

The Influence of Environmental Literacy and Pro-Environmental Attitudes on Household Waste Management Behavior in the City of Mataram

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh literasi lingkungan dan sikap pro-lingkungan terhadap perilaku pengelolaan sampah rumah tangga di Kota Mataram. Pendekatan yang digunakan adalah kuantitatif dengan desain penelitian eksplanatori. Data dikumpulkan melalui penyebaran kuesioner kepada 120 responden rumah tangga yang dipilih menggunakan teknik sampling tertentu. Instrumen penelitian menggunakan skala Likert dan telah diuji validitas serta reliabilitasnya. Analisis data dilakukan menggunakan regresi linear berganda dengan bantuan perangkat lunak statistik. Hasil penelitian menunjukkan bahwa literasi lingkungan dan sikap pro-lingkungan secara parsial maupun simultan berpengaruh signifikan terhadap perilaku pengelolaan sampah rumah tangga. Literasi lingkungan memiliki pengaruh positif dalam meningkatkan pemahaman masyarakat terkait pentingnya pengelolaan sampah, sedangkan sikap pro-lingkungan menunjukkan pengaruh yang lebih dominan dalam mendorong tindakan nyata masyarakat. Nilai koefisien determinasi (R^2) menunjukkan bahwa kedua variabel independen mampu menjelaskan sebagian besar variasi perilaku pengelolaan sampah. Temuan ini mengindikasikan bahwa peningkatan perilaku pengelolaan sampah tidak hanya bergantung pada aspek pengetahuan, tetapi juga pada pembentukan sikap yang positif terhadap lingkungan. Oleh karena itu, diperlukan strategi edukasi lingkungan yang terintegrasi dengan pendekatan afektif dan dukungan fasilitas yang memadai. Penelitian ini diharapkan dapat memberikan kontribusi bagi

pengembangan kebijakan pengelolaan sampah berbasis masyarakat serta menjadi referensi bagi penelitian selanjutnya dalam bidang lingkungan dan pendidikan.

ABSTRACT

This study aims to analyze the influence of environmental literacy and pro-environmental attitudes on household waste management behavior in Mataram City. A quantitative approach with an explanatory research design was used. Data were collected through the distribution of questionnaires to 120 household respondents selected using a specific sampling technique. The research instrument utilized a Likert scale and had been tested for validity and reliability. Data analysis was conducted using multiple linear regression with the aid of statistical software. The results indicate that both environmental literacy and pro-environmental attitudes have a significant influence on household waste management behavior, both individually and collectively. Environmental literacy has a positive effect on enhancing public understanding of the importance of waste management, while pro-environmental attitudes demonstrate a more dominant influence in driving concrete actions among the public. The coefficient of determination (R^2) indicates that the two independent variables account for the majority of the variation in waste management behavior. These findings suggest that improvements in waste management behavior depend not only on knowledge but also on the development of positive attitudes toward the environment. Therefore, an integrated environmental education strategy is needed, incorporating an affective approach and supported by adequate facilities. This study is expected to contribute to the development of community-based waste management policies and serve as a reference for future research in the fields of the environment and education.

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1. INTRODUCTION

Environmental literacy is an individual's ability to understand, analyze, and make responsible decisions regarding environmental issues. This literacy encompasses the knowledge, attitudes, and skills that contribute to environmentally friendly behavior (Maurer & Bogner, 2020). Meanwhile, pro-environmental attitudes refer to an individual's psychological disposition expressed through positive evaluations of environmental conservation actions (Ojo & Fauzi, 2020). These two variables are believed to be closely related to household waste management behavior, which constitutes concrete actions to reduce the negative environmental impacts of waste. This behavior includes sorting, recycling, and reducing waste production in daily life (Su et al., 2020).

Several studies indicate that environmental literacy has a significant influence on waste management behavior. Research by (González et al., 2021) found that individuals with high levels of environmental literacy tend to exhibit more environmentally friendly consumption behaviors. Furthermore, a study by Hidayati Utami et al., (2025) in Indonesia revealed that environmental literacy positively contributes to the habit of sorting household waste. Similar results were also found by Haq, (2026), who showed that increased environmental knowledge significantly enhances community participation in waste management practices.

