

Reconstructing Eco-Theology in Islamic Education: Transforming Ecological Values into Students' Ecological Habitus

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Abstract: This study aims to describe, analyze, and reconstruct a transformative model of eco-theology in Islamic Religious Education (PAI) learning towards the formation of students' ecological habitus at Nurul Jadid Islamic Junior High School, Paiton, Probolinggo. Employing a qualitative approach with a case study design, this research was conducted from April to June 2026 at Nurul Jadid Islamic Boarding School Paiton. Data were collected through participant observation, in-depth interviews with 9 informants (head of madrasah, vice principal for curriculum, PAI teachers, educational staff, and students) selected via snowball sampling until data saturation, and documentation of institutional policies, syllabi, lesson plans, and environmental programs. Data analysis used the Miles, Huberman, and Saldana interactive model (data condensation, data display, conclusion drawing/verification) with source and method triangulation, member check, and prolonged engagement to ensure trustworthiness. Findings reveal that transformation occurs through three interrelated pathways that reconstruct eco-theology into pedagogical praxis: (1) Curricular Integration Pathway – ecological values (khalifah fi al-ardh, amanah, mizan, prohibition of fasad, hubb al-bi'ah) are integrated implicitly through PAI themes (thaharah, shodaqoh, amanah, social responsibility) but remain fragmented, contextual, and dependent on teacher initiative, lacking explicit formulation in syllabus and lesson plans; (2) Pedagogical-Experiential Pathway – internalization through contextual material and project-based ecological learning (tree planting, waste management, green learning space) as experiential learning that bridges normative doctrine with ecological praxis, yet remains partial and incidental; (3) Institutional-Cultural Pathway – Green Madrasah program and ecological posters as hidden curriculum and cultural arena (Bourdieu) forming ecological habitus through habituation, exemplary (uswah hasanah), and visual culture.

INTRODUCTION

Ecological issues have increasingly dominated global discourse, along with increasing environmental damage and increasingly evident climate change (Dedi Eko, Riyadi HS, 2025; Qian Tang, 2017; Sterling, 2024). The low ecological habitus of students in educational institutions under pesantren is a crucial issue in strengthening character education and environmental sustainability (Akhir & Siagian, 2025). Although pesantren has a strong theological foundation related to environmental ethics through the concept of khalifah fil ardh and amanah, these values have not been fully internalized into consistent ecological behavioral dispositions (Pudjiastuti, Iriansyah, & Yuliwati, 2021). Environmental education in pesantren still tends to be normative and oriented towards compliance with rules, so that students' ecological awareness is situational and dependent on institutional supervision, not formed as a settled habitus (Prianto, Sujono, & Dwiyanto, 2019).

The urgency is evident in daily practices, such as littering in school and dormitory environments, low concern for cleanliness of public facilities, and uncontrolled use of single-use plastics in pesantren canteens (Basri, 2022). In many cases, cleanliness activities are carried out as formalities without deep ecological value understanding, so environmentally friendly behavior does not continue outside teacher control (Nurkhin et al., 2023). This shows failure of religious-ecological value transformation into sustainable praxis, affirming importance of empirical study to formulate effective contextual Islamic ecological education model in pesantren.

Students still lack awareness of importance of protecting environment because religious education has not sufficiently emphasized environmental issues (Muntaha, 2021). Understanding of ecology in Islamic religious education is still low, as evidenced by many studies. Islamic religious education curriculum needs to be changed to instill environmental values in lessons, so students can understand and implement religious teachings in protecting and preserving nature (Pratama & Latifa, 2024; Olfah, 2024).

This research focuses on Nurul Jadid Islamic Junior High School, Paiton, Probolinggo as part of Pesantren Nurul Jadid educational ecosystem. This madrasah is under Pesantren Nurul Jadid Paiton, Probolinggo, East Java, established 1966, with vision of strengthening religious character and social concern, including concern for living environment. Institutionally, madrasah has implemented a number of ecological policies and programs, such as provision of segregated waste bins, cleanliness appeals based on Islamic values, and habituation to maintain cleanliness of classrooms and madrasah environment (Profile Madrasah, 2025).

