

Internalization of Students' Ecological Intelligence Through Contextual Teaching and Learning In Akidah Akhlak Subjects at Madrasah Tsanawiyah

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ABSTRACT

The irregularity of seasons and the impact of climate change in Indonesia demand a transformation in religious education that is not only based on theoretical knowledge but also responsive to environmental crises. This study aims to deeply analyze the mechanism of internalizing ecological values in the Akidah Akhlak subject through the Contextual Teaching and Learning (CTL) strategy at MTs Anwarus Salaf. Using a descriptive-analytical qualitative approach, this study involved an Akidah Akhlak teacher and 210 students as research subjects. Data were collected through participant observation, in-depth interviews, and documentation studies, which were then analyzed using the Miles, Huberman, and Saldaña model with the assistance of Atlas.ti software. The results show that the internalization of ecological intelligence occurs through a systematic CTL cycle, where constructivism and inquiry components successfully shift the student paradigm from textual understanding to contextual awareness of the fasad (earthly destruction) phenomenon. Teacher exemplary behavior through modeling (*uswatun hasanah*) and measured habituation through the Moral Control Book (*Buku Kendali Akhlak*) proved effective in transforming student motivation from extrinsic to intrinsic-transcendental. The main finding of this study constructs the *Khalifah fi al-Ardh* paradigm as a new identity for students, which gives birth to eco-spirituality where nature conservation is understood as a manifestation of *tawhid* and moral accountability before Allah SWT. This study recommends a reorientation of integrative religious education curricula to form a generation that is intellectually brilliant and has ethical responsibility for the sustainability of the universe.

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1. INTRODUCTION

The irregularity of seasons in Indonesia caused by the global crisis and the worsening impacts of climate change is no longer merely an environmental threat, but an existential challenge that demands

innovative educational transformation. Education can no longer function as an ivory tower that produces purely theoretical knowledge; rather, it must be capable of radically enhancing students' ecological awareness. Contemporary environmental challenges require applicable educational innovations that integrate ecological values into the strengthening of students' foundational character. Within this framework, integrating Islamic principles with the Contextual Teaching and Learning (CTL) strategy offers a decisive pathway to fostering deeper environmental awareness (Kuswanto, 2025). The implementation of CTL in Akidah Akhlak (Islamic Creed and Ethics) lessons not only reinforces theological understanding of human beings' position as khalifah (stewards of the earth), but also actively inspires students to engage in environmental management as a concrete reflection of spiritual conviction and a living manifestation of faith (Nurhamzah & Amarullah, 2021).

Although there is a fundamental connection between the teachings of Akidah Akhlak—which emphasize faith in Allah through reverence for His creation—and environmental ethics, field realities reveal a significant gap between theoretical knowledge and practical application. The phenomenon of students' inconsistent behavior regarding environmental management principles, such as low levels of waste sorting practices and a lack of empathy toward the school ecosystem, indicates that spiritual understanding has not been authentically internalized into concrete actions. This condition is further exacerbated by the dominance of conventional teaching practices that rely heavily on memorization of classical texts without efforts to connect the material to real-world ecological issues (Kuswanto et al., 2024). As a result, religious education often loses its relevance in responding to the current ecological crisis, leaving students insufficiently prepared to face increasingly complex environmental challenges (Berlin et al., 2022) (Putri & Setiawan, 2022)

Educators play a central role as bridges in closing this gap through their strategic function as moral role models and ecological activists within the school environment. Effective educational interaction, supported by empathetic and collaborative learning communities, has been shown to cultivate sustainable environmental responsibility among students (Aripin & Nurdiansyah, 2022) (Zuhdi, 2018). The CTL strategy facilitates this process by transforming abstract religious content into practical applications in students' daily lives (Kuswanto, 2025b). By optimizing its seven core components, such as teacher modeling and inquiry into surrounding environmental issues, this strategy ensures that the principles of Islamic eco-spirituality are understood as an urgent daily responsibility rather than merely textual theory assessed in written examinations (Ismayanti & Tarsono, 2022).

