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## GREEN THEOLOGY IMPLEMENTATION STRENGTHENS ADIWIYATA MADRASAH STUDENTS' ECOLOGICAL AWARENESS FOR SUSTAINABLE EDUCATION

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### Abstract

Environmental damage in Indonesia is becoming increasingly concerning, as reflected in the national Environmental Quality Index. This problem is not only ecological in nature but also relates to the low level of ecological awareness among the community, including students. This research aims to examine the relationship and influence of the implementation of Green Theology values on the ecological awareness of students at Madrasah Ibtidaiyah Negeri 1 Sukoharjo, which implements the Adiwiyata program. Green Theology emphasizes the obligation of humans as caliphs on earth, so its integration into education adds a moral and spiritual dimension to environmental learning. The research used a quantitative approach with total sampling of 147 fifth-grade students, using a four-point Likert scale questionnaire, and analyzed it through validity, reliability, normality, linearity, and Spearman's correlation tests. The results showed that the instruments were valid and reliable, the data were normally distributed, and the relationship between variables was non-linear but significant ( $p < 0.05$ ). These findings confirm that the internalization of Green Theology values can significantly increase students' ecological awareness, contributing theoretically to Islamic-based environmental education and practically to the strengthening of the Adiwiyata program in madrasahs.

**Keywords:** Green Theology, ecological awareness, environmental education, Adiwiyata madrasah.

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## INTRODUCTION

Environmental damage in Indonesia shows an increasingly concerning trend based on the latest quantitative data. The 2023 report from the Ministry of Environment and Forestry (KLHK) notes that the national Environmental Quality Index (IKLH) stands at 70.37, while water quality only reaches 54.59, which indicates a moderate condition (Gianini, 2023). More than 70% of rivers are reported to be polluted by domestic waste and plastic waste (Isnanda et al., 2021). In addition, the total national waste is recorded at 56.63 million tons per year, with only 39.01% (around 22.09 million tons) being properly managed, while the rest is said to be disposed of in landfills without adequate management (Febriyanto, 2021). This data shows that environmental issues are not only related to ecology but also to community behavior and suboptimal governance.

Societal behavior also contributes significantly to environmental degradation (Wang et al., 2020); (Ramayah et al., 2019). A survey by the Ministry of Environment and Forestry (2022) found that 52% of people still litter and 34% of households burn trash openly, increasing PM2.5 particulate levels by 28–35% in residential areas. This low level of ecological awareness is also reflected in school-age students (Hasanah & Sari, 2023). Research by Prastiwi et al., (2020) found that the level of ecological literacy among elementary to high school students only reached 66.11% which indicates a moderate and suboptimal level of ecological literacy, suggesting that students' understanding and awareness of environmental issues are still insufficient and may hinder the development of environmentally responsible behavior if not addressed through effective educational interventions. Furthermore, Ahyar et al., (2025) found that elementary school students have not consistently applied environmentally conscious behaviors, even though they have participated in environmental programs at school, and they also tend to show limited active involvement in solving environmental problems, indicating that participation in such programs has not yet translated into meaningful engagement or problem-solving actions.

Therefore, it is necessary to teach environmental education to the community, both in the family and school environments (Hasanah & Sari, 2023). One strategic effort in the school context is the Adiwiyata program, an Indonesian government initiative aimed at creating environmentally caring and cultured schools through the integration of environmental values into school policies, curriculum, participatory activities, and infrastructure management. This program has strong potential to enhance students' ecological awareness as it not only emphasizes knowledge acquisition but also promotes active participation and habituation in environmental practices. The Adiwiyata program has shown a positive impact in shaping students' ecological behavior (Syah et al., 2021); (Aqilah & Lathifah, 2023); (Nurwidodo et al., 2020). Arbiana Putri (2019) reported that the Adiwiyata program can build the character of students and other school components in order to create schools that are environmentally conscious and have an environmental culture. However, most Adiwiyata implementations still focus on school policies (Arbiana Putri, 2019) and participatory activities (Maryani, 2014), which

tend to emphasize structural and procedural aspects rather than the internalization of values that can foster deep and sustained ecological awareness. The integration of Islamic religious values as a moral foundation for building ecological awareness has not been widely discussed in quantitative research, even though spiritual values such as caliphate, trust, and kindness provide a strong normative basis for environmentally friendly behavior in the context of Islamic education (Iman et al., 2025).