However, reality shows gap between policy and ecological praxis. In daily activities, students still dispose waste not according to category, leave food remnants in class and madrasah yard, and lack care for public facilities after learning activities. This phenomenon indicates that students' ecological awareness has not been fully internalized as permanent behavioral disposition (habitus), but remains situational and dependent on external control of teachers or administrators.

Case frequently encountered is behavior of some students who, despite having received socialization about cleanliness and ecological responsibility, still throw plastic food packaging into ditches around madrasah or slip it under desks after break time. In class picket activities, tendency found that students carry out cleaning tasks as formality without collective awareness, so waste is only moved, not managed properly. When there is no direct supervision from teacher, ecological discipline declines significantly. These cases show that formation of students' ecological habitus at MTs. Nurul Jadid still faces serious challenges, especially in transforming ecological values based on Islamic teachings into sustainable practices in daily life.

From Muhaimin's contemporary Islamic education thought perspective (2012), MTs. Nurul Jadid represents combination of Tradisional Mazhab (sorogan, bandongan, Kitab Kuning) and Modernis (national curriculum, technology), transforming towards Neo-Modernis (integrative, wasathiyah, transformative). This condition makes MTs. Nurul Jadid authentic laboratory for studying reconstruction of eco-theology in PAI (Yin, 2018; Creswell & Poth, 2018).

Global ecological crisis demands theological response from Islamic education. Islam as rahmatan lil 'alamin has moral responsibility to be solution, not part of problem. Concept of khalifah fi al-ardh, amanah, and prohibition of fasad must be reconstructed into operational eco-theology in PAI learning (Nasr, 1968; Zarkasyi, 2020; Borrong, 2020; Ayyatullah, 2023). Without reconstruction, PAI will lose relevance in answering contemporary challenges.

Preliminary study findings show environmental education in pesantren tends normative and compliance-oriented, so ecological awareness is situational (Prianto et al., 2019; Muntaha, 2021). PAI learning often oriented to knowledge transmission, not transformation. Transformation of internalization strategy towards contextual and transformative approach able to integrate religious values with ecological realities faced by students daily in pesantren environment is needed (Sterling, 2024; Suyadi et al., 2020). Urgency strengthened with launch of Kurikulum Berbasis Cinta (KBC) by Ministry of Religious Affairs (2025) placing hubb al-bi'ah as core of character formation. Without clear pedagogical model, KBC will stop at discourse level, not praxis.

Previous studies show PAI consistently positioned as means for moral and spiritual formation (Mukhlis et al., 2023; Dalimunthe, 2023), but few examine operational integration of ecological values and its impact on habitus formation. Study by Sulwana & Harahap (2025) emphasizes importance of environmental values in faith-based education but not specifically internalization strategy in PAI nor impact on habitus. Most literature remains normative-conceptual without examining transformative pedagogy bridging religious values with sustainable ecological practice (Olfah, 2024; Habibah et al., 2025). Some studies focus on ecotheology mainstreaming (Rifa & Yusuf, 2025; Sabtina & Mahariah, 2025) and ecosophy in agricultural pesantren (Rini et al., 2022), but have not constructed integrative model linking transformation of PAI learning

strategy with habitus formation. From Bourdieu's habitus perspective, dispositional formation requires consistent internalization through structured and repeated pedagogical practices in educational social arena (Bourdieu, 1990; Al Hamid, 2024). This gap is filled by this research.

MTs. Nurul Jadid as part of Pesantren Nurul Jadid has strategic role as moral and ecological agent. If ecological habitus not formed in madrasah, pesantren will fail to produce khalifah generation caring for environment. On other hand, success of this model can be replicated in 28,000 pesantren in Indonesia (Kemenag data, 2024) as real contribution of Islamic education in achieving Sustainable Development Goals (SDGs) especially SDG 13 Climate Action and SDG 15 Life on Land.

Novelty of this research lies in: (1) Reconstruction of Eco-Theology as new paradigm in PAI, not just value internalization; (2) Integrative three-pathway model (curricular, pedagogical-experiential, institutional-cultural) towards ecological habitus; (3) Integration of Bourdieu (habitus), Mezirow (transformative learning), Lickona (character education), and Nasr (eco-theology) in one Islamic pedagogical framework; (4) Empirical contribution to ESD in pesantren context.

