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The Influence of Green Human Resource Management and Green Transformational Leadership in Shaping Green Employee Behavior in Private Elementary Schools

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Abstract **— Although Green Employee Behavior (GEB) has been extensively explored in corporate and business environments, far less attention has been given to its development within educational institutions, particularly private elementary schools. In fact, schools hold a vital role in nurturing sustainability values from an early stage through the example set by educators. This study investigates how Green Human Resource Management (GHRM) and Green Transformational Leadership (GTL) contribute to shaping Green Employee Behavior (GEB), while also examining the mediating roles of Green Knowledge Sharing (GKS) and Employee Environmental Awareness (EEA). Using a quantitative explanatory approach, data were gathered through a survey of 214 permanent teachers from private elementary schools across five areas of Jakarta. Responses were measured using a five-point Likert scale and analyzed with Structural Equation Modeling–Partial Least Squares (SEM-PLS). The results indicate that GHRM positively influences GEB both directly and indirectly through Green Knowledge Sharing. In addition, Green Transformational Leadership strengthens Green Employee Behavior by enhancing Employee Environmental Awareness and encouraging knowledge-sharing practices among educators. Practically, the study suggests that schools should implement structured green HR policies, promote collaborative green knowledge-sharing practices, and develop transformational leadership competencies to foster environmental awareness and sustainable employee behavior in educational institutions.**

Keywords— ***Green Human Resource Management; Green Knowledge Sharing; Green Transformational Leadership; Employee Environmental Awareness; Green Employee Behavior***

I. INTRODUCTION

Concerns about environmental problems in Indonesia are increasing [1] due to irresponsible human activities [2] , such as misuse of resources and improper management of resources [3] . This has a negative impact on the surrounding environment, even on other neighboring countries. [4] .

Green Employee Behavior (GEB) is important to implement in educational institutions as a strategy to overcome environmental problems. [5] . Unlike business organizations that focus primarily on economic outcomes, schools operate within a value-driven framework where moral responsibility and character development are central objectives. Through the green behavior of educators, schools can form an organizational culture that cares about the environment and becomes a role model for students. [6] . Schools have the legitimacy to instill sustainability values, as moral and social institutions [7] in shaping green behavior such as saving energy, reducing waste, and encouraging other employees to be environmentally friendly. [8] [9] . This behavior is also an indicator of the success of sustainability programs such as Green Human Resource Management (GHRM) and Corporate Social Responsibility (CSR), which rely heavily on employee participation. [10] [11] . However, its implementation in Indonesia is still hampered by low environmental awareness and organizational support. [12] .

GHRM implementation creates an organizational culture that supports an environmentally friendly vision, increases environmental awareness, and encourages employee involvement in green initiatives. [13] [11] . In addition, employees who take the initiative to implement GHRM practices in the workplace and actively engage in Green Knowledge Sharing (GKS) can influence green behavior among

other coworkers. [14] . Recent scientific findings confirm that GKS mediates the relationship between GHRM and GEB, explaining that GHRM not only has a direct influence, but also requires a mediating role in encouraging GEB through strengthening information and knowledge exchange activities. [10] [15] .

The research results of Ding and Santos & Ramirez explain that other factors that can influence GEB are Green Transformational Leadership (GTL) and Employee Environmental Awareness (EEA). [16] [17] . GTL in a superior's leadership style will inspire employees to exceed environmental targets through a vision of sustainability, open communication, and empowerment of environmentally friendly resources. [18] . Previous studies have shown that GTL significantly increases employee volunteer behavior to support environmental initiatives. [19] . Leaders with GTL act as "role models" who create pro-environmental social norms, thereby motivating employees to adopt green behaviors such as energy saving and recycling. [20] .

Further research concluded that GTL can contribute directly to shaping green norms, and GKS can strengthen them through technical capacity building and collaboration [21] . On the other hand, EEA serves as a key mediator between GTL and GEB [22] . Another study explained that environmental awareness and green behavioral intentions are important mediators in the relationship between environmental knowledge and GEB [23] .

