

## Management of *Hijaiyah* Literacy Learning Based on *Ecopedagogy* through *Loose Parts* Media Recycling in Playgroups

Ratu Dinny Fauziah<sup>1✉</sup>, Zahra<sup>2</sup>, Tia Putri Pratiwi<sup>3</sup>, Muhammad Rizal<sup>4</sup>  
<sup>1,2,3,4</sup>Program Studi Pendidikan Agama Islam, STIT Insan Kamil Bogor

Correspondence Email: [ratudinnyfauziah@stitinsankamil.ac.id](mailto:ratudinnyfauziah@stitinsankamil.ac.id)

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### Abstract

This study aims to analyze *Hijaiyah* literacy learning management based on *eco-pedagogy* by utilizing recycled *loose parts* media in Playgroups. The main focus of this study is how spiritual and *ecological* values are integrated through the planning, implementation, and evaluation stages of learning. Using a descriptive qualitative approach supported by descriptive statistical data, this study involved educators and students as research subjects. Data were collected through structured observations, in-depth interviews, and documentation. The results showed that systematic learning management was able to produce an average child development achievement of 85%. The achievements included the ability to accurately construct *Hijaiyah* letters and the emergence of *eco-literacy* characteristics, such as responsibility in treating recycled media. These findings prove that the use of waste as loose parts not only streamlines educational operational costs but is also effective as a pedagogical instrument for introducing the concept of sustainability from an early age. This study recommends the *Eco-Religious* Literacy management model as an innovative solution for early childhood education in realizing holistic and environmentally friendly learning.

**Keywords:** *Learning Management, Literacy Ecopedagogy, Early Childhood.*

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## INTRODUCTION

Currently, early childhood education is at a crucial crossroads between the need and demand to master basic literacy and the importance of character building based on the environment. The crisis in basic literacy and the worsening ecological degradation challenge early childhood education today (UNESCO 2015) Purnomo 2024). Religious education in Indonesia is often confined to instrumental cognitive aspects, where the introduction to the *Hijaiyah* alphabet is viewed merely as a technical process of reading symbols without delving into their essential meaning. In fact, from a theological perspective, the *Hijaiyah* alphabet is a spiritual phenomenon that represents the existence of creation. This study positions each *Hijaiyah* letter not merely as an alphabet but as a sacred symbol connected to the universe. For example, through an eco-pedagogical approach, these letters are constructed using natural materials (*loose parts*), which symbolically teach that every “letter” (word) and every “natural object” (creation) originates from the same transcendental source. Thus, the *Hijaiyah* letters become a central phenomenon that bridges children’s understanding of sacred texts and ecological contexts.

The phenomenon in the field shows that learning media in playgroups is dominated by teaching aids made from unsustainable plastic. This indirectly distances children from ecological values that should be an important part of teaching religious values (*Ecotheology*). Ecotheological principles must be integrated into all aspects of learning, including curriculum content, teaching approaches, and daily school life. This aligns with the spirit of Islam as a religion that is a mercy to all creation, bringing mercy to all things (Yudi 2025). Amid the current global environmental crisis, education must transform into a means of internalizing sustainability values rather than merely disseminating knowledge (Yudi 2025). Conventional methods that are mechanical and use disposable media that are not environmentally friendly are often used to teach *Hijaiyah* literacy as the foundation of Muslim children's spiritual education. This creates a gap between what children think about theology and what happens in their environment. As a result, spiritual values are not internalized when they act to protect nature (Raisul Muhadidsin, Nabila Firliya Zahra, and Hafidz Taqiyuddin 2026).

Schools have a strategic responsibility to instill environmental awareness in students from an early age. Strategies that can be used to foster environmental awareness include an eco-friendly play approach and the integration of a green curriculum with a Green Education approach starting from early childhood education (Husain 2025). Education is essential for raising awareness and concern for the environment. The goal of environmental education, however, is not only to improve students' theoretical understanding but also to foster their love for the environment through practical activities. Conventional learning approaches are often too theoretical and do not provide information that is relevant to students' real lives. As a result, students' attitudes and behaviors are not internalized into their understanding. Overcoming these differences requires a new learning model that combines perspectives, skills, and knowledge (Fauziah 2025).

