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### Eco-Habituation Learning (EHL): Internalizing ESD Values through Habit Formation to Foster Environmentally Friendly Behavior Among Students

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#### Abstract

This study aims to analyze the application of Eco-Habituation Learning (EHL) in internalizing ESD values to foster environmentally friendly behavior among students. In addition, this study can also provide practical insights into the development of environment-based learning models that are in line with the times and the needs of today's students. This study employed a descriptive qualitative approach, utilizing data collection techniques such as observation, interviews, and documentation, which were analyzed thematically. The results indicate that the implementation of EHL through consistent practice, coupled with the supervisory support of teachers and school principals, significantly fosters students' environmentally conscious attitudes. Such habit formation encourages students to internalize environmental values through direct experience; EHL has proven effective as a learning approach in supporting the implementation of ESD in schools. Therefore, it is recommended that schools integrate habit-forming strategies systematically and continuously to strengthen students' environmentally conscious character.

[Penelitian ini bertujuan untuk menganalisis penerapan Pembelajaran Pembiasaan Ekologis (EHL) dalam menginternalisasi nilai-nilai ESD guna menumbuhkan perilaku ramah lingkungan di kalangan siswa. Selain itu, penelitian ini juga dapat memberikan wawasan praktis mengenai pengembangan model pembelajaran berbasis lingkungan yang sesuai dengan zaman dan kebutuhan siswa saat ini. Penelitian ini menggunakan pendekatan kualitatif deskriptif, dengan memanfaatkan teknik pengumpulan data seperti observasi, wawancara, dan dokumentasi, yang dianalisis secara tematis. Hasil penelitian menunjukkan bahwa penerapan EHL melalui praktik yang konsisten, ditambah dengan dukungan pengawasan dari guru dan kepala sekolah, secara signifikan menumbuhkan sikap sadar lingkungan pada siswa. Pembentukan kebiasaan tersebut mendorong siswa untuk menginternalisasi nilai-nilai lingkungan melalui pengalaman langsung; EHL telah terbukti efektif sebagai pendekatan pembelajaran dalam mendukung implementasi ESD di sekolah. Oleh karena itu, disarankan agar sekolah mengintegrasikan strategi pembentukan kebiasaan secara sistematis dan berkelanjutan untuk memperkuat karakter sadar lingkungan siswa.] © The Authors.

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## 1. Introduction

The phenomenon of low environmental awareness among students has become a critical concern in the context of sustainable education [1]. The younger generation is increasingly exposed to technology but lacks a deep understanding of environmental values, while the learning process in schools still tends to prioritize cognitive aspects over the development of practical habits in daily life [2]. The data shows that littering is still common in school environments, and the implementation of environmental education has not been optimal due to a lack of hands-on approaches [3]. *Education for Sustainable Development (ESD)* emphasizes the importance of shaping behavior through hands-on experiences, which underscores the urgency of identifying effective strategies to foster environmentally friendly behavior among students [4].

Although research on environmental education continues to grow, there is a significant gap regarding habit formation as a key strategy for shaping student behavior. Most studies focus more on program implementation or curriculum integration than on students' daily practices within the school environment, with approaches that often emphasize cognitive aspects and are therefore less effective in fostering sustainable habits [5]. Although the implementation of ESD has been shown to significantly increase students' environmental awareness, and structured programs such as Green Education have proven effective in fostering environmentally conscious attitudes, research consistently shows that without consistent reinforcement, changes in student behavior tend not to last long [3].

Research on experiential learning shows that students' direct involvement in environmental activities can strengthen their internalization of values and sense of responsibility toward sustainability [6]. However, the integration of habit-forming approaches in fostering environmentally friendly behavior among students remains limited, as habit formation is often viewed as an informal process that is difficult to measure within the framework of learning assessment [7]. In addition, current approaches still tend to emphasize formal programs over students' daily practices, leaving a critical gap between conceptual understanding and actual behavior in the school setting [8].

A considerable amount of previous research has examined environmental education and Education for Sustainable Development (ESD). Salma Shafi Safira, in a study titled "Analysis of the Implementation of Education for Sustainable Development (ESD) at SMPN 1 Kalirejo," found that ESD implementation in environmental aspects was highly successful, with 95% of indicators achieved. The study also showed that ESD had been integrated into learning activities and school culture, helping to improve students' environmental awareness. However, challenges such as limited environmental facilities still remained. The similarity with this study lies in the discussion of environmental education in supporting sustainable development. The difference is that this research focuses more on habit-forming activities in shaping students' eco-friendly behavior.