Exploration related to GEB in companies has been widely conducted in the context of business organizations with various studies. Rubel's research examined GEB in financial companies in Bangladesh, then a study by Ngadi examined GEB in coffee shop companies in Indonesia [15] [10] . Furthermore, Ilmi and Kania studied GEB in property and manufacturing sector companies in Indonesia [24] [13] . In addition, several existing large studies are still partial, for example only testing the effect of GHRM on GEB [25] [26] or examining the relationship between GTL and GKS in a limited scope [27] [28] [29] . Because of these fundamental differences, the factors that encourage green behavior among educators may not function in the same way as they do in corporate contexts. However, empirical evidence examining how sustainability-oriented human resource practices and leadership approaches influence teachers' environmental behavior remains limited. Therefore, it is important to study GEB in the context of schools or educational institutions, in order to understand how environmentally friendly behavior can be instilled through the role models of educators [30] .

This study provides theoretical contributions by adding two variables that are still rarely studied in the educational context, namely GTL and EEA. GTL was chosen because transformative leadership plays a role in building vision, motivation, and inspiration towards environmental values, in line with the character of value-based education [31] . Meanwhile, EEA was added as a mediator because employee environmental awareness is a crucial cognitive and affective prerequisite before acting in a pro-environmental manner [27] [32] . By integrating GTL and EEA into the model, this scientific study seeks to provide a more complete conceptual mastery of the driving elements of GEB in the Education sector, as a context that has received less attention in the academic literature [28] . To address this gap, the present study extends the GEB framework into the non-business educational sector by integrating Green Human Resource Management (GHRM) and Green Transformational Leadership (GTL) with the mediating roles of Green Knowledge Sharing (GKS) and Employee Environmental Awareness (EEA). By incorporating leadership and cognitive-awareness mechanisms within a unified model, this study offers a novel perspective on how sustainability values are institutionalized through educators in private elementary schools. With this approach, it is hoped that the results of the study will be able to expand previous findings and provide new perspectives on the implementation of sustainability principles in the non-business sector.

II. METHOD

In this study, regarding the measurement of variables in the questionnaire, we adopted Ababneh, Makumbe and Perez [33] [34] [35] . All questionnaire statement items were measured and arranged using a Likert scale with a value range of 1 to 5, where the number 1 means "Strongly Disagree", and the number 5 means "Strongly Agree". The detailed of research questionnaire is presented in the table below :

TABLE I. MEASUREMENT

Variable	No. of Items Used	Indicators	Source
Green Human Resource Management	13	(1). In my organization, job description specification includes environmental concerns, (2). My organization includes environmental criteria in the recruitment messages, (3). Every employee has an opportunity to receive environmental training in my organization, etc	Hooi et al [36]
Green Knowledge Sharing	5	(1). I always share green knowledge obtained from newspapers, magazines, journals, television and other sources, (2). In my organisation, people share expertise from work experience with each other, (3). I believe that knowledge sharing can benefit all parties involved, etc	Ahmed [37]

TABLE I. MEASUREMENT (CONTINUED)

Variable	No. of Items Used	Indicators	Source
Green Employee Behavior	6	(1). I carry out my professional duties in a way that has a positive impact on the environment, (2). I feel responsible for the environment, (3) I feel responsible to protect the environment for future generations, etc	Iqbal [38]
Green Transformational Leadership	6	(1). The leader provides a clear environmental vision for the employees to follow, (2).The leader inspires employees with the environmental plans, (3). The leader stimulates employees to think about green ideas	Li [39]
Employee Environmental Awareness	5	(1). We must reduce energy consumption to solve climate problems, (2). I have a personal responsibility to help to solve environmental problems, (3). Everyone should do whatever they can to protect the environment.	Ojo & Fauzi [40]

This study uses a quantitative approach, with data collection through a survey using an online questionnaire using Google Forms. The population in this study was all private elementary school educators in the Jakarta area who were registered under the Ministry of Education, Culture, Research, and Technology in 2024/2025, totaling 15,462 people. The sampling technique was purposive sampling, namely by selecting educators who met the criteria, namely active elementary school educators with permanent status in private schools in Jakarta. The rules of the private school foundation studied stipulate that educators who have worked for two years are categorized as permanent educators of the foundation. In addition, a minimum of two years of work experience indicates that the educators have implemented school programs comprehensively and intensively, one of which is P5 (Pancasila Student Profile Strengthening Project) with the theme of caring for the environment.

