IJETR International Journal of Education and Theoritical Research
https://journal.synrise.org/index.php/ijetr

e-ISSN : 3164-8150
Vol 1, Issue 3, 2026
pp. 87-97

# The Role of Education in Building Awareness of Sustainable Living in the Young Generation

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**Article Info**

**Article history:**

Received: 15-12-2025
Revised: 16-02-2026
Accepted: 19-03-2026

**Keywords:**

Sustainable Living,
Young Generation,
Environmental Education

**ABSTRACT**

This study aims to analyze the role of education in building awareness of sustainable living in the younger generation, identify relevant learning approaches, and examine the challenges in turning knowledge into real action. The research uses a narrative literature review approach by analyzing journal articles that discuss environmental education, education for sustainable development, sustainability literacy, and pro-environmental behavior. The literature is reviewed thematically based on the contribution of education to knowledge, attitudes, behaviors, learning experiences, and environmental support of education. The results of the study show that education can support the formation of sustainable awareness through the integration of sustainability issues in the curriculum, experiential learning, student involvement in solving real problems, educator examples, and the formation of a school culture that supports environmentally friendly behavior. However, knowledge improvement is not always followed by behavior change because individual actions are also influenced by habits, social norms, availability of facilities, and institutional support. Therefore, continuous education needs to be implemented comprehensively through the integration of learning, habituation, participation, and a supportive environment. This study emphasizes that the success of education for sustainability needs to be assessed not only based on students' understanding, but also through the application of values and behaviors in daily life.

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## 1. INTRODUCTION

The development of modern life provides various conveniences for society, but it also poses increasingly complex challenges. Increased consumption, use of natural resources, waste production, environmental pollution, and climate change show that human life patterns have a close relationship with environmental sustainability. These problems are not only related to natural conditions, but also concern social behavior, economic decisions, and daily habits. Therefore, efforts to build a sustainable life require the involvement of various parties, including educational institutions that play a role in shaping the knowledge, values, and behavior of the younger generation.

Sustainable living can be understood as a lifestyle that seeks to meet current needs while still considering the ability of future generations to meet their needs. The concept includes interrelated environmental, social, and economic dimensions. Environmental sustainability, for example, is not enough to be realized through tree planting or reducing waste, but it also needs to be accompanied by an understanding of responsible

***How to cite:*** Example: Ali, A., Bertoni, C. F., & Hapsari, S. N. (2026). The Role of Education in Building Sustainable Living Awareness in the Young Generation. IJETR: *International Journal of Education and Theoritical Research*, *1*(3), 87-97.

consumption, social justice, resource use, and the impact of human decisions. Education for sustainable development therefore requires learning that helps students understand the relationship between various issues and consider the consequences of their actions (Wiek et al., 2011).

The younger generation is an important group in this effort because they are forming habits, life views, and social responsibilities that will influence behavior in adulthood. Education provided from an early age to higher education can be the basis for recognizing environmental problems and understanding more responsible action options. Ardoin and Bowers (2020), through a systematic study of environmental education in early childhood, show the importance of experiences close to nature for the development of children's knowledge and affective aspects. These findings provide the basis that environmental awareness is not only built through theoretical explanations, but also through direct experiences that allow students to interact with their environment.

However, providing knowledge about sustainability does not automatically result in behavioral change. Students can understand the importance of reducing waste, saving energy, and maintaining cleanliness, but do not necessarily apply them consistently. This condition shows a gap between knowledge and action. A meta-analysis of van de Wetering et al. (2022), which included 169 studies from 43 countries with 176,007 participants, showed that environmental education is related to increased knowledge, attitudes, intentions, and pro-environmental behaviors. However, variations in results between studies also show that the impact of education is not always uniform. Therefore, the effectiveness of education needs to be understood based on learning methods, the context of learners, and the conditions that allow sustainable behaviors to be applied.

These problems are important in the context of education in Indonesia. Students face environmental problems that can be encountered in daily life, such as the use of single-use plastics, household waste management, waste of water and electricity, and the reduction of green space. These problems can be a source of learning that is close to their experiences. Learning does not always have to start from global problems that are difficult to understand, but can start from observing the school environment, family consumption habits, and living environmental conditions. Through this approach, students can connect the knowledge gained in the classroom with real problems that require action.

