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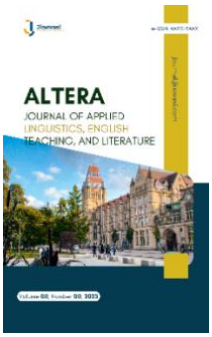

Integrating SDGs into Indonesian Education: A Literature Review of Implementation and Barriers in ESD Practices

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This study aims to examine the implementation of the principles of Education for Sustainable Development (ESD) in the Indonesian education curriculum and identify the challenges faced by educators in applying them. This study uses a Systematic Literature Review (SLR) approach to explore various relevant literature sources, including scientific journals, policy documents, and reports from national and international institutions published between 2015 and 2025. The analysis was conducted thematically by grouping the data into several main themes, such as forms of ESD implementation, curriculum policies, teacher challenges, and gaps in access and training. Research results show that the principles of ESD have been conceptually accommodated in the Merdeka Curriculum policy and the Pancasila Student Profile Strengthening Project (P5) program. Sustainability values are integrated through thematic learning, issue-based local projects, as well as extracurricular activities and community engagement. However, its implementation still faces significant challenges, particularly related to the low understanding of teachers, the limited availability of specialized ESD training, and the disparity in educational infrastructure between regions. Moreover, the absence of formal regulations that explicitly include ESD as an integral part of the national education system also serves as an obstacle. This study concludes that the transformation towards sustainable education in Indonesia requires systemic strengthening through teacher training, the development of contextual learning resources, and sustainable policy support.

Keywords: Education for sustainable development, Environtmental education, Curriculum implementation, Teacher challenges

INTRODUCTION

Sustainable Development Goals (SDGs) are a key to achieving sustainable development because they have the authority to drive individual transformation and societal change. According to UNESCO, education not only gives the science and skills, but also nurtures the values, behaviors, and attitudes necessary to realize a fair and sustainable future. Through the Education for Sustainable Development (ESD) approach, education allows everyone to understand global challenges such as climate change, loss of biodiversity, and social inequality, and to take responsible actions to address them. Therefore, education is positioned as a strategic foundation in promoting all SDG goals, because only with a society that is attentive, educated, and concerned about sustainability can real transformation occur. Thus, the Sustainable Development Goals (SDGs) are one of the main focuses of the global agenda, with Target 4.7 specifically highlighting the importance of education for sustainable development (ESD). This target aims to ensure that by 2030, all learners acquire the knowledge and skills needed to promote sustainable development, including through education for human rights, gender equality, a culture of peace, global citizenship, and appreciation of cultural diversity and its contributions to sustainable development. In this framework, ESD not only

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facilitates understanding of global issues but also encourages changes in attitudes and behaviors that align with the principles of social justice, environmental sustainability, and collective responsibility. Hence, Target 4.7 becomes an important pillar in driving the transformation of education to make a tangible contribution to the achievement of all SDGs.

Education for Sustainable Development (ESD) is an educational approach that equips learners of all ages with the knowledge, values, skills, and attitudes needed to make informed decisions and act responsibly to maintain environmental sustainability, economic viability, and social justice. According to UNESCO (2020), ESD not only helps individuals understand sustainability challenges such as climate change, biodiversity loss, and social inequality, but also encourages them to actively engage in seeking solutions through critical thinking, collaboration, and ethical decision-making. Thus, ESD encourages comprehensive and transformative learning through cognitive, socio-emotional, and behavioral aspects to support sustainable development at various levels, whether personal, local, or global.

Therefore, in response to the global sustainable development agenda, Indonesia has taken concrete steps through various educational policies. One of the main efforts is the implementation of the Merdeka Curriculum, which emphasizes project-based learning and character strengthening as part of contextual education relevant to current challenges. This policy also provides space for the integration of sustainability values in the cross-subject learning process. Additionally, through the Character Education Strengthening Program (PPK), the government encourages the formation of attitudes and behaviors among students that align with SDG principles such as responsibility, social awareness, and environmental consciousness (Ministry of Education, Culture, Research, and Technology, 2024). In their study, Khoirunnisa and Firmansyah (2024) assert that the sustainable education approach has been implicitly adopted in the basic and secondary education curriculum in Indonesia, although it still requires strengthening in the aspects of policy formulation, teacher training, and implementation evaluation.