RESEARCH METHOD

This study employed qualitative approach with case study design to understand in depth transformation process of ecological values internalization in PAI learning and its implication for students' ecological habitus formation (Yin, 2018; Creswell & Poth, 2018; Moleong, 2016; Sugiyono, 2019). Case study chosen to comprehensively explore learning strategies, internalization mechanisms, and habitus formation in specific institutional and cultural context of pesantren-based madrasah.

Research location was Nurul Jadid Islamic Junior High School, Paiton, Probolinggo as part of Pesantren Nurul Jadid ecosystem, conducted from April to July 2026, allowing adequate time to observe PAI learning, ecological habituation, and students' behavioral dynamics.

Research subjects included head of madrasah, vice principal for curriculum, PAI teachers, educational staff, and students. Informant selection used snowball sampling, starting from key informants with strategic roles in PAI formulation and ecological policies, developing gradually based on previous informant recommendations until data saturation (Moleong, 2016). Nine informants involved with criteria: understanding pesantren ecological culture and living at least 2 years in pesantren environment.

Table 1. Informant Codes and Roles

CODE	ROLE	DESCRIPTION
INF-01	Head of Madrasah	Policy maker Green Madrasah
INF-02	Vice Principal Curriculum	Curriculum integration designer
INF-03	PAI Teacher 1	Fiqh and Akidah teacher
INF-04	PAI Teacher 2	Qur'an Hadith teacher
INF-05	PAI Teacher 3	Akhlak teacher

INF-06	Educational Staff	Facilities and cleanliness coordinator
INF-07	Student SMP	Grade 8, 2 years in pesantren
INF-08	Student MTs	Grade 9, 3 years
INF-09	Student MA	Grade 10, 2.5 years

Data collection techniques were: (1) Participant observation to directly observe PAI learning practices, ecological habituation activities, school culture, and teacher-student interaction in ecological habitus formation context; (2) In-depth interviews conducted exploratorily to dig understanding, experiences, and strategies of ecological values internalization in PAI learning; (3) Documentation study to examine institutional documents such as vision-mission, PAI learning devices (syllabus, lesson plans), environmental programs, and students' attitude evaluation records.

Data analysis used Miles, Huberman, and Saldana (2014) interactive model conducted simultaneously from data collection to conclusion: data condensation, data display, and conclusion drawing/verification. Data condensation by sorting and focusing relevant data. Display in descriptive-thematic form to identify patterns, relations, and meanings. Validity ensured through source and method triangulation, member check, and prolonged engagement, achieving credibility, transferability, dependability, and confirmability (Moleong, 2016).

Researchers as key instrument, directly involved in field, maintaining rapport while keeping academic distance, embodying principle of researcher as instrument in qualitative research.

RESULTS AND DISCUSSION

In this section, the findings and discussion derived from participant observation, in-depth interviews, and document study on the Transformation of the Internalization Strategy of Ecological Values in Islamic Religious Education Learning Towards the Formation of Students' Ecological Habitus are elaborated. The findings are subsequently analyzed and interpreted through relevant theoretical lenses, including Bourdieu's habitus theory, Lickona's character education, Mezirow's transformative learning, and Nasr's eco-theology. The findings and discussion are as follows

Integration of Ecological Values in PAI Curriculum

Findings indicate that integration of ecological values in PAI curriculum at MTs. Nurul Jadid Paiton is positioned as moral-spiritual responsibility rooted in khalifah fil ardh and Islamic environmental ethics (Rini et al., 2022; Muzakki et al., 2024). Conceptually, integration is directed to form students' ecological habitus, pattern of thought and habit encouraging environmentally friendly behavior as manifestation of faith and akhlaq. However, field findings show integration remains implicit and not systematically formulated in PAI curriculum structure.

