

Pembelajaran IPS untuk meningkatkan Kepedulian Lingkungan melalui Kemampuan Berpikir Kritis Siswa: Suatu Tinjauan Literatur Sistematis

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ABSTRACT: The global environmental crisis demands that education play an active role in shaping a generation that is critical and concerned about sustainability. This literature study aims to identify effective Social Studies (IPS) learning strategies to enhance environmental awareness through the strengthening of students' critical thinking skills. The analysis was conducted on ten relevant national and international scholarly articles, focusing on Problem-Based Learning (PBL), Discovery Learning, Ethno-STEM, and the Sustainable Development Goals (SDGs). The synthesis results show that 90% of the articles emphasize the effectiveness of innovative learning models in developing students' thinking skills and ecological character. Furthermore, 80% of the articles highlight the importance of critical thinking as a bridge between knowledge and ecological action, while 70% underline the contextual integration of environmental education in Social Studies learning. This study concludes that Social Studies learning designed to be reflective, contextual, and grounded in sustainability values has great potential to foster environmental awareness. These findings provide a conceptual foundation for developing more transformative Social Studies curricula and learning strategies, supporting both quality education and climate action.

KEYWORDS - Critical thinking, Environmental awareness, Problem-Based Learning, Social Studies, Sustainability

I. INTRODUCTION

The global environmental crisis has become a multidimensional challenge that threatens the sustainability of human life and Earth's ecosystems. Phenomena such as climate change, water and air pollution, deforestation, and plastic waste accumulation indicate that environmental degradation is no longer a local issue but a global concern requiring cross-sectoral responses, including education (Pada et al., 2025; Ricoy & Sánchez-Martínez, 2022)[1]. Unfortunately, the level of ecological awareness among students remains relatively low. A study by Wiono & Meriza (2022)[2] revealed that although students possess basic knowledge about environmental issues, they have yet to demonstrate attitudes and behaviors that reflect a comprehensive ecological awareness. The low level of student involvement in concrete actions such as waste management, resource conservation, or environmental advocacy indicates that education has not yet fully succeeded in shaping environmentally conscious character.

In this context, Social Studies (IPS) plays a strategic role as a medium for character formation and environmental awareness. IPS not only teaches social and geographical concepts but also instills life values, social responsibility, and the interconnection between humans, space, and the environment (Puspitasari et al., 2016[3]; Ardiansyah et al., 2024)[4]. Through materials such as environmental conservation, sustainable development, and human-environment interaction, IPS can serve as an effective medium for fostering critical thinking and reflective attitudes toward ecological issues. Contextual and problem-based social studies learning enables students to analyze environmental problems around them, evaluate their impacts, and formulate relevant solutions (Chusni et al., 2021; Ekamilasari et al., 2021)[5].

However, this potential has not been fully utilized. Many IPS learning practices still focus on memorization and theoretical understanding rather than strengthening ecological values and actions. Therefore, a more transformative learning approach is needed such as Problem-Based Learning, Discovery Learning, or Ethno-STEM which holistically integrates cognitive, affective, and conative aspects (Pada et al., 2025[1]; Wiono & Meriza, 2022)[2]. By optimizing the role of IPS as a medium for character and environmental awareness formation, education can become the forefront in addressing the global ecological crisis and nurturing a generation that is conscious, critical, and responsible for Earth's sustainability.