To date, discourse and literature on ecological intelligence have been largely dominated by perspectives from the natural sciences and geography, while exploration of environmental education integration within religious subjects such as Akidah Akhlak remains very limited. The lack of in-depth empirical studies in this area hinders the development of religious pedagogy capable of integrating academic excellence with moral accountability (Afandi & Mustajab, 2019) (Muhtar, 2021). Therefore, this study seeks to fill this gap by conducting an in-depth analysis of the impact of the CTL approach in enhancing students' ecological intelligence through the optimization of its strategic components. The primary focus of this research is to construct a mechanism for internalizing ecological values within the Akidah Akhlak curriculum in order to form a generation that is not only intellectually competent, but also possesses ethical character and full responsibility for the sustainability of the universe (Basri et al., 2022).

2. METHODS

Research Design

This study employed a qualitative approach with a descriptive-analytical design. The selection of this method aimed to gain an in-depth understanding of the natural process of internalizing ecological intelligence through the implementation of the Contextual Teaching and Learning (CTL) strategy. A qualitative approach is highly relevant as it focuses on exploring meanings and complex social processes within educational contexts (Komarudin, 2021). This research prioritizes depth of

interpretation over numerical generalization in order to capture the essence of students' character transformation.

Research Subjects

The study was conducted at MTs Anwarus Salaf, involving the key informant, the Akidah Akhlak teacher, Mrs. Tutik Tri Wahyuni, along with 210 students. The subjects were selected using purposive sampling, meaning participants were chosen based on their potential to provide the richest information related to the phenomenon under investigation (Hajar et al., 2021). The research site was selected based on the criterion of being an institution actively integrating spiritual and ecological values into its curriculum (Purwati et al., 2023).

Data Collection Techniques

Data were collected using three primary techniques to ensure validity through triangulation. First, participant observation was conducted to examine the implementation of CTL practices and students' daily environmental behaviors in accordance with qualitative field observation standards (Anam et al., 2024). Second, in-depth interviews were carried out using semi-structured guidelines, allowing participants to express their subjective narratives and experiences more openly (Mahmudah, 2017). Third, document analysis was undertaken by collecting and examining relevant artifacts, such as lesson plans and student portfolios, that were directly related to the focus of the study (Nur'aini & Farisi, 2023).

Data Analysis

The data were analyzed using the Miles, Huberman, and Saldaña model through four systematic stages: data condensation, data display, and conclusion drawing. The use of data condensation (rather than mere reduction) enabled the researcher to refine and organize the data dynamically without losing its original context (Fikri & Savitri, 2022).

Data Validity

Data credibility was tested through technique and source triangulation. This step was essential to ensure that the research findings accurately represented the realities in the field and minimized researcher bias (Fauzan et al., 2019) (Mareta, 2021).

3. FINDINGS AND DISCUSSION

FINDINGS

a. Design and Internalization Mechanism

Based on grounded data analysis, the internalization process was carried out through a systematic CTL cycle. In the constructivism mechanism, the teacher successfully shifted students' paradigm from text to context by raising real phenomena such as flooding and clogged drains around the madrasah. Students independently constructed the understanding that *fasad* (environmental destruction) constitutes a real ecological sin, not merely a theoretical concept in textbooks. Through the learning community strategy, the formation of the "Laskar Hijau" (Green Troops) transformed individual responsibility into a collective movement. Students felt they had a "special mission" and developed an emotional bond in collaboratively maintaining the school garden. In the inquiry process, students acted as "environmental detectives," identifying issues such as withering plants caused by plastic waste or detergent contamination, thereby strengthening their critical thinking skills toward the local ecosystem. This design was structurally validated through lesson plans that synchronized the concept of *Khalifah* (stewardship) with climate change mitigation efforts.

b. Effectiveness of Character Transformation (Impact/Output)

