

The influence of social media use on students' knowledge of green management and pro-environmental attitudes

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Abstract

This study explores the influence of social media use on enhancing students' knowledge of green management and strengthening pro-environmental attitudes. The methodology employed a quantitative survey design involving 100 student respondents selected through accidental sampling. Data were collected using structured questionnaires and analyzed with inferential statistics to examine the strength and direction of the relationship. The findings indicate that social media has a positive, significant, consistent, and meaningful impact on improving green management knowledge and reinforcing pro-environmental attitudes. Practical implications highlight the integration of digital communication strategies with formal learning and on-campus experiential activities, supported by curated credible source and media literacy to minimize misinformation. While the elements of social media use, such as platform type, content format, source quality, and interactivity, can optimize educational impact and attitudes.

Keywords:

Digital learning; green management; pro-environmental attitude; social media; students.

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INTRODUCTION

The contemporary era is marked by a significant increase in global environmental degradation, posing serious challenges to ecological systems and human well-being worldwide. Critical issues such as accelerating climate change, widespread resource depletion, alarming biodiversity loss, and

rampant pollution demand urgent and coordinated action from all sectors of society. This persistent environmental pressure clearly highlights the imperative to adopt sustainable practices across industries and governmental frameworks (Kumar et al., 2025). Organisations around the world are increasingly recognising their role in addressing these complex issues, moving beyond simple regulatory compliance toward proactive and comprehensive environmental management. This shift represents a growing awareness that long-term economic prosperity is fundamentally tied to the health and stability of the natural environment (Frank & Lucky, 2025). Therefore, the systematic integration of management philosophies that embed environmental considerations into core business strategies has emerged as an essential prerequisite for organisational resilience and broader societal progress (Sahni, 2025). The concept of green management has emerged as a strategic response to this need. This approach integrates principles of sustainability and ecological awareness into every operational and strategic aspect of a business. Its goal is to achieve optimal economic performance while minimising negative impacts on the natural environment and maximising positive contributions. The implementation of green management encompasses a wide range of practices, from resource efficiency and pollution reduction to eco-friendly product design and responsible supply chain management (Yorulmaz, 2025).

Higher education institutions play a vital and strategic role in shaping students' understanding and attitudes toward sustainability. As future leaders, innovators, and decision-makers, students need to develop comprehensive knowledge of green management and strong pro-environmental attitudes (Machado & Davim, 2023). Thus, academic curricula, extracurricular activities, and the campus environment as a whole can serve as effective platforms for fostering this awareness and competence. Adequate knowledge of green management equips students with the necessary skills to integrate sustainability into their future professions, while pro-environmental attitudes encourage them to act as agents of change within their community (Ahmadova, 2025).

Nowadays, social media has grown into a dominant force in communication and information sharing, especially among the younger generation. Platforms such as Instagram, Twitter, Facebook, and TikTok serve not only as tools for social interaction but also as primary sources of news, opinions, and knowledge on various topics, including environmental issues. The characteristics of social media enable rapid information dissemination, two-way interaction, and wide accessibility, making it a potentially transformative tool in shaping individual perceptions, knowledge, and attitudes (Ayob et al., 2025). Therefore, exploration of how far social media influences students' understanding of green management and the formation of pro-environmental attitudes is highly relevant to education and sustainability.

Students' use of social media to access and share environmental information can vary; some students may actively seek out sustainability-related content, follow environmental organisations, or engage in online discussions about ecological issues, but others may be passively exposed to environmental information through posts from friends or trending news stories. The level and type of exposure have the potential to influence how well they understand green management concepts and how strong their pro-environmental attitudes are. Interaction with environmental content on social media can raise awareness of global issues, introduce innovative solutions, and even motivate real action in their daily lives or career aspirations (Kovanci & Yildiz Karakoç, 2022). However, the influence of social media is complex. The quality and reliability of information vary, with the potential for the spread of misinformation or biased information. Social media algorithms can also create “filter bubbles” that limit individuals' exposure to diverse perspectives, reinforcing existing views or limiting comprehensive understanding (Bush & Löns, 2024). Therefore, it is important to test whether students' use of social media is truly correlated with increased knowledge about green management and strengthened pro-environmental attitudes.