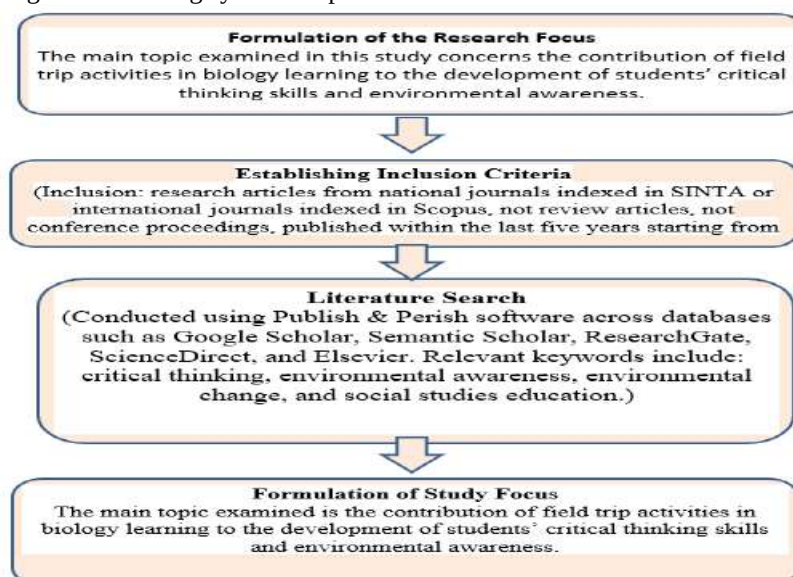
Critical thinking is an essential skill in education, especially in facing the complexity of ecological issues such as climate change, pollution, and natural resource degradation. Students must go beyond theoretical understanding of environmental concepts they need to be trained to analyze, evaluate, and interpret information reflectively to make informed and responsible decisions regarding the environment (Facione, 2011; Fisher, 2001). Critical thinking enables students to identify environmental problems around them, consider multiple perspectives, and formulate contextual and sustainable solutions (Angelo & Cross, 1995 ; Pada et al., 2025)[1]. In the context of Social Studies, critical thinking plays a strategic role in internalizing environmental awareness values. As a subject that examines the relationship between humans, space, and the environment, IPS provides broad opportunities for developing higher-order thinking skills. Through contextual and problem-based approaches, students can engage in learning processes that require them to explore local environmental issues such as ecosystem degradation, waste management, or natural resource use conflicts (Puspitasari et al., 2016;[3] Ardiansyah et al., 2024)[6]. Thus, critical thinking becomes not only a cognitive tool but also a foundation for developing active and solution-oriented ecological character.

In reality, Social Studies learning in secondary schools still tends to focus on knowledge transfer and concept memorization rather than fostering ecological character and strengthening students' critical thinking (Puspitasari et al., 2016[3]; Ardiansyah et al., 2024)[6]. Yet, today's environmental challenges demand a young generation that not only understands ecological issues but is also capable of analyzing, evaluating, and taking reflective and responsible action. Therefore, a systematic study is needed to identify effective IPS learning strategies in building environmental awareness through the enhancement of critical thinking.

The novelty of this study lies in its cross-model synthesis approach combining Problem-Based Learning (PBL), Discovery Learning, Ethno-STEM, and contextual learning examined comprehensively within a literature review framework. This study not only explores the cognitive dimension but also emphasizes affective and conative domains in forming environmentally caring character. By integrating critical thinking indicators (Facione, 2011; Ennis, 1985) and environmental awareness indicators (Ham et al., 2016), this study offers a conceptual framework for Social Studies learning that is transformative and sustainability-oriented. Relevant studies serving as references include Chusni et al. (2021)[5], who examined e-learning-based Discovery Learning; Ekamilasari et al. (2021), who highlighted the need for ESD-based instructional intervention; and Pada et al. (2025)[1], who demonstrated the use of the Ethno-STEM approach to enhance environmental awareness. The urgency of this literature study lies in the need to formulate IPS learning strategies that are not only academically relevant but also have a real impact on shaping students' ecological character. By reviewing various learning approaches proven effective in environmental education, this study is expected to provide both theoretical and practical contributions to the development of a more contextual, reflective, and sustainability-oriented Social Studies curriculum.

II. METHOD

Based on the characteristics of the issues examined, this study adopts a systematic literature review approach. Nazir (1998:112) emphasizes that a literature review constitutes a crucial methodological stage conducted after the formulation of the research topic, aiming to explore various relevant sources within the field of study. The data curation process in this study specifically utilizes primary research articles from nationally accredited journals indexed in SINTA and internationally recognized journals indexed in Scopus, which were selected through the following systematic protocol:



III. RESULT AND DISCUSSION

Critical thinking is a fundamental foundation in 21st-century education, particularly in addressing the complexity of environmental issues. According to Facione (2011), critical thinking encompasses six core skills: interpretation, analysis, inference, evaluation, explanation, and self-regulation. In the context of Social Studies (IPS) learning, this skill not only functions to understand social and geographical concepts but also serves as a reflective tool to assess the impact of human activities on the environment and to formulate sustainable solutions (Puspitasari et al., 2016[3]; Pada et al., 2025)[1].