To reduce the risk of response bias, several precautionary steps were carefully applied throughout the data collection process. Participants were assured that their responses would remain completely anonymous and would be used exclusively for academic research purposes. No personal or identifying information was requested, helping to minimize the possibility of socially desirable answers. In addition, respondents were clearly informed that there were no correct or incorrect responses, encouraging them to answer honestly and based on their genuine experiences. These procedural measures were designed to strengthen the credibility of the data and to mitigate the potential for common method bias.

In deciding the number of participants, the researcher followed the recommendations of Hair & Alamer [42]. They suggest that when using Structural Equation Modeling (SEM), the minimum sample size should be at least five times the total number of indicators (observed variables) included in the model. Since this study employs 35 indicators, the required minimum sample is 175 respondents. Furthermore, all questionnaire items will undergo validity and reliability testing to ensure that the instrument measures the constructs accurately and consistently. The measurement model will be evaluated using Confirmatory Factor Analysis (CFA), following the approach outlined by Hair & Alamer [42], with data processed through IBM SPSS Statistics 25.

To assess construct validity, this study employed the Average Variance Extracted (AVE) criterion by examining the AVE value of each construct. A construct is considered to demonstrate adequate convergent validity when its AVE exceeds 0.50, indicating that the indicators sufficiently represent the underlying variable [42]. To evaluate reliability, Cronbach's Alpha was employed to measure internal consistency. A construct is regarded as reliable when the Cronbach's Alpha coefficient is greater than 0.7, indicating satisfactory consistency among its items [43].

The research hypotheses were tested using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) technique. Specifically, bootstrapping procedures were conducted with SMART PLS 4 software to determine the significance of the proposed relationships. SEM-PLS was selected because of its strength in handling complex research models that involve multiple latent constructs and interconnected structural paths [42].

III. RESULTS AND DISCUSSION

From the results of the questionnaire distribution, researchers obtained 214 respondents, more than the target of only 175 respondents. The distribution process was carried out by visiting a number of private elementary schools in five areas of Jakarta, both religious and non-religious schools. The targeted private elementary schools are classified as middle to upper economic schools. Before distributing the questionnaire, researchers held a short meeting with the Principal at each

school . This was done so that the Principal could be a liaison for the teaching staff in filling out the questionnaire with a good and correct understanding. The data obtained, the majority of respondents were Female Private Elementary School Educators as many as 130 people (60.7%), with the majority teaching area in East Jakarta as many as 66 people (30.8%), the highest educational level was S1, namely 182 people (85%), then for the teaching period the majority was around 2-4 years, namely 125 people (58.4%), while the largest number of educators who carried out the P5 environmental project was 96 people (44.9%) and their participation in the Caring Environment seminar or training was 1 time, namely 129 people (60.3%).

Based on Hair [43] , to assess the measurement model that reflects the validity and reliability of the construct, a loading factor test is first carried out. If the result is above 0.7 then the indicator in the construct is maintained, if the result is below 0.4 then the indicator is deleted and if the result is more than 0.4 but less than 0.7, it is recommended to look at the Average Variance Extracted value. (AVE). During the first calculation, the GHRM_12 construct had a value of 0.646 (the lowest), so it was decided not to retain it, leaving 31 statement items. After the second calculation, there was an increase in the AVE value of the GHRM construct from 0.545 to 0.563, which value has exceeded the AVE threshold of 0.5. Thus, it shows that the loading factor results its reliability has been accepted.