In addition to environmental literacy, pro-environmental attitudes are also a key determinant in shaping waste management behavior. According to research by Uyun et al., (2025) environmental attitudes have a direct influence on individuals' intentions and behaviors regarding waste management. Another study by Jakučionytė-Skodienė et al., (2020) shows that pro-environmental attitudes are strongly correlated with concrete actions in waste reduction. In Indonesia, a study by Akkalatham & Taghipour, (2021) found that people with positive attitudes toward the environment tend to be more active in recycling and household-based waste management activities.

Research examining the simultaneous influence of environmental literacy and pro-environmental attitudes has also yielded consistent results. For example, a study by Srisathan et al., (2024) found that the combination of environmental knowledge and attitudes makes a significant contribution to eco-friendly behavior. Additionally, a study by F. Khan et al., (2025) found that literacy and attitudes jointly influence sustainable waste management behavior. Research by Boermans et al., (2024) further supports these findings by demonstrating that cognitive and affective variables simultaneously influence individual environmental behavior.

In urban areas, waste management issues are becoming increasingly complex due to high population density and economic activity. Research by Raghu & Rodrigues, (2020) shows that the behavior of urban residents in managing waste is strongly influenced by social factors and environmental knowledge. A study by Raghu & Rodrigues, (2022) in developing cities found that public awareness and attitudes are key factors in the success of waste management. Additionally, research by Luo et al., (2020) confirms that environmental education-based interventions in urban areas can significantly improve waste management behavior.

In Indonesia, research on household waste management behavior continues to grow, yet results remain inconsistent. A study by Parajuly et al., (2020) found that environmental literacy has a significant influence on community waste management behavior. However, a study by Parajuly et al., (2020) showed that even with high levels of environmental knowledge, consistent behavior does not always follow. Another study by Law et al., (2023) revealed that attitude plays a mediating role in the relationship between environmental literacy and waste management behavior.

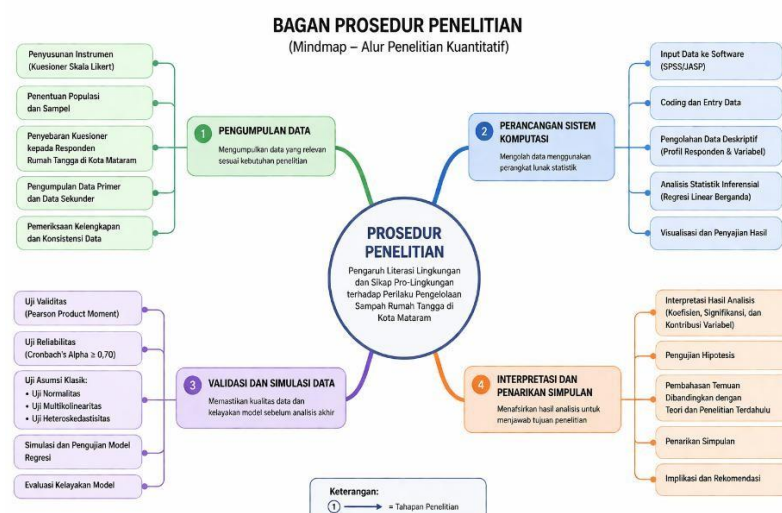
Based on these various research findings, it can be concluded that environmental literacy and pro-environmental attitudes are important factors in shaping waste management behavior. However, there remains a research gap, particularly regarding inconsistent results in local

contexts and the lack of studies that specifically integrate these two variables into a single analytical model at a specific regional scale. Furthermore, research focusing on local contexts such as the city of Mataram remains limited, even though the social and cultural characteristics of a community can significantly influence environmental behavior. Therefore, this study offers novelty by simultaneously testing the influence of environmental literacy and pro-environmental attitudes on household waste management behavior in the city of Mataram. The objective of this study is to analyze the influence of environmental literacy and pro-environmental attitudes on household waste management behavior in the Mataram City area.

2. METHOD

This study employs a quantitative approach with an explanatory research design aimed at examining the influence of environmental literacy and pro-environmental attitudes on household waste management behavior in Mataram City. The quantitative approach was chosen because it allows for the objective measurement of relationships between variables through statistical analysis (Creswell, 2018). The independent variables in this study consist of environmental literacy (X1) and pro-environmental attitudes (X2), while the dependent variable is household waste management behavior (Y). This study employs a survey design using a Likert-scale questionnaire to measure respondents' perceptions of each research variable.

