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Integration of Waste Management and Clean Environment Policies into Social Studies Learning in Junior High Schools

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Abstract

The issue of waste management in Indonesia continues to be a complex environmental problem, in line with the increasing population, unsustainable consumption patterns, and low public awareness in sorting and processing waste. At the junior high school level, Social Studies (IPS) education holds a strategic position in instilling environmental awareness values because IPS discusses the relationship between humans and space, natural resources, and social processes. This article aims to analyze how waste management policies can be integrated into IPS learning in junior high schools and to identify the benefits they provide for students. The research was conducted using a qualitative approach through a literature study of various references such as scientific articles, books, curricula, and environmental management policy documents. The study results indicate that integration can be carried out in several ways, including strengthening social studies material related to the utilization of natural resources and the impact of human activities on the environment, incorporating topics on waste sorting and the 3Rs (reduce, reuse, recycle) into learning project activities, and developing activities based on project-based learning such as school waste audits, compost making, or cleanliness campaigns. This integration provides significant benefits for students, including increased ecological literacy, the development of environmental awareness, enhanced critical thinking skills, and the growth of pro-environmental behavior reflected in the independent management of waste.

Keywords: clean environment; policy; social studies learning; waste management.

INTRODUCTION

Currently, waste management has become one of the most pressing environmental challenges in Indonesia and globally. Population growth, urbanization, and changing consumption patterns have continuously increased the volume of domestic waste each year (Warmadewanthi et al., 2025). National data indicate that in 2023, Indonesia generated approximately 26.2 million tons of waste; however, only around 62.54% was properly managed, while the remaining portion was not optimally handled (SIPSN, 2023). This condition has serious environmental impacts because unmanaged waste can contaminate soil, pollute water and air, cause health problems such as respiratory infections and skin diseases, and reduce quality of life as well as agricultural productivity (Adyatama et al., 2025). Furthermore, waste disposed of in landfills produces CH_4 (methane), CO_2, VOCs, and other pollutants that contribute to global warming and air pollution (Hanson et al., 2023). In the context of sustainable development, the integration of the circular economy into waste management plays an important role in supporting the achievement of the Sustainable Development Goals (SDGs), particularly those related to sustainable cities and terrestrial environmental protection (Geissdoerfer et al., 2017).

Conceptually, waste management is not only related to the technical aspects of waste collection and disposal, but also encompasses dimensions of public policy, environmental education, and community social participation (Uba et al., 2023). Effective waste management policies require sustainable landfill governance that is based on ecological principles and social justice, while also encouraging the integration of technical management and community empowerment to create a fair and adaptive waste management system that responds to local needs (Adyatama et al., 2025). Several studies have shown that the successful implementation of waste management policies is strongly influenced by human resource capacity, institutional support, and inter-agency coordination at the local level. Limitations in these aspects often become the main obstacles to optimizing policy implementation in various regions of Indonesia (Artha et al., 2023; Andini et al., 2024). In the educational context, schools hold a strategic position as spaces for character building and environmental literacy development among younger generations (Syahmani et al., 2021). Environmentally oriented school programs, such as the Adiwiyata Program, have become one of the government's approaches to fostering an environmentally conscious culture through activities such as waste segregation, plastic reduction, and recycling within school environments (Febriani et al., 2020). Moreover, recent studies have shown that students' active involvement in waste management practices can enhance ecological awareness, environmentally friendly behavior, and students' social participation in sustainability issues (Ghozal et al., 2025; Danhas et al., 2025).

Although various waste management policies and programs have been implemented, the reality in the field shows that the implementation of environmental education in schools still faces numerous challenges. Experimental studies indicate that environmental education programs in schools

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often increase awareness, but do not always produce systemic change because they remain limited to specific school activities (Jaime et al., 2023). Social Studies learning at the junior high school level has thus far tended to emphasize cognitive aspects and has not optimally connected environmental issues with the social realities surrounding students (Filho et al., 2022). In fact, research conducted by Ekawati et al. (2025) demonstrated that Social Studies education plays a strategic role in integrating social, environmental, and sustainability (SDGs) issues to build students' awareness and social responsibility. Previous studies have generally focused more on the implementation of the Adiwiyata Program and school-based waste management, while only a limited number have examined the direct integration of waste management and clean environment policies into Social Studies learning at the junior high school level (Danirmala et al., 2020; Wijayanti et al., 2024). Therefore, this study offers novelty by attempting to connect waste management policies with Social Studies learning approaches as a medium for developing environmental literacy and students' social awareness in a critical and participatory manner.