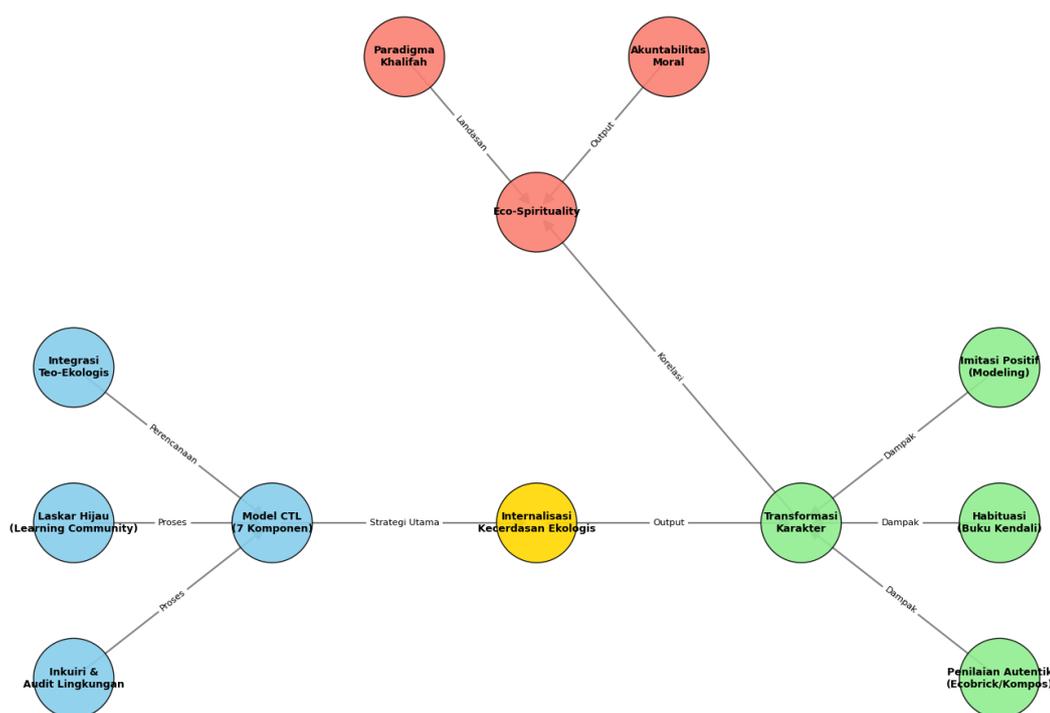
The data indicate that the CTL approach effectively transformed students' spontaneous behavior and habits. The modeling effect (*uswatun hasanah*) was evident through the teacher's silent pedagogy—consistently bringing a tumbler and picking up litter—which became a catalyst for positive imitation. All six student informants reported feeling motivated and even ashamed not to participate after witnessing the teacher's integrity in action. Habituation through the Moral Control Book (daily logbook) successfully

trained students' environmental care "muscles" until such behavior became a daily reflex, even outside the school environment. Environmental responsibility was no longer incidental but became permanent. Furthermore, authentic assessment fostered greater student satisfaction, particularly in psychomotor achievement, as students felt more proud of tangible outcomes—such as Ecobrick projects or thriving plants—than of merely obtaining perfect cognitive scores on written exams.

c. Theological Correlation and Moral Responsibility

In-depth analysis of the reflection phase revealed a strong correlation between faith conviction and moral accountability. There was a transformation of motivation from extrinsic (fear of sanctions or point deductions) to intrinsic-transcendental (responsibility before Allah). Students began to perceive environmental stewardship as an act of gratitude and a sacred duty as *Khalifah fi al-Ardh* (stewards on earth). The manifestation of eco-spirituality was strengthened through reflective sessions on *ayat-ayat kauniyah* (cosmic verses) conducted in open spaces, which fostered deep spiritual awareness. Students experienced inner peace and closeness to God through environmental care activities, which in turn enhanced the quality of their prayers. Systemic support, such as the "Green Madrasah" policy and plastic prohibition regulated through an official decree, further reinforced the structural scaffolding for embedding theological values into the madrasah's social order.