In its implementation, education for sustainability should not be limited to one subject. Sustainability materials can be developed through the learning of natural sciences, social sciences, civic education, economics, language, and extracurricular activities. Integration across fields is needed because sustainability issues have interrelated dimensions. Wiek et al. (2011) emphasized the importance of competence in thinking systems, anticipating the future, considering values, designing strategies, and working together in dealing with sustainability issues. Thus, students are not only expected to know the causes of environmental problems, but also to be able to analyze the relationships between factors and consider feasible solutions.

The role of teachers is also an important concern. Teachers not only convey information, but also provide examples through behaviors, decisions, and habits shown in educational activities. Students will more easily understand the value of environmental responsibility if these values are seen in real practice, such as reducing the use of single-use materials, sorting waste, using water wisely, and caring for the school environment. Sieg and Dreesmann's (2021) research on pro-environmental behavior in schools shows the importance of considering the factors that encourage students' environmentally friendly

actions. This suggests that the formation of behavior needs to be supported by the learning process and the social environment that allows these actions to be carried out.

In addition to teachers, schools have a responsibility to build a culture that is consistent with sustainability values. Students will face difficulties in implementing the habit of sorting waste if the school does not provide sorted waste bins. Similarly, the invitation to reduce plastic waste will be less meaningful if school activities actually produce a lot of single-use packaging. Therefore, the educational environment needs to be a concrete example of the values taught. Sustainability education will be more meaningful if there is a match between learning materials, school policies, facilities, and behavior of school residents.

Research on sustainability literacy also shows the need to examine knowledge, attitudes, and behaviors simultaneously. Chen et al. (2022), for example, examined aspects of student knowledge, attitudes, and behaviors related to sustainable development. This framework is relevant because sustainable awareness cannot be measured only through the ability to answer questions about the environment. Students also need to have the care, willingness to act, and the opportunity to apply knowledge in their daily lives.

On the other hand, the development of education for sustainable development requires a more in-depth evaluation. The success of the program is not sufficiently assessed based on the number of environmental activities carried out or the high participation of students in certain activities. Evaluation needs to see whether students understand the reasons behind an action, are able to apply it consistently, and bring the habit outside the school environment. Ardoin et al. (2020), through a systematic study of environmental education outcomes for conservation, showed the relevance of learning that raises local issues, engages partnerships, and encourages concrete action.

Based on this description, education has a strategic role in building awareness of sustainable living in the younger generation, but the success of this role depends on the way education is designed and implemented. This article aims to analyze the contribution of education to the formation of sustainable awareness, identify learning approaches that can connect knowledge with behavior, and discuss the challenges of its application in the educational environment. This study is expected to provide an understanding of the importance of education that is not only oriented towards mastering concepts, but also on the formation of habits, responsibilities, and decision-making skills that support sustainable living.

## 2. RESEARCH METHODS

This article uses a narrative literature review approach to analyze the role of education in building awareness of sustainable living in the younger generation. This approach was chosen because the purpose of the article is to outline the concept, compare the findings of previous research, and develop an understanding of the relationship between education, sustainability awareness, and pro-environmental behavior. The literature review allows researchers to connect research results from various educational contexts and age groups to identify patterns of findings, differences in outcomes, and practical implications.

The study sources are focused on scientific journal articles that discuss environmental education, education for sustainable development, sustainability literacy, sustainability competencies, experiential learning, and factors that affect pro-environmental behavior. Relevant literature is searched through scientific publication information and journal publisher pages, using a combination of keywords such as environmental education,

education for sustainable development, sustainability awareness, sustainability literacy, pro-environmental behavior, and youth sustainability. The search also pays attention to the relevance of titles, abstracts, research objectives, main findings, and DOIs that can be used to identify publications.