Previous studies have shown that social media can be an effective tool for environmental awareness campaigns and social mobilisation (Mahat et al., 2023; Mallick & Bajpai, 2019; Pearson et al., 2016; Tlebere et al., 2016). However, studies that specifically examine the relationship between social media use and students' academic knowledge of green management remain limited, particularly within specific contexts. Although social media has been shown to influence attitudes, the precise mechanism through which exposure to environmental content shapes students' pro-environmental attitudes still requires further exploration. This research gap underscores the need for more focused investigations to better understand the dynamics of this relationship, which can help inform more effective educational and communication strategies. Moreover, understanding how social media use influences students' knowledge and attitudes has important practical implications for educational institutions, policymakers, and environmental organisations. Since social media has been found to be an effective medium for increasing knowledge of green management and fostering pro-environmental attitudes, educational institutions can integrate these platforms into their learning strategies. Environmental organisations can also optimise digital campaigns to reach and engage students effectively. Moreover, the findings of this study can give an empirical basis to develop a framework that promotes critical media literacy, ensuring that students can filter the relevant and accurate information from any kind of digital source.

This study seeks to fill the existing knowledge gap by analysing the relationship between social media use and two key variables: students'

knowledge of green management and their pro-environmental attitudes. Specifically, it aims to examine whether social media use significantly influences students' levels of knowledge about green management and their pro-environmental attitudes. Through this analysis, the study is expected to provide a clearer understanding of how social media contributes to shaping students' positive perspectives and behaviours toward ecological issues, as well as building their capacity to become environmentally conscious individuals who are competent in applying green management principles.

LITERATURE REVIEW

Social Media Usage

The use of social media refers to an individual's activity in interacting with digital platforms that facilitate the creation and sharing of ideas and other types of content within virtual communities and networks (Benlidayi, 2024). This covers a wide range of behaviours, from passively consuming content to actively participating in discussions and creating new material. Social media functions not only as a communication tool but also as a complex ecosystem that shapes how individuals access information, form opinions, and engage with the world around them (Atteh et al., 2020).

According to Scheepers et al. (2014), social media usage behaviour can be categorised into four main subconstructs. The first is information seeking, which involves searching for and sharing information on social media to fulfil knowledge needs and stay connected with current issues. The second is hedonic activity, referring to the use of social media for entertainment and personal enjoyment, such as watching humorous videos, listening to music, or playing online games. The third, sustaining strong ties, represents the use of social media to maintain close relationships with friends, family, or others with whom one has an emotional bond. The last is extending weak ties, which refers to efforts to expand one's social network by interacting or building new relationships with people outside one's immediate circle, such as acquaintances or online community members.

Chen and Lee (2021) showed that engagement with environmental content on social media can stimulate critical discussion and reflection on sustainability issues. Visual or narrative content that evokes emotion can raise awareness, prompt users to think more deeply, share experiences, and question the environmental impact of their daily activities. As a platform for information exchange, social media serves as a space for social learning that fosters greater awareness and action on environmental issues.

Students' Knowledge Level of Green Management

The level of students' knowledge of green management refers to how far their accurate and comprehensive understanding of its concept, principle, practice, benefit, challenge, and regulation (Kedla et al., 2025). This

knowledge covers a cognitive dimension which encompasses the ability to recall, comprehend, and apply sustainability-related information within organisational contexts. It is not merely an introduction to the term but a deep understanding of how environmental principles are integrated into various business functions such as production, marketing, human resources, and corporate strategy. Such understanding is essential for preparing students to contribute to responsible business practices in the future.

Students' knowledge of green management can be measured through several indicators covering different aspects. According to Fahiminia et al. (2017), these indicators include understanding the basic concepts and principles of green management, which reflect how well individuals grasp the objectives and foundations of environmentally friendly organisational practices. In addition, knowledge of sustainability-oriented resource management policies and practices, such as efficiency strategies and responsible waste management, is also a key component. Awareness of the environmental impacts of organisational activities serves as another important indicator, demonstrating sensitivity to the ecological consequences of managerial decisions. Furthermore, understanding the importance of energy efficiency and waste reduction highlights how well individuals recognise the role of resource optimisation in effectively implementing green management. Tampubolon et al. (2024) found that, although students generally possess good theoretical understanding, their environmentally friendly actions remain limited. This indicates the need to enhance awareness through more engaging and effective programs. Therefore, it is crucial to design creative initiatives that increase students' awareness and participation in sustainability efforts.