One approach that is in line with these needs is green theology, which is an Islamic theological concept that emphasizes the obligation of humans as guardians of the earth. Green theology has the potential to strengthen environmental education through a value-based approach, not just a technical knowledge-based approach (Kurttekin, 2024). Previous studies have predominantly examined environmental education and ecological awareness from behavioral and programmatic perspectives, such as the implementation of Adiwiyata, while the integration of religious value-based frameworks, particularly green theology, remains underexplored in empirical research. In addition, most existing studies tend to be qualitative or conceptual, with limited quantitative evidence measuring the direct effect of green theology on students' ecological awareness. However, so far, limited research has tested the quantitative effect of implementing green theology on students' ecological awareness, especially in Adiwiyata madrasahs. Therefore, this study offers a state-of-the-art contribution by quantitatively examining the role of green theology within the Adiwiyata school context, bridging the gap between religious values and environmental education in shaping students' ecological awareness. Madrasah Ibtidaiyah Negeri (MIN) 1 Sukoharjo is one of the Islamic elementary schools in Sukoharjo Regency that is active in integrating religious values with character education and environmental awareness practices, making it an ideal locus for testing this relationship.

Based on the above background, the research problem can be explicitly formulated as follows: the lack of empirical evidence on how the implementation of Green Theology values contributes to students' ecological awareness within the context of Adiwiyata madrasahs. This indicates a clear research gap, particularly in integrating value-based Islamic perspectives with environmental education in a measurable and quantitative framework. Therefore, this study aims to examine the relationship between the implementation of Green Theology values and students' ecological awareness. In line with this objective, the research question is formulated as: "Is there a significant relationship between the implementation of Green Theology values and students' ecological awareness in Adiwiyata madrasahs?"

The novelty of this research lies in the integration of Islamic theological values with the Adiwiyata environmental education framework and the quantitative testing of their relationship, which has not been widely explored in previous studies. The findings of this research are expected to contribute theoretically to the development of value-based environmental education within Islamic perspectives and practically to inform policy and curriculum development in strengthening ecological awareness in madrasahs.

## METHODS

This study employed a quantitative correlational research design with a cross-sectional approach, aiming to examine the relationship between the implementation of Green Theology values (independent variable) and students' ecological awareness (dependent variable). The population in this research consisted of all fifth-grade students at MIN 1 Sukoharjo in the 2025/2026 academic year, totaling 147 students. Considering the relatively small population size and the homogeneous characteristics of the students in terms of their experience in participating in the Adiwiyata program and learning based on Islamic values, this research used a total sampling technique. Thus, all members of the population were included in the research sample so that the research results are expected to have an optimal level of representativeness.

Research data was collected using a closed-ended questionnaire consisting of 20 items developed based on theoretical constructs of green theology and ecological awareness. The questionnaire employed a four-point Likert scale, namely Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1), to avoid neutral responses and encourage more decisive answers from respondents. The development of the questionnaire items followed a systematic procedure, including (1) identification of relevant constructs from the literature, (2) formulation of indicators based on theoretical frameworks, (3) item construction, and (4) expert judgment involving education and environmental studies experts to ensure content validity and clarity of the items. The instrument items were adapted from relevant literature on environmental education and Islamic values related to environmental stewardship, ensuring content validity. The instrument's validity was tested using Pearson's Product Moment correlation to determine the extent to which each item could measure the intended construct. An item was stated to be valid if it met the criterion of  $r_{\text{count}} > r_{\text{table}}$  at a significance level of 0.05. Furthermore, the reliability test was conducted using Cronbach's Alpha, and the instrument was stated to be reliable if the  $\alpha$  value was  $> 0.70$ , which indicated good internal consistency between the questions.