By integrating environmental awareness into all aspects of the curriculum, the eco-pedagogical approach emerges as a solution to this problem. To implement *eco-pedagogy* in playgroups, adaptive learning management is required (Gilar, Gandana, dkk 2025). *Eco-pedagogical* education aims to increase awareness and sensitivity to the environment so that human life can be improved (Siregar, Siregar, and Aditya 2025). Therefore, *ecopedagogical* education can help students gain a basic awareness of the environment and nurture their personalities so that they can understand the objectives of basic education (Ismail & Sari 2024). One way to do this is by using loose parts or loose materials (*loose parts*) that come from recycled waste. The use of *loose parts* not only allows children to experiment and make *Hijaiyah* letters, but also implicitly teaches the concept of *thayyib* (goodness) through the reuse of used items. In order to achieve symbolic literacy and environmental literacy simultaneously, it is very important to carry out systematic management in planning and organizing these media.

Learning the *Hijaiyah* alphabet from an early age is a very important first step in instilling Islamic values so that children can learn and recognize the *Hijaiyah* alphabet, distinguish between good and bad behavior, right and wrong, honesty, discipline, responsibility, gratitude, and respect for elders, as well as recognize the attributes of Allah SWT (Nurhayati et al. 2021). Learning the basics of reading the Qur'an, namely the *Hijaiyah* letters, is an important part of Islamic religious education. This education must be taught to children from an early age. Children are valuable assets that families have so that they can become a generation that understands the Qur'an (Damanhuri & Yacub, 2022). Learning the Qur'an is a time-consuming process, starting with spelling the *Hijaiyah* letters to reading the entire Qur'an. A learning tool is needed that can maximize children's memory and make it easier for them to learn by seeing, hearing, and practicing (Alfian, Efendi, & Asmara 2023). Allah SWT says in Surah Maryam, verse 12:

يَا يَحْيَىٰ خُذِ الْكِتَابَ بِقُوَّةٍ وَآتَيْنَاهُ الْحُكْمَ صَبِيًّا

Meaning: *Wahai Yahya, ambillah Al-Kitab (Taurat) itu dengan sungguh-sungguh. Dan kami berikan kepadanya hikmah selagi ia masih kanak-kanak.*

Early childhood learning is synonymous with playing without focusing on results, but on the process. Learning through play allows students to discover and gain experiences from themselves, others, and their environment. Play-based education can help build the foundation of attitudes, knowledge, skills, and creativity needed by students to adapt to their environment and for their future growth and development. One way to improve the learning process is by using diverse and interesting learning media. One of them is by using the *loose parts* (Rahma, Kustiono, and Setiawan 2023).

*Loose parts* are objects that children can use to play with. These objects can come from nature or from recycled items found around children, but they are not specific to traditional toys. Natural materials (stones, pebbles, soil, sand, shells, twigs, leaves), plastic (straws, bottles, baskets, pipes), metal (cans, coins, spoons), wood and bamboo (pieces of wood, sticks, blocks), thread and fabric (ribbons, thread, scrap fabric, cotton), glass and ceramics (glass bottles, beads, marbles), and packaging items (cardboard, tissue rolls, egg cartons) (Rahma, Kustiono, and Setiawan 2023).

Learning media can be made from materials found in our environment, such as recycled waste materials from bottle caps, plastic bottles, cardboard, and so on. At the same time, *ecological* degradation is occurring due to plastic waste accumulation. Based on data on waste issues, in 2023, Indonesia produced around 19 million tons of waste, 17% of which was plastic waste that is difficult to decompose, according to data from the Ministry of Environment and Forestry (KLHK) (Zulfikar and Ismi 2025). Ironically, most of this waste has not been used effectively for educational and economic purposes. Therefore, the use of recycled waste as a learning medium is an approach that not only solves environmental problems but is also innovative in education (Zulfikar and Ismi 2025).

The waste problem requires a repositioning of the role of education. Early childhood education can no longer focus solely on symbolic cognitive abilities such as the *Hijaiyah* alphabet in isolation, but must integrate them with eco-pedagogical awareness in order to shape *eco-religious* character from an early age. Using recycled waste materials is one way to reduce waste in waste management, as it serves as a learning medium. Turning used items into learning media not only makes students more enthusiastic about learning but also reduces waste and protects the environment. Utilizing used items is safer than burning them because it does not pollute the air. We can find new value in used items and encourage student creativity.