Atlas.ti Network View: Internalisasi Kecerdasan Ekologis melalui CTL



Network View Analysis: Internalization of Ecological Intelligence

This visualization constructs how pedagogical strategies transform into students' spiritual awareness based on triangulated data from observation, documentation, and interviews.

In the process cluster, the CTL design mechanism began with theo-ecological integration, where scriptural evidence from the Qur'an was directly synchronized with real environmental phenomena such as waste and flooding in the school environment. Constructivism and inquiry positioned students as environmental detectives who built independent understanding through local ecosystem audits. The "Laskar Hijau" learning community functioned as a social mechanism that transformed individual responsibility into collective student action.

In the impact cluster, character transformation and habituation were evident through modeling (positive imitation), where the teacher's consistent example—bringing a tumbler and picking up litter—became the primary driver of behavioral change without verbal instruction. Habituation through the daily logbook reinforced consistent ecological behavior until it became a permanent character trait. Authentic assessment through tangible projects such as Ecobrick production and composting generated performance-based pride that validated the effectiveness of the learning process.

In the correlation cluster, the depth of eco-spirituality emerged. The *Khalifah* paradigm established a new student identity as caretakers of the earth accountable to the Creator. Eco-spirituality developed through reflection on *ayat-ayat kauniyah*, where environmental care was understood as gratitude and an integral dimension of faith. The ultimate output was moral accountability, in which students felt transcendental responsibility for environmental sustainability as a manifestation of *tawhid* (Islamic monotheism).

Overall, the Network View visualization demonstrates that the internalization of ecological intelligence occurs through a systematic causal pathway in which contextual and collaborative instructional design serves as the primary catalyst for behavioral transformation. This transformation culminates when habituation and teacher modeling successfully construct a new student identity as *Khalifah fi al-Ardh*, ultimately giving rise to deep eco-spiritual awareness. Thus, the integration of Akidah Akhlak values through the CTL strategy extends beyond academic achievement and produces transcendental moral accountability toward the sustainability of the universe.

DISCUSSION

a. The CTL Design Mechanism in Internalizing Theo-Ecological Values

The findings indicate that the internalization of ecological intelligence at MTs Anwarus Salaf did not occur instantly, but rather through a Contextual Teaching and Learning (CTL) pedagogical design that integrates religious texts with ecosystem realities. The Constructivism component served as the primary foundation; the teacher (Mrs. Tutik) successfully reconstructed students' understanding of the concept of *fasad* (destruction) from mere memorization of verses into an awareness of plastic waste problems in the school drainage system. This aligns with Johnson's theory that meaningful learning occurs when students are able to connect academic content with real-life contexts (Komarudin, 2021).

Furthermore, the application of the Inquiry and Learning Community components through the "Laskar Hijau" (Green Troops) group demonstrates that ecological intelligence develops most effectively within collaborative social interaction. Documentary evidence in the form of lesson plans integrating the concept of *Khalifah* (stewardship) with climate change mitigation reflects a systematic effort to "green" the Akidah Akhlak curriculum. Theoretically, this process confirms that contextual religious education can bridge the gap between cognitive theological knowledge and applied environmental awareness (Anam et al., 2024; Ismayanti & Tarsono, 2022; Purwati et al., 2023).

