

Integrating Ecological Values into Arabic *Muhadatsah* Learning to Promote Students' Ecological Awareness

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ABSTRACT

The integration of sustainability into language education has received increasing scholarly attention; however, Arabic language instruction has rarely been positioned as a medium for fostering students' ecological awareness. This study investigates the effectiveness of integrating ecological values into Arabic *muhadatsah* learning to promote ecological awareness among students at an Islamic senior secondary school. Employing a Classroom Action Research design based on the Kemmis and McTaggart model, the study was conducted over two instructional cycles involving 35 tenth-grade students at MA Mursyiduttullab Lembanna. Data were collected through classroom observations, semi-structured interviews, and a 20-item ecological awareness questionnaire and analyzed using descriptive statistics, paired-sample *t*-tests, thematic analysis, and effect size analysis. The findings indicate that contextual *muhadatsah* activities incorporating authentic environmental themes significantly enhanced students' ecological awareness, classroom participation, and communicative confidence. The intervention also encouraged students to internalize environmental responsibility through dialogue, collaborative interaction, and reflective communication. These findings demonstrate that Arabic communicative learning can function not only as a means of developing speaking proficiency but also as a pedagogical space for cultivating sustainability values. This study contributes to the intersection of Arabic language pedagogy, ecolinguistics, and Education for Sustainable Development by proposing a contextual and sustainability-oriented *muhadatsah* model that integrates language learning with ecological value formation.

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Introduction

The accelerating climate crisis has positioned ecological awareness as one of the most pressing priorities in contemporary education. Global environmental challenges including climate change, biodiversity loss, deforestation, pollution, and unsustainable consumption have highlighted the necessity of developing environmentally responsible citizens through educational systems rather than relying solely on environmental regulations (Blumstein & Saylan, 2007; İzgi Onbaşılı & Ercan Yalman, 2025). The Intergovernmental Panel on Climate Change (IPCC, 2023) emphasizes that sustainable societal transformation requires changes not only in technology and policy but also in individual values, attitudes, and behaviors. Likewise, UNESCO (2020; 2023) identifies Education for Sustainable Development (ESD) as a fundamental strategy for cultivating ecological literacy, critical thinking, and pro-environmental behavior among younger generations. Consequently, ecological awareness is increasingly viewed as a multidimensional educational outcome involving cognitive understanding, environmental ethics, emotional engagement, and responsible action rather than merely environmental knowledge (Hassan et al., 2024; UNESCO, 2023).

Within the Indonesian context, strengthening ecological awareness among students remains a considerable educational challenge. Despite numerous governmental initiatives promoting environmental education, Indonesia continues to experience severe environmental degradation, including plastic waste accumulation, forest fires, deforestation, and declining ecosystem quality. This situation is reflected in Indonesia's relatively low environmental performance, where the country ranked 163rd out of 180 countries in the 2024 Environmental Performance Index (EPI) (Block et al., 2024). Such conditions indicate that environmental sustainability has not yet been effectively internalized within educational practices. In many Indonesian schools, environmental education is commonly delivered as isolated scientific knowledge instead of being integrated across disciplines, thereby limiting students' opportunities to construct ecological values through authentic learning experiences. Similar conditions were identified at MA Mursyiduttullab Lembanna, where environmental stewardship constitutes part of the school's vision, yet students continue to demonstrate limited participation in environmental initiatives and insufficient awareness of sustainable behaviors. This discrepancy suggests that ecological values have not been optimally transformed into everyday educational practices.

One promising approach to addressing this issue is integrating ecological education into communicative language learning, particularly through *muhadatsah* (Arabic conversation). Unlike traditional language instruction that primarily emphasizes linguistic accuracy, communicative learning enables learners to construct meaning through authentic interaction and socially relevant discourse. From the perspective of Constructivist Learning Theory, knowledge is actively developed through dialogue, negotiation, and social interaction rather than

passive transmission (Pelealu, 2015). Similarly, Content-Based Instruction (CBI) argues that language acquisition becomes more meaningful when learners use language to discuss authentic issues embedded in their social realities (Salmani et al., 2025). Ecological themes therefore provide meaningful communicative contexts that simultaneously facilitate Arabic speaking proficiency and ecological value formation. Moreover, an ecolinguistic perspective argues that language does not merely describe environmental reality but actively shapes ecological perceptions, ideologies, and patterns of human interaction with nature (Stibbe, 2021). Accordingly, integrating ecological discourse into *muhadatsah* has the potential to transform Arabic language classrooms into spaces where linguistic competence and environmental responsibility develop simultaneously.

Previous studies have widely acknowledged the importance of environmental education across various educational contexts. Existing research has predominantly explored ecological education through science learning, ecopedagogy, environmental campaigns, digital learning media, and sustainability-oriented instructional innovations (Hassan et al., 2024). Other studies have examined environmental education from Islamic ethical perspectives (Setianingrum et al., 2024), while several researchers have incorporated environmental topics into English language instruction to improve literacy, critical thinking, and environmental communication skills (Paramanathan & Syed-Abdullah, 2022). In Arabic language education, however, previous studies have largely concentrated on developing grammatical competence, vocabulary acquisition, speaking fluency, or communicative skills without explicitly embedding sustainability-oriented content into instructional activities (Abdilah & Al Farisi, 2023). Although these studies demonstrate valuable pedagogical contributions, they generally conceptualize language learning as linguistic skill development rather than as a medium for cultivating ecological consciousness and sustainability values.