The data sources in this study consist of primary and secondary data. Primary data were obtained directly from respondents through the distribution of questionnaires to households in the Mataram City area using specific sampling techniques, such as purposive sampling or proportional random sampling, with a minimum sample size of 100 respondents to meet the requirements for statistical analysis. Meanwhile, secondary data was obtained from relevant agencies such as the Central Statistics Agency (BPS), the Environmental Agency, and relevant scientific literature. The data in this study is classified as quantitative data because it consists of numerical values obtained from Likert scale measurements and is subsequently analyzed using inferential statistical techniques, such as multiple linear regression (Creswell, 2018).



The research procedure began with the data collection phase, which involved the development of research instruments that had been tested for validity and reliability. Validity was assessed using Pearson's Product-Moment correlation, while reliability was assessed using Cronbach's Alpha coefficient, with a minimum value of 0.70 as an indicator of reliability (Creswell, 2018). Next, the collected data is processed through a computational system design phase using statistical software such as SPSS or JASP to perform descriptive and inferential analyses. The next stage involves data validation and simulation through classical assumption tests, including tests for normality, multicollinearity, and heteroscedasticity, to ensure the suitability of the regression model.

The final stage of this study involves interpreting the analysis results and drawing conclusions. The results of the statistical analysis are interpreted to address the research questions and test the previously formulated hypotheses. This interpretation is based on the regression coefficients, significance levels (p-values), and the contribution of each independent variable to the dependent variable. Based on these results, conclusions are drawn that reflect the relationship between environmental literacy, pro-environmental attitudes, and household waste management behavior. Additionally, the findings of this study are expected to provide practical recommendations for policymakers in enhancing public awareness and behavior regarding sustainable waste management.

3. RESULT AND DISCUSSION

Result

Based on data collected from 120 household respondents in Mataram City, the respondents exhibited diverse characteristics in terms of age, education, and occupation. Descriptive analysis indicates that the respondents' environmental literacy levels fall into the moderate to high categories, while their pro-environmental attitudes tend to be positive. Meanwhile, household waste management behaviors show significant variation, particularly in the areas of waste sorting and recycling. These results indicate that most of the community already possesses a basic understanding of the environment, but its implementation is still not optimal.

Variables	N	Mean	Std. Deviasi	Category
Environmental Literacy (X1)	120	3.78	0.54	High
Pro-Environmental Attitudes (X2)	120	3.85	0.50	High
Waste Management Behavior (Y)	120	3.45	0.62	Medium

Table 1. Descriptive Statistics of Research Variables

The validity test results indicate that all statement items have a correlation coefficient (calculated r) greater than the critical value (0.30), and are therefore deemed valid. The reliability test using Cronbach's Alpha showed that all variables had values above 0.70, meaning the research instrument is reliable and consistent in measuring the variables under study. This indicates that the data used in this study are suitable for further analysis using inferential statistical techniques.

Variables	Cronbach's Alpha	Description
Environmental Literacy (X1)	0.82	Reliable
Pro-Environmental Attitudes (X2)	0.85	Reliable
Waste Management Behavior (Y)	0.79	Reliable

Table 2. Reliability Test Results

The results of the classical assumption tests indicate that the research data meet the requirements for regression analysis. The Kolmogorov-Smirnov normality test yielded a p-value of 0.200 (>0.05), indicating that the data are normally distributed. The multicollinearity test showed VIF values < 10 and tolerance values > 0.10 , indicating that there is no multicollinearity among the independent variables. Furthermore, the heteroscedasticity test revealed no specific patterns in the scatterplot, indicating that the regression model is free from heteroscedasticity issues.

Test	Results	Description
Normality	Sig = 0.200	Normal

Multicollinearity	VIF < 2.5	Did not occur
Heteroscedasticity	No pattern	Did not occur

Table 3. Results of the Classical Assumptions Test

The results of the multiple linear regression analysis indicate that environmental literacy and pro-environmental attitudes simultaneously have a significant effect on household waste management behavior. The coefficient of determination (R^2) value of 0.62 indicates that 62% of the variation in waste management behavior can be explained by the two independent variables. Partially, environmental literacy has a positive and significant effect ($p < 0.05$), as does pro-environmental attitude, which shows a more dominant influence on waste management behavior.