Literature reviews on the use of loose parts in enhancing children's creativity have been widely published, such as studies by Farikhah et al. (2022), Maarang, Khotimah, and

Maria Lily (2023) which show that the use of *loose parts* can increase creativity and critical thinking in early childhood and improve children's ability to collaborate, communicate, and imagine. There is a substantial gap in the context of *Hijaiyah* literacy learning management. So far, the *eco-pedagogical* aspect tends to be only a supplement in early childhood science education and is rarely integrated into symbolic religious education. There is a methodological void regarding how to manage recycled materials so that they function not only as play tools but also as instruments for internalizing environmentally-conscious spiritual values. This study aims to fill this gap by constructing a learning management system that coherently integrates religious and *ecological* literacy.

The main innovation of this study is a management framework that simultaneously integrates theological-symbolic literacy (*Hijaiyah*) and ecological awareness (*Ecopedagogy*) through the optimization of recycled materials. This study offers a holistic management model, differing from previous research that tended to distinguish religious education as a cognitive domain and *eco-pedagogy* as a scientific domain. It is highly beneficial for curriculum management design, where educators systematically plan the synchronization between sacred symbols and natural materials, and develop an assessment system that measures how children behave toward their environment as an indicator of religious success. In this model, waste management is viewed not only as a cost-effective solution but also as a management tool that fosters the belief that preserving ecosystems is a vital manifestation of theological values. This provides a new direction for early childhood education management by synergizing two distinct values, spiritual and ecological, into a coherent and sustainable learning system.

The primary objective of this study, based on the gaps in the literature discussed above, is to analyze and develop a *Hijaiyah* literacy learning management model that integrates eco-pedagogical values using recyclable waste materials. This study aims to demonstrate that religious literacy in early childhood is not merely cognitive and static; it can be dynamically utilized to enhance environmental awareness. According to the research hypothesis, integrating waste into sacred symbols (*Hijaiyah*) in learning management will result in a more meaningful learning experience (deep learning). This will also enhance children's understanding of symbolic letters and increase their sense of responsibility toward their environment. Thus, this study demonstrates that sustainability-based pedagogical innovations can address the limitations of managerial resources in early childhood education.

Therefore, this study is important for determining how eco-pedagogy regulates *Hijaiyah* literacy learning in playgroups using recycled media. Religious and *ecological* values are combined in this study through innovative and sustainable learning environment management. It is hoped that the results of this study will provide theoretical contributions to developing a comprehensive early childhood education curriculum management model. In addition, the results will provide practical guidance for educators on how to use materials available in their environment to support more significant literacy achievement in children.

## METHODS

This study uses a descriptive qualitative approach supported by descriptive statistical data with a case study design. This approach was chosen to explore in depth the phenomenon of learning management in one unit of analysis, namely KB-TK Insan Kamil Bogor, which has implemented environmentally friendly principles. The research focused on three pillars of learning management: planning, actuating, and evaluating, which are integrated with eco-pedagogical principles. This study was conducted over a three-month period, from August to October 2025. This duration was chosen based on the need to capture the process of internalizing *eco-pedagogical* values, which cannot be observed within a short timeframe. Structured observations were conducted during each *Hijaiyah* literacy learning session. The duration of this study was designed to achieve saturation of qualitative data, at which point the

children's behavioral patterns in handling loose parts and their understanding of *Hijaiyah* symbols had demonstrated stable consistency. The depth of this data was further supported by anecdotal notes documenting the children's shifting perspectives on natural waste from the initial to the final stages of the learning management intervention.