Based on these conditions, the integration of waste management and clean environment policies into Social Studies learning is essential to strengthen environmental education from adolescence. Junior high schools not only function as academic institutions, but also as socio-ecological laboratories for fostering sustainability awareness and environmental responsibility. Through Social Studies learning, students can understand the relationship between public policies, community behavior, and environmental impacts contextually through real case studies within their surrounding environments. In addition, the integration of environmental issues into learning processes can encourage the development of environmental literacy, participatory democracy, and environmentally responsible character among students (Syahmani et al., 2021). Therefore, this study aims to analyze the integration of waste management and clean environment policies into Social Studies learning at the junior high school level as an effort to develop environmental literacy, social participation, and environmentally responsible character among students. This research is expected to provide academic contributions to the development of sustainability-based Social Studies education, while also serving as a recommendation for schools and governments in strengthening environmental education at the junior high school level.

RESEARCH METHODS

Research Design

This study employed a descriptive qualitative approach based on library research to comprehensively describe the process of integrating waste management policies and clean environment formation into Social Studies learning at the junior high school level. A descriptive qualitative approach was chosen because it provides a holistic understanding of educational phenomena, particularly in examining concepts, policy implementation, and the relevance of environment-based learning through in-depth analysis of scientific sources (Creswell & Creswell, 2018). Library research was used as the primary method because it enables researchers to systematically identify, evaluate, and synthesize previous studies in order to obtain a strong theoretical foundation (Snyder, 2019).

The population of this study consisted of scientific articles, nationally accredited SINTA journals, internationally reputable Scopus-indexed journals, academic books, government policy documents, and official reports related to waste management, environmental education, environmentally based school policies, and Social Studies learning at the junior high school level. The initial population identified through academic database searches comprised more than 150 scientific sources. The research sample was determined using purposive sampling techniques, namely the selection of sources based on specific criteria such as topic relevance, publication year within the last five years (2020–2026), journal credibility, and direct relevance to the research variables (Palinkas et al., 2015). Based on this selection process, approximately 45 main articles were analyzed in depth. The research variables included: (1) waste management policy, (2) clean environment, (3) Social Studies learning, (4) environmental literacy, and (5) students' ecological behavior. The keywords used in the literature search included "waste management policy," "environmental education," "social studies learning," "junior high school," "Adiwiyata," and "clean environment." Sources were searched through academic databases such as Google Scholar, Scopus, ScienceDirect, and SpringerLink.

Research Procedure

The research procedure was carried out systematically through several stages. The first stage involved identifying the research topic, namely the integration of waste management and clean environment policies into Social Studies learning at the junior high school level. The second stage consisted of conducting a literature search using predetermined keywords across various scientific databases. The third stage involved selecting articles based on inclusion and exclusion criteria, such as thematic relevance, journal quality, publication year range, and source accessibility. The fourth stage was data extraction, which involved organizing important information from each article related to concepts, methods, findings, and research implications. The fifth stage was data synthesis aimed at identifying patterns, relationships among concepts, research novelty, and opportunities for policy integration into Social Studies learning. These stages referred to the systematic literature review approach based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model to ensure the validity, transparency, and systematic nature of the research process (Page et al., 2021).

Research Data Analysis

Data analysis in this study employed content analysis techniques, which are methods used to systematically analyze documents and literature in order to identify patterns, major themes, relationships among variables, and interpretations of meaning relevant to the research objectives (Krippendorff, 2019). The stages of analysis included data reduction, thematic categorization, conceptual interpretation, and conclusion drawing based on the results of the literature synthesis. The analysis was conducted using data classification matrices and reference management software such as Mendeley to facilitate source organization. This technique was selected because it is effective in generating a comprehensive theoretical understanding regarding the integration of waste management policies into Social Studies

learning and its implications for the development of environmental education at the junior high school level.