Pro-Environmental Attitudes

The attitude of pro-environmental is defined as an individual psychological tendency to respond positively to environmental issues, show concern for nature conservation, and have the intention to participate in environmental preservation efforts (Ullegaddi et al., 2023). This attitude consists of three key components: cognitive (beliefs about the environment), affective (feelings toward the environment), and conative (behavioural intentions). Individuals with strong pro-environmental attitudes tend to perceive the environment as valuable and worthy of protection, feeling personally responsible for reducing the negative impacts of human activities on ecosystems. Such attitudes serve as an important predictor of responsible environmental behaviour. Sierra Barón and Meneses Baez (2022) identified that pro-environmental attitudes can be assessed through three main dimensions: environmental awareness, environmental values, and pro-environmental behaviour at work. These dimensions reflect how well individuals understand environmental issues, appreciate the importance of

nature conservation, and demonstrate concrete actions in their professional lives to support sustainability.

Many studies have examined factors influencing pro-environmental attitudes among students. Stern (2000) found that pro-environmental attitudes are shaped by a combination of individual values, beliefs about environmental consequences, and social norms. Similarly, Kollmuss and Agyeman (2002) revealed that environmental knowledge is insufficient to generate strong pro-environmental attitudes or consistent behaviour, since it is also influenced by psychological and situational factors. However, Han et al. (2020) discovered that exposure to environmental information, especially through mass and digital media, can significantly increase pro-environmental concern and behavioural intentions. Jones and Brown (2021) indicated that interaction with environmentally oriented online communities can strengthen pro-environmental identity and social norms that support sustainable behaviour. However, the influence of social media on pro-environmental attitudes may vary depending on individual factors such as personal values and prior experiences.

RESEARCH METHOD

This study uses a quantitative approach with a causal associative design to examine the effect of independent variables on dependent variables. The study population consists of all students at Universitas Sunan Giri Surabaya. To determine the sample, accidental sampling was used, whereby respondents were selected based on their availability and ease of access for researchers at the study location. A total of 100 undergraduate students from various levels were selected as the study sample. The selection of sample size was based on the consideration that it was adequate for performing simple linear regression statistical analysis, as well as for achieving representative generalisation of findings within the defined population boundaries. Primary data were collected through structured questionnaires distributed to respondents who met the inclusion criteria. These questionnaires were designed to systematically and objectively measure each research variable. The research variables consist of one independent variable, Social Media Use (X), and two dependent variables: Students' Knowledge Level of Green Management (Y1) and Pro-Environmental Attitude (Y2).

Before conducting the main data analysis, the research instruments were tested for validity and reliability to ensure accuracy and consistency in measurement. The data were analysed using the simple linear regression method. Two separate regression models were developed to test the research hypotheses: the first examined the effect of Social Media Use on Students' Knowledge of Green Management, while the second tested its effect on Pro-Environmental Attitude. The regression model follows the equation " $Y = a +$

$bX + e$ ", where Y represents the dependent variable, X the independent variable, a the constant, b the regression coefficient, and e the error term.

FINDINGS AND DISCUSSION

The descriptive analysis results from 100 university student respondents provide an overview of the general characteristics of the variables: Social Media Use, Students' Knowledge of Green Management, and Pro-Environmental Attitudes. The descriptive statistics include the mean, standard deviation, minimum, and maximum values for each variable, all measured using a consistent scale. These findings offer insight into the distribution and central tendencies of the data, helping to better understand the overall patterns among the student sample.

Table 1.
Description of Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Social Media Usage	100	2.88	4.75	3.92	0.51
Students' Knowledge Level of Green Management	100	2.50	4.38	3.45	0.48
Pro-Environmental Attitudes	100	3.17	4.83	4.10	0.45

Source: Authors' work

Table 1 presents that the mean score for social media use was 3.92 with a standard deviation of 0.51, indicating that students generally have a high level of engagement and are active on various digital platforms. The range of values from 2.88 to 4.75 indicates differences in usage intensity among respondents, although most fall within the frequent-use category. This suggests that social media is deeply integrated into students' daily routines. For the students' knowledge levels of green management, the average was 3.45 with a standard deviation of 0.48. This indicates that students have a fairly good understanding of green management concepts, principles, and practices, although some variation still exists. The range of 2.50 to 4.38 shows that there are differences in the level of knowledge, with some students having a more comprehensive understanding and others only having a basic understanding. These results suggest that awareness of green management is present but not evenly distributed across the sample.

The pro-environmental attitude variable showed an average of 4.10 with a standard deviation of 0.45, indicating that students generally have a very positive attitude towards environmental issues and tend to support environmental protection. The range values from 3.17 to 4.83 show that most

respondents have a strong disposition to act in environmentally friendly ways, even though individual differences remain. This high mean values reflects strong awareness and concern among students regarding sustainability and ecological responsibility.