Despite the growing body of literature on sustainability education, an important research gap remains insufficiently explored. Existing studies rarely examine how Arabic communicative learning, particularly *muhadatsah*, can function as a pedagogical space for ecological meaning-making through dialogue and interaction. The intersection between ecolinguistics, Arabic language pedagogy, and Education for Sustainable Development has therefore received limited scholarly attention, especially within Islamic secondary education. Consequently, empirical evidence demonstrating how communicative Arabic learning contributes to ecological awareness remains scarce. Addressing this gap, the present study investigates the integration of ecological values into *muhadatsah* learning to enhance students' ecological awareness. The novelty of this study lies in three significant contributions: first, it extends ecolinguistic theory by positioning Arabic communication as a medium for ecological value internalization; second, it proposes a sustainability-oriented *muhadatsah* instructional model that integrates

communicative competence with environmental education; and third, it provides empirical evidence that language learning can function as an interdisciplinary platform for promoting ecological awareness beyond conventional science instruction.

The significance of this study extends beyond improving Arabic speaking proficiency. As sustainability increasingly becomes a central agenda within global education, integrating ecological values into language classrooms offers an innovative pedagogical pathway for achieving both linguistic and environmental learning outcomes simultaneously. By demonstrating that Arabic communicative learning can contribute to the development of ecological awareness, this study broadens the role of Arabic language education from linguistic competence toward transformative education that supports sustainable development, environmental responsibility, and socially engaged citizenship. The findings are therefore expected to contribute not only to Arabic language pedagogy but also to the broader discourse on Education for Sustainable Development within Islamic educational institutions.

Method

Research Design

This study employed Classroom Action Research (CAR) to investigate the effectiveness of integrating ecological values into Arabic *muhadatsah* learning in promoting students' ecological awareness. Classroom Action Research was selected because it enables teachers and researchers to systematically improve instructional practices while simultaneously examining their impact on students' learning outcomes through iterative cycles of planning, implementation, observation, and reflection (Kemmis et al., 2013). Unlike experimental designs that primarily evaluate causal relationships under controlled conditions, CAR emphasizes continuous pedagogical improvement within authentic classroom settings, making it particularly suitable for developing contextual and value-oriented language learning innovations.

The study adopted the spiral model proposed by Kemmis and McTaggart (2013), consisting of four interconnected stages: planning, action, observation, and reflection. Each cycle informed the subsequent cycle through systematic evaluation and reflective revision, thereby allowing instructional improvements to be continuously refined. Two instructional cycles were implemented because previous action research has shown that two iterative cycles generally provide sufficient opportunities to identify instructional weaknesses, revise pedagogical strategies, and observe measurable learning improvements (Cohen et al., 2013).

Although the research primarily adopted a Classroom Action Research approach, quantitative and qualitative evidence were collected simultaneously to obtain a comprehensive understanding of the intervention outcomes. Quantitative data were generated from ecological awareness questionnaires administered before and after the intervention, whereas qualitative evidence was obtained through classroom observations and semi-structured interviews.

Combining these complementary sources enabled methodological triangulation and strengthened the credibility of the findings (Creswell et al., 2007).

Research Context and Participants

The research was conducted at MA Mursyiduttullab Lembanna, an Islamic senior secondary school that emphasizes both Arabic language learning and character education within its curriculum. The school has incorporated environmental responsibility into its institutional vision; however, preliminary classroom observations indicated that students' ecological awareness and participation in environmental conservation activities remained relatively limited. This educational context provided an appropriate setting for examining whether ecological values could be more effectively internalized through communicative Arabic language learning.

The participants consisted of 35 tenth-grade students enrolled in the Arabic language course during the 2025/2026 academic year. Participants were selected using purposive sampling, as this class represented students who had completed basic Arabic instruction and had begun developing communicative speaking skills through *muhadatsah*. At this educational stage, students are considered cognitively capable of engaging in reflective dialogue, contextual problem-solving, and value-oriented discussion, all of which are essential components of ecological communication.

The Arabic language teacher participated collaboratively throughout the intervention by facilitating classroom implementation, while the researchers assumed the roles of instructional designers, classroom observers, and data analysts. Such collaboration reflects one of the defining characteristics of Classroom Action Research, where teachers and researchers jointly improve instructional practice through reflective inquiry (Burns, 2009).

Instructional Intervention

The intervention consisted of integrating ecological values into Arabic *muhadatsah* instruction through contextual communicative learning activities. Rather than treating environmental education as an independent subject, ecological themes were embedded within Arabic speaking practices to encourage students to communicate using authentic environmental issues encountered in their daily lives. This instructional design was grounded in Content-Based Instruction (CBI), which emphasizes learning language through meaningful disciplinary content (Richards, 2022; Salmani et al., 2025).