The literature is analyzed based on four main focuses. First, the contribution of education to the knowledge and understanding of the younger generation about sustainability. Second, the role of education in shaping attitudes, values, responsibilities, and behavioral intentions. Third, learning approaches that can encourage the application of knowledge in real actions. Fourth, supporting and inhibiting factors for behavior change, including teacher examples, school culture, family support, social norms, and the availability of facilities. Findings from relevant articles are then compared and synthesized thematically to build arguments about the role of education in sustainable living.

The analysis was carried out in a descriptive-critical manner by paying attention to the similarities, differences, and limitations of findings reported in the literature. Research in the form of meta-analysis and systematic review is used as a source of evidence synthesis, while empirical research is used to understand the relationship between variables in a given context. The differences in the characteristics of the research are considered so that the results of one context are not directly generalized to all groups of learners.

This study has limitations. The search process used in this draft is not yet a systematic review with the PRISMA protocol, has not yet established the entire database and year range strictly, and has not carried out a documented screening and quality assessment process. Therefore, this article is positioned as a narrative literature review, not a systematic literature review. The conclusions drawn are a synthesis of the literature discussed and are not intended as the result of new empirical testing.

## 3. RESULTS AND DISCUSSION

Based on the synthesis of literature, education has a fundamental role in building awareness of sustainable living through the development of knowledge, attitudes, values, and decision-making skills. Sustainable awareness not only means knowing that the environment needs to be protected, but also understanding the relationship between human behavior and its impact on life. Students need to understand that resource use, consumption patterns, waste management, and economic activities have consequences that can affect the environment and community welfare.

Education can help young people understand these relationships through a learning process that connects concepts to real-life situations. When learners learn about environmental pollution, for example, learning can continue by observing waste sources in schools, identifying habits that produce waste, and designing alternative treatments. This process allows learners to see environmental issues as part of their lives, not just material to be memorized. Ardoin and Bowers (2020) emphasize the importance of nature-related experiences in early childhood environmental education, while Ardoin et al. (2020) underscore the importance of the interconnectedness of local issues, partnerships, and actions in environmental education.

The role of education can also be understood through the concept of sustainability competence. Wiek et al. (2011) identify competencies that include the ability to think systems, anticipate future conditions, consider values, design strategies, and collaborate. These competencies show that sustainable living awareness requires broader capabilities than factual knowledge. Students need to understand that a decision can provide benefits in the short term, but have negative impacts in the long term. For example, the use of

single-use items may feel practical, but the habit can increase the volume of waste if not balanced with proper management.

Education that develops systems thinking helps learners see the relationship between individual actions, institutional policies, social conditions, and environmental conditions. Meanwhile, the ability to anticipate the future encourages them to consider the consequences of decisions made today. The ability to consider values is also important because decisions regarding sustainability often involve choices related to personal, community, and future generations' interests. Thus, sustainable education needs to encourage learners to analyze problems, ask questions, and account for the choices made.

The findings of Chen et al. (2022) regarding sustainability literacy reinforce the importance of seeing knowledge, attitudes, and behaviors as interrelated aspects. In the context of education, knowledge provides a basis for understanding problems, attitudes show how individuals assess the problem, while behavior describes its application in action. These three aspects need to be developed in a balanced manner so that learning does not stop at the ability to explain the concept of sustainability.

However, education cannot be seen as the only factor that determines behavior. Family environment, peers, economic conditions, public facilities, and community habits can also influence a person's choices. Therefore, the success of education should be understood as the result of the interaction between learning and the social environment that supports it.

One of the key issues in sustainability education is the gap between knowledge and action. Learners may be able to explain the benefits of saving water or sorting waste, but that knowledge is not necessarily applied consistently. This gap suggests that cognitive understanding is an important foundation, but it is not yet enough to produce lasting behavioural change.

The meta-analysis van de Wetering et al. (2022) provides evidence that environmental education is associated with improved knowledge, attitudes, intentions, and pro-environmental behaviors in children and adolescents. However, the study also reported considerable heterogeneity of outcomes. This means that the influence of education can differ based on program, participants, context, and measurement methods. These findings support the view that no single learning method can be considered always effective for all groups of learners.