For Composite Reliability value (CR) ideally ≥ 0.7 and AVE ideally ≥ 0.5 [42] and *Cronbach's Alpha* (CA) according to Ghozali [42] is ≥ 0.7. The results of this study's calculations for the GHRM variables (CR=0.92; AVE=0.563; CA=0.902), GTL (CR=0.922; AVE=0.665; CA=0.899), GKS (CR=0.866; AVE=0.564; CA=0.807), EEA (CR=0.873; AVE=0.579; CA=0.818) and GEB (CR=0.908; AVE=0.622; CA=0.878). Thus, the calculations of CR, AVE, and CA all meet the requirements.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|) >1.96	P Values <0.05	Information
EEA -> GEB	0.333	0.332	0.072	4,627	0	Significant
GHRM -> GKS	0.575	0.576	0.062	9,305	0	Significant
GKS -> GEB	0.548	0.551	0.068	8,118	0	Significant
GTL -> EEA	0.698	0.7	0.053	13,167	0	Significant
GTL -> GKS	0.28	0.28	0.067	4.152	0	Significant

Discriminant Validity In this study, it was declared invalid because the AVE root of each latent variable was not higher than the correlation with other latent variables (Fornell-Larcker Criteria), the ideal Heterotrait-Monotrait Ratio (HTMT) results of <0.90 [44] were not met in some construct pairs, but the cross loading results shows all indicators have loading highest in each meaningful construct so that the indicator it is not in the wrong place [44] .

In testing the structural model (inner model), bootstrapping was performed on the model first, thus producing path coefficient data (direct influence) with the aim of knowing how big the direction and relationship of one variable with another variable. Based on the bootstrapping results, all relationships between variables have a t-statistic value above 1.96 and a p-value below 0.05. The test results show that Green Human Resource Management (GHRM) has a positive and significant effect on Green Knowledge Sharing (GKS) with a value of t = 9.305 and p = 0.000. Green Knowledge Sharing is also proven to have a positive and significant effect on Green Employee Behavior with a value of t = 8.118 and p = 0.000. Next, Green Transformational Leadership (GTL) has a positive and significant effect on Employee Environmental Awareness (t = 13.167; p = 0.000), then Employee Environmental Awareness (EEA) has a positive and significant effect on Green Employee Behavior (t = 4.627; p = 0.000). Furthermore, Green Transformational Leadership also had a positive and significant effect on Green Knowledge Sharing (t=4.152; p=0.000). The output model of the hypothesis test can be seen in the image below:

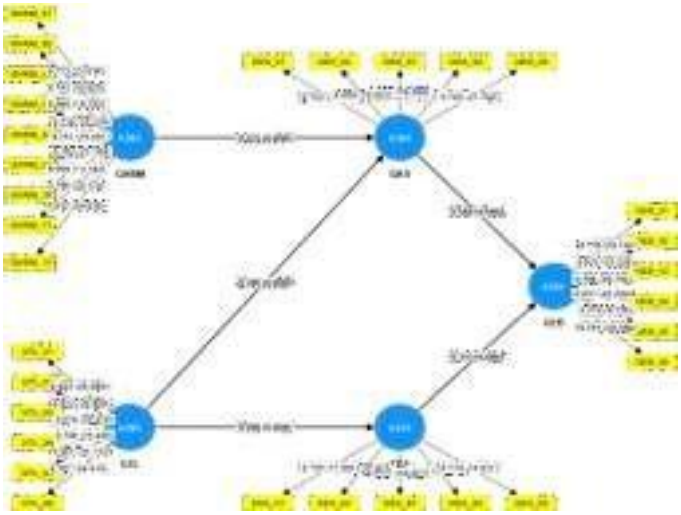

Figure 1. T - Value Path Diagram

Path coefficient test results in direct relationships can be seen in the following table:

TABLE II. DIRECT EFFECTS

The mediation results show that Green Knowledge Sharing mediates the relationship between Green Human Resource Management and Green Employee Behavior, because both direct and indirect influences are positive and significant (t = 5.705; p = 0.000). The second mediation result is proven in the role of Employee Environmental Awareness in mediating Green Transformational Leadership to Green Employee Behavior (t = 4.25; p = 0).

TABLE III. INDIRECT EFFECTS

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics (|O/STDEV|) >1.96	P Values <0.05	Information
GHRM →GKS →GEB	0.315	0.318	0.055	5,705	0	Significant
GTL →EEA →GEB	0.232	0.233	0.055	4.255	0	Significant

Based on the data listed on In the direct effects and indirect effects table above, the seven hypotheses have a *T-Value* exceeding the threshold of 1.96 so that the hypothesis that was built has been supported by the data produced .