Table 1. Observation Instrument Based on the Spirituality of *Hijaiyah* and Ecopedagogy

Observed Aspects	Behavior Indicators	Observed (Yes/No)	Anecdotal Notes (Spiritual-Ecological Reflection)
<b>Spiritual-Literacy (<i>Hijaiyah</i> Phenomenon)</b>	Children are able to construct <i>Hijaiyah</i> letters as spiritual symbols using natural materials, demonstrating an understanding that the "sacred text" ( <i>Hijaiyah</i> ) and "nature" (materials) come from the same Creator.		e.g., Child reflects on the straightness of ' <i>Alif</i> ' using a twig.
<b>Eco-Theological Respect</b>	Children demonstrate respect for natural materials as God's creations ( <i>Ayat Kauniyah</i> ) by not wasting them and showing gratitude through careful handling of the media.		e.g., Child treats pebbles with care, recognizing them as part of the ecosystem.
<b>Meaningful Construction (<i>Loose Parts</i>)</b>	Children combine various <i>loose parts</i> (e.g., twigs and seeds) not just for decoration, but to symbolize the harmony of nature in perfecting the meaning of <i>Hijaiyah</i> punctuation ( <i>harakat</i> ).		e.g., Using seeds as ' <i>fathah</i> ' to symbolize growth/life.
<b>Ecological Responsibility (Sorting)</b>	Children spontaneously rearrange media as a form of environmental stewardship ( <i>Khalifatullah fil Ardh</i> ), understanding that returning materials to their place is a manifestation of religious cleanliness and order.		e.g., Sorting materials by type as a form of keeping ' <i>mizan</i> ' (balance).

Source: Researcher's Personal Documents, 2026

Purposive sampling was used to determine the research subjects. The principal acted as the curriculum manager, the classroom teachers acted as learning facilitators, and the children in the Playgroup acted as the subjects of observation. Three stages were used to collect the main data, namely (1) Moderate Participatory Observation: the researcher observed how children interacted with *loose parts* media (such as plastic bottles, bottle caps, used cardboard, etc.) while learning the *Hijaiyah* alphabet. The children observed how teachers applied eco-pedagogical values. The observation sheet used when interacting with *loose parts* media is shown in Table 1 below:

Then, to obtain an objective picture of the level of child development achievement, the observation data were analyzed using simple descriptive statistics (percentages). Next, this data was interpreted qualitatively; (2) semi-structured interviews were conducted with educators to study the philosophical reasons behind the use of recycled media in religious teaching. In addition to conducting interviews, the researcher also used observation sheets as an assessment tool to determine the effectiveness of learning management on children's *Hijaiyah* literacy and *eco-pedagogical* behavior; (3) resources included children's development records, teaching modules (RPP), and photos of activities using recycled materials.

Data analysis was conducted following the interactive model of Miles, Huberman, and Saldana (2014), comprising data condensation, data display, and conclusion drawing. To provide an objective measurement of children's developmental progress, this qualitative approach is supported by descriptive statistics. The use of simple percentage analysis in this study does not aim to test hypotheses (as in experimental research) or measure action cycles (as in Classroom Action Research), but rather serves as a data triangulation tool to map the distribution of developmental achievements across the observed *ecopedagogical* indicators. This descriptive statistical support is justified, given the small sample size, where inferential statistics (such as t-tests or ANOVA) are inappropriate. It provides a numerical baseline to strengthen the qualitative findings regarding the effectiveness of the *Hijaiyah-ecopedagogy* management model. Data was analyzed using a simple percentage distribution to describe the level of achievement.

The interactive model of Miles, Huberman, and Saldana was used to analyze the data, which included the data collection phase, the data condensation process: the researchers sorted and simplified the findings from the interviews and field notes on learning management, data display, and conclusion drawing or verification. To ensure that the data was valid, the researchers performed technique and source triangulation. Technique triangulation means comparing interview results with observations, and source triangulation means verifying data from teachers to principals. The research was conducted in accordance with research ethics, including keeping the subjects' identities confidential and obtaining approval from the relevant institutions.

## RESULT AND DISCUSSION

### Strategic Planning: Integration of Theological and Ecological Values

The results of the study show that planning management in this Playgroup is better than ordinary administrative rules. Planning is carried out through “*Ecological-Religious Mapping*,” where *Hijaiyah* literacy achievement metrics are adjusted to the availability of natural materials and recycled waste around the school. Planning begins with the preparation of a Lesson Plan (RPP) or teaching module as the main guide for the learning process, in accordance with the applicable curriculum. The RPP or teaching module is prepared in stages according to the learning method to be used, so that each step of the learning process is well organized. The preparation of the learning media to be used is also an important part of the planning. This ensures that the media meets the learning objectives and has the ability to increase the effectiveness of learning in the classroom. Teachers no longer rely on paper worksheets. Instead, teachers create lesson modules that use loose parts as the main motivation in introducing recycled-based *Hijaiyah* letters, as shown in Figure 1 below:

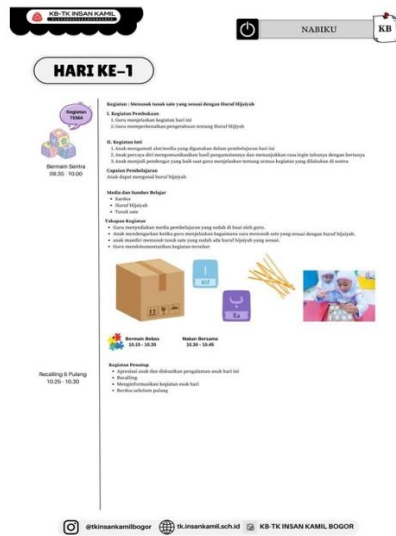


Figure 1. *Hijaiyah* Literacy Teaching Module  
Source: Classroom Teacher Documentation, 2026

The findings from the study show that *eco-pedagogical* values are integrated into *Hijaiyah* literacy learning in playgroups in three systematic stages. Before introducing the letters, the teacher began the internalization stage by telling Islamic stories about the duty of humans as *khalifah fil ardh* (guardians of the earth). The second stage was sensory exploration, in which the children made *Hijaiyah* letters using recycled items such as bottle caps, paper cups, cardboard pieces, and popsicle sticks. The third stage is habituation, where children become more aware of how to sort media according to type.

The teacher uses cardboard, bottle caps, paper cups, and popsicle sticks as learning media in introducing *Hijaiyah* letters, as shown in Figure 1.



Figure 1. *Hijaiyah* Literacy Teaching Module  
Source: Classroom Teacher Documentation, 2026

By integrating *eco-pedagogical* values into learning *Hijaiyah* letters, recycled materials are not only used as teaching aids but also as a way to internalize the principle of sustainability. Teachers begin the integration process with verbal scaffolding that links the concept of *Hijaiyah* literacy with humanity's duty to protect nature (*khalifah fil ardh*). For children aged 3 to 4 years, the use of *loose parts* media provides exploratory freedom to touch, arrange, and manipulate real objects. Simon Nicholson's (1971) Theory of Loose Parts forms the foundation of this approach to teaching *Hijaiyah* literacy. Nicholson argues that in any given situation, the level of creativity and discovery is directly correlated with the number and types of variables (materials) involved (Siburian et al. 2024). The teachers in this playgroup provide children with manipulatives and the "opportunity" to experiment with open-ended natural materials. This

allows children to physically and tactilely abstract *Hijaiyah* symbols. It helps create a flexible learning environment rich in creative stimuli.

According to social constructivism theory, this helps children internalize values more quickly through direct experience. Constructivist theory emphasizes the importance of students actively constructing their own knowledge. Through this method, students will become smarter because they learn in a more profound way (Suparlan 2019). In line with Saputro and Pakpahan (2021), Constructivism is a view of how knowledge is formed. In this perspective, knowledge is not something that is simply accepted, but something that is actively constructed by individuals through experience and interaction with the environment. This exploratory process is further reinforced through the framework of Social Constructivism (Vygotsky). In the observed classroom management, children do not work in isolation; they interact, discuss, and help one another as they arrange natural materials into *Hijaiyah* letters. Here, the teacher's role emerges as that of a facilitator who provides scaffolding through social interaction. Knowledge regarding the spiritual significance of the *Hijaiyah* letters is co-constructed through dialogue about the origins of the natural materials (wood, stones, seeds) they use. Thus, literacy learning is no longer a one-way transfer of information, but rather an active process in which children build religious and ecological understanding through meaningful social and physical experiences.