The intervention was implemented across two instructional cycles. During the first cycle, learning activities focused on introducing environmental vocabulary, simple dialogue structures, and basic ecological concepts related to school cleanliness, waste management, tree planting,

and responsible environmental behavior. Students practiced structured conversations in pairs while receiving teacher guidance on both linguistic accuracy and ecological content.

Following reflective evaluation of the first cycle, the second cycle incorporated more interactive communicative tasks designed to stimulate higher-order thinking and collaborative problem-solving. Students participated in role-play, argumentative dialogue, group discussion, environmental campaign simulations, and oral reflection activities addressing contemporary environmental issues. These activities encouraged students not only to improve Arabic speaking fluency but also to negotiate ecological meaning through authentic communication, consistent with constructivist learning principles (Pelealu, 2015).

Research Procedures

The Classroom Action Research followed the four stages proposed by Kemmis and McTaggart (2013).

During the planning stage, researchers identified classroom problems through preliminary observations and discussions with the Arabic teacher. Based on these findings, lesson plans integrating ecological themes into *muhadatsah* learning were developed. Learning materials incorporated environmental vocabulary, communicative expressions, contextual dialogues, and speaking activities emphasizing environmental responsibility. Observation sheets, interview protocols, ecological awareness questionnaires, and assessment rubrics were also prepared prior to implementation.

The action stage involved implementing the designed instructional activities during regular Arabic language lessons. Students participated in various communicative learning tasks, including pair dialogue, collaborative discussion, role-play, oral presentations, and reflective conversation concerning environmental sustainability. Throughout the intervention, the teacher facilitated interaction while encouraging students to express ecological ideas using Arabic.

During the observation stage, researchers systematically documented classroom interaction, student participation, communicative performance, and ecological responses using structured observation sheets. Particular attention was given to students' willingness to participate, environmental vocabulary usage, communicative confidence, collaborative interaction, and expressions reflecting ecological awareness.

The reflection stage involved evaluating instructional outcomes after each cycle by examining questionnaire results, classroom observations, interview findings, and teacher reflections. Identified weaknesses from the first cycle were subsequently addressed during the

second cycle through revised instructional strategies, more interactive speaking activities, and enhanced opportunities for collaborative communication.

Research Instruments

Three complementary instruments were employed to collect research data. First, classroom observations were conducted throughout both instructional cycles to examine students' participation, communicative interaction, environmental expression, collaborative engagement, and observable ecological behavior during *muhadatsah* activities. Structured observation sheets enabled systematic documentation of classroom processes while minimizing observer subjectivity.

Second, semi-structured interviews were conducted with the Arabic language teacher, the school principal, and selected students after completion of the intervention. The interviews explored participants' perceptions regarding instructional implementation, students' learning experiences, ecological value internalization, and challenges encountered throughout the learning process. Semi-structured interviews were selected because they provide flexibility while ensuring consistency across participants (Patton, 2014).

Third, students completed an Ecological Awareness Questionnaire consisting of twenty statements measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire measured five dimensions of ecological awareness: environmental knowledge, environmental attitudes, environmental responsibility, sustainable behavior, and participation in environmental conservation activities. These indicators were adapted from UNESCO's Education for Sustainable Development framework and previous ecological awareness studies (UNESCO, 2020; Hassan et al., 2024).

Instrument Validity and Reliability

To ensure content validity, all research instruments underwent expert judgment involving two specialists in Arabic language education and one expert in environmental education. The experts evaluated the clarity, relevance, linguistic appropriateness, and conceptual alignment of each questionnaire item and observation indicator with the research objectives. Revisions were subsequently undertaken based on expert recommendations before classroom implementation.

The internal consistency of the ecological awareness questionnaire was examined using Cronbach's Alpha, resulting in a reliability coefficient of 0.82, which exceeds the minimum acceptable threshold of 0.70 and therefore indicates satisfactory reliability (Hair et al., 2022; Taber, 2018). These findings suggest that the instrument consistently measured students' ecological awareness across multiple dimensions.

To enhance the trustworthiness of qualitative findings, methodological triangulation was employed by comparing evidence obtained from classroom observations, interviews, and questionnaire responses. Member checking was also conducted with the Arabic teacher to verify

the accuracy of classroom interpretations, thereby strengthening the credibility of the qualitative findings (Lincoln & Guba, 1985).

Data Analysis

Both quantitative and qualitative analytical procedures were employed to comprehensively evaluate the intervention.

Quantitative data obtained from the ecological awareness questionnaire were analyzed using IBM SPSS Statistics. Descriptive statistics, including means, standard deviations, frequencies, and percentage distributions, were first calculated to describe students' ecological awareness before and after the intervention. Prior to hypothesis testing, the assumption of normality was examined using the Shapiro–Wilk test. Since both pre-test and post-test data demonstrated normal distribution ($p > .05$), parametric statistical analysis was considered appropriate (Field, 2024).