Prior to conducting the prerequisite tests, the operational definitions of the variables were clearly established. The implementation of Green Theology (X) is defined as the internalization and practice of Islamic values that emphasize human responsibility as stewards of the earth, which are reflected in students' understanding, attitudes, and behaviors toward environmental preservation. This variable was measured using indicators covering cognitive (knowledge of religious teachings about the environment), affective (awareness and concern based on religious values), and behavioral (real actions in maintaining the environment) aspects. Meanwhile, students' ecological awareness (Y) is defined as the level of students' understanding, sensitivity, and active involvement in environmental issues, which includes indicators of environmental knowledge, attitudes toward environmental care, and participation in solving environmental problems. Prerequisite tests for analysis, which include (1) a normality test, to determine whether the distribution of scores on variables X and Y is normally distributed; (2) a

linearity test, to ensure that the relationship between the two variables is linear; and (3) a homoscedasticity test, to ensure that the residual variance in the regression model is constant across all values of the independent variable. The results of the prerequisite tests are presented and discussed in the Research Results section. The selection of analysis techniques is based on the fulfillment of these assumptions.

The analysis of the relationship between variables was conducted based on the results of the prerequisite test. If the linearity assumption was met, hypothesis testing was performed using Pearson's correlation and simple linear regression with the t-test as the significance test. However, if the linearity assumption was not met, the linear regression model could not be used. In such conditions, the relationship analysis is performed using Spearman's Rho correlation, which is a non-parametric technique and does not require a linear relationship. The hypothesis tested is:

$H_0$ : There is no significant relationship between the implementation of Green Theology values (X) and students' ecological awareness (Y).

$H_1$ : There is a significant relationship between the implementation of Green Theology values (X) and student ecological awareness (Y).

## RESULTS AND DISCUSSION

### Validity test

The validity test of the instrument was conducted using Pearson's Product Moment correlation to determine the extent that each item was able to measure the intended construct. An item was declared valid if it met the criteria of  $r_{\text{count}} > r_{\text{table}}$  at a significance level of 0.05.

**Table 1.** Results of Validity Test of Variables X and Y

Variabel	$r_{\text{count}}$	$r_{\text{table}}$ ( $\alpha=0,05$ )	Sig. (2-tailed)	Description
X (Green Theology values)	0,371 – 0,583	0,162	0,00	Valid
Y (students' ecological awareness)	0,341 – 0,680	0,162	0,00	Valid

Based on the validity test results using Pearson's Product Moment correlation, all items in variable X (Green Theology values) showed  $r_{\text{count}}$  values in the range of 0.371 - 0.583. Meanwhile, in variable Y (student ecological awareness), the  $r_{\text{count}}$  values were in the range of 0.341 - 0.680. All of these  $r_{\text{count}}$  values were greater than the  $r_{\text{count}}$  0.162 at a significance level of  $\alpha = 0.05$  with a total of 147 student respondents. In addition, all items showed a Sig. (2-tailed) value of  $0.00 < 0.05$ , so it can be concluded that each statement item has a good level of validity. Therefore, all items in the X and Y variable instruments are declared valid and suitable for use as data collection tools in this research. These correlation values indicate moderate item validity, suggesting that the instrument adequately captures the intended constructs. High validity

indicates that the instrument items are capable of measuring the intended construct, namely the implementation of Green Theology and students' ecological awareness. This validity is important because the construct of Green Theology is abstract and value-based, so the items must be able to accurately reflect theological aspects.

### Reliability Test

The reliability test of the instrument was conducted using Cronbach's Alpha coefficient to determine the level of internal consistency between items in each research variable. An instrument is considered reliable if it has a Cronbach's Alpha ( $\alpha$ ) value  $> 0.70$ , which indicates that the items in it are capable of providing stable and consistent measurement results.