The results of this study indicate that Green Human Resource Management (GHRM) practices have a positive and significant influence on Green Knowledge Sharing. (GKS) . This means that the implementation of Human Resource management policies that are oriented towards environmental sustainability can strongly encourage educators to share information, ideas, and experiences related to green activities in their respective schools. Starting with recruiting educators who understand environmental issues, then including their educators in environmental care training/seminars, then making the training/seminars part of the school's annual program, and conducting performance evaluations/assessments of principals and educators after the training, or establishing other environmentally based policies, so that educators feel more active and have space to exchange ideas, in accordance with the research results of Rubel and Khawaja [15] [47] which confirms that the GHRM strategy is able to create an organizational culture that is cooperative and open to the exchange of green knowledge in the school environment. Although the school is not a non-profit organization, educators share environmentally friendly knowledge about the environment as a form of social moral action in the schools where they teach, as confirmed by the findings of Aboramadan [46] .

The results of this study also demonstrated a significant relationship between Green Knowledge Sharing and Green Employee Behavior. For educators, sharing knowledge about environmental concerns with other educators fosters a sense of responsibility for environmental issues. This is highly relevant to Social Exchange Theory, which states that knowledge sharing fosters a sense of responsibility and engagement among organizational members. [47] . Likewise, in school organizations, through Green Knowledge Sharing, educators not only gain new knowledge about environmentally friendly practices, but are also encouraged to apply it in real actions such as saving electricity, saving water, using office equipment efficiently and managing plastic waste at school, actively planting and caring for trees in the school's mini garden. Even sharing green knowledge is considered enjoyable for them. By feeling happy to share green knowledge with fellow educators, they get tips and tricks for green behavior without having to attend special training or seminars. This finding is in line with research which shows that Green Knowledge Sharing is a driving factor in the formation of green behavior habits such as sharing tips on how to save vehicle fuel, reminding other educators to reduce waste production and other habits that can be a catalyst for continuous green behavior. [50] [49] .

In this study, the mediating role of Green Knowledge Sharing in the relationship between Green Human Resource Management and Green Employee Behavior was also proven to be significant. This means that although Green Human Resource Management practices were proven to be more dominant in directly influencing green behavior, the mediating role of green knowledge sharing was proven to be able to increase green behavior among educators. These results support the view that Green Knowledge Sharing is a bridge that connects green management strategies with actual employee behavior [14] [15] . In the school environment, this reflects that the success of forming green behavior among educators depends on a school management system that supports continuous learning and knowledge exchange. Because if green human resource management is implemented comprehensively and structured, then educators will also understand well how to apply green practices in their daily lives, they can even use them as enrichment in deep learning methods in the subjects they teach. Because one of the dimensions of the deep learning method is meaningful, which is meaningful and has an impact on the survival of the nation's generations, it further clarifies that stable Green Human Resource Management practices in the school environment will be stronger if supported by the sharing of knowledge and expertise among educators in forming green behavior in schools.

Furthermore, Green Transformational Leadership was shown to have a significant impact on Employee Environmental Awareness. This study's results are striking. This indicates that school leaders with green transformational leadership are able to foster environmental awareness among educators through role models, visionary communication, and individual attention to ecosystem issues. school that is able to direct Educators working together to achieve environmentally friendly goals can foster awareness that leads to *intrinsic motivation* within each educator at the school. These results align with studies confirming that a green transformational leadership style can increase employee environmental awareness by strengthening pro-environmental values and norms. [16] [50] . In the context of a school, which is essentially a non-profit organization, a leader tends to be a moral agent, who conveys a clear environmental vision and reflects an example that can inspire his/her teaching staff to realize that caring for the environment is something that is important to do continuously.

Employee Environmental Awareness also has a positive effect on Green Employee Behavior. This indicates that the higher the awareness of educators regarding the importance of protecting the environment, the greater their tendency to act in an environmentally friendly manner. These results support the Planned Behavior theory that awareness and positive attitudes towards environmental issues are the basis for the formation of environmentally friendly behavior [51] . Orgun's findings [52] also show that increasing employee environmental awareness contributes directly to the implementation of pro-environmental behavior in the workplace [53] [54] . The results of this study prove that someone who has an awareness that their actions can have an ecological impact and even have the potential to become a contributor to pollution or waste can be the door to the

formation of Green Employee Behavior. Educators who strive to involve, educate, and inspire other educators to reduce negative impacts on the environment confirm that educators in schools have more than just awareness, but have an ingrained sense of responsibility within themselves, to play an active role both personally and collectively in implementing environmentally friendly behavior, the practice of which they begin in the school environment where they teach.