Moreover, the integration of Education for Sustainable Development (ESD) in Indonesian education is realized through contextual and transformative learning approaches. One of the main strategies is the use of thematic and project-based learning, which allows students to comprehensively, relevantly, and applicably study sustainability issues. This approach has been implemented in the Merdeka Curriculum, where students are involved in projects to strengthen the Pancasila student profile, emphasizing values such as cooperation, environmental awareness, and diversity. Additionally, ESD values are also reinforced through extracurricular activities and school culture, which provide space for the formation of sustainable character in a non-formal context. According to UNESCO (2020), such integration aligns with ESD principles that promote holistic, participatory, and locally relevant learning. Support for this model is also affirmed by the Ministry of Education, Culture, Research, and Technology (2024) in the policy for developing a project-based and character-based curriculum.

Although various national policies, such as the Merdeka Curriculum and the Character Education Strengthening Program (PPK), have explicitly supported the integration of Education for Sustainable Development (ESD) into Indonesia's education system, a significant gap still exists between central-level policies and field practices. One of the main causes is the low understanding and readiness of teachers to comprehensively apply ESD principles. Fadliyana (2024) notes that most teachers have not received special training on ESD, and many of them do not even understand the basic concepts. This causes the implementation of ESD to be uneven and more administrative or symbolic in nature. The gap is exacerbated by differences in infrastructure and access to education between regions, especially between urban areas and the 3T regions (Frontier, Outermost, and Disadvantaged). A study by Wijayati, Damanik, and Prawirosastro (2025) revealed that difficult-to-reach geographical conditions, limited facilities and infrastructure, and weak support for digital technology contribute to the low quality of education in remote areas, including the implementation of sustainability values. This disparity directly impacts the unequal learning opportunities among students in different regions. According to Education for Sustainable Development: A Roadmap from UNESCO (2020), the success of ESD heavily relies on systemic support, which includes educator training, provision of learning resources, and equitable access to technology and information. Without the support of an inclusive and equitable educational ecosystem, the implementation of ESD in Indonesia risks becoming mere policy rhetoric without real transformation across all layers of society. Among the growing global awareness of the urgency of the climate crisis, social inequality, and environmental degradation, education is recognized as the most strategic medium in shaping a generation capable of critical thinking, ethical action, and active involvement in sustainable solutions. In the context of Indonesia, this challenge

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becomes even more complex because the national education system is not only faced with global demands but also with internal conditions such as cultural diversity, geographical disparities, and uneven institutional capacity. Therefore, the success of implementing Education for Sustainable Development (ESD) is greatly determined by the ability of the Indonesian education system to align the global framework with local realities (UNESCO, 2020). ESD cannot be considered an additional element in the curriculum, but must be a comprehensive approach that shapes the philosophy of education itself.

Several previous studies have highlighted both the potential and the challenges in the implementation of ESD in Indonesia. Azizah and Putra (2024), for example, through their study in several high schools in East Java, showed that although some teachers have implemented P5 projects with environmental themes, many of them do not yet deeply understand the principles of sustainability integrated into ESD. Learning tends to focus on symbolic activities rather than transformative ones. Meanwhile, a study by Munir and Yavuz (2024) emphasizes that without comprehensive teacher training and clear policy support, ESD risks becoming mere curriculum rhetoric that does not meaningfully impact classroom learning practices. This is reinforced by the findings of Wicaksono and Harahap (2023), which state that only a small portion of lesson plans (RPP) include indicators or learning activities that explicitly represent the dimensions of ESD. Besides the issue of teacher capacity, another challenge is the lack of contextual and locally based learning resources. One of the fundamental principles of ESD is to use local sustainability issues as a gateway to global understanding. According to the United Nations report (2023), the use of learning resources relevant to students' lives can enhance engagement, empathy, and critical understanding of social and ecological issues around them. However, many teachers in rural areas still do not have access to teaching materials such as ESD modules, local case studies, or sustainability competency-based evaluation tools. These limitations cause disparities in ESD practices between schools with access to technology and training and schools in 3T areas (frontier, outermost, and disadvantaged) that still face basic issues in educational infrastructure (Wijayati, Damanik, & Prawirosastro, 2025).