RESULTS AND DISCUSSION

Waste Management and Clean Environment Policies

The legal framework for waste management in Indonesia demonstrates that national policies already possess a relatively strong regulatory foundation through Law Number 18 of 2008 concerning Waste Management, along with its various implementing regulations. This regulation has been further strengthened through the Regulation of the Minister of Environment and Forestry Number P.75 of 2019 concerning the roadmap for waste reduction by producers, the Minister of Environment and Forestry Regulation Number 14 of 2021 concerning waste banks, as well as various regional regulations formulated according to the specific contexts of each region. In general, the existence of these regulations indicates that the government has attempted to integrate waste management with the sustainable environmental development agenda through normative, administrative, and social approaches.

Table 1. Implementation of Waste Management Policies in Various Regions of Indonesia

Region	Regulation	Implementation Findings
Payakumbuh City	Regional Regulation No. 4 of 2019	Implementation has not been optimal due to operational limitations and limited community participation (Okhtafianny & Ariani, 2023).
Kudus Regency	Regional Regulation No. 4 of 2017	Policy socialization remains limited, and community involvement has not been maximized (Wachid & Caesar, 2021).
Pekanbaru City	Regional Regulation No. 08 of 2014	Policy implementation has not yet been carried out effectively (Lestari & Kamaruddin, 2023).

Source: Synthesized from various studies, 2026.

Based on the findings, although Indonesia already possesses a comprehensive regulatory system, the implementation of waste management policies at the regional level still faces various structural and cultural challenges. The primary obstacles include weak policy dissemination, limited human resources, low levels of public participation, and the lack of optimal integration between national policies and local practices. These findings are consistent with various studies indicating that the success of environmental policy implementation is strongly influenced by the effectiveness of local governance, institutional capacity, and community support. The combination of these three factors determines the extent to which policies can be effectively implemented at the local level, particularly within the complexity of environmental issues. Empirical studies and meta-analyses also emphasize that public participation and institutional capacity strengthening are key elements in improving environmental governance performance (Rongjuan, 2023; Newig et al., 2023; Zhang & Li, 2026). Therefore, the existence of formal regulations alone is insufficient without strengthening community-based implementation.

In addition to the regulatory aspect, the clean environment agenda as part of waste management policies also emphasizes the importance of social behavioral change through educational and participatory approaches. Programs such as waste banks, the Indonesia Bersih national movement, clean and healthy living behavior (PHBS), and environmentally based school programs such as CILUNG demonstrate that policy success is determined not only by regulations, but also by the internalization of cleanliness values in everyday life (Widayani, 2023; Kurniatillah et al., 2024; Haryati, 2022). This is reinforced by the study of Koskela and Paloniemi (2023), which states that sustainability education must build individual, collective, and community agency so that learners are able to contribute meaningfully to socio-ecological transformation. Education should not merely increase knowledge, but must also encourage sustainable action. Compared to previous studies that mainly focused on administrative policies, the findings of this study indicate that the integration of regulation, education, and social movements is the primary key to the effectiveness of waste management and clean environment programs.

Overall, the findings indicate that waste management policies in Indonesia have developed normatively, yet still require stronger implementation through environmental education, public participation, and social innovation. The main weakness of existing policies lies in the uneven implementation capacity at the local level, resulting in many policies failing to achieve optimal outcomes. The implications of this study suggest that Social Studies learning at the junior high school level can play a strategic role as an integrative medium for introducing students to the relationship between public policy, environmental management, and social responsibility. Thus, education becomes an important instrument in bridging formal policies with behavioral changes in society toward long-term environmental sustainability.

Relevance of Waste Management Policies in Social Studies Learning at the Junior High School Level

The integration of waste management and clean environment policies into Social Studies learning at the junior high school level demonstrates a strong relevance to learning outcomes that emphasize the reciprocal relationship between humans and the environment. Within the Social Studies curriculum, students are encouraged to understand how human activities can affect environmental quality and how environmental conditions impact the social, economic, and cultural lives of communities. Therefore, waste management issues become highly contextual learning materials because they reflect the real dynamics of human-environment interactions. Topics such as waste segregation, the 3R principles (reduce, reuse, recycle), plastic waste reduction, and waste-to-energy innovations can serve as practical and relevant learning media in developing students' environmental literacy.