The results of this observation have shown that leaders in their schools are not the main drivers in shaping green behavior among educators, requiring a strong mediating role of Employee Environmental Awareness. This means that the new green transformational leadership style has an impact on the behavior of educators after their environmental awareness has increased. In other words, awareness becomes an important pathway connecting green leadership with actual behavior. This finding is in line with research results explaining that environmental awareness functions as a psychological process that channels the influence of green leadership to the real actions of employees [27] [32] . In the context of the schools studied, the green behavior of educators seems to be more inherent due to the work culture in the school, or the interaction between fellow educators, rather than the exemplary role of school leaders. Even if the role of school leaders in shaping the green behavior of educators, it likely requires an indirect mechanism or certain situations to produce a significant effect. Although the indicators in Green Transformational Leadership show good quality results.

This study also shows a positive and significant relationship between Green Transformational Leadership and Green Knowledge Sharing. School leaders who demonstrate a commitment to sustainability create an open organizational climate and support collaboration in sharing knowledge and expertise among educators at the school. These results support scientific studies that confirm that Green Transformational Leadership increases organizational member participation in the process of sharing environmental knowledge. [28] [55] . School leaders who are skilled at conveying a clear environmentally friendly vision to educators, it can be understood that the role of a green transformational school leader is still needed in providing understanding, direction and guidance regarding environmentally friendly practices to their educators. Because a transformative leader can be a source of inspiration for educators in behaving greenly at school.

IV. CONCLUSIONS

The results of this study offer meaningful insights for private elementary schools in Jakarta that are striving to cultivate environmentally responsible behavior among their educators. The strong relationship identified between Green Human Resource Management (GHRM), Green Knowledge Sharing (GKS), and Green Employee Behavior (GEB) highlights the importance of developing a more systematic and sustainability-oriented human resource management framework within schools. This commitment can begin at the recruitment stage by incorporating environmental criteria into job qualifications, such as prior involvement in sustainability initiatives or environmental activities. Environmental values should then be clearly communicated during the onboarding process to ensure that new educators understand the school's commitment from the outset.

Schools can further strengthen this culture by organizing regular in-house training programs focused on environmentally friendly practices that align with the institution's values, ideally integrating these programs into the annual academic calendar. Providing opportunities for educators to participate in external workshops, seminars, or environmental communities can also broaden their perspectives and enrich their knowledge.

In addition, conducting periodic evaluations of educators' environmental performance can reinforce accountability. Recognition systems, whether through financial incentives, symbolic awards, or career advancement opportunities, can motivate educators who actively demonstrate pro-environmental initiatives. Finally, these efforts should be supported by adequate facilities and resources to ensure that environmental programs can be implemented effectively and sustainably within the school environment.

Regarding to Green Transformational Leadership (GTL) that led by school principals, need to understand that their leadership influence is not always exercised through direct commands. More often, it works by nurturing educators' awareness of the environmental values / Employee Environmental Awareness (EEA), they embody in the classroom and reflect in the school's daily culture. In this sense, leadership becomes a matter of inspiration and example rather than instruction alone. To achieve this, principals are encouraged to adopt more creative and up-to-date approaches in motivating their staff. Simple yet meaningful efforts, such as placing visually engaging posters or banners with clear and relatable messages about environmental responsibility in strategic areas of the school can serve as constant reminders of shared commitments.

In addition, environmental themes can be integrated into existing school habituation programs. For instance, morning routines before teaching and learning activities, English Day, or literacy programs can incorporate topics related to a green lifestyle. Healthy eating initiatives can also be strengthened by requiring the use of reusable, eco-friendly food and drink containers to reduce single-use waste. Furthermore, school policies should extend to canteen management. Vendors can be required to avoid packaging materials that are harmful to human health and the environment, while also maintaining cleanliness and comfort in the canteen area. Through these consistent and practical efforts, principals can foster a school environment where environmental awareness becomes a lived value rather than merely a written policy.