Subsequently, a paired-sample t-test was conducted to determine whether statistically significant differences existed between students' ecological awareness before and after participating in ecological-based *muhadatsah* learning. Statistical significance was determined at $\alpha = .05$. To evaluate the practical significance of the intervention, Cohen's d effect size was calculated. The obtained effect size ($d = 0.72$) indicated a moderate-to-large educational effect, suggesting that integrating ecological values into communicative Arabic learning produced meaningful improvements in students' ecological awareness.

Qualitative data derived from classroom observations and interviews were analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2021). Data were transcribed, repeatedly reviewed, coded, categorized into emerging themes, and interpreted to explain how students developed ecological awareness throughout communicative learning activities. The integration of quantitative and qualitative findings enabled a richer interpretation of both learning outcomes and classroom processes.

Research Ethics

This research adhered to internationally recognized ethical principles governing educational research. Prior to data collection, formal approval was obtained from the school administration, and all participants received detailed information concerning the objectives, procedures, and voluntary nature of the study. Written informed consent was obtained from participants before the intervention commenced.

Participants were assured that their identities would remain confidential throughout the research process. Personal information was anonymized using identification codes, and all research data were stored securely for academic purposes only. Participants retained the right to withdraw from the study at any stage without academic consequences. Throughout the research process, the investigators ensured that the intervention posed no physical,

psychological, or educational risks to participants and that all procedures complied with accepted ethical standards for educational research (BERA, 2024; American Psychological Association, 2020).

Result and Discussion

The learning conditions before the action show several things that need to be improved, but before that, the researcher first conducts a validity and reliability test to test the validity of the data and the consistency of the data processed

Reliability Statistics	
Cronbach's Alpha	N of Items
.912	23

Based on the table above, it is known that Cronbach's Alpha value of 0.9 means that it is greater than 0.6 so that the reliability of the instrument used is acceptable. In addition, based on the results of the researcher's observations, in *muhadatsah* learning, students still tend to find it difficult to communicate with Arabic, in addition to that in the interview process with the Arabic subject teacher, Mrs. Marlina, it is known that "In class, children rarely use Arabic in class because of different backgrounds," besides that she also added that "in learning very rarely discusses ecological problems, The material presented focuses on the books used".

Furthermore, in the awareness of caring for the environment of students at MA MursyidutThullab Lembanna at the beginning of the action or pre-test, a percentage of 77% was found with an average score of 88.66. The data was obtained from the distribution of questionnaires to 35 students of class X. With the general picture obtained by the researcher through the distribution of the questionnaire, the researcher wanted to find out more about the results of changes in students' ecological awareness through Arabic *muhadatsah*.

Cycle I

The first cycle of the classroom action research consisted of four interrelated stages: planning, implementation, observation, and reflection. During the planning stage, the researcher prepared instructional materials related to environmental themes and presented them in Arabic to support students' language development while fostering environmental awareness. Appropriate learning media were also developed, and detailed lesson plans were designed to ensure that the learning process was systematic, measurable, and aligned with the intended learning objectives. This preparation was particularly important because the school did not provide standardized instructional materials on environmental topics, especially those designed for Arabic language instruction.

During the implementation stage, the researcher carried out the instructional activities according to the lesson plan. The learning process began with an introductory session in which

the teacher greeted the students, checked attendance, and provided an overview of the learning objectives and the environmental topics to be discussed. In the main learning activities, the teacher presented the instructional materials in Arabic and encouraged students to participate in simple oral interactions by responding to questions related to the lesson. Students were continuously motivated to express their ideas in Arabic, and their speaking efforts were acknowledged and appreciated to build confidence and increase classroom participation. The lesson concluded with a summary of the key concepts, followed by a reflection on the learning activities, before ending with a closing prayer and greetings.

The observation stage focused on monitoring students' participation and identifying challenges encountered during the learning process. The observations revealed that many students tended to avoid responding when asked to speak in Arabic, indicating limited confidence and active participation. Furthermore, several students had not yet fully understood the importance of environmental issues, partly because the instructional content was delivered in Arabic, which increased the cognitive demands of the learning process. These findings highlighted several limitations in the first cycle and provided valuable information for improving subsequent instructional activities.

Finally, during the reflection stage, the researcher evaluated the outcomes of the first cycle and identified several aspects requiring improvement. It was concluded that the instructional materials should be presented using simpler and more comprehensible Arabic expressions to facilitate students' understanding without reducing language exposure. In addition, greater attention should be given to creating a supportive and engaging classroom atmosphere that encourages students to participate actively in oral communication. These reflections served as the basis for revising the instructional strategy implemented in the subsequent research cycle.

Cycle II

Following the evaluation of the shortcomings identified in Cycle I, the researcher proceeded to implement Cycle II by refining the learning activities based on the results of the reflection. The first stage was planning, during which the researcher prepared learning materials that were simpler, more engaging, and easier for students to understand. The instructional content was presented in the form of a dialogue centered on environmental topics, allowing students to practice speaking in a more meaningful and contextualized manner.