Yuana Dwi Cahya, Baryanto, and Rizki Yunita Putri, in their study titled "Implementation of the Green Education Program in Enhancing Environmental Awareness Among Fifth-Grade Students at SDN 17 Rejang Lebong," found that the Green Education program successfully improved students' environmental awareness through integrated learning and sustainable activities. The study showed that students demonstrated increased understanding and environmentally responsible behavior after participating in the program. The similarity with this study lies in the focus on improving students' environmental awareness and behavior. The difference is that this study emphasizes habit-forming activities as a strategy to support Education for Sustainable Development (ESD).

This study proposes Eco-Habituation Learning (EHL) as an integrated habituation strategy to address this gap. EHL emphasizes continuous and repetitive eco-friendly practices, embedded in students' daily routines at school as a means of internalizing ESD values. This approach bridges the gap between students' conceptual understanding and their actual environmental practices by making habituation the primary mechanism for behavioral change, rather than merely a supplementary component of formal programs [9].

This study aims to analyze the application of EHL in internalizing ESD values to foster environmentally friendly behavior among students at SMPI Darussalam. The novelty of this study lies in the systematic integration of habit formation as the primary framework in environmental education, offering theoretical and practical contributions to the development of a sustainable, habit-based environmental education model. This approach is expected to strengthen the long-term effectiveness of ESD implementation in the school environment

## **2. Method**

This study employs a descriptive qualitative design to understand the phenomenon of students' environmental awareness. This approach was chosen because it allows for an in-depth exploration of meanings and processes. Additionally, this method is suitable for examining behavior in a natural setting. The research was conducted through observation of students' activities at school. This approach is effective for understanding social phenomena holistically. However, this approach requires researcher subjectivity. Therefore, this design was used to gain a comprehensive understanding.

The units of analysis in this study are students, teachers, and environmental education activities at school. This is because they are the primary actors in shaping environmental behavior. Additionally, school activities reflect the practical application of environmental values. Research indicates that school interactions shape students' character. Other studies confirm that collective activities reinforce environmental values. However, this unit does not yet encompass the environment outside of school. Therefore, the focus of the analysis is directed toward the school context.

The data sources consist of primary and supporting qualitative data. Primary data were obtained from interviews and participant observation. Additionally, supporting data were derived from documentation of school activities. Qualitative data allow for an in-depth understanding of phenomena. Combining data enhances the validity of the research. However, this data collection requires a high degree of precision. Therefore, various data sources are utilized.

Data collection techniques include observation, interviews, and documentation. These techniques were chosen because they provide comprehensive and in-depth data. Additionally, triangulation can enhance data validity. Observation is used to directly observe student behavior. Interviews explore participants' understanding. However, this technique requires the researcher's communication skills. Therefore, the techniques are combined to achieve optimal results.

Data analysis is conducted through reduction, presentation, and drawing conclusions. These steps are used to simplify complex data. Additionally, this process helps identify patterns in the research data. The model proposed by Miles et al. emphasizes interactive analysis in qualitative research. This approach is effective in uncovering social phenomena. However, this analysis requires a high degree of precision. Therefore, the analysis is conducted systematically.

## **3. Result and Discussion**

### **3.1 Implementation of Eco-Habituation Learning (EHL) Through Environmental Education Programs in Schools**

The implementation of Eco-Habituation Learning (EHL) demonstrates the crucial role of habit formation in shaping students' eco-friendly behavior. This is because habit formation bridges the gap between knowledge and real-world practice in daily life. Furthermore, this approach reinforces the internalization of environmental values through students' direct experiences. Research indicates that experience-based learning is more effective in fostering sustainable behavior [10]. Other studies also confirm that repeated habits can consistently shape students' character [3]. However, this approach has not yet been uniformly implemented in all schools [11]. Therefore, EHL is a vital approach in practice-based environmental education.



Figure 1. Students participation in environmental education activities at school

Student engagement and participation play an important role in supporting the implementation of Education for Sustainable Development (ESD) in schools. Through active involvement in environmental activities, students are not only introduced to environmental knowledge but are also encouraged to develop sustainable habits and responsible attitudes toward their surroundings. Routine school programs, such as community service activities, provide opportunities for students to participate directly in maintaining environmental cleanliness and sustainability. These activities reflect the integration of Environmental Habituation Learning (EHL) and ESD principles, where repeated practices and participatory learning contribute to the development of environmental awareness and values among students.

