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Analysis of Strengthening Environmental Awareness through the Adiwiyata Program

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Abstract— Environmental degradation is a pressing global issue that demands systemic responses, including through formal education. This study investigates the implementation of the Adiwiyata Program at SDN Kalijaga Permai and its contribution to strengthening students' environmental awareness. A research gap exists in that previous studies have largely focused on administrative compliance and physical infrastructure of the Adiwiyata Program, while the internalization of environmental values and its direct impact on student behavior has received limited attention. This study addresses this gap by examining how habituation activities within the Adiwiyata Program shape actual student behavior. A qualitative case study approach was employed, with data collected through in-depth interviews with the school principal, Adiwiyata coordinator, and four teachers; participatory observations; and open-ended questionnaires distributed to 32 students. Data were analyzed using the Miles and Huberman model. The findings reveal that continuous habituation activities—encompassing waste management, cleanliness maintenance, greening programs, and teacher role

modeling—positively contribute to the development of students' environmental awareness. However, inconsistencies remain in water conservation practices and independent student initiative. These findings highlight the need for a more values-oriented approach within the Adiwiyata framework to ensure deeper internalization beyond routine compliance.

Keywords— *adiwiyata; environmental awareness; character development; elementary school; qualitative case study*

I. INTRODUCTION

Environmental degradation has emerged as one of the most critical global challenges of the twenty-first century. Human activities that disregard ecosystem sustainability continue to accelerate the deterioration of natural environments, threatening long-term ecological balance [1]. Addressing this issue requires not only policy interventions but also a fundamental shift in individual and collective environmental values—a shift that education is uniquely positioned to facilitate.

Elementary schools serve as a particularly strategic setting for this transformation. Students at this developmental stage are in the process of forming long-term habits and values, making early environmental education highly influential in shaping future behavioral patterns [2]. Environmental education, however, must extend beyond curriculum content to permeate school culture and daily practices.

The Indonesian government responded to this imperative by establishing the Adiwiyata Program—a national initiative designed to develop environmentally oriented schools. The program operates through four integrated components: the strengthening of school environmental policies, the integration of environmental education into learning, the promotion of participatory activities, and the management of environmentally friendly facilities [3].

Despite widespread implementation, existing research reveals a critical gap: studies have predominantly evaluated the administrative and physical dimensions of the Adiwiyata Program, with limited attention to how the program contributes to the genuine internalization of environmental values among students [4], [5]. While Nurhasan et al. [6] demonstrate that Adiwiyata schools show stronger environmental knowledge and attitudes than non-Adiwiyata schools, and Aziza et al. [7] identify key success factors including school leadership and institutional culture, neither addresses the specific behavioral mechanisms through which habituation activities translate into lasting environmental awareness at the elementary level.

This study addresses that gap by focusing on the implementation process and behavioral outcomes of the Adiwiyata Program at SDN Kalijaga Permai—a school that has actively implemented the program through waste management, greening, and cleanliness habituation activities. Despite these efforts, observable inconsistencies in student behavior, such as improper waste disposal and limited voluntary participation, suggest that program activities have not yet achieved full behavioral internalization. This study therefore aims to provide a comprehensive analysis of how the Adiwiyata Program is implemented at SDN Kalijaga Permai and the extent to which it strengthens students' environmental awareness.

II. METHOD

This study employed a qualitative approach using a case study design, selected for its suitability in capturing the depth and complexity of the Adiwiyata Program's implementation within a specific school context. The case study design allows

for a holistic examination of participants' lived experiences, institutional practices, and behavioral outcomes [8].

Participants were selected through purposive sampling to ensure that individuals with direct involvement in the Adiwiyata Program were included. The sample comprised the school principal (1 person), the Adiwiyata program coordinator (1 person), classroom and subject teachers actively involved in environmental habituation (4 persons), and students from grades 4 and 5 who had undergone at least one full academic year of program exposure (32 students). Parents of participating students were also consulted to obtain corroborating perspectives on environmental behavior at home.

Data were collected through three complementary instruments. First, in-depth semi-structured interviews were conducted with the principal, coordinator, and teachers to explore their perceptions of program implementation, challenges, and observed student behavioral changes. Second, participatory observations were carried out across multiple school sessions over four weeks, focusing on eight indicators of environmental awareness: waste sorting, cleanliness maintenance, participation in greening activities, water conservation, electricity conservation, responsible use of facilities, teacher role modeling, and peer environmental influence. Third, open-ended questionnaires were distributed to 32 students to capture their self-reported environmental habits and program experiences.