The second stage was implementation, in which the researcher carried out the lesson according to the revised instructional plan. The lesson began with introductory activities, including greeting the students, checking attendance, and providing a brief overview of the learning objectives and the material to be discussed. During the main activity, the teacher reviewed the material from the previous meeting as a form of learning evaluation before

introducing the new dialogue. Students were then encouraged to participate actively by answering simple questions related to the dialogue and expressing their opinions in Arabic. Throughout the lesson, the teacher consistently appreciated students' efforts to communicate their ideas and encouraged them to speak confidently without fear of making mistakes. The lesson concluded with a summary of the key learning points, followed by a closing prayer and greetings.

The third stage was observation, during which the researcher monitored students' participation and behavioral changes throughout the learning process. Compared with the previous cycle, students demonstrated greater confidence and enthusiasm in expressing their opinions and answering questions during classroom discussions. In addition to their increased verbal participation, students also showed greater awareness of environmental responsibility by voluntarily participating in classroom cleaning activities, reflecting the successful integration of the lesson content into their daily behavior.

The final stage was reflection, in which the researcher evaluated the effectiveness of the revised instructional strategies implemented in Cycle II. The reflection indicated that presenting simpler and more comprehensible learning materials successfully promoted more active classroom interaction and reduced teacher-centered instruction. The use of contextual dialogue and interactive questioning created a more dynamic learning environment, enabling meaningful communication between the teacher and students and contributing to improvements in both speaking performance and classroom engagement.

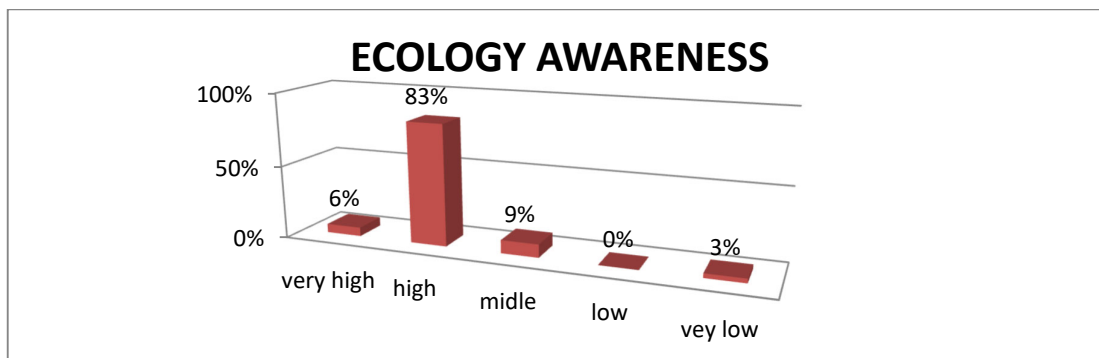
Students' Ecological Awareness before and after learning

Table 1. Students' Ecological Awareness

Ecological Awareness		
Cycle	Mean Score	Percentage
Pre-Cycle	88,66	77%
Cycle I	93,11	81%
Cycle II	95,91	83%

Based on the table, it can be seen that in the pre-action, the average environmental knowledge of class X students was obtained which was 88.66 with a percentage of 77% of good geori.

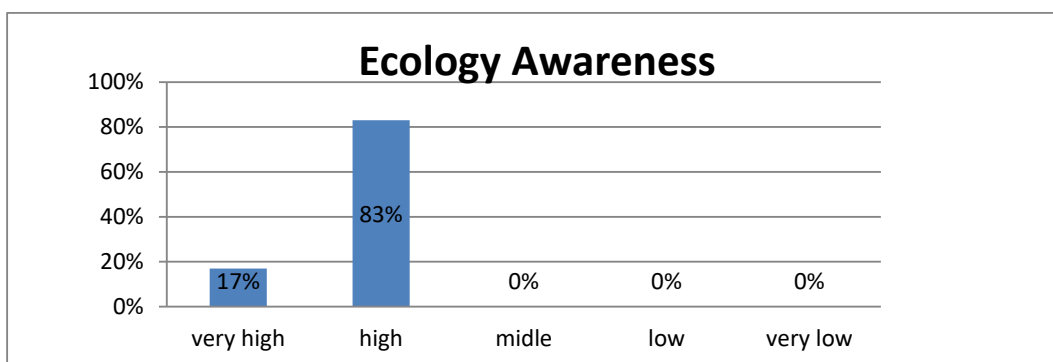
Table 2. Pre-action Ecological Awareness



Although the percentage score above shows a good category, it was found that 3% of students are in the category of very low understanding of the environment and 9% so it is still necessary to be given some stimulus so that learning success can be achieved. This was asked to one of the students of class x about the difficulties encountered when studying "The difficulty I experienced was the delivery of material that was not optimal and I still did not understand it very well", he said. Meanwhile, from the results of observations, it was found that there is still low awareness of students, especially in efforts to reduce waste at home, and there is still a need for encouragement to maintain school cleanliness. Thus the researcher decided to continue in cycle I.