**Table 2.** Reliability Test Results for Variables X and Y

Variabel	Nilai Cronbach's Alpha	N of Items	Requirements	Description
X (nilai-nilai Green Theology)	0,822	20	$> 0,70$	Reliabel
Y (kesadaran ekologis siswa)	0,886	20	$> 0,70$	Reliabel

Based on the calculation results, the instruments for variable X (Green Theology values) and variable Y (students' ecological awareness) obtained Cronbach's Alpha values above 0.70, so that both instruments met the reliability criteria. Thus, the instruments were declared reliable and suitable for use as data collection tools in this research. The obtained Cronbach's Alpha values fall into the "good" category, indicating strong internal consistency. Descriptive statistical analysis showed that the mean score of Green Theology implementation (X) and students' ecological awareness (Y) were in the moderate to high category, indicating that most students have relatively good exposure to environmental values based on religious teachings. The standard deviation values indicate a moderate distribution of responses, suggesting some variation among students in internalizing these values.

### Prerequisite Tests for Analysis and Hypothesis Testing

Before testing hypotheses, a series of prerequisite tests are required to ensure that the data meets the basic assumptions of the statistical analysis used. The prerequisite tests for analysis and hypothesis testing are shown in the following table.

**Table 3.** Results of Prerequisite Tests for Analysis and Hypothesis Testing

Type of Test	Sig. Value	Requirements	Description
Normality (Kolmogorov–Smirnov)	0,228	> 0,05	Data distributed normally
Linearity (Deviation from Linearity)	0,014	> 0,05	The relationship between variable X and variable Y is not linear
Spearman's Rho	0,000	< 0,05	H <sub>1</sub> is accepted. There is a significant relationship between variable X and variable Y

Based on the results of the Kolmogorov–Smirnov test on the residual values, a significance value of 0.288 was obtained, which is above the limit of 0.05. This indicates that the residual data is normally distributed. Thus, the assumption of normality is fulfilled so that the data is suitable for further linearity testing. The linearity test results show that the Deviation from Linearity value is 0.014, which is < 0.05. This means that the relationship between variable X (implementation of Green Theology values) and variable Y (students' ecological awareness) is not linear. This condition indicates that the relationship model between the two variables does not follow a straight-line pattern. Due to the non-linear relationship between the variables, the relationship analysis was conducted using Spearman's Rho non-parametric technique. The Spearman test results show a significance value of 0.000, which is less than 0.05. This finding indicates that there is a significant relationship between the implementation of Green Theology values and students' ecological awareness. Hence, even though the relationship is not linear, the two variables still have a statistically significant correlation. This means that the better the application of Green Theology values in learning activities and madrasah programs, the stronger the tendency for an increase in students' ecological awareness, and vice versa.

The significant correlation found between the implementation of Green Theology values and students' ecological awareness provides important empirical evidence regarding the effectiveness of theological approaches in environmental education. Theoretically, Green Theology is rooted in the paradigm of a transcendent relationship between humans, God, and nature (Leo, 2025). The concept of ecological tauhid (monotheism) teaches that all components of nature are manifestations of God's creation (Basith, 2021), so that actions that damage the environment are tantamount to neglecting divine mandate (Hidayatullah, 2025). This approach makes ecological awareness not just an intellectual understanding but a spiritual moral that demands concrete action. Therefore, theological values have a stronger transformative power than pedagogical approaches that are purely cognitive in nature.

Psychopedagogically, the internalization of Green Theology values can be understood through moral ecological identity, which emphasizes that a person's ecological behavior is greatly influenced by internalized moral beliefs. Values as core beliefs function as a behavioral compass, so that when ecological values are integrated with religious belief systems, they produce a more stable and lasting form of ecological commitment. This explains why students who live in educational ecosystems that integrate religious teachings with environmental practices tend to show higher levels of ecological concern.