Statements related to social media usage and students' level of knowledge about green management were measured using eight items designed to obtain data on how and how often individuals use social media platforms. While statements related to the pro-environmental attitude variable consisted of six items. All items achieved corrected item-total correlations above 0.4, indicating strong relationships with their respective total scores. Cronbach's Alpha values of 0.879 (social media use), 0.842 (knowledge of green management), and 0.803 (pro-environmental attitudes) confirm excellent internal consistency, suggesting that the instruments used are both valid and reliable.

The analysis further shows that social media use is positively and significantly associated with both key outcomes. In the first regression model, social media use had a moderate correlation ($R = 0.486$) with students' knowledge of green management, explaining 23.6% of the variance ($R^2 = 0.236$; adj. $R^2 = 0.229$). The model was statistically significant ($F(1,98) = 30.339$; $p < 0.001$), indicating that variations in green management knowledge can be meaningfully attributed to differences in social media use. The regression coefficient ($B = 0.583$; $SE = 0.106$; $t = 5.508$; $p < 0.001$) suggests that each one-unit increase in social media use corresponds to a 0.583-point increase in knowledge scores, with a medium effect size ($\beta = 0.486$). The standard error of the estimate (4.467) indicates moderate residual variation, while the Durbin-Watson value (1.620) suggests no serious autocorrelation. The collinearity statistic ($VIF = 1$) also meets ideal conditions for a single predictor model. Substantively, these results imply that intensified use of social media relevant to environmental content is associated with increased student understanding of green management concepts and practices.

$$\text{Model 1 equation: } Y_1 = 16.588 + 0.583X$$

In the second model, the relationship between social media usage and pro-environmental attitudes is moderate ($R = 0.491$), explaining 24.1% of the variance ($R^2 = 0.241$; adj. $R^2 = 0.233$). The model is statistically significant, $F(1,98) = 31.084$; $p < 0.001$, indicating that the use of social media meaningfully predicts variations in pro-environmental attitudes. The unstandardized coefficient shows a stronger practical effect than in the knowledge model: each one-unit increase in social media use predicts a 0.807-point increase in pro-environmental attitudes ($B = 0.807$; $SE = 0.145$; $t = 5.575$; $p < 0.001$), with a moderate standardised effect ($\beta = 0.491$). The standard error of estimate (6.115) shows a slightly larger residual spread than the knowledge

model, suggesting that attitudes—as affective and conative constructs—tend to vary more widely. The Durbin–Watson value of 1.555 remains within the acceptable range, and the collinearity statistic ($VIF = 1$) is ideal. Overall, these results suggest that greater exposure to and engagement with social media are associated with stronger positive attitudes toward environmental issues, with a larger effect size than their influence on knowledge.

$$\text{Model 2 equation: } Y_2 = 20.291 + 0.807X$$

Both models meet the basic feasibility indicators for simple linear regression, that is, strong overall model significance, stable and significant predictor coefficients, and initial diagnostic indicators showing no serious issues of autocorrelation or collinearity. However, approximately three-quarters of the variance in both outcomes is still influenced by factors beyond social media use, suggesting that formal education, direct experiences, personal values, and social norms likely play additional roles. Practically, these findings support the use of social media–based strategies to enhance literacy and foster pro-environmental attitudes, with the note that credible content curation and participatory message design will further strengthen their impact.

Table 2.
Regression Results

Outcome	R	R ²	F (p)	SEE	DW	Inter- cept	Slope (X)	Beta	t (p)
Knowledge of Green Management	0.486	0.236	30.339 (<0.001)	4.467	1.620	16.588	0.583	0.486	5.508 (<0.001)
Pro- Environment al Attitudes	0.491	0.241	31.084 (<0.001)	6.115	1.555	20.291	0.807	0.491	5.575 (<0.001)

Note: R = correlation; R² = explained variance proportion; F(p) = model testing and its significance; SEE = standard error of estimate; DW = Durbin–Watson; Intercept = constant a; Slope (X) = unstandardized coefficient X; Beta = standardized coefficient; t(p) = coefficient testing and its significance

Source: Authors' work

Social media usage and knowledge enhancement on green management

The findings showed that social media usage has a significant influence on students' knowledge of green management. Through these platforms, students can more easily grasp concepts and practices related to green management (Madhavi, 2022). A brief content format, such as infographics, short videos, and case studies, helps simplify complex material, making it easier to understand. Since students frequently access digital platforms, social media naturally becomes an accessible and engaging learning medium (Damanik, 2025). This learning process occurs through repeated and convenient exposure. When students encounter examples, visual explanations,

and light discussions about environmental management, their comprehension deepens. Interactions in comment sections or online forums also promote clarification of concepts and broaden perspectives (Lovochkina et al., 2023).