This gap is what drives the need for this study to be conducted. By focusing on a systematic literature review related to the implementation of ESD in the Indonesian curriculum and the challenges faced by teachers in their teaching practices, this research is expected to provide both conceptual and practical contributions. First, to map the extent to which the direction of Indonesian education policy aligns with the principles of the SDGs, particularly Target 4.7. Second, to identify the obstacles faced by educators, so that evidence-based strengthening strategies can be formulated. This research also aims to bridge the gap between theory and practice, and to provide recommendations for policymakers, curriculum developers, and teacher training institutions so that the implementation of ESD can be more effective, equitable, and contextual across all levels of education.

Aligning with the background and issues that have been outlined, this study aims to examine how the principles of Education for Sustainable Development (ESD) have been implemented within Indonesia's national curriculum in support of the Sustainable Development Goals (SDGs). Despite the presence of progressive policy frameworks such as the Kurikulum Merdeka, implementation remains uneven across educational levels and regions. Therefore, this study seeks to answer the following research questions:

1. How are the principles of Education for Sustainable Development (ESD) implemented in the Indonesian curriculum to support the achievement of the SDGs?
2. What are the main challenges in integrating sustainable education (ESD) into teaching practices in Indonesia?

This literature review explores the current state of ESD integration and its pedagogical challenges within formal education in Indonesia, particularly in primary and secondary schools. By synthesizing existing literature, it aims to identify gaps, policy-practice mismatches, and areas for strategic intervention. The findings are expected to inform curriculum developers, teacher educators, and policymakers on how to strengthen ESD implementation across educational settings, ultimately supporting a more inclusive, context-relevant, and sustainability-driven education system.

METHOD

This research uses the Systematic Literature Review (SLR) approach as the main method to obtain a deep and comprehensive understanding of the phenomenon under study. The SLR technique is very suitable for use in this context because it allows researchers to systematically and structurally identify, evaluate, and interpret all relevant literature sources about the research question (Snyder,

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2019). The focus of the study is directed towards two main aspects, namely (1) how the principles of Education for Sustainable Development (ESD) have been implemented in the Indonesian education curriculum, and (2) what the main challenges faced by educators in applying ESD in learning practices are. The use of SLR helps researchers to compile a synthesis of knowledge that is not only descriptive but also analytical and reflective of the existing educational policies and practices.

The research procedure is carried out through three main stages. The first stage is the collection of literature data, where researchers search various reliable sources, such as national and international scientific journal articles, reports from official institutions (e.g., UNESCO and the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia), policy documents, and scientific books relevant to the research topic. The second stage is the selection and screening process of sources, which is conducted by setting inclusion criteria: (a) direct relevance to the topic of sustainable education in the context of curriculum and teaching in Indonesia, (b) publication years between 2015-2025 to ensure data currency, and (c) relevance to the two main research questions. Sources that are duplicative, irrelevant, or less credible are removed from the review list to maintain the validity and focus of the analysis.

The third stage is thematic analysis conducted qualitatively and descriptively. In this stage, data from selected sources are classified into main themes, including: forms and strategies for implementing ESD in curriculum and pedagogy; curriculum policies related to sustainability values; challenges faced by teachers in understanding and applying ESD; as well as issues of access and training gaps between regions. These themes are then used to structure the discussion and identify patterns, trends, and gaps in sustainable education practices in Indonesia.

The data analysis technique in this study is descriptive-qualitative, presenting the findings narratively based on synthesis across sources, and then delving deeper into the connections, gaps, and trends that emerge from the data examined. This approach does not aim to measure quantitatively, but to capture the complexity and context underlying ESD practices, as suggested by Boell and Cecez-Kecmanovic (2015). Through this approach, researchers are able to formulate meaningful syntheses and propose evidence-based recommendations for the development of policies and educational practices in the future. By using this method, it is hoped that this research can provide a comprehensive, reflective, and critical overview of the position of ESD within the Indonesian national education system including its development potential, the limitations faced, and the prospects for its broader and more equitable application in various formal education contexts.

RESULT AND DISCUSSION

Implementation principles of education for Sustainable Development (ESD) in the Indonesian Curriculum

The integration of ESD into national curriculum policies shows that Indonesia has adopted ESD principles through national curriculum policies, especially in the Merdeka curriculum and the strengthening of the Siska character within the framework of the Pancasila student profile (P5). The P5 dimensions, such as "global diversity," "independence," and "environmental care," reflect a commitment to sustainability values (Kemendikbudristek, 2024). However, the National Education System Law has not yet explicitly mentioned the term "sustainable education," which often leads to a vague understanding and focus on ESD at the school level (Khoirunnisa & Firmansyah, 2024).