PAI learning practices demonstrate strong pedagogical awareness of religion-environment linkage, viewing nature preservation as inherent part of worship. Yet normative awareness has not been systematically

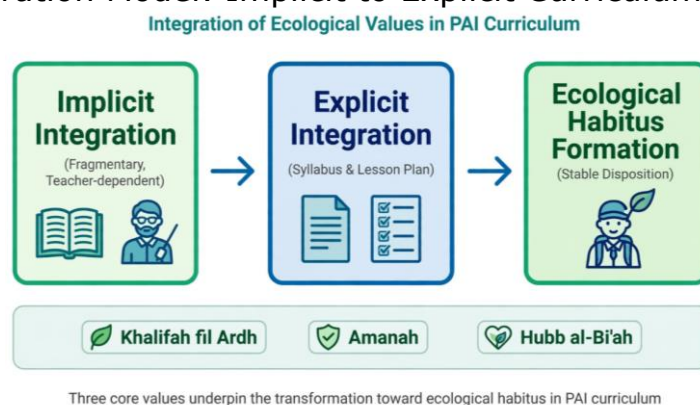
articulated in learning planning. Integration still occurs contextually depending on individual teacher initiative without support of explicit curriculum framework. Consequently, implementation is fragmentary and not institutionally institutionalized. Material such as sedekah, amanah, and social responsibility having ecological dimensions has not been consistently constructed as ecological consciousness, not explicitly formulated in syllabus and lesson plans, making it unsustainable and difficult to evaluate.

Analytically, from curriculum theory perspective (Tyler, 1949; Ornstein & Hunkins, 2018), this condition indicates dissonance between value objectives and pedagogical design. Learning experiences are not institutionalized as sustainable experiences but appear sporadically. From Bourdieu's habitus perspective (Bourdieu, 1990; Al Hamid, 2024), dispositional formation requires consistent internalization through structured and repeated pedagogical practices. When ecological values are not explicitly integrated in syllabus and lesson plans, potentials such as sedekah, amanah, responsibility do not transform into stable ecological habitus (Maghfiroh et al., 2024).

This confirms that internalization strategy has not yet reached transformative learning level as proposed by Mezirow (1991) and Sterling (2024), which requires shifting frame of reference sustainably. Therefore, strengthening ecological habitus requires explicit curriculum integration, reflective pedagogy, and systematic institutional habituation, aligning with Kurikulum Berbasis Cinta emphasizing hubb al-bi'ah (Kementerian Agama RI, 2025; RI, 2025).

Interpretatively, this reflects transition from moral knowing to moral feeling to moral action (Lickona, 1991). Current stage remains at moral knowing without systematic habituation, so ecological awareness remains cognitive, not yet affective and conative. Need for explicit formulation in syllabus with indicators of hubb al-bi'ah.

Figure 1. Integration Model: Implicit to Explicit Curriculum Transformation



Implicit to Explicit Curriculum Transformation – Integration of Ecological Values in PAI Curriculum showing transformation from Implicit Integration (fragmentary, teacher-dependent) to Explicit Integration (Syllabus & Lesson Plan) towards Ecological Habitus Formation, underpinned by Khalifah fil Ardh, Amanah, and Hubb al-Bi'ah.

Internalization of Ecological Values in PAI Learning Process

Internalization of ecological values in PAI learning at MTs. Nurul Jadid is positioned as internalization of environmental ethics rooted in akhlaq and spiritual responsibility, where ecological care is manifestation of human relation with Allah's creation through principles of sustainability, balance, and environmental maintenance ethics (Widianto et al., 2023; Hishnuddin, 2025). Institutional awareness links religious teaching with ecological issues so environmental education does not stand apart from religious education.

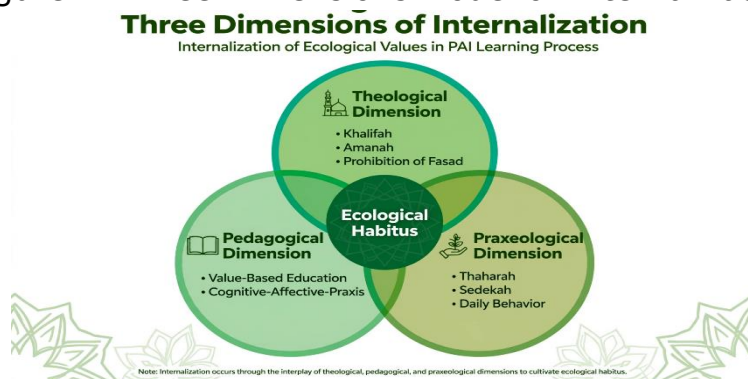
Integration is articulated systematically in some contexts, particularly themes related to thaharah (cleanliness) and daily behavior, supported by coherent theological-ecological framework. Fundamental Islamic concepts such as khalifah fi al-ardh, prohibition of fasad, and principle of environmental maintenance have been comprehensively integrated into core PAI material (Ayyatullah, 2023; Borrong, 2020). This indicates integrative internalization developing as pedagogical strategy oriented to habitus formation.