The integration of theological and ecological values in *Hijaiyah* literacy is achieved through the *Eco-Theology* Contextual Learning approach, in which children interact with the environment not only as a physical learning resource but also as a spiritual medium. In this practice, every natural material (*loose parts*) used to form *Hijaiyah* letters is positioned as an *Ayat Kauniyah* (a sign of God's greatness in nature) that gives tangible form to the *Ayat Qauliyah* (the sacred text of the Qur'an). This process teaches children that preserving these natural materials is a direct form of respect for the sanctity of the *Hijaiyah* letters they are learning, so that the values of *tauhid* (spiritual) and conservation (*ecological*) are simultaneously internalized through a single motor activity. Findings from Meirawan and Triatna, (2025) the study indicate that this approach is effective in fostering children's independence and sense of responsibility toward their environment, as well as in enhancing their social and emotional skills. In addition, previous studies, such as those conducted by Ismail & Sari (2024), show that *eco-pedagogical* education increases students' environmental awareness. In line with the Gandana et al, (2025) study, *eco-pedagogy* is an educational approach aimed at instilling environmental awareness and concern in children from an early age. *Eco-pedagogy* serves as a key strategy in early childhood education for fostering environmentally friendly attitudes and behaviors in children. *Eco-pedagogy* in early childhood education not only educates children about the environment from an early age but also helps shape a generation that is more responsible and active in addressing environmental issues in the future. *Ecopedagogy* can be applied in the curriculum and learning through an *ecological* understanding of the subjects or materials taught and the application of methods or media. Furthermore, this research is reinforced by Fadjarajani & As'ari (2021) those who state that starting environment-based learning is one way to improve students' environmental literacy (environmentally conscious character).

At this point, *ecopedagogy* serves as a philosophical umbrella that transforms the classroom environment from merely transferring knowledge to transferring character (Fadjarajani and As'ari 2021). In this classroom, children learn that waste and all objects around them have potential benefits that must be preserved (Fauziah 2025).

Theoretically, this plan describes a shift from information-centered curriculum management to experience-centered management. The principle of *eco-pedagogy*, which states that the environment is not just a place of learning but the subject of learning itself, supports this synchronization. The school has achieved management efficiency while giving new

meaning to waste as a sacred learning medium by arranging the introduction of the letter “*Alif*” with tree branches or the letter “*Dal*” with pieces of cardboard.

### **Implementation: Transformation of Loose Parts Media in Hijaiyah Literacy**

This study was conducted over a three-month period, from August to October 2025. This timeframe was chosen based on the need to document the process of internalizing *ecopedagogical* values, which cannot be observed in a short period of time. During each Hijaiyah literacy learning session, structured observations were conducted twice a week. The focus of this research was to collect qualitative data. The data collected showed consistent stability in the children’s behavior toward loose parts and their understanding of *Hijaiyah* symbols. Anecdotal notes documenting the children’s shifting perspectives on natural waste from the beginning of the learning management intervention to the end support the depth of this data. During the implementation stage, it was demonstrated that the use of free recycled media created an active and exploratory learning ecosystem. Children not only memorized the shapes of letters, but also constructed them into three-dimensional forms. Interview results showed that teachers found it easier to apply environmental moral principles with recycled media.

Table 2. Percentage of Child Development Achievement in Eco-pedagogical-based *Hijaiyah* Literacy

No.	Observation Indicators	Achievement (%)	Category	Observed Behavior
1.	Accuracy in forming <i>Hijaiyah</i> letters	90%	Very High	Children are able to arrange loose parts (twigs, bottle caps, pebbles) correctly to form <i>Hijaiyah</i> letters.
2.	Exploratory Creativity	85%	Height	The children made punctuation marks ( <i>harakat</i> ) by combining various types of recycled waste.
3.	Internalization of <i>Ecopedagogy</i>	80%	Height	Children show empathy towards nature and do not damage the organic materials used.
4.	Media Managerial Responsibility	85%	Height	The children independently classify and organize loose materials.
Average	Overall Achievement	85%	Height	The integration of <i>Hijaiyah</i> literacy and eco-literacy is effective.

Source: Researcher's Personal Documents, 2026

Observation data showed that 85% of students were able to categorize media based on type after learning, indicating that classroom management successfully instilled *ecopedagogical* values. This indicates that the 85% figure was achieved due to the freedom to explore (Nicholson) and social support (Vygotsky).