Lecturers and campuses can combine lecture materials with short content on social media to support formal learning. For example, a series of weekly themed posts, summaries of key concepts, or links to relevant reading materials. When combined with practical campus activities like waste management programs or energy-saving projects, it strengthens understanding, as students immediately apply what they learn. To maximise these benefits, maintaining source credibility and careful content curation is essential. Students should be guided toward accurate, relevant, and contextually meaningful materials rather than merely popular ones. This approach ensures that their knowledge extends beyond surface-level familiarity, fostering the ability to apply green management principles to real-world environmental challenges.

Social media usage and strengthening pro-environmental attitudes among students

Social media plays an important role in shaping pro-environmental attitudes because it presents stories, testimonies, and real experiences that influence how students perceive environmental issues (Robina-Ramírez & Medina-Merodio, 2019). Students are easily persuaded, especially when they see their peers or campus figures engage in simple yet impactful environmental actions, which fosters a more positive attitude (Gupta et al., 2024). These attitudes develop through a combination of knowledge, emotion, and a sense of shared purpose. Content that highlights practical solutions, everyday benefits, and easy-to-follow actions makes environmental issues feel more relevant and approachable. In addition, social support through likes, comments, or invitations from online communities provides encouragement and reinforces environmental commitment (Varni et al., 2024).

At a practical level, campuses can design social media campaigns that combine credible information with storytelling aligned to students' daily lives. Shared challenges, simple commitments, and progress feedback can help maintain consistent attitudes. Linking messages to real opportunities for action on campus also helps bridge the gap between "agreeing" and "doing." To ensure long-term impact, guidance is needed for content curation, media literacy, and simple evaluation of campaign outcomes. This ensures information accuracy, prevents audience fatigue, and helps transform attitude changes into concrete actions. With a clear, inclusive, and solution-focused approach, social media can serve as a sustainable driver for cultivating pro-environmental attitudes among students.

CONCLUSIONS

The use of social media shows a positive, consistent, and meaningful relationship with students' knowledge of green management and their pro-environmental attitudes, demonstrating a moderate effect size and strong model validity. Evidence-based and participatory social media-based intervention strategies have the potential to increase the impact of environmental education, while strengthening future research designs are needed to confirm causal pathways and optimise sustainable campus policies and programs. Based on findings that social media use is significantly associated with green management knowledge and pro-environmental attitudes, the key recommendation is to optimise social media as a structured landscape for learning and attitude change. Campaigns should be strictly curated to ensure source credibility and content accuracy, presented through concise, visual, and interactive micro-learning formats that connect with students' real-life contexts. The involvement of trusted figures such as lecturers, campus environmental communities, and student leaders can increase the credibility of the message, while the integration of participatory elements such as community challenges, online workshops, and feedback mechanisms will strengthen the internalisation of knowledge into more established attitudes.

At the institutional level, the integration of green management content into the curriculum and co-curricular activities should align with the campus's digital communication strategies, so that educational messages on social media are reinforced by direct learning experiences and sustainability practices on campus. Program managers are advised to establish data-driven evaluation plans that combine social media reach and engagement metrics with pre- and post-knowledge and attitude measurements, as well as behaviour indicators such as participation in environmental activities or changes in habits. These insights can then be used to refine future content, highlighting the most effective platforms and formats, and addressing any gaps in understanding that emerge.

LIMITATION & FURTHER RESEARCH

This study has several limitations that can guide future research. It is suggested that future studies use longitudinal designs or controlled experiments to test cause-and-effect relationships and reduce the bias that often occurs in cross-sectional studies. The measurement of social media usage should also be improved by including aspects such as platform type, the balance between creating and consuming content, and the credibility of information sources. This would help explain more clearly how social media influences knowledge and attitudes. Moreover, mediation and moderation analyses could also be used, for example, examining knowledge as a mediator between social media use and pro-environmental attitudes, or media literacy and self-efficacy as

moderating factors. Overall, these recommendations point toward an integrated approach that combines the strengths of digital communication with formal education and campus sustainability initiatives, ensuring that students' pro-environmental knowledge and attitudes not only improve but also translate into consistent, real-world actions.

AUTHOR CONTRIBUTION

Rahayu Mardikaningsih: Conceptualisation, Research Design and Data Collection, **Didit Darmawan:** Conceptualisation, Methodology, and Supervision, **Rafadi Khan Khayru:** Writing Entire Paper, Data Collection and Analysis, **Fayola Issalillah:** Data Collection, Editing, and Layouting. All Authors have read the final version of the paper.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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