ESD in curriculum practice is integrated through thematic and project-based learning approaches, which are explicitly applied in the Pancasila student profile strengthening project. This project aims to develop students' awareness of issues such as water conservation, waste management, and renewable energy. This strategy aligns with the UNESCO (2020) approach, which emphasizes the importance of contextual and transformative learning in ESD. Table 1 presents an example of implementing the ESD project in the curriculum Merdeka in every education stage, which comes from the Pancasila Student Profile Strengthening Project (P5).

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TABLE 1. Examples of ESD Project Implementation in the Merdeka Curriculum Across Education Levels

Project Theme	Activity Description	Competencies Developed	Related SDGs
Environmental Conservation (Recycling)	Students identify types of waste at school and home, then create creative products from recyclables, such as tote bags from plastic or vases from bottles.	- Creativity - Collaboration - Environmental awareness	SDG 12 (Responsible Consumption) SDG 13 (Climate Action)
Energy Saving at School and Home	Students conduct an energy audit at school and home, record electricity usage, identify inefficiencies, and create energy-saving awareness campaigns.	- Data literacy - Communication - Personal and social - responsibility	SDG 7 (Clean Energy) SDG 13 (Climate Action)
Local Food and Balanced Nutrition	Students research healthy local food, interview culinary SMEs, and compile a mini book of healthy local recipes.	- Scientific literacy - Basic research skills - Cultural and nutritional awareness	SDG 2 (Zero Hunger) SDG 3 (Good Health)
Clean Water Conservation	Students design simple rainwater catchment tools and initiate water-saving campaigns in school and home.	- Problem-solving - Empathy for environmental issues - Simple technology innovation	SDG 6 (Clean Water and Sanitation)

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Healthy and Child-Friendly School	Students assess school cleanliness and safety, then propose improvements through infographics and presentations to school leaders.	- Leadership - Critical analysis - Student-teacher collaboration	SDG 3 (Health) SDG 4 (Quality Education)
Tree Planting and Adoption	Students plant trees or useful plants at school or home and keep a growth observation journal.	- Persistence - Scientific observation - Ecological responsibility	SDG 15 (Life on Land)

Table 1 presents practical examples of how the principles of Education for Sustainable Development (ESD) are implemented within the Indonesian Merdeka Curriculum through thematic and project-based learning. These projects are rooted in the "Projek Penguatan Profil Pelajar Pancasila (P5)", a flagship initiative under the Merdeka Curriculum launched by the Ministry of Education, Culture, Research, and Technology of Indonesia. Each project theme in the table addresses real-world sustainability challenges aligned with the Sustainable Development Goals (SDGs), such as climate action, clean energy, biodiversity, and public health. The listed activities are intentionally designed to be flexible and adaptable, allowing schools to implement them according to their local contexts, available resources, and student needs. For instance, while urban schools may focus on energy audits and recycling, rural schools might prioritize water conservation or agroecology-based projects.

Importantly, these projects not only aim to enhance knowledge and awareness about sustainability issues but also promote the development of 21st-century competencies, such as critical thinking, collaborative problem-solving, scientific inquiry, and ecological responsibility. Through experiential and student-centered approaches, learners are empowered to take meaningful action, connect classroom learning with community realities, and cultivate values that support long-term sustainability. As such, the table illustrates how Indonesia's national curriculum integrates ESD holistically by bridging global sustainability goals with locally relevant, interdisciplinary, and value-driven education practices.

Further, in the pedagogical approach and learning environment, such as the implementation of Education for Sustainable Development (ESD) in the classroom context, not only demands changes in teaching content but also a transformation of the pedagogical approaches used by teachers. ESD actively encourages the use of participatory and reflective learning methods, where students are not only recipients of information but also actively involved in the process of meaning-making and decision-making. Teachers act as facilitators who accompany students in developing critical awareness of sustainability issues through group discussions, case studies, problem-based learning (PBL), and direct field observations. This strategy aligns with the approach recommended by UNESCO (2006) and Tilbury & Wortman (2004), which emphasizes that education for sustainability must encompass cognitive, affective, and action dimensions. This means that students not only understand sustainability issues theoretically but also internalize values such as care, responsibility, collaboration, and a commitment to act. Moreover, in several schools, the implementation of ESD values is reinforced through the creation of a green school culture. This culture is reflected in the school's environmentally friendly policies and activities, such as managing a school waste bank, creating vertical gardens in classroom yards, energy and water-saving programs, and reducing single-use plastics. Learning environments like this not only shape sustainable behaviors tangibly but also provide space for students to engage in collective decision-making and participate in community projects. Therefore, the pedagogical approach in ESD is not merely a teaching method, but a transformative strategy that encourages a shift in the educational paradigm towards a more ethical, contextual, and sustainable direction.