Table 2 shows that the average child development reached 85%, with the Symbol Construction Accuracy indicator reaching 90%. This shows that the concrete and manipulative nature of *loose parts* greatly helps early childhood understand the abstraction of *Hijaiyah* letters. Interestingly, the Media Managerial Responsibility indicator also reached 85%. This shows that teachers use effective learning management to create an orderly classroom ecosystem, in addition to providing information. Children treat recycled media with care because they know that it has value. The results confirm that the use of media made from recycled loose materials is an effective way to achieve symbolic literacy and environmental literacy targets. This statement is confirmed by an NRA teacher, who said: *"At first, I was skeptical whether children could understand Hijaiyah letters using stones, twigs, and bottle caps. It turns out that making the letter 'Jim' from stones or bottle caps made them remember it better because of the physical experience. Interestingly, I slipped in the message that twigs are God's creation that must be preserved when the children wanted to throw away the twigs they had used. This is where their cognition develops, and their character is formed. Their enthusiasm, which never waned during this session, resulted in an achievement rate of 85%."* (Tuesday, August 26, 2025, 1:40 p.m. WIB).

The use of recycled materials as learning tools can stimulate students' creativity in Playgroups, as expressed by Teacher NRA: *"To stimulate students' creativity, I let them decide what shapes to make from the objects. Usually, I give them free time to explore. I only mention the Hijaiyah letters they are looking for; they are free to explore, imagine, according to their imagination, what they want to form, how they want it."* (Thursday, July 24, 2025, 1:20 p.m. WIB). Figure 2 shows the children's activities as they stimulate creativity by matching different *Arabic* letters, using the teacher's explanation.



Figure 2. Activities that Stimulate Children's Creativity  
Source: Researcher's Personal Documents, 2025

The emergence of *"Spiritual-Ecological Engagement"* is very important for this stage. When children pull strings to match *Hijaiyah* letters, or arrange bottle caps or pebbles into the letter Jim, two cognitive processes occur: appreciation of natural materials and understanding of *Hijaiyah* letters. This supports Simon Nicholson's Loose Parts theory that transferable and manipulable materials will result in higher levels of creativity (Siburian et al. 2024). However, researchers discovered a new aspect, namely *"Green Literacy."* Religious literacy helps children understand the concepts of reuse and appreciation for God's creation. This shows that a lack of facilities can be overcome with innovation in the management of local resources.

Research findings indicate that when children interact with *loose parts*, the *Hijaiyah* letters evolve from mere phonetic symbols into a spiritual-ecological phenomenon. From an educational perspective, educators view natural materials as *Ayat Kauniyah* (signs of God's greatness in nature) and *Ayat Qauliyah* (sacred texts or *Hijaiyah* letters). For example, when a

child uses a straight tree branch to form the letter *Alif*, a cognitive and spiritual process occurs simultaneously. Now regarded as a static vertical line, the letter *Alif* represents the concept of *Tawhid* (Oneness), reflected in the steadfastness of the natural world. The use of pebbles to create vowel marks (*harakat*) symbolizes the balance and harmony of nature (*Mizan*), where every small part contributes to a greater meaning.

This finding addresses the criticism that religious education is merely cognitive-instructional. Children are taught about their role as *Khalifatullah fil Ardh* (stewards of the earth) by using the *Hijaiyah* alphabet as a central element crafted from natural waste. Through respect or reverence for the materials they use as a way to express gratitude to the Creator, eco-pedagogical awareness develops. This explains why the environmental responsibility indicator reached 85%, as children view keeping the materials clean as part of their worship and preserving their religious identity.

Children spontaneously rearrange media as a form of environmental stewardship (*Khalifatullah fil Ardh*), understanding that returning materials to their place is a manifestation of religious cleanliness and order. As explained in Surah Al-Baqarah (2:30), the role of humanity as *khalifah fil ard* (stewards of the earth) is not merely that of rulers, but also of responsible stewards. This responsibility includes the wise use of natural resources, without *tabzir* (wastefulness) or *israf* (extravagance). Maintaining harmony between humanity and nature is an important part of Islamic worship. Humans are obligated to fulfill their role as stewards with full responsibility (Fauziah, Dainuri, and Mudzaki 2025).

Therefore, the concept of *khalifah fi al-ard* encompasses a broad framework of ecological ethics, which positions environmental conservation as an essential part of the obligations of faith. This concept is crucial as a foundation for developing environmental education grounded in Islamic principles, particularly within Islamic religious education. Islamic education can help students become more environmentally conscious by teaching them that caring for nature is a duty of stewardship and a demonstration of obedience to Allah (Muflihin 2026).