b. The Effectiveness of Character Transformation: From Imitation to Habituation

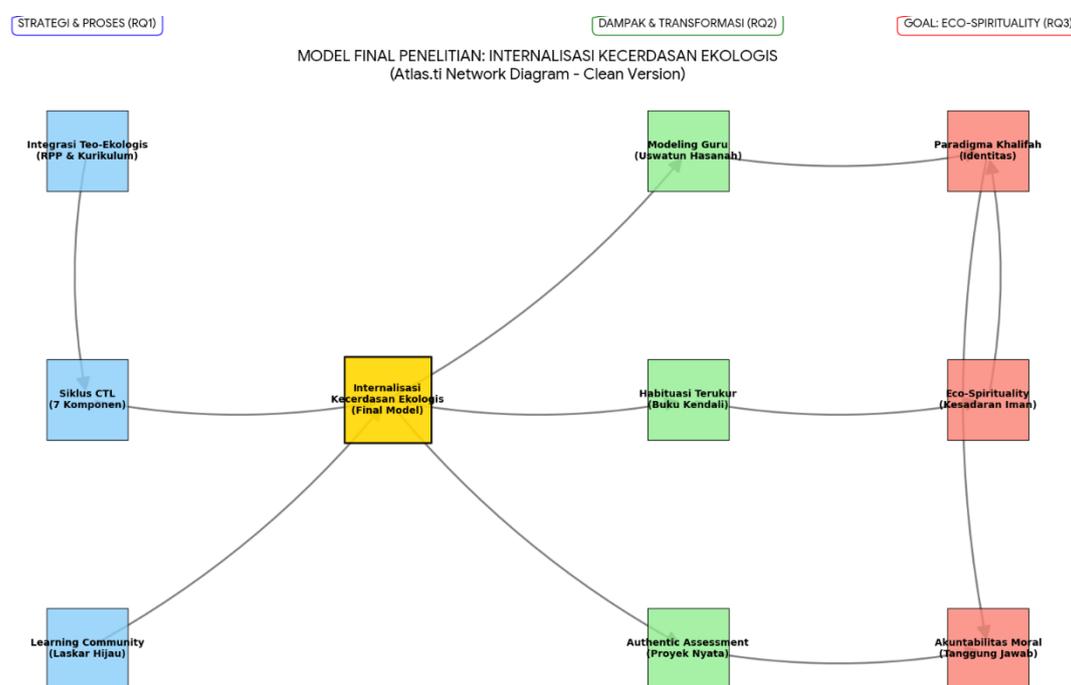
The success of students' character transformation in this study was driven by two main forces: Modeling and Authentic Assessment. Interviews with all student informants (Rizki, Bayu, Dafa, Ahmad, Arga, and Istiqomah) consistently revealed that the teacher's behavior—bringing a tumbler and picking up litter without verbal instruction—served as the strongest stimulus for imitation. From the perspective of Albert Bandura's Social Learning Theory, the process of observational learning from an authority figure (teacher) has a more radical impact on character formation than verbal instruction alone (Ismayanti & Tarsono, 2022).

This effectiveness was reinforced by the Authentic Assessment component through the "Environmental Moral Control Book." Unlike conventional paper-based evaluation, this instrument validated students' real-life performance on a daily basis. Portfolio documentation of Ecobrick and composting projects indicates that students reached the psychomotor stage of ecological intelligence. This transformation demonstrates that CTL goes beyond paradigm shifts and successfully creates habituation, resulting in a lasting environmental care character (Mareta, 2021) (Mahmudah, 2017)

c. The Internalization of Eco-Spirituality: Constructing the Identity of Khalifah

The most profound finding of this study is the strong correlation between theological understanding and students' moral responsibility, leading to the formation of eco-spirituality. Analysis of the Reflection phase revealed that students no longer viewed school cleanliness as mere compliance with madrasah regulations (sanctions or point systems), but as a manifestation of faith. The repeated emergence of the terms *amanah* (trust) and *Khalifah* in student interviews indicates that ecological values have been internalized into the structure of their religious identity.

Philosophically, this phenomenon reflects a shift in motivation from extrinsic to intrinsic-transcendental. Maintaining environmental cleanliness was perceived as a means of attaining deeper devotion in worship and closeness to Allah SWT. The integration of *Akidah* (belief) and *Akhlak* (conduct) through reflection on *ayat-ayat kauniyah* (cosmic verses) demonstrates that Islamic education holds significant potential in addressing the global ecological crisis. This finding reinforces Seyyed Hossein Nasr's argument regarding the need to revive a sacred view of nature as a response to environmental degradation in the modern era (Muhar, 2021) (Mareta, 2021) (Ismayanti & Tarsono, 2022).



This diagram illustrates the students' "transformation pathway" from receiving instructional material to becoming individuals with deep ecological awareness.