Data analysis followed the Miles and Huberman interactive model, involving three concurrent processes: data reduction (systematic coding and categorization of raw data), thematic data display (organizing coded data into conceptual clusters), and conclusion drawing (interpreting patterns and verifying findings against multiple data sources). Thematic coding was applied inductively, with emergent categories refined through iterative review. Data credibility was established through source triangulation (cross-checking data from principals, teachers, and students) and method triangulation (comparing interview, observation, and questionnaire findings), in accordance with Lincoln and Guba's criteria for trustworthiness.

III. RESULTS AND DISCUSSION

The findings are presented across three data sources—interviews, observations, and questionnaires—followed by an integrative discussion that situates the results within the existing literature.

A. Interview Findings

Semi-structured interviews were conducted with six participants: the school principal, the Adiwiyata coordinator, and four teachers. Table 1 presents a representative summary of key responses.

TABLE I. SUMMARY OF INTERVIEW FINDINGS ON ADIWIYATA PROGRAM IMPLEMENTATION

No	Question Focus	Representative Response	Interpretation
1	How is students' cleanliness habituation managed?	"Students are assigned daily cleaning rotations and reminded every morning during flag ceremony." (Principal)	Structured habituation supports routine environmental behavior, consistent with findings by Anggraeni [9].
2	Do students demonstrate proper waste sorting?	"Most students can sort waste, but consistency drops outside supervised settings." (Adiwiyata Coordinator)	Behavioral internalization requires sustained reinforcement beyond classroom monitoring [6].
3	What is the role of teachers in environmental modeling?	"Teachers model behavior by using refillable bottles, turning off lights, and separating their own waste." (Teacher 2)	Teacher role modeling is a key driver of student environmental behavior, as confirmed by Siskayanti & Chastanti [12].
4	What challenges hinder program effectiveness?	"Large class sizes and limited monitoring staff make it difficult to ensure all students follow environmental protocols consistently." (Teacher 4)	Structural constraints affect program consistency, highlighting the need for systemic support [7].

The interview data reveal that the Adiwiyata Program at SDN Kalijaga Permai is perceived as meaningful by school staff and has yielded observable changes in student environmental behavior. Importantly, teachers function not merely as program administrators but as active role models whose daily actions reinforce the values the program seeks to instill. This aligns with findings by Aziza et al. [7], who identify teacher consistency and school leadership as the primary determinants of Adiwiyata program effectiveness. However, the recurring concern about inconsistent behavior outside supervised settings points to a persistent gap between externally regulated compliance and genuine internalized environmental values—a distinction that is critical to understanding the program's long-term impact.

B. Observation Findings

Participatory observations were conducted across eight environmental awareness indicators over a four-week period. Table 2 presents the aggregated results.

TABLE II. OBSERVATION RESULTS OF STUDENTS' ENVIRONMENTAL AWARENESS INDICATORS

No	Indicator	Result	Consistency Level
1	Students maintain school cleanliness	Observed	High
2	Students sort waste into designated bins	Observed	Moderate
3	Active participation in scheduled cleaning activities	Observed	High
4	Water conservation practices	Partially observed	Low
5	Electricity conservation (lights/fans off when not in use)	Observed	Moderate
6	Responsible maintenance of school facilities	Observed	Moderate
7	Teacher role modeling of environmental behavior	Observed	High
8	Peer-to-peer environmental influence	Partially observed	Low–Moderate

Observational data indicate that the majority of environmental awareness indicators have been institutionalized at SDN Kalijaga Permai, with cleanliness maintenance, participation in cleaning activities, and teacher role modeling consistently observed at high levels. These findings support the conclusion that structured habituation through the Adiwiyata Program does produce measurable behavioral outcomes. However, two indicators—water conservation and peer environmental influence—were observed at notably lower levels of consistency, suggesting that certain environmental values remain under-internalized.