However, findings also reveal that institutionalization is not yet fully embedded in curriculum structure. Ecological values inserted contextually without coherent theological-ecological framework cause partial internalization. From value-based education perspective (Lickona, 1991; Lutfauziah et al., 2023), meaningful learning occurs when moral and religious values are contextualized in students' life reality. Pedagogically, this reflects model connecting cognitive, affective, and praxis dimensions (Muhammad & Nugraheni, 2022). Yet absence of consistent integration limits internalization becoming permanent action scheme, so ecological awareness tends normative and situational (Ali & Bahtera, 2024; Nisa & Nugrahaeni, 2024).

Therefore, transformation of PAI learning strategy integrating theological, pedagogical, and praxis ecological dimensions simultaneously becomes fundamental prerequisite to build sustainable ecological habitus in pesantren-based madrasah environment. This aligns with Nasr's eco-theology (Nasr, 1968; Zarkasyi, 2020) and Islamic eco-theology internalization through school culture (Sabtina & Mahariah, 2025).

Interpretatively, integration of ecological values in PAI material represents early manifestation of transformative curriculum paradigm aligning with Kurikulum Berbasis Cinta, particularly hubb al-bi'ah (love for environment) (Kementerian Agama RI, 2025). Experiential learning through thaharah and sedekah as ecological acts bridges normative doctrine with ecological praxis.

Figure 2. Three Dimensions Model of Internalization



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Project-Based Ecological Learning: Experiential Pathway to Ecological Habitus

Implementation of project-based ecological PAI learning at MTs. Nurul Jadid shows pedagogical effort to transform Islamic values into contextual ecological praxis. Integration of activities such as tree planting, waste management, and green learning space development represents experiential learning (Kolb, 1984; Sterling, 2024) positioning students as moral and ecological agents. Findings indicate PAI learning is no longer positioned merely as normative value transmission but as medium for ecological awareness formation through real actions aligned with khalifah fil ardh concept.

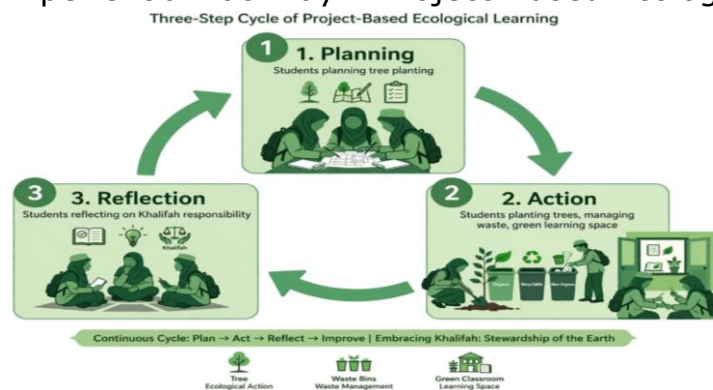
Project-based learning functions as internalization vehicle strengthening relation between religious teaching and environmental responsibility. In Islamic education perspective, this practice represents actualization of khalifah fi al-ardh and amanah, where environmental responsibility is understood as integral part of worship and akhlaq (Kementerian Agama RI, 2025). However, implementation remains partial and not systematically institutionalized in PAI curriculum. Ecological practices tend to be limited to incidental activities involving certain student groups, not forming consistent habituation pattern. Absence of long-term implementation framework and integrated pedagogical standards causes strategy not fully contributing to sustainable habitus formation.

This is evident in Green Madrasah program through tree planting. Initiative designed to build green madrasah environment while instilling ecological awareness through direct involvement. Tree planting positioned not only as aesthetic effort but as pedagogical medium to internalize Islamic teaching about human responsibility as khalifah (Muzakki et al., 2024; Hishnuddin, 2025). Implementation shows strong institutional commitment, marked by support of madrasah leadership and educators making tree planting part of religious ecological education, involving students from land preparation to plant maintenance with fruit trees, protective trees, and ornamental plants.

