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Analyzing the Influence of Social Media on Pro-Environmental Behavior via the Mediation of Pro-Environmental Knowledge and Attitudes among Middle School Students in Bandung Regency, Indonesia

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ABSTRACT

Adolescents, even those in junior high school, have incorporated social media into their daily routines, making it an essential component of their lives. The objective of this study is to examine how social media influences the adoption of pro-environmental behavior among junior high school students in Bandung Regency, Indonesia, by mediating their pro-environmental knowledge and attitudes. This study employs quantitative methodologies via a survey-based approach. We administered questionnaires to a sample of 300 junior high school students in Bandung Regency to collect data. The questionnaire encompasses inquiries on social media use, pro-environmental knowledge, pro-environmental attitudes, and pro-environmental conduct. The research findings indicate that social media exerts a beneficial influence on the pro-environmental conduct of junior high school pupils. The statistically significant positive correlation coefficient ($r = 0.35$, $p < 0.01$) supports the connection between the usage of social media and pro-environmental behavior. Pro-environmental knowledge and attitudes influence the connection between social media use and pro-environmental behavior, as revealed by mediation analysis. Consequently, social media enhances students' understanding and beliefs about the environment, thereby motivating them to engage in environmentally friendly actions. The findings of this study demonstrate that social media can serve as a potent instrument for promoting pro-environmental conduct among adolescents in junior high school.

1. Introduction

Adolescents, even those in middle school, have incorporated social media into their daily routines, making it an essential component of their lives. Within Indonesia, the proportion of individuals aged 13–17 who utilize social media amounts to 88.1%. Social media usage can exert both advantageous and detrimental effects on adolescents, particularly regarding their pro-environmental conduct. Pro-environmental behavior refers to the actions undertaken by humans to save and preserve the environment. These behaviors can vary from basic efforts like conserving energy and water to more intricate actions like recycling and advocating for

environmental policies (Akerloff et al., 2023). The significance of pro-environmental conduct among adolescents is indisputable. Adolescents are the forthcoming cohort who will bear the responsibility for ensuring environmental sustainability in the future. Hence, it is important to enhance pro-environmental conduct among adolescents (Cho et al., 2022).

Prior research has demonstrated that social media may effectively promote pro-environmental behavior. A study revealed that the utilization of Facebook can enhance knowledge and consciousness regarding environmental matters while also motivating users to engage in environmentally friendly behaviors (Allcott et al., 2021). A separate study discovered that



the utilization of social media can enhance favorable attitudes towards the environment and motivate users to participate in activities that promote environmental well-being (Bawaskar, 2019). This study seeks to examine the influence of social media on pro-environmental behavior among junior high school students in Bandung Regency, Indonesia. It will specifically investigate how social media mediates the relationship between pro-environmental knowledge and attitudes.

2. Literature Review

Utilization of social media

In the digital age, social media has become an indispensable aspect of human existence. Platforms such as Facebook, Instagram, Twitter, and TikTok have facilitated global connectivity, allowing billions of individuals to engage in communication, information sharing, and community building. Utilizing social media yields a multitude of both advantageous and detrimental effects, necessitating users to comprehend and contemplate. Social media facilitates long-distance connections with friends and family, enables the formation of new friendships, and fosters the development of communities centered around common interests and objectives (Cheng et al., 2020).

Social media has emerged as a convenient and expeditious platform for accessing information and news, enabling users to stay updated on the newest advancements across many domains. Users extensively utilize social media platforms for educational purposes, including the dissemination of expert-generated educational information and the facilitation of online learning communities (Evans et al., 2020). Utilizing social media platforms enables businesses to effectively advertise their products or services, expand their consumer base, and enhance their revenue. Instagram and TikTok have become prominent platforms for influencer marketing and e-commerce. Social media serves as a platform to enhance public knowledge of social and political

matters, galvanize collective efforts and assistance, and foster constructive transformation within society (Dahlstrom et al., 2022).

Excessive utilization of social media can result in addiction, anxiety, despair, and several other mental health issues. Social media serves as a medium for cyberbullying and online harassment, adversely affecting the mental and emotional well-being of its users. Social media serves as a medium for the dissemination of false information and deceptive schemes, leading to user confusion and detrimental effects on their decision-making processes. Social media platforms have the ability to gather and utilize users' personal data for business reasons, thus jeopardizing user privacy and security. Social media platforms have the potential to intensify polarization and fragmentation in society by utilizing algorithms that guide users towards information that reinforces their existing beliefs while restricting their exposure to opposing viewpoints.