The integration of waste management policies into Social Studies learning can strengthen students' theoretical and practical understanding. Arisona (2018) emphasized that Social Studies learning should include 3R-based waste

management materials to foster environmentally responsible student character. These findings are reinforced by studies showing that waste-to-energy (WtE) and the circular economy are important approaches to sustainable waste management. WtE contributes to converting waste into alternative energy, while the circular economy emphasizes the principles of reduce, reuse, recycle, and recovery to create a more sustainable and efficient resource management system (Setyono & Sinaga, 2021; Sarasati et al., 2021; Somadayo et al., 2024). Therefore, Social Studies learning functions not only as a means of knowledge transfer, but also as an educational medium that connects academic concepts with socio-ecological realities within society.

In addition to material relevance, waste management policies also have significant potential to be utilized as case studies in Social Studies learning. Policies such as regional regulations on waste management, the Adiwiyata school program, and national plastic waste reduction movements are social issues closely connected to students' daily lives. Through these case studies, students can develop critical thinking skills by identifying problems, analyzing causal factors, evaluating policy implementation, and comparing the success of programs across regions or schools. This approach aligns with the study conducted by Wijayanti et al. (2024), which emphasized that environment-based learning rooted in local policies can improve students' analytical and reflective abilities in understanding sustainability issues.

Furthermore, the integration of waste management policies also creates opportunities for implementing more participatory project-based learning. Students can become directly involved through classroom waste audits, evaluations of school waste segregation effectiveness, environmental campaigns, and the development of clean school programs. These activities not only improve students' conceptual understanding of environmental issues, but also foster social responsibility, ecological awareness, and problem-solving skills. Compared to conventional learning, this approach is more effective in shaping sustainable pro-environmental behavior because students learn through real practices. Thus, waste management policies within Social Studies learning function not only as learning resources, but also as strategic instruments in shaping a generation that is environmentally conscious, critical toward public policies, and active in promoting socio-ecological sustainability.

Forms of Integration in Social Studies Learning

Waste management and clean environment policies possess a very strong level of compatibility with the learning outcomes of Social Studies subjects at the junior high school level, particularly in aspects concerning the relationship between humans and the environment. Social Studies learning requires students to understand how human social activities influence environmental conditions and how environmental degradation can affect the social, economic, and cultural lives of communities. Therefore, materials related to waste management, such as waste segregation, plastic waste reduction, and the implementation of 3R principles (reduce, reuse, recycle), represent concrete examples of human-environment interaction closely connected to students' everyday lives. The integration of these materials makes learning more contextual and enables students to understand environmental issues through the social realities surrounding them.

Integrating waste management policies into Social Studies learning can strengthen students' conceptual understanding while improving the quality of learning to become more active and meaningful. Research by Pratiwi et al. (2023) demonstrated that the implementation of Project-Based Learning (PBL) significantly enhances learning motivation, active participation, and students' abilities to solve real-world problems through projects based on everyday contexts. Thus, Social Studies learning that incorporates waste management issues not only strengthens academic understanding, but also encourages students to engage directly in experience-based learning processes. This indicates that environmental policies can become effective means of building connections between social education theory and everyday life practices.

Furthermore, waste management policies hold considerable potential as case study materials in Social Studies learning. Policies such as regional regulations on single-use plastic reduction, the Adiwiyata Program, and school policies related to waste segregation can be used as objects of social analysis. Through a case study approach, students can understand policy formulation processes, the actors involved, implementation barriers, and the impacts on society. This approach is consistent with the findings of Soro et al. (2024), which showed that collaboration among students, teachers, and school communities in maintaining environmental cleanliness can increase students' responsibility, strengthen independence, and support improvements in educational quality. Compared with conventional learning, the use of policy case studies provides broader opportunities for students to develop critical, reflective, and analytical thinking skills.