Schools can also appoint selected teachers to take part in lifelong learning communities or knowledge-sharing platforms. Another meaningful strategy is to position each institution as a key hub within a broader environmental commitment network, collaborating with other elementary schools. This approach helps sustain ongoing dialogue, encourages shared learning experiences, and promotes collective action centered on sustainability.

In the context of GKS, Schools can also appoint selected teachers to take part in lifelong learning communities or

knowledge-sharing platforms. Another meaningful strategy is to position each institution as a key hub within a broader environmental commitment network, collaborating with other elementary schools. This approach helps sustain ongoing dialogue, encourages shared learning experiences, and promotes collective action centered on sustainability. When these initiatives are consistently implemented, they can foster a more collaborative atmosphere and shape a school environment that is open and adaptable to green programs. In the long run, such a culture ensures that sustainability is not simply promoted through formal policies or leadership directives, but is truly internalized by the school community. Environmental values gradually become embedded in daily interactions among educators—within individual schools and in partnerships between schools—allowing a genuine and lasting commitment to sustainability to develop naturally.

Essentially, the results of this study encourage schools to consciously work towards an organizational culture in which sustainability values are consistently supported by well-designed systems and strong leadership. Environmentally conscious behavior among teachers cannot develop optimally if these values are only reflected in an annual program or as a symbolic activity. Sustainability should be integrated into daily practices and anchored in the school's long-term ambitions.

Limitations

This study acknowledges several limitations that should be considered to avoid overgeneralizing the findings. Since the research focused solely on teachers from private elementary schools in Jakarta, the results may not be directly transferable to public schools or to institutions located in other regions with different sociocultural contexts. Each school operates within its own unique environment, shaped by variations in organizational culture, foundation policies, leadership dynamics, and available facilities. As a result, patterns of environmentally responsible behavior among teachers may differ across educational settings.

For this reason, future research is encouraged to broaden the scope by including different types of schools and expanding the geographical coverage. Examining a more diverse range of educational contexts would provide a deeper and more comprehensive understanding of how environmentally responsible behavior develops and is sustained among educators across varying institutional environments.

It is also important to acknowledge that relying on a quantitative, questionnaire-based approach means the findings are primarily drawn from participants' self-evaluations. When data depend on personal perceptions, there is always the possibility of social desirability bias. In other words, respondents may provide answers they believe are more appropriate or aligned with institutional expectations rather than fully reflecting their actual behavior. As a result, reported levels of green behavior may appear more favorable than what occurs in everyday practice.

Therefore, future research could be strengthened by incorporating qualitative methods, such as in-depth interviews or direct classroom and workplace observations. These methods would allow researchers to explore more deeply the psychological dynamics, motivations, and real-life actions of teachers in relation to environmental practices. Employing a mixed-methods design that combines quantitative and qualitative approaches may offer a more comprehensive understanding of the phenomenon and enhance the overall robustness and credibility of the findings.

Furthermore, this study did not specifically explore differences in workplace culture among schools. Each institution operates with its own set of values, policies, and leadership practices, which can determine educators' responses to environmental policies or initiatives that promote knowledge sharing about sustainability. Future research could examine school culture more closely to better understand how it strengthens or hinders environmentally responsible behavior among educators.

Considering these limitations, this study proposes several directions for further development. Future research is recommended to expand the scope of subjects and research contexts so that the proposed model can be tested in more diverse educational environments. The use of qualitative approaches and mixed-method designs is also highly recommended, as these methods are able to capture emotional, social, and cultural dynamics that are often not fully captured by quantitative data alone. Furthermore, future researchers can consider adding other variables, such as organizational commitment, school culture, staff involvement, and the adequacy of school facilities, to gain a deeper and more comprehensive understanding of how environmentally friendly behavior develops in elementary schools. Through this broader and more comprehensive approach, it is hoped that future research will not only enrich theoretical contributions but also produce findings that are more applicable and relevant to educational practice.

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