Variables	Koefisien (β)	t hitung	Sig.	Description
Constants	1.12	-	-	-
Environmental Literacy	0.35	3.85	0.000	Significant
Pro-Environmental Attitudes	0.42	4.60	0.000	Significant

Table 4. Results of the Multiple Linear Regression Analysis

The results of this study indicate that environmental literacy and pro-environmental attitudes play a significant role in shaping household waste management behavior in Mataram City. Pro-environmental attitudes were found to be a more dominant variable than environmental literacy, suggesting that affective aspects exert a stronger influence in driving concrete actions than cognitive aspects. These findings reinforce the theory of planned behavior, which states that attitudes are the primary determinants of individual behavior. Thus, improving environmental education—one that focuses not only on knowledge but also on attitude formation—is an effective strategy for improving community waste management behavior.

Discussion

The results of the study indicate that environmental literacy has a significant influence on household waste management behavior. These findings are consistent with research stating that environmental knowledge is a key factor in shaping pro-environmental behavior, although its contribution is often not independent (Jia & Wang, 2024). Environmental literacy enables individuals to understand the impacts of human activities on the environment, thereby encouraging more responsible actions. However, several studies indicate that knowledge alone is insufficient to consistently change behavior without the support of other psychological factors (M. A. S. Khan et al., 2022).

The significant influence of pro-environmental attitudes on waste management behavior in this study reinforces the Theory of Planned Behavior, which identifies attitudes as the primary determinant of individual behavior. Previous research has shown that environmental attitudes are directly linked to the practices of reduce, reuse, and recycle (3R) in waste management (Naparin & Karsudjono, 2025). Furthermore, positive environmental attitudes have been shown to increase individuals' intentions and actions to maintain cleanliness and reduce waste (Giancola et al., 2023). This explains why, in this study, the attitude variable had a more dominant influence than environmental literacy.

Simultaneously, environmental literacy and pro-environmental attitudes have been shown to make a significant contribution to household waste management behavior. These findings align with the Knowledge-Attitude-Practice (KAP) model, which states that knowledge and attitudes are the two primary components that shape behavior (Ahmad et al., 2020). Other studies also indicate that the relationship between knowledge and behavior becomes stronger when mediated by environmental attitudes (Bagheri et al., 2021). Thus, the integration of

cognitive and affective aspects is key to enhancing the effectiveness of waste management programs.

In the context of urban communities such as Mataram City, waste management behavior is influenced by social and environmental complexities. Previous studies have shown that urban communities tend to have higher levels of literacy, but this is not always accompanied by optimal waste management practices (Kwol et al., 2020). This is also supported by research finding that external factors such as policies, facilities, and social norms also influence community environmental behavior (Ulker-Demirel & Ciftci, 2020). Thus, waste management behavior is determined not only by internal factors but also by surrounding environmental conditions.

The results of this study also indicate that there remains a gap between levels of environmental literacy and the implementation of waste management behaviors. This phenomenon is known as the “knowledge-behavior gap,” in which individuals possess sound knowledge but do not always translate it into concrete actions (Boukouvalas et al., 2020). Other studies have also found that factors such as motivation, habits, and perceptions of self-efficacy can influence this gap (Nisar et al., 2021). Therefore, education-based interventions need to be combined with psychological and social approaches to produce sustainable behavioral change.

Overall, the results of this study underscore the importance of a holistic approach to improving household waste management behavior. Environmental literacy serves as the cognitive foundation, while pro-environmental attitudes act as the primary driver of concrete action. These findings align with various studies emphasizing that environmental behavior change requires a combination of knowledge, attitudes, and environmental support (Kwol et al., 2020). Thus, waste management strategies in Mataram City need to focus on strengthening environmental education integrated with attitude formation and the provision of facilities that support the community's eco-friendly behavior.

4. CONCLUSION

Based on the research findings, it can be concluded that environmental literacy and pro-environmental attitudes have a significant influence on household waste management behavior in Mataram City. Partially, environmental literacy contributes to increasing public understanding of the importance of sustainable waste management, although its influence is not as strong as that of pro-environmental attitudes. Meanwhile, pro-environmental attitudes have proven to be the dominant factor driving the public's actual waste management behaviors, such as sorting, reducing, and recycling. Simultaneously, these two variables account for the majority of the variation in waste management behavior, indicating that the combination of cognitive and affective aspects is crucial in shaping responsible environmental behavior.

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