Attitudes and values play a role in determining whether knowledge is considered important and worth applying. Students who understand the problem of waste, for example, may not change their habits if waste reduction is considered troublesome or not the norm in their environment. Conversely, if they see that the action is beneficial, has the support of friends, and is easy to do, the likelihood of implementing the behavior may increase.

Zhang and Cao's (2025) research on the psychological mechanisms of education for sustainable development discusses the role of environmental attitudes, self-efficacy, and social norms in the relationship between education and students' pro-environmental behaviors. The framework helps explain that knowledge needs to be supported by the belief that individuals are capable of acting and that their actions gain social support. Learners who feel that their actions will not have an impact or gain support may be less motivated to maintain environmentally friendly behaviors.

In an educational context, teachers can help build connections between knowledge and action through activities that provide students with opportunities to try solutions. Instead of simply explaining the importance of waste reduction, teachers can invite

students to identify the most waste-generated waste in the classroom, design reduction measures, and evaluate changes after the program is implemented. These experiences can help students see the relationship between decisions and outcomes.

Sieg and Dreesmann (2021) examined the factors that encourage students' environmentally friendly actions in schools. This kind of research is relevant because pro-environmental behavior is influenced not only by individual understanding, but also by the conditions that enable students to act. Therefore, educational assessment should not only use knowledge tests or attitude questionnaires. Habit observation, activity documentation, student reflection, and action evaluation can provide a more complete picture of the application of sustainability values.

However, behavior changes need to be assessed carefully. Behavior reported by students themselves does not necessarily fully reflect real habits. Students can give answers that are considered socially sound. Therefore, assessments that combine student reports with observations and evidence of activities can strengthen evaluation, as long as it is done ethically and in accordance with learning objectives.

Education for sustainable living needs to be integrated into the curriculum and not just implemented as an additional activity. This integration allows students to learn about sustainability through various perspectives. In the natural sciences, they can study ecosystems, energy, water, and environmental change. In the social sciences, they can discuss consumption patterns, inequality, public policy, and people's relations with resources. In mathematics, students can process data on water use or waste volumes, while language learning can be used to develop campaigns and deliver arguments on environmental issues.

A cross-disciplinary approach is in accordance with the character of sustainability issues that cannot be adequately explained through one field of knowledge. Wiek et al. (2011) show the importance of the ability to think systems and work together in developing sustainability competencies. The application of this principle in the curriculum allows students to connect various knowledge to understand the problem more completely.

Research on sustainability education in higher education also provides an important perspective. The article Sustainability education at higher education institutions: Pedagogies and students' competencies highlights the relationship between the way learning is organized, sustainability competencies, environmental views, and student behavior (2022). Sustainability learning thus needs to pay attention to the processes that students experience, not just the amount of material included in the curriculum.

Curriculum integration also needs to avoid an approach that only adds the term sustainability without changing the learning experience. If the material is only delivered through the memorization of definitions, students may understand the terms used, but may not be able to apply them when facing real problems. The curriculum needs to provide space for investigation, discussion, problem-solving, and reflection.

For example, the theme of plastic use can be developed through cross-subject activities. Students can collect data on the amount of plastic packaging in schools, study its impact on the environment, calculate reduction alternatives, examine consumption habits, and then make recommendations. Teachers can ask them to compare the benefits, costs, and limitations of each alternative. Through this process, sustainability becomes part of a concrete and measurable learning experience.

The implementation of a sustainable curriculum must also consider the suitability of the material for the age and context of the students. Early childhood can learn through games, nature observations, and plant care activities. Elementary school students can start

developing habits of saving water and reducing waste. At the secondary level, learning can be directed to analysis of causes, impacts, and solutions. Students can be involved in research, innovation, community service, and evaluation of sustainability programs.

These different approaches do not mean that educational goals are separated by level. On the contrary, education needs to be designed on an ongoing basis so that simple experiences at an early age can develop into more complex analytical skills, responsibilities, and participation as learners mature.

Experiential learning is one of the relevant approaches to building awareness of sustainable living because it connects concepts with situations that learners can observe. Through hands-on experience, learners have the opportunity to observe environmental conditions, identify problems, try actions, and reflect on the results.