A study by Chusni et al. (2021) [5] revealed that e-learning-based Discovery Learning models can enhance students' critical thinking skills in environmental change topics. This aligns with the findings of Wiono & Meriza (2022)[2], which demonstrated that environment-based learning can increase metacognitive awareness and higher-order thinking skills. Meanwhile, Ekamilasari et al. (2021) found that although junior high school students' sustainability awareness was in the moderate category, their critical thinking skills remained weak, indicating the need for more contextual and experience-based learning interventions.

Social Studies learning holds great potential as a medium for character formation and environmental awareness. Through materials such as environmental conservation and sustainable development, students can be guided to analyze local environmental degradation, as shown in the study by Puspitasari et al. (2016) in Lumajang Regency. A contextual approach enables students not only to understand concepts but also to develop environmental concern and create real actions as contributions to sustainability.

Problem-Based Learning (PBL) has also proven effective in enhancing critical thinking and environmental awareness. Ardiansyah et al. (2024) demonstrated that the application of PBL in geography learning significantly improved senior high school students' critical thinking abilities within the context of environmental conservation. PBL encourages students to identify real-world problems, evaluate information, and collaboratively formulate solutions thereby fostering deeper understanding and more reflective attitudes toward ecological issues.

Furthermore, the Ethno-STEM approach, oriented toward the Sustainable Development Goals (SDGs), as developed by Pada et al. (2025), demonstrated that integrating local cultural values and sustainability principles into science learning at the elementary level effectively enhanced students' environmental awareness in cognitive, affective, and behavioral domains. Activities such as eco-brick creation, waste management simulations, and "Zero Plastic Week" challenges have proven effective in shaping students' ecological behaviors from an early age.

Overall, Social Studies learning that integrates problem-based, contextual, discovery, and Ethno-STEM approaches holds substantial potential to enhance students' critical thinking and environmental awareness. This literature study is therefore essential to construct a conceptual framework for Social Studies learning that not only transfers knowledge but also develops active, reflective, and solution-oriented ecological character. In this way, Social Studies education can serve as the frontline in nurturing an environmentally conscious generation capable of contributing to sustainable development.

require Social Studies learning that not only delivers theoretical concepts but also enables them to experience and reflect upon environmental issues through contextual and problem-based approaches. Learning that integrates critical thinking skills allows students to analyze environmental issues, evaluate their impacts, and formulate relevant and sustainable solutions. Based on a comprehensive analysis of the selected literature, Table 1 presents a synthesis of findings regarding the effectiveness, development opportunities, and implementation challenges of Social Studies learning related to critical thinking and environmental awareness.

Table 1. Synthesis of Findings from Selected Literature.

No	Article Title	Nama Jurnal	Penulis	Uraian Hasil	Kategori
1	A Search for a Method to Improve Critical Thinking Skills in Social Studies Teaching: Writing-to-Learn	Review of International Geographical Education	Kayaalp, Meral, Şimşek, Şahin	Writing-to-learn activities such as letters, columns, and articles encourage students to research, use evidence, and evaluate information holistically, thereby significantly enhancing both the disposition and skills of critical thinking.	Strengthening critical thinking through literacy strategies in Social Studies learning; emphasizing a reflective approach and written expression-based methods.
2	Critical Thinking Skills	Journal of	Ekamilasari,	Students' sustainability	Evaluation of critical