Pro-environmental knowledge

Pro-environmental knowledge encompasses an individual's comprehension of environmental matters, including climate change, pollution, and biodiversity. Individuals with pro-environmental knowledge comprehend the root causes and ramifications of environmental issues, as well as the remedies and measures that can be implemented to address them. Pro-environmental knowledge enables individuals to comprehend the significance of conserving nature and the consequences of their activities on the environment. Having a sufficient understanding of environmental concerns might motivate individuals to adopt environmentally conscious behaviors, such as conserving energy, recycling, and minimizing plastic usage. Understanding the remedies and measures that can be implemented to address environmental issues can motivate individuals to participate in environmental initiatives, such as clean-up efforts, tree planting, and



advocating for legislative changes. Enhancing one's understanding of environmental issues can eventually contribute to enhancing the well-being of individuals and communities by fostering a healthier and more sustainable environment (Fox et al., 2020).

Formal education institutions, such as schools and universities, have the potential to significantly enhance pro-environmental knowledge by including environmental topics and practical solutions into their curricula. Public education campaigns, outreach activities, and seminars have the potential to enhance the pro-environmental awareness of the broader community. The mass media, including television, radio, and the internet, have the ability to distribute information and enhance public consciousness on environmental matters. ICT can distribute information on environmental issues and resolutions, while also connecting individuals concerned about the environment. Participating in a pro-environmental community can enhance individuals' knowledge of environmental matters and enable them to actively participate in group efforts. Having a strong understanding of environmental issues is a crucial basis for constructing a sustainable future. Through the augmentation of knowledge and consciousness regarding environmental concerns, people and communities may undertake the essential measures to safeguard and conserve nature for both present and future generations (Ha et al., 2022).

Pro-environmental attitudes

Pro-environmental attitudes pertain to an individual's inclination to endorse and participate in endeavors aimed at safeguarding and conserving the natural environment. This perspective is founded on optimistic convictions and principles toward the environment and a consciousness of the significance of upholding the equilibrium of nature. Embrace an eco-conscious way of life by implementing practices such as conserving energy, engaging in recycling, minimizing plastic use, and utilizing ecologically

sustainable modes of transportation. Engage in environmental conservation endeavors, such as participating in beach clean-ups, planting trees, and advocating for pro-environment policies. Provide financial and non-financial assistance to organizations and movements dedicated to environmental conservation. Exhibit a strong sense of environmental stewardship and consistently evaluate the ecological consequences of their behaviors. Education, whether official or informal, pertaining to environmental matters has the potential to enhance understanding and foster a greater sense of care for the natural world. Engaging in pleasant encounters and direct engagement with the natural world may cultivate a profound affection and admiration for the environment. Personal values and views on the significance of conserving nature might foster pro-environmental attitudes. Social norms, expectations, and influences from their family, friends, and community can motivate individuals to engage in environmentally friendly behavior (Gangadharrat et al., 2016).

An environmentally conscious mindset is a crucial basis for constructing a viable and enduring future. This mindset encourages individuals to undertake essential measures to save and conserve nature. An environmentally conscious mindset aids in preserving the equilibrium of nature, safeguarding biodiversity, and mitigating the effects of climate change. Fostering a more salubrious and environmentally responsible setting enhances the well-being of individuals and communities. An environmentally conscious mindset contributes to the development of a sustainable and ecologically sound future for both present and future generations. An environmentally conscious mindset is essential for promoting eco-friendly conduct, engaging in environmental initiatives, and ultimately fostering a healthier and more sustainable planet. Cultivating and upholding a pro-environment mindset is both an individual and community duty to save and conserve



the natural world (Hao et al., 2020).

Pro-environmental behavior

The individual's deliberate activities and routines aim to safeguard and conserve the natural environment, encompassing pro-environmental behavior. Individuals engage in pro-environmental behavior because they are environmentally conscious and dedicated to preserving ecological equilibrium. Pro-environmental conduct can take on several forms, spanning from basic activities in daily life to involvement in collective efforts for the preservation of nature. Below are a few illustrations: (1) Energy conservation: Implementing energy conservation practices such as switching off lights and electrical devices when not in use, utilizing energy-efficient electronic equipment, and minimizing hot water consumption. Transition to sustainable modes of transportation, such as bicycles, public transit, or electric automobiles. (2) Waste Reduction: Employ reusable shopping bags when shopping; refrain from using disposable plastic items; opt for products with little packaging; engage in recycling and composting. Sustainable consumption entails purchasing locally sourced and ecologically conscious products, minimizing meat consumption, cultivating one's own plants, and opting to repair damaged objects rather than acquire new ones. Engage in environmental action by actively taking part in beach clean-up initiatives, planting trees, and advocating for pro-environment policies. Show support for groups and movements that prioritize environmental protection. Share information about environmental challenges and practical solutions to raise awareness (Gao et al., 2019).