In the first cycle, it was obtained that the average awareness of class X students showed a figure of 93, 11 with a percentage of 81% which was classified as good. Through this data, if explained through a meal chart, an overview is obtained:

Table 3. Ecological Awareness Cycle I

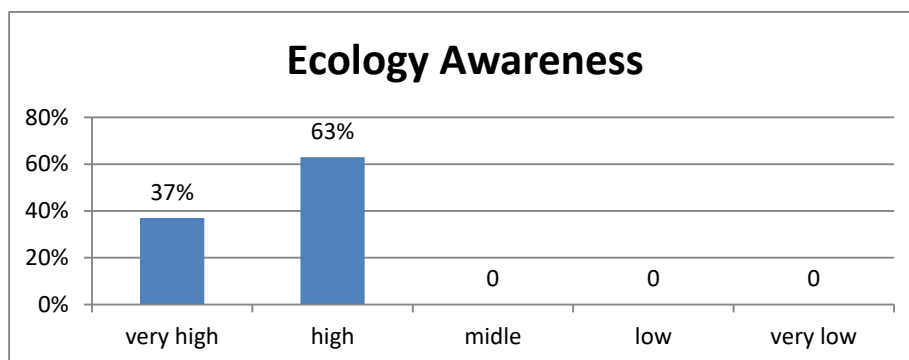


In the chart, it can be seen that there is a change compared to the pre-action of the following things, marked by an increase in the percentage in the very high category by 17% and in the high category by 83%. This is also strengthened by the results of interviews with class X students "The existence of a focus on the environment makes me understand better how to protect the environment and how to take care of it" while at the observation stage, students are seen to be more active in maintaining the cleanliness of the classroom and have thrown food

packaging waste in the trash can after eating. Although there was an increase compared to the pre-cycle, the researcher wanted to continue in cycle II to find out if there were changes in the next stage assuming there were significant changes in this cycle II.

In the second cycle, an average score of 95.91 was obtained at a good percentage of 83%. In this second cycle, there was an increase in the very good category and a decrease in the good category. Here's the chart:

Table 4. Ecological awareness cycle II



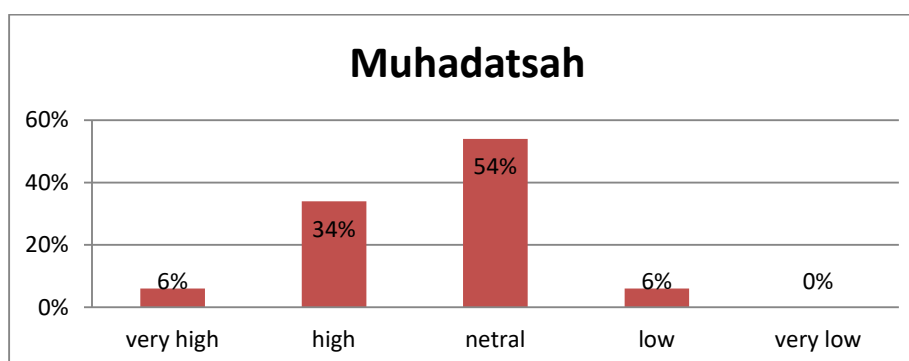
From the chart, it is known that there was a decrease in the category of good by as much as 20% to 63%, while in the very good category there was an increase of 20%, this shows a significant change in this second cycle.

Thus, it can be concluded that students' ecological awareness has increased every cycle, although there are several things that still need to be reviewed further.

The Ability to Be Successful

Based on the results of the research on the pre-action, an overview was obtained which is explained through the following diagram:

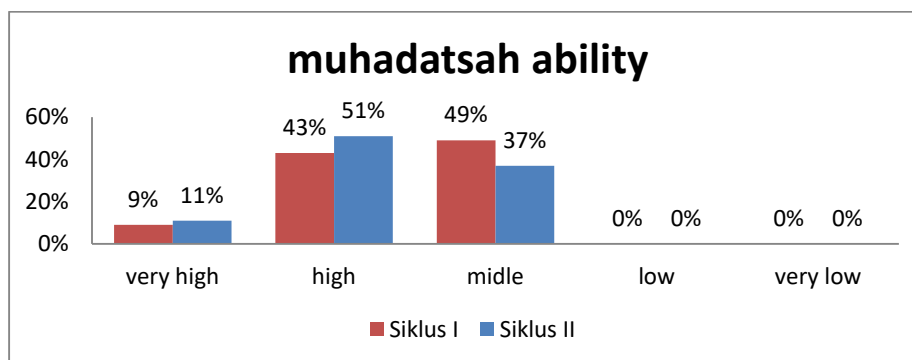
Table 5. The Ability to Pre-Meditate



From the diagram, it can be seen that around 6% of students are in the low category. One of the aspects that is a weakness that occurs based on the results of observation is that students are very lacking in speaking in class, the delivery of material often uses Indonesian, so

Arabic communication is very rare. In an interview with the Arabic subject teacher, Mrs. Marlina said "it is a challenge because students have a variety of different backgrounds". thus, the researcher took action in Cycle I and Cycle II to find out the changes in students' communication skills in each cycle. The following is salted in both cycles:

Tabel 6. Comparison of *muhadatsah* capability in the cycle I and II



After taking action in the first cycle, it can be seen that around 49% of students are still in the sufficient category, and 43% are in the high category and 9% are in the very high category. The results of observations in learning after the first cycle were obtained as a result of students slowly starting to dare to express their opinions, although most of them were still stammering in their pronunciation. Meanwhile, in cycle II there was a decrease in the sufficient category to 37% and there was an increase in 51% and in the very high category it increased to 11%, based on the results of observation through the classroom it was also obtained that students slowly began to be able to make arguments related to environmental issues with Arabic, language skills although there is still a need to strengthen but there has been a significant increase compared to cycle I. In addition, according to Students "With the existence of environmental materials in learning Arabic provides a new nuance in learning, we are not only taught to learn Arabic but also taught values about protecting the environment.

Based on the results of the actions that have been carried out in the two cycles, it can be concluded that with the integration of the environmental theme of the learning environment of students. Students are not only taught the value of ecology but also the ability to understand the language and the ability to improve their Arabic language literacy.

Tabel 7. Inferential Statistical Analysis (Paired-Sample t-Test)

Inferential Statistic Analysis

Statistic	Pre-Test	Post-Test
Mean	100.97	107.89
Variance	148.03	48.16
Observations	35	35
Pearson Correlation	0.62	-
df	34	-
t Stat	-4.26	-

Sig. (2-tailed)	0.00	-
Cohen's d (Effect Size)	0.72	-
Interpretation	Moderate to Large Effect	-

Cohen's d value of 0.72 indicates that the integration of environmental themes in *muhadatsah* learning has a moderate to high influence on the improvement of students' ecological awareness and speaking ability.

The present study demonstrates that integrating ecological values into Arabic *muhadatsah* learning contributes positively to students' ecological awareness while simultaneously strengthening communicative competence. Across the two Classroom Action Research cycles, students exhibited measurable improvements not only in their ecological awareness scores but also in their participation, confidence, and engagement during Arabic speaking activities. The quantitative findings indicated a statistically meaningful increase in ecological awareness following the intervention, while classroom observations and interview data revealed corresponding behavioral changes, including greater participation in maintaining classroom cleanliness, increased responsibility for waste management, and more active involvement in environmental conservation activities. These findings suggest that contextual Arabic communication can function not merely as a vehicle for language acquisition but also as a pedagogical medium for fostering environmental responsibility. Such findings reinforce UNESCO's (2020; 2023) assertion that Education for Sustainable Development should integrate sustainability values across curricular disciplines rather than confining them to environmental science instruction.

The findings also extend previous research concerning environmental education and communicative language teaching. Earlier studies predominantly integrated ecological education into science learning, ecopedagogy, digital learning environments, or environmental literacy programs (Hassan et al., 2024; Setianingrum et al., 2024). Other scholars have demonstrated that environmental themes can enhance literacy development and critical thinking in English language education (Paramanathan & Syed-Abdullah, 2022). Consistent with these studies, the present research confirms that authentic environmental issues provide meaningful contexts for learning. However, unlike previous investigations, this study demonstrates that Arabic *muhadatsah* can also serve as an effective pedagogical space for cultivating ecological awareness through spoken interaction. Whereas previous Arabic language studies have primarily emphasized grammatical competence, vocabulary acquisition, or speaking fluency (Abdilah & Al Farisi, 2023), the present findings indicate that communicative Arabic learning can simultaneously support language development and sustainability-oriented character education. This finding therefore broadens the pedagogical function of Arabic language instruction beyond linguistic competence alone.

The effectiveness of the intervention can be explained through several complementary theoretical mechanisms. First, the contextualization of ecological themes enabled students to discuss issues that closely reflected their everyday experiences, including classroom cleanliness, waste disposal, school gardening, and environmental responsibility. According to Contextual Teaching and Learning (CTL), learning becomes more meaningful when instructional content is directly connected to learners' real-life experiences, thereby facilitating deeper understanding and long-term retention (Triani & Putra, 2023). Because students communicated about familiar situations rather than abstract topics, they were able to express ideas more confidently and participate more actively in classroom interaction. This authentic communicative engagement reduced the cognitive burden associated with language production while simultaneously encouraging meaningful reflection on environmental issues.

Second, the findings can be interpreted through the perspective of Content-Based Instruction (CBI), which conceptualizes language as a medium for learning disciplinary content rather than an isolated linguistic system (Richards, 2022; Salmani et al., 2025). Within the present study, ecological content functioned as the communicative substance through which students practiced Arabic speaking. Consequently, vocabulary acquisition, sentence production, and communicative interaction occurred naturally while students discussed authentic environmental challenges. Rather than memorizing decontextualized dialogues, learners actively negotiated meaning, defended opinions, and collaboratively proposed environmental solutions using Arabic. Such communicative processes align with constructivist learning theory, which argues that knowledge develops through active social interaction, dialogue, and collaborative meaning-making (Pelealu, 2015).