Theoretically, this aligns with holistic-integrative Islamic education paradigm oriented to formation of insan kamil, balanced between spiritual and socio-ecological piety (Nasr, 1968; Rini et al., 2022). Tree planting functions as effective hidden curriculum in instilling Islamic ecological values contextually through direct learning experience (experiential learning) encouraging deep internalization (Kementerian Agama RI, 2025). Findings are relevant with Kurikulum Berbasis Cinta emphasizing hubb al-bi'ah (love for environment) as integral expression of faith and noble akhlaq. Active involvement of students in all stages reflects transformative education approach where hubb al-bi'ah value is realized in sustainable real action.

Interpretatively, three-step cycle Planning → Action → Reflection aligns with Kolb's experiential learning cycle and Mezirow's transformative learning, where concrete experience of planting leads to reflective observation on khalifah responsibility, abstract conceptualization of amanah, and active experimentation in maintaining environment.

Figure 3. Experiential Pathway – Project-Based Ecological Learning



Green Madrasah Program and Ecological Posters: Institutional-Cultural Pathway

Green Madrasah program through tree planting at MTs. Nurul Jadid represents institutional strategy in integrating ecological values into Islamic education practice. Initiative designed to build green madrasah environment while instilling ecological awareness through direct involvement in environmental preservation activities. Tree planting positioned not only as effort for aesthetics of school environment but also as pedagogical medium to internalize Islamic teaching about human responsibility as khalifah fil ardh in maintaining Allah's creation.

Implementation shows strong institutional commitment, marked by support of madrasah leadership and educators in making tree planting part of religious ecological education. Activity understood as form of social worship praxis linking spiritual dimension with ecological responsibility. Tree planting perceived as effective means to build awareness that preserving environment is integral part of Islamic akhlaq teaching.

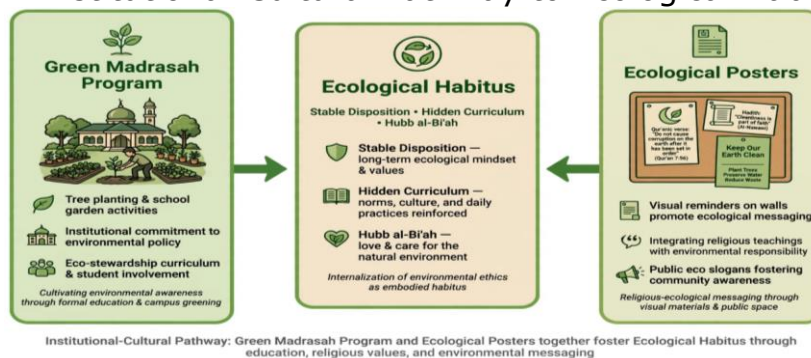
At implementative level, tree planting activity involves students in various stages, from land preparation to plant maintenance, with plant types including fruit trees, protective trees, and ornamental plants. Thus, ecological activity not viewed as additional activity but as manifestation of religious values in daily life in madrasah environment.

Program Green Madrasah at MTs. Nurul Jadid as form of holistic-integrative Islamic education actualization, where cognitive, affective, and psychomotor dimensions of learners are synergized through ecological praxis. Theoretically, program aligns with Islamic education paradigm oriented to formation of insan kamil, perfect human having balance between spiritual piety and socio-ecological piety (Hishnuddin, 2025). Concept of khalifah fi al-ardh becomes strong normative foundation, because placing human as moral subject responsible for maintaining natural sustainability as divine trust (Muzakki, Aisyah, & Munif, 2024).

In curriculum perspective, tree planting activity functions as effective hidden curriculum in instilling Islamic ecological values contextually and meaningfully, not merely through normative knowledge transmission, but through direct learning experience (experiential learning) encouraging deep internalization (Kementerian Agama RI, 2025).