### **Authentic Assessment Based on *Hijaiyah-Ecopedagogy***

The 85% developmental achievement in *Hijaiyah* literacy through this eco-pedagogical approach demonstrates that a learning management strategy integrating profane materials (recycled items) with sacred values (*Hijaiyah* letters) fosters what is known as Transformative Learning (Mezirow, 1991) with (Insiyah 2018). In this context, children do not merely memorize symbols but experience a shift in perspective regarding their environment.

In this management approach, learning assessment has evolved from a mere cognitive evaluation into an authentic evaluation grounded in the *Hijaiyah-Ecopedagogical* framework. Observation tools focus on how children interpret the *Hijaiyah* letters as sacred symbols intertwined with natural materials. As revealed in interviews with NRA teachers, evaluation is no longer limited to whether children can recite the letters, but rather on how they interact with natural materials while forming those letters.

This indicates that the *Hijaiyah* alphabet is a central focus of the assessment. A child is considered successful not only when they can construct the symbol for 'Ba,' but also when they can recognize that the materials they use (stones or twigs) represent God's creation, which must be preserved. This is the essence of *Ecopedagogy* in *Hijaiyah* Literacy: positioning sacred texts and ecological contexts within a unified assessment framework. The use of instruments focused on the interaction between *Hijaiyah* symbols and children's ecological behavior ensures that the findings of this study do not stray into general literacy issues but remain consistent with the strengthening of *spiritual-ecological* character.

Based on the findings of research on Authentic Assessment Based on *Hijaiyah-Ecopedagogy*, in line with Raisul Muhadidsin, Nabila Firlia Zahra, and Hafidz Taqiyuddin (2026) the statement, learning not only enhances thinking skills but also fosters feelings and a desire to act. The goal of Islamic religious education based on *eco-theology* is to enhance

students' awareness, perspectives, and skills as well as their engagement, which in turn will foster an environmentally conscious moral compass. Students are not only provided with sufficient knowledge but are also encouraged to act in accordance with their beliefs, such as maintaining cleanliness and preserving the environment.

Furthermore, these findings are linked to SDG 12 (Responsible Consumption and Production), indicating that early childhood education institutions can serve as catalysts for change in management practices. Schools instill a culture of sustainable management by applying the principles of reuse and recycling through learning focused on green behavior, encouraging children not only to understand the importance of the environment for sustainability but also to practice responsible, environmentally conscious behavior in their daily lives (Irayana and M. Irfan Islamy 2025). This demonstrates that Islamic educational management in Indonesia holds significant potential to address global challenges through an approach that is deeply rooted in local contexts and grounded in *theological-ecological* values.

## CONCLUSION

Research findings indicate that *Hijaiyah* literacy learning management based on *ecopedagogy* through recycled loose parts media is an effective strategy for integrating spiritual intelligence and *ecological* awareness in early childhood. The success of this model is reflected in its contextual planning system, exploratory implementation, and holistic evaluation. Observational data prove the effectiveness of this model with an average child development achievement of 85%, which includes the accuracy of *Hijaiyah* symbol construction as well as the emergence of a sense of responsibility towards the environment.

A surprising and crucial finding of this research is the shift in children's perception of "waste." Unlike conventional methods, where materials are merely tools, in this *ecopedagogical* model, children begin to treat recycled objects as "sacred instruments" that connect them to *spiritual* symbols. This indicates that the integration of religious values can significantly elevate the aesthetic and moral value of mundane materials, leading to a spontaneous "*eco-religious*" behavior that exceeds the results of standard environmental education.

However, this study has limitations, primarily its focus on a single institutional setting (Playgroups), which may not account for diverse socio-economic backgrounds where access to specific types of recycled "*loose parts*" might vary. Furthermore, the short-term observation period could not yet determine the long-term retention of these *eco-religious* characters as children transition to primary school.

Therefore, further research should focus on longitudinal studies to track the permanence of these environmental values. Future studies could also expand the scope by implementing this "*Eco-Religious Management*" model in larger, more diverse educational settings or exploring its application in other religious literacy contexts to validate its cross-cultural adaptability.

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