Tabel 1. Student engagement and participation in supporting education for sustainable development (ESD)

Data Excerpt	Data Analysis	Concept (EHL/ESD)	Description
Community service activities are held every morning before classes begin.	Demonstrates the existence of routine habits as a form of habit-based learning.	EHL (repeated exposure) EHL + ESD (participatory)	Structured activities
All students participated in cleaning the school grounds, both inside and outside the classrooms.	Active student participation reflects hands-on learning.	EHL + ESD (participatory)	Student engagement
Environmental education isn't just about teaching content; it's about fostering habits through daily activities.	Demonstrating the transformation of learning from cognitive understanding to sustainable real-world practice.	ESD (values education)	A practical approach

The research findings indicate that EHL is implemented through routine practices in school environmental activities. This occurs because such practices can shape behavior through repeated action. Additionally, students' active involvement reinforces their understanding of environmental values. Data indicates the existence of routine community service activities involving all students [12]. Students' active participation reflects experience-based learning [13]. However, the implementation of these activities has not been entirely consistent [14]. Therefore, the implementation of EHL demonstrates fairly effective results.

In general, this study indicates that EHL contributes to raising students' environmental awareness. This is because habit formation can change behavior through practical application. Furthermore, the integration of EHL with ESD strengthens students' character development. Findings indicate an increase in student participation in environmental activities [15]. Other studies also confirm that habit formation impacts sustainable behavior. However, these results remain context-specific to the study location [16]. Therefore, EHL has proven effective within the context of environmental education.

The findings of this study are relevant to the context of environmental education in modern schools. This is because schools serve as the primary setting for shaping students' character. Furthermore, current environmental challenges demand a more practical approach. Data indicates low levels of environmental awareness among students in various schools [5]. Other studies also emphasize the importance of integrating ESD into learning [17]. However, its implementation remains uneven across schools[18]. Therefore, EHL serves as a contextual approach.

The results of this study suggest that habituation plays a significant role in shaping student behavior. This is because behavior is formed through the consistent repetition of activities. Furthermore, hands-on experiences reinforce students' understanding of environmental values. Findings indicate that students are more active in maintaining environmental cleanliness [19]. Other studies also show that hands-on experiences enhance students' awareness [20]. However, not all students exhibit the same changes [21]. Therefore, habituation is a key factor in behavioral change.

This study demonstrates that the development of environmental character requires a continuous process of habit formation. This is because values are not enough to be taught; they must be practiced. Furthermore, real-world experiences reinforce the deep internalization of values. Research indicates that habit formation is effective in character education [22]. Other studies also emphasize the importance of hands-on practice in learning. However, this approach requires commitment from the entire school community [23]. Therefore, habit formation is the key to the success of environmental education.

The findings of this study share similarities and differences with previous studies. The similarity lies in the importance of environmental education in shaping student behavior. Furthermore, the difference lies in the focus on habit formation as the primary strategy. research emphasizes the implementation of ESD through the curriculum. The study by Cahya et al. focuses on the Green Education program. However, this research places greater emphasis on habit formation in students' daily activities. Therefore, this research offers a new contribution to the field of EHL.

This study offers important implications for the development of environmental education in schools. This is because habit formation can serve as a key strategy in shaping student behavior. Additionally, integrating EHL with school programs can strengthen the implementation of ESD. Schools can develop routine community service programs and waste management initiatives. Teachers need to enhance their supervision and guidance of students [24]. However, this implementation requires strong school policy support. Therefore, a systematic strategy is needed to integrate EHL into school culture.

### 3.2 The Process of Internalizing ESD Values through Habituation and Continuous Monitoring

The process of internalizing Education for Sustainable Development (ESD) values through habit formation and ongoing monitoring plays a crucial role in shaping student behavior. This is because habit formation allows students to develop values through repeated real-world practice. Additionally, monitoring reinforces the consistency of the behaviors that have been established. Research indicates that the internalization of values requires an ongoing process [25]. Other studies also emphasize the importance of monitoring in shaping student behavior. However, this process has not yet been fully optimized in schools [26]. Therefore, the combination of habit formation and monitoring becomes a key strategy in the implementation of ESD.



Figure 2. Continuous monitoring and communication activities in shaping students' environmental behavior.

The roles of school principals and teachers are essential in supporting the implementation of Education for Sustainable Development (ESD) through the development of students' environmental awareness and discipline. School leaders and teachers contribute not only by establishing rules and routines but also by consistently supervising and guiding students' behavior in maintaining school cleanliness. Routine monitoring and direct involvement from educators help strengthen habit formation and encourage students to internalize environmental values in their daily activities. Through continuous supervision and evaluation, students become more disciplined and responsible toward their environment. Data on the roles of school principals and teachers in managing student behavior are presented in the following table:

Table 2. The Roles of School Principals and Teachers in Managing Student Behavior through EHL and ESD Implementation.