Furthermore, research findings relevant with Kurikulum Berbasis Cinta framework developed by Ministry of Religious Affairs, particularly dimension *hubb al-bi'ah* (love for environment) (Kementerian Agama RI, 2025). Curriculum emphasizes that love for environment is integral part of expression of faith and noble *akhlaq*. Active involvement of students in all stages of planting and plant maintenance reflects transformative education approach, where *hubb al-bi'ah* value does not stop at discourse level, but realized in sustainable real actions. Institutional support and role of educators in program strengthen function of madrasah as moral agent growing religious ecological awareness.

Figure 4. Institutional-Cultural Pathway to Ecological Habitus



Green Madrasah Program and Ecological Posters as hidden curriculum and cultural arena fostering stable disposition, hidden curriculum, and *hubb al-bi'ah*.

Thus, tree planting activity not only contributes to physical greening of madrasah environment, but also becomes medium for formation of Islamic ecological character, affirming that maintaining natural sustainability is inseparable part of social worship and *akhlaq* praxis in daily life.

Creation and installation of ecological posters in madrasah and classroom environment represents visual-cultural pathway. Posters containing Qur'anic verses about environmental preservation, hadith about cleanliness, and ecological slogans function as constant reminders and symbolic arena (Bourdieu, 1990) reinforcing ecological habitus. Observation shows posters become effective medium to transform cognitive knowledge into affective commitment, especially when combined with teacher exemplary (*uswah hasanah*) and reflective discussion.

Interpretatively, three pathways—curricular, pedagogical-experiential, and institutional-cultural—form integrative model of eco-theology reconstruction. When values are integrated explicitly in curriculum, articulated contextually in material, actualized through projects and Green Madrasah, and reinforced through visual culture and habituation, then ecological awareness transforms from situational compliance to stable disposition (*habitus*). This model answers not only whether PAI works but how and why transformation occurs, bridging theological, pedagogical, and sociological dimensions, providing evidence-based foundation for sustainable development education in Islamic education

Table 2. Transformation Matrix of Three Pathways

PATHWAY	CURRENT CONDITION (IMPLICIT)	TRANSFORMATI ON NEEDED (EXPLICIT)	HABITUS IMPACT
Curricular	Fragmentary, teacher- dependent, not in syllabus	Explicit in syllabus & RPP with hubb al-bi'ah indicators, integrative module	From cognitive to stable disposition
Pedagogical- experiential	Contextual, incidental project, limited groups	Systematic project-based, experiential learning cycle, Kolb & Mezirow	From situational to sustainable praxis
Institutional- cultural	Partial Green Madrasah, as poster decoration	Systemic Madrasah, Green curriculum, hidden culture, visual hasanah uswah	From compliance to internalized habitus

CONCLUSION

This study concludes that transformation of ecological values internalization strategy in PAI learning towards formation of students' ecological habitus at MTs. Nurul Jadid Paiton occurs through three interrelated pathways, yet has not reached fully transformative stage. Curricular integration remains implicit and fragmented, dependent on teacher initiative, not yet explicitly formulated in syllabus and lesson plans. Pedagogical internalization through contextual materials and project-based ecological learning has initiated experiential learning pathway bridging normative doctrine with ecological praxis, but remains partial and incidental. Institutional-cultural pathway through Green Madrasah program and ecological posters has become hidden curriculum and cultural arena potential to form ecological habitus, yet requires systematic long-term framework.

Using Bourdieu's habitus theory, Lickona's character education, Mezirow's transformative learning, and Nasr's eco-theology, formation of ecological habitus requires consistent, structured, and repeated practices in social arena. Therefore, reconstructing eco-theology in Islamic education requires integration of explicit curriculum, reflective pedagogy, and systematic institutional habituation aligned with Kurikulum Berbasis Cinta (hubb al-bi'ah).

RECOMMENDATION

This study recommends: (1) Explicit formulation of ecological values in PAI syllabus and lesson plans with clear indicators of hubb al-bi'ah; (2) Development of integrative eco-theology module based on Qur'an and Hadith about environment (fiqh al-bi'ah); (3) Institutionalization of Green Madrasah as systemic program with long-term evaluation and standard pedagogical integration; (4) Strengthening teacher capacity in transformative eco-pedagogy through training on experiential learning and habitus formation; (5) Integration of ecological habitus assessment in

students' character evaluation using authentic assessment (project, portfolio, observation of ecological behavior); (6) Replication of model in other pesantren-based madrasah with contextual adaptation.

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