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In addition to being applied through formal classroom learning, the values of Education for Sustainable Development (ESD) are also significantly instilled through extracurricular activities and community involvement. Extracurricular activities provide a more flexible and contextual space to shape students' character tangibly through direct actions. Various schools have developed extracurricular programs themed around sustainability, such as environmental scouts, tree planting programs, student waste banks, and water and energy conservation campaigns. These activities not only raise students' awareness of environmental issues but also foster a sense of responsibility, solidarity, and the ability to work together in groups. In this context, learning does not occur theoretically, but rather through direct and repeated experiences, which become an important foundation in shaping long-term, sustainable behavior.

Furthermore, the involvement of the local community is an important part of strengthening the impact of ESD. Many schools collaborate with external parties such as environmental NGOs, village governments, farmer communities, independent waste banks, and local cultural leaders to partner in the implementation of school sustainability projects. This form of collaboration includes activities such as community clean-up of rivers, field studies to mangrove forests or organic farms, and creative recycling training from local entrepreneurs. UNESCO (2020) explicitly states that cross-sectoral involvement between schools, families, communities, and civil society institutions is one of the key principles for the success of ESD, as it bridges the gap between academic knowledge and real-life realities. Through this approach, learners not only understand sustainability issues cognitively but also see, experience, and directly engage in sustainable socio-ecological practices. In other words, extracurricular activities and collaboration with local communities provide space for more meaningful, contextual, and transformative education for both students and society.

The study's results generally indicate that the implementation of Education for Sustainable Development (ESD) principles in the Indonesian education curriculum has made significant progress at the policy and curriculum design levels. This commitment is reflected in the Merdeka Curriculum, which provides flexible space for schools to develop project-based and value-based learning, as well as through the Pancasila Student Profile Strengthening Project (P5) that explicitly encourages the development of character and sustainability awareness among students. This approach is considered progressive because it not only incorporates sustainability themes thematically but also leads to a shift in the perspective of education: from being content-heavy to being more reflective, contextual, and behavior-oriented. However, the implementation still faces a number of structural and practical obstacles. One of the main weaknesses is the lack of explicit mention of ESD in formal regulations such as the National Education System Law, so the principles of ESD have not yet become a binding legal mandate in the national education system. In addition, the implementation in the field highly depends on the readiness and capacity of each educational unit, ranging from teachers' understanding, school principals' support, to the availability of supporting resources such as modules, training, and learning facilities. This causes a gap in the quality and consistency of implementation between schools located in the city center and those in remote areas. Furthermore, although ESD has been adopted in the strategic direction of national education, systemic strengthening and operationalization of ESD principles are still needed to truly take root in everyday educational practices. This includes the need for the development of comprehensive implementation guidelines, clear evaluation indicators, and teacher training that not only focuses on curriculum technicalities but also on value transformation and pedagogical approaches. Only with a comprehensive approach that includes policy aspects, pedagogy, and institutional support can ESD make a real impact and optimally contribute to the achievement of sustainable development goals (SDGs) in Indonesia.

Challenges in Integrating ESD into Teaching Practices in Indonesia

The most challenging is the limited exposure of teachers to ESD-specific training. Although the Merdeka Curriculum promotes values aligned with ESD through projects like P5, many educators have not received sufficient professional development to implement ESD effectively. According to Fadliyana (2024), a large number of teachers are unfamiliar with ESD frameworks, and many interpret sustainability simply as environmental awareness, without understanding its broader social, economic, and ethical aspects. Without formal training, teachers find it difficult to create meaningful, value-based learning activities that incorporate sustainability principles. Even though the number of qualified teachers has increased, many teachers still lack ESD training, and some don’t know anything about it (Fadliyana, 2024).