The low consistency in water conservation is particularly noteworthy. Unlike waste sorting, which is visually reinforced by the presence of labeled bins, water conservation requires a higher degree of autonomous environmental awareness—an awareness that is not yet sufficiently cultivated through existing program activities. This finding echoes Toharoh & Khaq [15], who noted that Adiwiyata programs tend to produce stronger outcomes in visible, habitual behaviors than in resource-conservation practices that require self-regulation.

C. Questionnaire Findings

Open-ended questionnaires were distributed to 32 students from grades 4 and 5. Table 3 summarizes the thematically analyzed responses across key environmental awareness dimensions.

TABLE III. THEMATIC SUMMARY OF QUESTIONNAIRE RESPONSES ON ENVIRONMENTAL AWARENESS (n=32)

No	Assessed Aspect	Dominant Student Response	Category
1	Cleanliness habits	Most students report maintaining personal and classroom cleanliness daily; 87.5% cite teacher reminders as the main motivator	Good
2	Waste sorting behavior	62.5% report sorting waste regularly; inconsistency noted when bins are not nearby or clearly labeled	Fair-Good
3	Awareness of water conservation	Only 40.6% report actively conserving water; most are unaware of specific conservation practices	Needs Improvement
4	Participation in greening activities	78.1% participate in scheduled greening activities; initiative outside structured sessions is limited	Good
5	Understanding of Adiwiyata purpose	71.9% can articulate the purpose of the program; understanding of broader environmental implications is partial	Fair-Good
6	Role of teachers in shaping behavior	93.7% acknowledge teacher modeling as influential in their environmental behavior	Good

Questionnaire responses corroborate both the interview and observational findings, while adding important nuance through students' self-reported perspectives. The high rate of acknowledgment of teacher modeling (93.7%) reinforces the observation data and underscores the centrality of teacher behavior in the program's outcomes. The moderate performance on waste sorting and the notably low awareness of water conservation are consistent with observational findings, confirming that these represent genuine programmatic challenges rather than isolated incidents.

Particularly significant is the finding that students' participation in environmental activities is primarily driven by external structures—scheduled sessions, teacher reminders, and bin placement—rather than by intrinsic motivation. This pattern, evident across all three data sources, suggests that the Adiwiyata Program at SDN Kalijaga Permai has successfully established behavioral compliance but has not yet achieved the deeper level of value internalization that is the program's ultimate goal. This distinction is theoretically important: Fahlevia et al. [5] differentiate between environmental compliance (behavior driven by external rules) and environmental awareness (behavior driven by internalized

values), arguing that sustainable environmental culture requires the latter.

Taken together, the triangulated data confirm that the Adiwiyata Program contributes positively and meaningfully to students' environmental awareness at SDN Kalijaga Permai. Teacher role modeling, structured habituation, and participatory activities are the program's strongest levers. At the same time, the findings identify a clear developmental challenge: bridging the gap between habitual compliance and genuine environmental consciousness, particularly in areas requiring self-directed resource conservation. This finding extends the existing literature by demonstrating that program effectiveness is not uniform across environmental behavior types and that more targeted interventions are needed for behaviors requiring autonomous self-regulation.

IV. CONCLUSIONS

This study demonstrates that the Adiwiyata Program at SDN Kalijaga Permai makes a meaningful and measurable contribution to the development of students' environmental awareness. Structured habituation activities—particularly waste management, cleanliness routines, greening programs, and consistent teacher role modeling—have produced observable positive behavioral changes. These findings affirm the program's potential as a vehicle for environmental character development at the elementary level.

However, the study also identifies a critical implication for program design: current implementation succeeds in establishing behavioral compliance but has not yet achieved full internalization of environmental values, particularly for practices requiring autonomous self-regulation, such as water conservation. This suggests that Adiwiyata implementation needs to shift from a compliance-centered model toward a values-centered approach that cultivates intrinsic environmental motivation through reflective learning, student-led initiatives, and stronger community engagement.

This study is subject to limitations. Being a single-site case study, the findings may not be directly generalizable to other school contexts. Additionally, the cross-sectional data collection does not capture long-term behavioral trajectories. Future research should employ longitudinal designs and comparative multi-site studies to assess the sustained impact of the Adiwiyata Program on environmental values internalization. Experimental or quasi-experimental studies testing specific program components—such as reflective environmental journals or student-led conservation projects—would contribute valuable evidence for program improvement.

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