Data Excerpt	Data Analysis	Concept (EHL/ESD)	Description
The principal routinely monitors the cleanliness of the school environment every day.	Routine monitoring serves as a mechanism that reinforces habits and promotes consistency in student behavior.	ESD (sustainable social control)	Supervision by the school principal
The principal personally conducts a classroom cleanliness inspection before students go home.	Monitoring at the end of the activity demonstrates that the process of internalizing values continues, not just at the beginning of the learning process.	EHL + ESD (consistency)	Daily evaluation
Teachers are responsible for ensuring the classroom is clean before students leave.	Teacher involvement strengthens the internalization of values through direct guidance and reinforcement of student behavior.	ESD (the role of educators)	Teachers' responsibilities

The research findings indicate that the internalization of ESD values occurs through habit formation and routine monitoring at school. This happens because habit formation shapes behavior through consistent, repeated practice. Additionally, monitoring ensures that such behavior is maintained over time. Data indicates that the principal monitors cleanliness daily [27]. Teacher involvement also reinforces student guidance in maintaining the environment [28]. However, this supervision is not yet consistent across all student activities. Therefore, this process demonstrates fairly good effectiveness.

In general, this study indicates that the internalization of ESD values occurs through habit formation supported by supervision. This is because habit formation establishes routines, while supervision ensures their consistency. Furthermore, the combination of the two reinforces students' character development. The findings reveal an improvement in students' discipline regarding cleanliness [29]. Other studies also confirm that supervision enhances behavioral compliance [30]. However, these results are still limited to specific school contexts [31]. Therefore, this strategy has proven effective.

These findings are relevant to the current state of environmental education, which requires strengthening students' character. This is because schools serve as the primary setting for shaping students' habits. Furthermore, environmental challenges demand a sustainable approach. Data indicates low environmental awareness among students in various schools [32]. Other research also underscores the importance of ESD in modern education. However, its implementation remains inconsistent across [33]. Therefore, this approach is contextually appropriate.

Research findings indicate that supervision plays a crucial role in reinforcing habit formation. This is because supervision encourages students to maintain consistent behavior. Additionally, teacher guidance helps students develop a deeper understanding of environmental values. Findings indicate that students are more disciplined in maintaining cleanliness [34]. Other studies also show that social control reinforces positive behavior [35]. However, not all students respond to supervision in the same way. Therefore, supervision is a key factor.

This study demonstrates that habit formation requires supervision to be effective. This is because behavior cannot be shaped by habits alone. Furthermore, external reinforcement helps to internalize values more strongly. Research indicates that social control is crucial in character education [10]. Other studies also confirm that habit formation without supervision is less effective.

However, this approach requires a comprehensive commitment from the school [26]. Therefore, a combination of both is key.

The findings of this study align with previous research on ESD. The similarity lies in the importance of shaping behavior through environmental education. Additionally, the difference lies in the emphasis on supervision as a means of reinforcing habit formation. Safira’s research emphasizes the implementation of ESD through the curriculum. The study by Cahya et al. focuses on the Green Education program. However, this study emphasizes habit formation and supervision in students’ daily activities.

This study offers important implications for the development of ESD-based environmental education. This is because monitoring can reinforce the habits students have already developed. Additionally, collaboration between school principals and teachers is a key factor in success. Schools can develop a system of routine monitoring and daily evaluation. Teachers need to enhance their role in guiding students [36]. However, this implementation requires strong policies from the school

### 3.3 The Impact of Eco-Habituation Learning (EHL) on Shaping Students’ Eco-Friendly Behavior

Eco-Habituation Learning (EHL) has a significant impact on shaping students’ eco-friendly behavior. This is because consistent habituation can foster positive habits. Additionally, students’ active involvement reinforces sustainable behavioral change. Data indicates an increase in students’ discipline regarding environmental cleanliness [37]. Other studies also confirm that direct experience reinforces environmental behavior. However, this change does not occur instantly and requires a lengthy process [5]. Therefore, EHL is effective in shaping student behavior.

Table 3. Changes in Students’ Environmental Attitudes and Habits through Eco-Habituation Learning (EHL).