	and Sustainability Awareness for the Implementation of ESD	Science Education Research (JSER)	Permanasari, Pursitasari	awareness is at a moderate level (3.65), while critical thinking skills are weak (28.68%). There is a need to strengthen ESD-based learning methods..	thinking skills and environmental awareness in science education; highlighting the need for explicit integration of ESD..
3	Implementation of Problem-Based Learning to Enhance Critical Thinking Skills in Social Studies	AR-RIAYAH: Jurnal Pendidikan Dasar	Binsa, Putri	PBL increased students' critical thinking scores from 59.6 to 81.0 over two cycles. Indicators such as problem identification, solution formulation, and decision-making showed significant improvement.	Effectiveness of PBL in enhancing critical thinking indicators of elementary students in Social Studies learning; based on classroom action research.
4	Student's Critical Thinking Skills Through Discovery Learning Model Using E-Learning	European Journal of Educational Research	Chusni, Saputro, Rahardjo, Suranto	E-learning-based Discovery Learning encourages students to learn actively and independently. Most students are at a moderate level in critical thinking, with improvements observed in inference and analysis skills.	Utilization of digital Discovery Learning to enhance critical thinking on environmental change topics; based on quantitative experimental research.
5	Investigating PBL Model's Impact on Critical Thinking in Environmental Conservation	Jambura Geo Education Journal	Ardiansyah, Putra, Nikitina	PBL increased the average critical thinking score from 61 to 71, with 31% of students reaching the "very critical" category. PBL is effective in issue-based environmental geography learning.	PBL in high school geography learning to develop critical thinking and conservation awareness; based on a quasi-experimental study.
6	Environmental Issues-based Discovery Learning to Enhance Metacognitive Awareness and HOTS	Tadris: Jurnal Keguruan dan Ilmu Tarbiyah	Wiono, Meriza	Discovery Learning berbasis Environmental issues significantly enhance metacognitive awareness and higher-order thinking skills of junior high school students ($p = 0.000$).	Integration of environmental issues in Discovery Learning to strengthen HOTS and metacognition; based on a quasi-experimental design.
7	Integration of Critical Thinking and Environmental Awareness through Geography Learning.	Journal of Education: Theory, Research, and Development	Puspitasari, Sumarmi, Amirudin	Contextual Geography learning effectively integrates critical thinking skills and environmentally conscious character in high school students, particularly regarding local issues such as sand mining and illegal logging.	Integration of critical thinking and environmentally conscious character in local-based Social Studies; based on observations and interviews.
8	Fostering Environmental Awareness Through SDG-Oriented Ethno-STEM in Elementary Education	Jurnal Pendidikan IPA Indonesia (JPPII)	Pada, Chanunan, Rahmat	SDG-based Ethno-STEM approach significantly improves environmental awareness of elementary students ($p = 0.001$); large effect size (Cohen's $d = 2.84$); cognitive, affective, and behavioral domains measured.	Integration of local culture and SDGs in science learning to develop holistic environmental awareness; based on quasi-experimental study.
9	Environmental Awareness and Critical Thinking in Science Education	Journal of Science Education Research (JSER)	Hidayati, Sinaga	Students' critical thinking skills remain low; development of contextual teaching	Review of students' critical thinking skills and environmental

				materials and learning methods is needed to enhance environmental awareness and critical thinking abilities.	awareness at the junior high school level; based on survey and indicator analysis.
10	Problem-Based Learning in Geography Education for Sustainability	Jambura Geo Education Journal	Rachman, Suwastini, Aryanti	PBL in geography learning encourages students to think critically and understand sustainability issues at both local and global levels; case-based learning enhances student engagement and reflection.	PBL in geography learning to develop sustainability understanding and critical reflection; based on case studies and student reflections.

Based on Table 1, the grouping of data analysis results from ten selected articles is presented in the form of coherent thematic categories, along with their respective percentages, calculated according to the frequency of occurrence and the primary focus of each study, as shown in the table below:

No.	Main Themes/Categories	Jumlah Artikel	Persent (%)	Deskripsi Singkat
1	Strengthening Critical Thinking in Social Studies Learning	8	80%	The article emphasizes enhancing critical thinking skills through active and reflective Social Studies (IPS) learning strategies.
2	Integration of Environmental Education and Environmentally Caring Character	7	70%	The study highlights the importance of fostering students' ecological attitudes through contextual and locally-based learning.
3	Effectiveness of Learning Models (PBL, Discovery Learning, Ethno-STEM)	9	90%	The article examines the impact of innovative learning models on enhancing students' cognitive and affective development.
4	Contextual and Problem-Based Learning	6	60%	The study emphasizes the importance of problem-based and locality-centered approaches in shaping students' understanding and actions.
5	Use of Technology and Media in Environmental Learning	3	30%	Several articles integrate e-learning, videos, and interactive media to support critical and ecological learning.
6	Evaluation of Higher-Order Thinking Skills (HOTS) and Metacognition	4	40%	The articles assess HOTS (Higher-Order Thinking Skills) and metacognitive awareness as indicators of the success of environment-based learning.
7	Implementation of SDGs in Social Studies (IPS) and Science (IPA) Education	2	20%	The study links learning with the Sustainable Development Goals (SDG 4 and SDG 13).

Based on the analysis of ten articles reviewed in this literature study, several interrelated themes were identified, reflecting the developmental direction of Social Studies (IPS) learning in shaping students' critical thinking skills and environmental awareness. In general, these themes can be categorized into six main groups, each representing a distinct pedagogical focus and research contribution to character education and sustainability.

The most dominant theme is the effectiveness of innovative learning models such as Problem-Based Learning (PBL), Discovery Learning, and Ethno-STEM, which appeared in 90% of the reviewed articles. This indicates that active, contextual, and experience-based learning approaches hold great potential for enhancing student engagement with environmental issues. These models not only promote conceptual understanding but also foster reflective attitudes and sustainable, action-oriented behavior.

The strengthening of critical thinking skills in Social Studies learning emerged as a focus in 80% of the articles. Critical thinking is positioned as a bridge between knowledge and action, enabling students to analyze environmental problems deeply, evaluate their impacts, and formulate relevant solutions. Indicators such as interpretation, analysis, inference, and evaluation serve as focal points in the development of this competence. These findings reinforce the argument that Social Studies is not merely a theoretical subject but also a medium for cultivating reflective reasoning and social responsibility.

The integration of environmental education and the development of ecological awareness appeared in 70% of the studies, demonstrating that Social Studies plays a strategic role in fostering students' ecological consciousness. Topics such as environmental conservation and sustainable development serve as effective media for instilling sustainability values particularly when linked to local contexts and real-world issues relevant to students' lives. This contextualized approach has proven to be more meaningful than abstract or decontextualized forms of instruction.

Contextual and problem-based learning also emerged as significant themes, found in 60% of the reviewed articles. These strategies emphasize the importance of connecting learning materials to students' real-life experiences, enabling them to understand the social and ecological relevance of each topic studied. As a result, students are not merely recipients of information but active participants capable of making informed decisions and taking actions based on critical analysis of their environment.

The use of technology and digital learning media appeared in 30% of the articles. Although not yet dominant, the integration of technology shows potential to expand access and enrich students' learning experiences. E-learning platforms, interactive videos, and other digital media can serve as effective tools for presenting environmental issues in visual and engaging ways, particularly in the context of remote or hybrid learning.

Finally, the implementation of the Sustainable Development Goals (SDGs) within Social Studies and Science education was found in 20% of the studies. Although still limited, this approach provides a new direction for developing curricula that are globally relevant and future-oriented. SDG 4 (Quality Education) and SDG 13 (Climate Action) serve as relevant entry points for integrating sustainability values into primary and secondary education.

Overall, this thematic interpretation demonstrates that Social Studies education has substantial potential to shape a generation that is critical, environmentally conscious, and sustainability-oriented. This literature study provides a strong conceptual foundation for developing more transformative, contextual, and humanistic learning strategies rooted in ecological values. By integrating appropriate pedagogical approaches, Social Studies can serve as the frontline of education in addressing global environmental challenges through early character formation.

Critical thinking and environmental awareness are two interdependent competencies essential to Social Studies (IPS) learning. This literature review reveals that appropriate learning approaches can serve as catalysts for developing students' ecological character while enhancing higher-order thinking skills. From the ten articles [7] analyzed, it was found that problem-based learning (PBL), discovery learning, and culturally contextual approaches (Ethno-STEM) contribute significantly to integrating cognitive and affective aspects of students' engagement with environmental issues.