Ardoin and Bowers (2020) show that nature-rich experiences are important in early childhood environmental education. Meanwhile, Ardoin et al. (2020) found that environmental education for conservation can yield cognitive and affective benefits, with approaches that focus on local issues, partnerships, and actions as relevant elements. Both studies support the use of the surrounding environment as a source of meaningful learning.

One form of applying this approach is project-based learning. In a waste reduction project, for example, students can identify the source of waste, determine the reduction goals, develop an action plan, carry out activities, and compare conditions before and after the program. Teachers do not have to establish all solutions from the beginning. Students can be given space to develop alternatives and assess their feasibility based on data.

Problem-based learning also allows students to develop critical thinking skills. When discussing water use in schools, students can trace the causes of waste, identify those involved, and compare alternative remedies. They can then make recommendations to school residents based on the evidence collected.

However, practical activities do not automatically result in deep learning. Planting trees, cleaning the yard, or collecting garbage can be a momentary activity if it is not accompanied by an understanding of the purpose, causes of problems, and the sustainability of the action. Therefore, direct experience needs to be complemented by discussion and reflection. Students need to understand the reason for an action taken, the expected benefits, and the obstacles that may be faced.

In addition, learning activities should avoid the assumption that all environmental problems can be solved through individual actions. Reducing personal waste is important, but waste management also requires adequate facilities, policies, and transportation systems. Learning needs to help students understand the role of individuals as well as the role of institutions and society. Thus, education results not only in compliance with rules, but also in the ability to identify the need for change at a broader level.

Teachers have an important position in continuing education because they interact directly with learners and influence their learning experience. These roles are not limited to delivering materials, but also include example, mentoring, giving feedback, and developing opportunities for action. When teachers teach energy saving but leave lights and air conditioning on unnecessarily, learners can see the mismatch between messages and actions.

Example becomes important because the value of sustainability needs to be translated into observable behaviors. Teachers can demonstrate the habit of using resources wisely, caring for shared facilities, reducing the use of single-use items, and valuing learners' participation. This practice helps to make it clear that sustainability is not just an academic demand, but part of a daily responsibility.

However, the responsibility for education cannot be imposed on teachers individually. Schools need to provide policies, facilities, time, and support that enable teachers to carry out learning. Environmental programs will be more consistent if there is a division of responsibilities between principals, teachers, students, education staff, and other related parties.

Family also plays a role in forming sustainable habits. The habits of using water, managing waste, choosing consumables, and caring for the environment are learned through daily experience. If schools teach waste reduction but the home environment does not provide opportunities to implement them, students may face difficulties in maintaining these habits. Conversely, family support can reinforce the values learned in school.

Therefore, the relationship between the school and the family needs to be built through communication and realistic activities. The school can provide a simple project that involves the family, for example recording the use of single-use items for one week or identifying ways to save water. Activities like this need to avoid judgments that blame families for differences in economic abilities and household facilities. The goal is to build understanding and habits that can be done according to each other's conditions.

School culture is another factor that affects behavioral consistency. This culture is formed through rules, habits, facilities, and social norms that take place every day. Segregated bins, reduction of single-use packaging, garden maintenance, and wise use of water can be part of the learning environment. However, the existence of facilities needs to be followed by proper management. Segregated bins will not support learning goals if waste ends up being remixed without appropriate handling.

Thus, a sustainable school culture must be built through the suitability between knowledge, policies, facilities, and actions of school citizens. Awareness is not only conveyed through slogans, but also manifested through consistent decisions and habits.

Although education has great potential, its implementation faces several challenges. The first challenge is learning that is still oriented towards mastery of the material. In this condition, sustainability issues can be taught as a collection of concepts that must be understood to answer exams. Students may be able to explain the meaning of sustainable development, but do not get the opportunity to apply the concept in real life.

The second challenge is the limitation of facilities and resources. Waste sorting programs require adequate facilities and advanced management systems. Water-saving programs require well-functioning facilities, while nature-based learning requires access to a safe environment. Without such support, learners can know the correct actions but have difficulty implementing them.