In the Strategy and Process Cluster (left side – Research Question 1/RQ1), the model shows how curriculum planning through Theo-Ecological Integration is embedded within the cycle of the seven CTL components. The Learning Community, represented by the "Laskar Hijau" group, functions as the primary driving force in creating a participatory social learning environment.

At the center lies the Internalization Core (gold area), which represents the meeting point where pedagogical strategies interact with students' consciousness. It is at this stage that the internalization of *Akidah Akhlak* values into ecological intelligence takes place.

In the Impact and Transformation Cluster (middle-right – Research Question 2/RQ2), teacher modeling serves as the catalyst that accelerates positive imitation. Habituation through the Moral Control Book transforms incidental actions into permanent character traits. Meanwhile, Authentic Assessment validates that students' competencies extend beyond theoretical understanding, as reflected in tangible outputs such as Ecobrick and composting projects.

Finally, in the Goal Cluster: Eco-Spirituality (right side – Research Question 3/RQ3), students achieve the highest level of transformation by embracing the Khalifah paradigm. At this stage, they develop Moral Accountability—responsibility before God—and Eco-Spirituality, where faith is embodied in environmental care.

Overall, the model demonstrates that the successful internalization of ecological intelligence in the madrasah depends heavily on the consistency between teacher modeling and daily evaluation systems (habituation), all framed within a strong theological foundation. Comprehensively, this transformation model affirms that internalizing ecological intelligence is not merely a process of knowledge transfer, but a sustained synergy between well-designed theo-ecological curriculum planning and the consistent application of the Contextual Teaching and Learning (CTL) strategy. The essential success of this model lies in the strategic role of teacher exemplarity (modeling) and authentic behavioral assessment, which effectively shifts students' orientation from mere compliance with school regulations toward profound theological responsibility. Consequently, the integration of Akidah Akhlak values through this mechanism not only fosters surface-level environmental care, but also constructs students' identities as *Khalifah fi al-Ardh*, characterized by transcendental moral accountability and enduring eco-spiritual awareness.

4. CONCLUSION

This study concludes that the internalization of ecological intelligence in the Akidah Akhlak subject through the Contextual Teaching and Learning (CTL) approach successfully transformed students' theological understanding into sustainable practical character. The internalization process occurred through a systematic mechanism integrating religious texts with the reality of environmental crises within the school context. The constructivism and inquiry components proved effective in reconstructing students' paradigms regarding the concept of *fasad* (destruction), shifting it from mere dogmatic memorization to critical awareness of local ecological issues.

The success of students' character transformation was significantly driven by the strength of teacher modeling (*uswatun hasanah*) and evaluation through authentic assessment. The teacher's exemplarity through silent pedagogy functioned as a catalyst for positive imitation that was more powerful than verbal instruction. Meanwhile, the use of the "Environmental Moral Control Book" instrument successfully created habituation, transforming environmentally caring actions from simple compliance with sanctions into enduring character traits.

The final findings of this study reveal a strong correlation between faith conviction and moral accountability constructed through the paradigm of *Khalifah fi al-Ardh* (stewards on earth). The shift in motivation from extrinsic to intrinsic-transcendental demonstrates that context-based Islamic education can cultivate eco-spirituality, where caring for nature is understood as a manifestation of *tawhid* (Islamic monotheism) and an expression of gratitude to the Creator. Theoretically, this research contributes to the development of an integrative model of religious pedagogy that unites intellectual, moral, and ecological intelligence within a comprehensive theological framework.

The implications of this study highlight the importance of reorienting the Islamic Religious Education curriculum so that it does not focus solely on abstract eschatological dimensions, but also emphasizes ecological responsibility as an integral part of *akidah*. It is recommended that educational practitioners at the Madrasah Tsanawiyah level consistently adopt the CTL model and strengthen teacher exemplarity as a primary instrument of character education. Future research may explore the effectiveness of this model across broader populations or within digital ecological contexts to examine the sustainability of eco-spiritual values in the modern era.

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