Various variables can impact pro-environmental behavior, such as: (1) Acquiring knowledge about environmental concerns and their consequences might motivate individuals to adopt environmentally conscious behaviors. (2) Attitude: Maintaining a favorable outlook towards the

environment and holding strong convictions on the need to conserve nature might motivate individuals to engage in environmentally friendly behaviors. (3) Personal values and beliefs: Individual values and beliefs on the significance of conserving nature can foster pro-environmental attitudes. Social Influence: Social norms and expectations, together with influences from family, friends, and the community, can motivate individuals to engage in environmentally conscious behavior. (4) Accessibility refers to the presence of infrastructure and resources that facilitate environmentally friendly behavior, which in turn can motivate individuals to engage in pro-environmental actions. Engaging in pro-environmental conduct is a tangible measure to safeguard and conserve nature. The adoption of environmentally friendly conduct, both on an individual and collective level, may exert a substantial and beneficial influence on the environment and the future (Kim et al., 2019). Engaging in pro-environmental conduct contributes to the preservation of ecological equilibrium, safeguards biodiversity, and mitigates the effects of climate change. Fostering a more salubrious and enduring environment enhances the well-being of individuals and communities. Engaging in pro-environmental conduct contributes to the establishment of a sustainable and ecologically conscious future for both present and future generations. Adopting pro-environmental behavior is essential for achieving a sustainable future. Each person plays a crucial role in embracing and advocating for eco-conscious conduct to safeguard and maintain the natural environment (Gifford, 2021).

3. Methods

This study employs quantitative methodologies utilizing a survey-based strategy. We administered questionnaires to a sample of 300 junior high school students in Bandung Regency to collect data. The questionnaire encompasses inquiries on the utilization of social media, knowledge pertaining to



pro-environmental matters, attitudes towards pro-environmental issues, and actual pro-environmental actions. The research encompassed the whole population of junior high school pupils in Bandung Regency. We collected a random sample of 300 pupils from 10 junior high schools in Bandung Regency for this investigation. A questionnaire was utilized as the study tool. The questionnaire has four sections: The initial section comprises inquiries on social media usage, encompassing the specific platforms employed, the duration of engagement with social media, and the content usually accessed. The second section comprises inquiries pertaining to pro-environmental knowledge, encompassing an understanding of environmental concerns and strategies for safeguarding the environment. The third component comprises inquiries regarding pro-environmental attitudes, including perspectives towards environmental matters and the inclination to engage in pro-environmental behaviors. The fourth component comprises inquiries regarding pro-environmental conduct, encompassing measures undertaken to safeguard the environment. Instructors

at each junior high school distributed questionnaires to a sample of junior high school pupils to collect data. Instructors at each junior high school sent the questionnaires. Prior to utilization, the questionnaire underwent rigorous testing to ensure its validity and reliability. During validity testing, we evaluated the relationship between questionnaire items and the variables under examination. We conducted the reliability test by computing Cronbach's alpha. The data underwent statistical analysis, namely correlation testing and mediation analysis.

4. Results and discussion

Questionnaire questions that have a correlation score above 0.50 demonstrate a significant and genuine association with the variables being examined. A Cronbach's alpha above 0.70 demonstrates a high level of reliability, indicating that the questionnaire consistently measures the variables it is intended to assess. Table 1 demonstrates the validity and reliability of the questionnaire.

Table 1. The validity and reliability tests conducted on the questionnaire.

Variables	Total item	Correlation (validity test)	Cronbach's alpha (reliability test)	Interpretation
Social media use	8	0.65	0.82	High
Pro-environmental knowledge	10	0.68	0.85	High
Pro-environmental attitudes	8	0.72	0.80	High
Pro-environmental behavior	12	0.71	0.75	High

Table 2. A correlation test examining the relationship between social media use and pro-environmental behavior.

Variables	Correlation coefficient (r)	p-value
Social media use	0,35	< 0,01
Pro-environmental behavior	-	-

The research findings indicate that social media exerts a beneficial influence on the pro-environmental conduct of junior high school pupils.