The third challenge is the difference in social and economic conditions. Not all families have equal access to public transportation, products that can be used repeatedly, green spaces, or waste management facilities. Education needs to avoid an approach that places all responsibility on the individual without considering the conditions that limit their choices. Instead, students need to be invited to understand the actions that can be taken according to their ability while recognizing the need for system improvement.

The fourth challenge is the measurement of educational outcomes. Changes in knowledge are relatively easy to assess through tests, but changes in habits require observation over a longer period of time. Programs that successfully increase participation over a few days do not necessarily result in behaviors that persist after the program ends. Therefore, evaluation needs to include the sustainability of actions and consistency of implementation, not just momentary achievements.

The fifth challenge relates to the coordination between formal education and the social environment. The values taught in schools can be weakened if they are not supported by family, peers, and institutional policies. On the contrary, the support of various parties can strengthen learning. Research on environmental education and pro-environmental behavior shows the importance of considering the context and mechanisms that link learning to action (van de Wetering et al., 2022; Zhang & Cao, 2025).

To face these challenges, education needs to be designed as a long-term process. Programs are not enough to be implemented through annual activities, but need to be integrated into learning, school policies, and daily habits. Evaluation also needs to be used to improve programs, not just meet administrative needs.

The synthesis of literature provides several implications for the development of education in Indonesia. First, sustainability education needs to be associated with issues that are close to students' lives. Schools can start learning from waste management, environmental cleanliness, water use, energy conservation, or the maintenance of green spaces. Local issues can be a starting point to understand broader issues, including climate change, sustainable consumption, and ecosystem protection.

Second, schools need to integrate sustainability education into the curriculum as well as institutional culture. This integration allows students to learn concepts through various subjects and apply them in daily activities. School policies also need to support the behaviors taught so that there is consistency between the learning materials and the real environment.

Third, teacher competency development needs to include the ability to design contextual and participatory learning. Teachers need support to develop projects, utilize the environment as a learning resource, direct discussions, and evaluate behavior change. This approach is in line with the view that sustainability education requires systems thinking, strategy, and collaboration competencies (Wiek et al., 2011).

Fourth, program evaluation needs to combine indicators of knowledge, attitudes, and actions. For example, waste reduction programs can be assessed based on students' understanding, participation, changes in the amount of waste produced, and consistency of implementation. Measurements need to be adjusted to the program's objectives and should not claim cause-and-effect relationships if the evaluation design does not support these conclusions.

Fifth, collaboration with families, communities, and related institutions needs to be strengthened. Sustainability education will be more meaningful if students see that the actions learned in school are also applied in people's lives. Such collaboration can expand learning opportunities, increase the relevance of learning, and support the sustainability of the program.

Overall, the main implication of this study is that education needs to develop the ability of the younger generation to understand problems, make decisions, act, and evaluate the impact of their actions. The success of education is determined not only by how much knowledge is mastered, but also by the extent to which it helps learners live more responsible lives.

## 4. CONCLUSION

Education has a strategic role in building awareness of sustainable living in the younger generation through the development of knowledge, attitudes, values, skills, and responsible behavior. Based on literature reviews, environmental education and education for sustainable development can help students understand the relationship between human

actions and environmental conditions, as well as develop the ability to deal with sustainability issues. However, knowledge improvement is not always followed by behavior change because the application of sustainability values is also influenced by habits, social norms, family support, teacher examples, and the availability of facilities.

The formation of sustainable living awareness needs to be done through the integration of sustainability materials in the curriculum, experiential learning, real problem solving, project development, and habituation in school life. Teachers and educational institutions need to provide consistent examples between the values taught and daily practice. Family and community support is also needed so that habits developed through education can be applied sustainably outside the school environment.

Thus, education for sustainable living should not only be oriented towards mastering concepts, but also on the formation of critical thinking skills, responsibility, collaboration, and concrete actions. Educational evaluation needs to include changes in knowledge, attitudes, and behaviors within an adequate period of time. Since this article uses a review of the narrative literature, its conclusions need to be understood as a synthesis of previous research, not new empirical evidence. Subsequent research can test the effectiveness of certain learning approaches through field studies, longitudinal observations, or mixed methods to determine the extent to which education can form sustainable living habits in the young generation in Indonesia.

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