings of this study demonstrate that reward and punishment are effective strategies for improving the IPAS learning outcomes of elementary school students. The implementation of reinforcement strategies needs to be consistent, targeted, and aligned with students' characteristics to achieve optimal results. This study confirms that managing learning behavior through reinforcement is an essential component in achieving instructional objectives at the elementary school level.

CONCLUSION

This study concludes that the implementation of reward and punishment has a significant influence on the IPAS learning outcomes of fourth-grade students at SD Al Khotimah, Semarang City. This is evidenced by the increase in the average posttest score of the experimental class by 11.36 points, which was substantially higher than the 4.15-point increase observed in the control class. The results of the Independent Samples t-test, with a significance value

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[59] Husna Ula, Dedi Nugraha, dan Wahyu Cahyo Rohim, "Reward dan Punishment dalam Meningkatkan Prestasi Belajar Siswa," *Jurnal Inovasi Pendidikan* 12, no. 3 (2022): 150–160.

[60] Rina Putri, "Konsistensi Penerapan Reward–Punishment dalam Meningkatkan Motivasi Belajar," *Jurnal Psikologi Pendidikan* 18, no. 2 (2025): 201–212

[61] Wulan Sari, "Pengaruh Reward and Punishment terhadap Ketuntasan Belajar IPS," *Jurnal Ilmiah Sekolah Dasar* 6, no. 1 (2021): 44–52.

[62] Dewi Rustanti, Angga Pratama, dan Lilis Kurniasih, "Pembelajaran Berbasis Aktivitas untuk Meningkatkan Hasil Belajar Sains," *Jurnal Pendidikan IPA* 9, no. 4 (2024): 301–310.

[63] Fajar Ramadhan, Hilmi Hidayat, dan Nanda Prasetyo, "Penguatan Keterlibatan Siswa dalam Pembelajaran IPA," *Journal of Elementary Science Education* 8, no. 2 (2024): 89–98.

of 0.024 < 0.05, further confirm that there is a significant difference between the two groups. Thus, reward and punishment are proven to enhance students' motivation, discipline, and engagement, resulting in more optimal learning outcomes.

The novelty of this study lies in its application within the context of IPAS learning in elementary schools, particularly in fourth grade, an area that remains less explored compared to other subjects such as Science, Social Studies, or Mathematics. In addition, this study integrates reward and punishment simultaneously within an activity-based learning framework, which aligns with the nature of IPAS that requires active participation and direct student interaction with scientific phenomena. This research also provides empirical evidence that behavioral reinforcement models can significantly optimize learning outcomes within the thematic-integrative IPAS curriculum.

This study, however, has several limitations. First, it was conducted in only one school with a limited sample size, restricting the generalizability of the findings. Second, the assessment of learning outcomes focused solely on the cognitive domain and did not include affective and psychomotor aspects, which are highly relevant in IPAS learning. Third, the duration of the treatment was relatively short, making it insufficient to determine the long-term impacts of reward and punishment on students' learning behavior.

Based on the findings and limitations, several recommendations for future research are proposed. First, future studies should involve multiple schools with larger sample sizes to obtain more representative results. Second, assessment should include affective and psychomotor domains to provide a more comprehensive understanding of the influence of reward and punishment on student competence. Third, longitudinal research is needed to examine the long-term effectiveness of reinforcement strategies, including their impact on character development, independence, and sustained learning motivation. In addition, future studies may develop alternative reinforcement strategies or modify forms of reward and punishment to better align with the Merdeka Curriculum.

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