Moreover, the use of waste management policies as learning media also supports the development of problem-based learning and participatory learning approaches. Students can conduct school waste audits, interview stakeholders, observe environmental behavior, and formulate policy improvement recommendations. These activities provide authentic learning experiences capable of fostering deeper ecological awareness among students. Rosidi and Fitroh (2020) emphasized that environmental issues in Social Studies learning should be directed toward developing ecological intelligence, namely the ability of individuals to understand and maintain environmental balance. Through such direct involvement, students not only acquire knowledge, but also internalize the values of social responsibility, leadership, and commitment to environmental sustainability.

Overall, the findings indicate that waste management and clean environment policies are highly relevant to Social Studies learning outcomes at the junior high school level and possess significant potential as contextual learning resources. This integration enables students to connect academic concepts with real-world phenomena, understand the complexity of environmental problems, and recognize their roles as responsible citizens. The implications of this study affirm that Social Studies learning can become a strategic space for fostering ecological literacy, environmentally responsible character, and a generation of young people who are critical, participatory, and committed to sustainable environmental conservation.

Impacts of Integration on Students

The integration of waste management policies and environmental issues into Social Studies learning provides significant impacts on improving students' environmental literacy. Through materials connecting concepts of human-environment relationships with issues such as waste, pollution, conservation, and sustainability, students gain a more comprehensive understanding of the ecological conditions surrounding them (Syahmani et al., 2021). Environmental literacy not only includes the ability to recognize environmental problems, but also involves understanding processes, causal factors, and ecological impacts resulting from human activities (Febriani et al., 2020). By studying real cases such as school waste management, plastic reduction policies, or environmental pollution caused by domestic waste, students can develop analytical, reflective, and interpretative abilities toward environmental issues more critically. This demonstrates that Social Studies learning integrated with environmental policies can strengthen students' ecological knowledge dimensions in a more practical and contextual manner.

In addition to improving environmental literacy, the integration of waste management policies also contributes to strengthening environmentally responsible attitudes and awareness of natural resource conservation. Through classroom discussions, case studies, and environmental projects, students are encouraged to understand that natural resources are limited and require sustainable management. This understanding motivates students to appreciate nature more deeply and recognize that human actions have long-term consequences for ecosystem balance. Environmentally responsible attitudes are reflected through simple yet meaningful behavioral changes, such as reducing single-use plastic consumption, bringing reusable drinking containers, and participating in school greening and cleanliness activities. Thus, Social Studies learning functions not only as a medium for knowledge transfer, but also as an instrument for shaping values, ecological ethics, and sustainability awareness.

Social Studies learning integrated with environmental policies has also been proven capable of shaping clean, healthy, and responsible lifestyles among students. Direct practices such as waste segregation, mini waste bank management, school cleanliness audits, and environmental campaigns provide real experiences that encourage the internalization of positive habits (Soro et al., 2024; Kurniatillah et al., 2024). Clean living behavior is no longer merely a formal school obligation, but develops into personal awareness regarding the importance of maintaining personal and environmental health. Rosidi and Fitroh (2020) emphasized that strengthening ecological intelligence in Social Studies learning is crucial for developing students' socially and environmentally responsible character. Compared to conventional learning, experience-based approaches have proven more effective in shaping sustainable pro-environmental behavior.

Overall, the findings demonstrate that the integration of waste management policies into Social Studies learning brings tangible changes to students' knowledge, attitudes, and behaviors toward the environment. The integration of environmental literacy enhancement, strengthened environmental awareness, and the formation of clean living behaviors makes students more prepared to become an ecologically conscious generation actively engaged in natural resource conservation. The implications of this study affirm that Social Studies learning plays a strategic role in developing young generations who not only understand environmental issues theoretically, but are also capable of acting responsibly in everyday life for the sustainability of the future.

CONCLUSION

The integration of waste management and clean environment policies into Social Studies learning at the junior high school level represents a strategic step in addressing increasingly complex environmental issues while strengthening sustainability-based education. This study demonstrates that Social Studies learning integrated with waste management issues is capable of improving students' environmental literacy, fostering environmentally responsible attitudes and pro-environmental behavior, and developing students' critical thinking skills in understanding the relationship between human activities, public policies, and environmental sustainability. Therefore, Social Studies learning functions not only as a medium for transferring social knowledge, but also as an effective instrument for shaping young generations who possess ecological character, social responsibility, and a commitment to sustainable environmental conservation.

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