First, critical thinking in the context of Social Studies functions not only as an analytical tool for understanding social and geographical phenomena but also as a bridge between knowledge and ecological action. A study by Binsa & Putri (2024) showed that the implementation of PBL in elementary Social Studies significantly increased students' critical thinking scores [6] from 59.6 to 81.0. Indicators such as problem identification, decision-making, and inference demonstrated consistent improvement. This is supported by Ardiansyah et al. (2024), who found that PBL in geography learning encouraged senior high school students to think reflectively about environmental conservation issues, with 31% of students reaching the "highly critical" category.

Second, environment-based discovery learning has proven effective in fostering ecological awareness and higher-order thinking skills. Wiono & Meriza (2022)[2] revealed that this model not only improved junior high school students' metacognitive awareness but also strengthened their analytical and evaluative abilities. Chusni et al. (2021) [3] added that the use of e-learning within discovery learning encouraged students to learn independently and actively, although most remained in the moderate critical-thinking category. These findings suggest that technology can be an effective learning aid but still requires contextual pedagogical reinforcement.

Third, the integration of the SDG-oriented Ethno-STEM approach in elementary science education, as examined by Pada et al. (2025)[1], introduced a new dimension to environmental education. This approach combines local cultural values with global sustainability principles, resulting in significant improvements in students' environmental awareness ($p = 0.001$; Cohen's $d = 2.84$). Although cognitive gains were higher than affective and behavioral outcomes, the approach effectively connected scientific knowledge with moral responsibility toward the environment.[8]

Fourth, contextual and locally grounded Social Studies learning has proven effective in integrating [2] critical thinking and environmental character values. Puspitasari et al. (2016)[3] emphasized that topics such as environmental conservation and sustainable development can serve as platforms for high school students to analyze local issues such as sand mining and illegal logging. By aligning learning objectives with local environmental conditions, students are guided not only to understand concepts but also to create concrete actions as contributions to sustainability.

Nevertheless, this review also identifies several challenges. Hidayati & Sinaga (2019) found that students' critical thinking skills remain weak, and environmental awareness has not yet been fully developed. This indicates that despite the advancement of instructional approaches, practical implementation still faces obstacles such as limited teaching media, insufficient teacher training, and lack of family support in fostering a sustainable learning ecosystem.

In conclusion, the synthesis of the ten reviewed articles shows that Social Studies learning that integrates problem-based, discovery, and culturally contextual approaches holds great potential for nurturing a generation that is both critical and environmentally conscious. This literature review is essential for formulating a conceptual framework for Social Studies education that not only transfers knowledge but also shapes active, reflective, and solution-oriented ecological character.

Thus, Social Studies education can stand at the forefront of developing an environmentally conscious generation capable of contributing to sustainable development.[5]

IV. CONCLUSION

This literature study demonstrates that Social Studies (IPS) education plays a strategic role in developing students' critical thinking skills and environmentally conscious character. Based on the analysis of ten research articles, it was found that problem-based learning (PBL), discovery learning, and Ethno-STEM approaches grounded in local cultural values and the Sustainable Development Goals (SDGs) are effective strategies for enhancing students' cognitive, affective, and conative engagement with environmental issues.

Critical thinking has proven to be an essential bridge between conceptual understanding and ecological action. Through indicators such as analysis, inference, and evaluation, students are guided to examine environmental problems reflectively and develop solution-oriented responses. Meanwhile, contextual and locally grounded learning fosters more meaningful ecological awareness, particularly when students are confronted with real-world issues in their immediate surroundings.

The findings also indicate that while cognitive outcomes show significant improvement, affective and behavioral domains still require further reinforcement. Therefore, integrating IPS learning with transformative [5]and participatory approaches needs to be continuously developed to ensure that education not only transfers knowledge but also cultivates character and action oriented toward sustainability.

Overall, this study confirms that IPS learning designed in a reflective, contextual, and sustainability-based manner can serve as a frontline in shaping a generation of students who are critical, environmentally conscious, and prepared to contribute to sustainable development. These findings provide both conceptual and practical foundations for developing curricula and instructional strategies that are more relevant to contemporary and future ecological challenges.

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