Third, the development of ecological awareness can also be interpreted through an ecolinguistic perspective, which argues that language shapes how individuals perceive and interact with the natural environment (Stibbe, 2020). Classroom dialogue concerning environmental responsibility encouraged students to construct ecological meanings collectively through discourse rather than merely receiving environmental information passively. Repeated communicative exposure to ecological vocabulary, expressions, and problem-solving discussions gradually transformed environmental concepts into socially shared values. This finding supports Rapanta and Felton (2022), who argue that dialogic learning promotes reflective thinking because students continuously evaluate, negotiate, and reconstruct ideas through interaction (Rapanta & Felton, 2022). Therefore, ecological awareness in this study emerged not solely from acquiring environmental knowledge but from participating in communicative practices that repeatedly reinforced environmentally responsible perspectives.

Another important finding concerns the reciprocal relationship between communicative confidence and ecological engagement. Students demonstrated greater willingness to

participate in Arabic conversations because the discussion topics reflected situations they encountered daily. Authentic environmental themes reduced students' anxiety when speaking and increased their motivation to contribute ideas during classroom interaction. Previous communicative language learning research has consistently reported that meaningful topics increase learner engagement, intrinsic motivation, and speaking confidence because learners perceive communicative tasks as personally relevant (Wang et al., 2024). The present findings therefore suggest that contextual environmental topics simultaneously functioned as linguistic scaffolding and motivational support, enabling students to improve both communicative competence and ecological consciousness.

From a theoretical perspective, this study contributes to the emerging intersection of Arabic language pedagogy, ecolinguistics, and Education for Sustainable Development (ESD). While ecolinguistic research has generally focused on environmental discourse analysis and ecological narratives (Stibbe, 2021), relatively few studies have examined how ecological discourse can be operationalized within Arabic language classrooms. The present study extends this body of literature by demonstrating that Arabic communicative interaction can function as a pedagogical mechanism for ecological value internalization. Accordingly, Arabic language learning should not be viewed solely as linguistic training but also as a transformative educational practice capable of cultivating environmental ethics, critical reflection, and sustainable citizenship.

The study also offers several pedagogical implications. First, Arabic language teachers may consider integrating sustainability-related themes into *muhadatsah* activities to increase both communicative authenticity and environmental awareness. Second, curriculum developers may incorporate interdisciplinary environmental topics into Arabic teaching materials as part of broader Education for Sustainable Development initiatives promoted by UNESCO (2020; 2023). Third, teacher education programs should prepare future Arabic teachers to design communicative learning experiences that integrate language development with contemporary global issues such as environmental sustainability. Such interdisciplinary approaches may increase the social relevance of Arabic language education while strengthening students' communicative competence and character development simultaneously.

Despite these promising findings, several limitations should be acknowledged. The study was conducted within a single Islamic secondary school involving a relatively small number of participants, thereby limiting the generalizability of the findings to broader educational contexts. Furthermore, the intervention was implemented over only two Classroom Action Research cycles, making it difficult to determine the long-term sustainability of students' ecological awareness after the completion of the program. The measurement of ecological awareness also relied primarily on self-reported questionnaire data supported by classroom observations and

interviews, which may not fully capture long-term behavioral changes outside the classroom. Future studies are therefore encouraged to employ longitudinal or quasi-experimental designs involving multiple schools and more diverse participant populations. In addition, future research could investigate the integration of ecological themes into other Arabic language skills, including listening, reading, and writing, to develop a more comprehensive sustainability-oriented Arabic language curriculum.

Conclusion

This study demonstrates that integrating ecological values into Arabic *muhadatsah* learning provides an effective pedagogical approach for simultaneously enhancing students' ecological awareness and communicative competence. By embedding authentic environmental issues into contextual speaking activities, students were encouraged to engage in meaningful dialogue, reflect on environmental responsibility, and actively construct ecological understanding through communication. The findings indicate that *muhadatsah* can extend beyond its conventional role of developing Arabic speaking proficiency to become an interdisciplinary learning space that facilitates the internalization of sustainability values and environmentally responsible behavior. These results suggest that contextual communicative learning offers a productive pathway for connecting language education with broader educational goals related to sustainable development.

The study contributes to the growing body of research at the intersection of Arabic language education, ecolinguistics, and Education for Sustainable Development by demonstrating that communicative Arabic instruction can function as a medium for ecological value formation rather than solely for linguistic skill development. Pedagogically, the proposed integration of ecological themes into *muhadatsah* provides an innovative instructional model that enriches Arabic language learning with authentic, socially relevant content while promoting students' active participation and reflective thinking. This interdisciplinary approach has the potential to strengthen the role of Arabic language education in fostering character development and sustainability-oriented learning within Islamic educational institutions.

Although the findings provide encouraging evidence, they were generated within a single classroom context and over a relatively short intervention period. Future studies are therefore encouraged to examine the long-term impact of sustainability-oriented Arabic language learning across different educational settings, participant characteristics, and language skills. Further research employing longitudinal, quasi-experimental, or multi-site designs would contribute to a more comprehensive understanding of how ecological values can be systematically integrated into Arabic language curricula to support both communicative competence and sustainable citizenship.

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