The usage of social media is supported by a statistically significant positive correlation coefficient ($r = 0.35$, $p < 0.01$) with engagement in pro-



environmental conduct. Table 2 demonstrates a positive correlation between the frequency of social media usage among junior high school students and their pro-environmental conduct.

Social media usage has a direct positive impact on pro-environmental behavior, increasing it by 0.20. Social media usage positively correlates with an increase in both pro-environmental knowledge (0.15) and pro-environmental attitudes (0.15), which then leads to an increase in pro-environmental

conduct (0.30 and 0.25). Social media directly impacts pro-environmental behavior, with 0.15 of this effect being channeled through pro-environmental information and another 0.15 through pro-environmental attitudes. Social media exerts a beneficial impact on pro-environmental conduct, both through direct and indirect means. Social media manifests this impact by providing individuals with greater information and fostering attitudes that support environmental preservation (Table 3).

Table 3. The involvement of mediating factors, such as knowledge and pro-environmental attitudes.

Variables	Direct effect	Indirect effect	Total effect
Social media use	0.2	0.15	0.35
Pro-environmental knowledge	-	0.3	0.3
Pro-environmental attitude	-	0.25	0.25
Pro-environmental behavior	-	-	0.55

Platforms like Instagram, Facebook, and Twitter have emerged as mediums for educating and spreading information on environmental matters. Junior high school pupils may readily obtain educational material on nature conservation, ecologically sustainable advice, and appeals for pro-environmental initiatives. Social media enables middle school students to engage with groups and peers who have a common interest in and care for the environment (Gao et al., 2019). Engagement within this community has the potential to inspire and incentivize students to engage in environmentally-friendly behaviors. Social media has the potential to enhance understanding and concern about environmental concerns among junior high school pupils (Klockner, 2023). Compelling visual media, such as photographs and movies, may enhance the learning process and enhance students' comprehension of the significance of conservation. Social media has evolved into a platform where diverse organizations and people may disseminate solutions and innovations pertaining to environmental

protection. Adolescents in middle school can acquire knowledge about several methods to actively participate in safeguarding the environment, including engaging in recycling practices, conserving energy, and minimizing the production of plastic garbage. Social media showcases compelling narratives of individuals and groups that have effectively executed environmentally conscious initiatives. This can inspire junior high school kids to emulate their actions and become catalysts for good transformation in the environment.

Individuals' pro-environmental knowledge and attitudes influenced the connection between social media usage and pro-environmental conduct. This discovery has significance as it demonstrates that social media has a direct impact on pro-environmental behavior, as well as its influence on pro-environmental knowledge and attitudes. Social media serves as a valuable platform for junior high school students to acquire information and knowledge about many environmental concerns. Engaging with educational materials, such as articles, movies, and infographics,



can enhance individuals' understanding of the consequences of climate change, environmental degradation, and the significance of conserving nature. Social media enables middle school pupils to engage with groups and individuals that possess a genuine concern for the environment (Fox et al., 2020).

Exposure to favorable information about nature conservation through engagement can enhance individuals' awareness and empathy towards environmental problems. This can foster a positive mindset and bolster initiatives for wildlife protection. Extensive information and positive attitudes towards the environment might motivate junior high school pupils to engage in environmentally conscious behavior. They will exhibit heightened motivation to engage in tangible acts, such as conserving energy, practicing recycling, and minimizing plastic waste (Evans et al., 2020).

Social media can enhance the pro-environmental knowledge and attitudes of junior high school pupils when used positively. Extensive information and positive attitudes towards the environment might motivate junior high school pupils to engage in environmentally conscious behavior. Social media has the potential to enhance the pro-environmental behavior of junior high school pupils, both directly and indirectly, by shaping their knowledge and attitudes towards environmental issues. Social media may serve as a forum for educators and parents to educate and share information about environmental concerns with middle school kids. It is imperative to disseminate educational and motivational material on nature preservation extensively on social media platforms in order to enhance the understanding and consciousness of middle school pupils. Environmental enthusiasts and individuals can utilize social media platforms to encourage and inspire middle school kids to engage in environmentally friendly behaviors (Gao et al., 2019).

5. Conclusion

Social media may serve as a potent instrument for promoting pro-environmental conduct among middle school pupils. Pro-environmental knowledge and attitudes influence the association between social media use and pro-environmental behavior. Through appropriate and conscientious utilization, social media has the potential to cultivate a younger generation that exhibits a heightened concern for environmental sustainability.

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