At the practical level, the results of this study also show that Green Theology can serve as a bridge that strengthens the effectiveness of the Adiwiyata program. As found in various literature, the implementation of Adiwiyata is often stuck in a structural approach, such as policy strengthening (Pradini et al., 2018), provision of green facilities (Melga Hotma Ida Marsauli Simanjuntak et al., 2022), or implementation of routine ecological activities (Maryani, 2014) but lacks a value driving force that can deeply motivate students. This condition is also supported by recent findings which indicate that the success of Adiwiyata programs is highly dependent on the internalization of environmental values, not merely on programmatic or institutional compliance (Uswatun et al., 2025). This finding confirms that environmental programs which rely solely on structural and procedural interventions tend to produce compliance-based behavior rather than internalized ecological awareness, as also highlighted in international studies on environmental education that emphasize the importance of value-oriented and transformative learning approaches (Hossain et al., 2025). The integration of religious values serves to fill this void, as it provides an affective and spiritual dimension that conventional environmental approaches do not offer. From a theoretical perspective, this supports the argument that ecological awareness is not only constructed through cognitive knowledge but also through moral and spiritual engagement, which can foster deeper personal commitment and pro-environmental behavior (Munawar et al., 2019). In this way, Green Theology can strengthen the sustainability of the Adiwiyata program through the formation of a value-oriented ecological habitus. Furthermore, this study extends previous research by empirically demonstrating that the integration of faith-based values into environmental education contributes to more meaningful and sustained student engagement, thereby offering a novel contribution to the discourse on religion-based environmental pedagogy in formal education settings.

Furthermore, Spearman's correlation results, which remain significant even though the relationship between variables is not linear, reflect the complexity of ecological behavior itself. The literature shows that the relationship between values, morality, and ecological behavior is not always linear but can be curvilinear, threshold-based, or influenced by moderating factors (Amoush & Jum'a, 2025) such as family environment (Park, 2018), school culture (Salle et al., 2015), or personal experience (Mieziene et al., 2021). Therefore, the existence of a significant relationship in the context of a non-linear relationship confirms that Green Theology works as a robust predictor of students' ecological awareness.

The scientific contribution of this research lies in the empirical evidence that environmental theology-based education is not only normatively relevant in Islamic education but also demonstrates statistical effectiveness in shaping students' ecological behavior. Thus, this research expands the discourse on Islamic environmental education from a mere conceptual study to a measurable data-based study. These results also offer a new perspective in the sustainability literature that spirituality and religious values can be strategic components in responding to the global environmental crisis, especially in the context of primary education.

In practical terms, these findings imply that madrasahs, especially those running the Adiwiyata program, need to adopt a curriculum that not only emphasizes environmentally friendly practices but also explicitly integrates theological values into thematic learning, extracurricular activities, and school culture. In this way, environmental learning does not take place in isolation but becomes a value system that is embedded in the students' identity.

## CONCLUSION

Based on the results of the research and discussion, it can be concluded that the application of Green Theology values is significantly related to an increase in the ecological awareness of students at MIN 1 Sukoharjo as a madrasah that implements the Adiwiyata program. Although the relationship between the independent variable (implementation of Green Theology) and the dependent variable (students' ecological awareness) shows a non-linear pattern, the results of the non-parametric correlation test (Spearman's Rho,  $p < 0.05$ ) confirm that the stronger the application of Islamic theological values in educational practices and madrasah culture, the higher the tendency for students' ecological awareness. These findings are consistent with the research objectives as formulated in the introduction, namely, to examine the impact of the integration of religious values on the ecological behavior of students.

This study offers a clear theoretical contribution by reinforcing the perspective that ecological awareness is not solely shaped by cognitive knowledge or structural environmental programs, but also significantly influenced by the internalization of religious and spiritual values. It extends the existing literature on environmental education by empirically demonstrating that green theology can function as a value-based pedagogical framework that integrates moral, spiritual, and behavioral dimensions in fostering sustainable ecological awareness.

In terms of broader significance, these findings highlight the strategic role of Islamic educational institutions in addressing environmental issues through value-oriented education. Therefore, this study implies that policymakers and educational stakeholders should integrate green theology principles into the curriculum design, particularly by embedding environmental ethics within Islamic studies subjects, developing interdisciplinary learning models, and strengthening school culture through religious-based environmental programs. Furthermore, curriculum development strategies may include the incorporation of project-based learning,

habituation programs, and participatory environmental activities grounded in Islamic values to ensure that ecological awareness is not only understood conceptually but also practiced consistently in students' daily lives.

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