Data Excerpt	Data Analysis	Concept (EHL/ESD)	Description
Students have been littering less frequently since the implementation of the habit-forming activities.	Demonstrating tangible behavioral changes as a result of consistent practice.	EHL (pembentukan kebiasaan)	Behavioral changes
Students are more concerned about the cleanliness of the school environment than they were before.	There has been an increase in environmental awareness, reflecting the successful internalization of ESD values.	ESD (Environmental Awareness)	Improvement in attitude
Consistent practice has an impact on changes in student behavior. Consistent practice has an impact on changes in student behavior.	Consistent practice reinforces the development of an eco-friendly mindset in students.	EHL + ESD (sustainable behavior)	Long-term effects

Research findings indicate that EHL leads to changes in student behavior, making them more environmentally conscious. This occurs because repeated activities help establish habits. Additionally, hands-on experiences reinforce students’ understanding of environmental values. Data indicates that students are less likely to litter. Student involvement in environmental activities increases their awareness [38]. However, not all students experience these changes uniformly. Therefore, EHL demonstrates a significant impact.

In general, this study indicates that EHL influences the improvement of students’ eco-friendly behavior. This is because habit formation fosters consistent behavior. Furthermore, the integration of EHL with ESD reinforces changes in student behavior. Findings reveal an increase in students’ concern for the environment [32]. Other studies also indicate that experience-based learning is effective. However, these results are still limited to specific school contexts. Therefore, EHL has been proven to have a positive impact.

These findings are relevant to the current state of environmental education, which requires a practical approach. This is because learning through theory alone is insufficient. Furthermore, students need real-world experiences to understand the environment. Data indicates that students’ environmental awareness remains low [39]. Other studies also emphasize the importance of a

practice-based approach. However, its implementation has not been uniform across schools. Therefore, EHL emerges as a relevant approach.

The results of this study indicate that habit formation has a direct impact on changes in student behavior. This is because behavior is shaped through the repetition of activities. Furthermore, direct experiences reinforce students' understanding of environmental values. Findings indicate that students are more disciplined in maintaining cleanliness [40]. Other studies also show that contextual learning increases student awareness. However, not all students demonstrate the same changes. Therefore, habit formation is the primary factor in behavioral change.

This study demonstrates that the formation of behavior requires sustained practice. This is because values are not merely understood but must be put into practice. Furthermore, direct experience reinforces the internalization of environmental values. Research indicates that habit formation is effective in character education [34]. Other studies also emphasize the importance of hands-on practice in learning. However, this approach requires a high degree of consistency from schools. Therefore, habit formation is the key to success.

The findings of this study align with previous research on environmental education. The similarity lies in the importance of practice-based learning. Additionally, the difference lies in the focus on habit formation as the primary strategy. The study by Kaumi et al. emphasizes Green Education. Other studies highlight the integration of ESD into the curriculum. However, this study places greater emphasis on habit formation in students' daily activities [2]. Therefore, this study offers a new contribution.

This study has important implications for the development of environmental education in schools. This is because EHL can be implemented as a learning strategy. Additionally, integrating these practices into school culture can strengthen students' character. Schools can develop routine programs such as community service and waste management [15]. Teachers need to enhance their role in guiding students. However, this program requires supervision to ensure consistent implementation. Therefore, a systematic implementation strategy is necessary.

#### **4. Conclusion**

This study confirms that Eco-Habituation Learning (EHL) significantly contributes to shaping students' environmentally friendly behavior through habituation and continuous monitoring. This is because the integration of hands-on practice with social control is able to strengthen the internalization of environmental values. Furthermore, this approach connects cognitive, affective, and behavioral dimensions within the framework of Education for Sustainable Development (ESD). Findings indicate a tangible change in students' behavior regarding environmental cleanliness. Other research also reinforces that habit formation plays a crucial role in character development. However, this contribution remains limited to specific school context. Therefore, this study provides a scientific contribution to the development of a habit-based learning model.

This study makes a theoretical contribution by integrating the concept of EHL with ESD in environmental education. This is because the habituation approach expands the theory of experiential learning. Furthermore, reinforcement through supervision adds a new dimension to the theory of social control in education. These findings align with experiential learning theory, which emphasizes direct experience. Other studies also highlight the importance of habituation in the internalization of values. However, the qualitative approach used has limitations regarding the generalizability of results. Therefore, the development of more diverse methods is necessary for future research.

This study offers practical implications for the development of school-based environmental education. This is because EHL can serve as a strategy for fostering students' character in a sustainable manner. Additionally, collaboration between teachers and school principals is a key factor in the successful implementation of such programs. Schools can develop routine habit-forming programs that are integrated into the school culture. Other studies also suggest strengthening school policies based on ESD. However, this research has not examined long-term impacts in greater depth. Therefore, further research is needed to explore the sustainability of the program and its application in various educational contexts.

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