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Furthermore, low Internalization of ESD in teaching practice, even when teachers are aware of ESD, many of them consider it as an additional theme, rather than a holistic approach embedded in pedagogy. The incorporation on sustainability values into lesson plans, assignments, or classroom culture remains inconsistent. This gap mainly stems from the lack of clear curricular guidelines and standardized measures to assess ESD implementation at the classroom level (UNESCO, 2020). As a result, sustainability often gets reduced to isolated classroom projects without lasting impact. Thus, Geographical inequality is a structural barrier in implementing ESD nationwide. In remote and underdeveloped areas, the lack of infrastructure, qualified teachers, and access to digital tools significantly obstructs the delivery of quality, sustainability-oriented education. The study by Wijayati, Damanik, and Prawirosastro (2025) highlights that many 3T (frontier, outermost, disadvantaged) regions face ongoing difficulties in accessing basic resources, let alone implementing ESD-based innovation. This situation creates a stark contrast between urban and rural schools in terms of the capacity to embed ESD in daily teaching.

Although national policy supports the ESD conceptually, the lack of explicit legal mandates in education law (such as the UU Sisdiknas) means that sustainability remains sidelined in many schools. Teachers and school leaders often focus on academic achievement indicators (e.g., national exams) rather than long-term, value-based outcomes. Additionally, a lack of monitoring and evaluation mechanisms further weakens institutional accountability for sustainable education practices. Some educators report low student engagement when sustainability issues are presented abstractly or disconnected from their daily lives. One of the crucial challenges that often goes unnoticed in the integration of Education for Sustainable Development (ESD) in Indonesia is the low involvement of local communities and cross-sector stakeholders in the educational process. One of the main principles of ESD is participatory and community-based learning, where students not only understand sustainability issues theoretically but also directly engage in solving real problems in their environment. Unfortunately, many schools still run ESD programs in isolation, without building strategic partnerships with local governments, civil society organizations, non-governmental organizations, or local businesses. The absence of a structured collaboration framework leads to limited contextual learning activities such as conservation projects, integrated waste management, sustainable agriculture, or the preservation of local culture. This results in a lack of authentic and applicable learning experiences for students, making sustainable education at risk of becoming mere curriculum rhetoric, rather than a transformative process that produces change agents at the community level. Without active community involvement and cross-sector support, the implementation of ESD will struggle to develop into an educational practice that integrates with the social and cultural life of the local community. Without contextual and experiential learning, students may see ESD as irrelevant or uninteresting. Research shows that interactive learning methods, like simulation games, role-play, and community projects, can significantly boost motivation (UNESCO, 2020), but these are rarely implemented due to time, training, and resource constraints. In conclusion, the integration of ESD in Indonesia faces multidimensional challenges pedagogical, structural, and institutional. While curriculum documents endorse sustainability education, practical implementation requires a system-wide alignment, including teacher capacity-building, contextualized resources, clear indicators, and strong school leadership. Without addressing these foundational issues, ESD is unlikely to produce the intended transformative impact across diverse educational contexts in Indonesia.

SUGESSTION AND CONCLUSION

Based on the research, the study has identified the implementation of the principles of Education for Sustainable Development (ESD) in the Indonesian education curriculum. It can be concluded that the integration of ESD has been conceptually carried out through the Merdeka Curriculum policy and the Pancasila Student Profile Strengthening Project (P5) program. The advantage of this approach lies in the flexibility of the curriculum and project-based learning spaces that can be linked to sustainability values and the achievement of the SDGs. However, its weakness lies in the absence of formal regulations that explicitly include ESD in the National Education Law, as well as the lack of standardized assessment indicators. However, these findings indicate that Indonesia's curriculum policy has great potential to be further developed into a truly transformative and future-oriented education system. In the future, strengthening regulations and expanding ESD practices at all levels of education will be an important step to ensure that sustainability values are not only present in policy documents but also realized in everyday learning practices.

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Meanwhile, in answering the second question regarding the main challenges in the implementation of ESD by educators, this study found that the limitations of teacher training, lack of understanding of ESD, and infrastructure disparities are the most significant obstacles. The main weakness lies in the readiness of human resources and the learning environment, which have not yet supported the creation of holistic, contextual, and value-oriented learning. Nevertheless, these findings simultaneously open opportunities for the development of teacher capacity through continuous training, the development of contextual teaching materials, and collaborative support between schools, the government, and the community. The prospects for applying the results of this study can be directed towards the development of ESD-based teacher training models, the creation of practical guides for integrating ESD into lesson plans, and long-term evaluations to assess the impact of ESD on changes in student behavior and awareness in supporting sustainable development goals.

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