

The Transformational Role of Social Studies Teachers in Integrating Environmental Education Towards Sustainable Development

Dinna Daniati^{1*}, Siti Sangadah², Indah Kristina Wulandari³, Lili Halimah⁴

Author Affiliations

^{1,2,3,4} Program Studi Magister Pendidikan IPS, STKIP Pasundan, Cimahi, Jawa Barat, Indonesia

Author Emails

- a) dinna.daniati@gmail.com*
- b) sitisangadah2079@gmail.com,
- c) indahkristina888@gmail.com,
- d) lili.halimah@gmail.com

Abstract.

The transformation of 21st-century education demands that teachers play a role beyond mere knowledge transmission, emphasizing the cultivation of social and ecological awareness. This study aims to analyze the role of Social Studies teachers in integrating environmental education toward Education for Sustainable Development (ESD). Employing a qualitative approach through library research, this paper reviews national and international academic literature on teacher roles, ecopedagogy, and sustainability-oriented learning strategies. The results reveal three central roles of Social Studies teachers in environmental education: (1) as facilitators who link social theory with ecological realities through contextual learning; (2) as social–ecological change agents who foster student awareness and participation in environmental issues; and (3) as developers of ecological character who cultivate values of empathy and environmental responsibility. Integration strategies include interdisciplinary thematic learning, action-based projects, cross-subject collaboration, and the use of digital technology in sustainability education. The novelty of this study lies in positioning Social Studies teachers as transformative environmental educators, bridging social science and sustainability science through an ecopedagogical framework. The findings provide implications for policy, curriculum development, and teacher professional training toward sustainability. Hence, the integration of environmental education within Social Studies serves as a strategic foundation for nurturing intelligent, ethical, and environmentally responsible citizens in the global era.

Keywords: Social studies teachers, Environmental education, Sustainable development, ESD, Ecopedagogy

INTRODUCTION

The environment can be understood as a unit that includes various aspects of life that are interconnected and affect the sustainability of living beings. In the context of education, the environment functions as a real object that can be used in the learning process, so that students gain a more in-depth and meaningful hands-on experience. This utilization is in line with the Independent Curriculum approach which emphasizes deep learning, where students are encouraged to understand concepts in their entirety through real involvement with the surrounding environment (Ministry of Education and Culture, 2022).

The relevance of environmental use in learning is getting stronger when it is associated with global conditions that are facing various ecological crises. Climate change, environmental degradation, and biodiversity loss are real challenges that threaten the sustainability of human life (UNESCO, 2021). Data shows that around 40% of villages in Indonesia will experience air pollution by 2024, especially on the island of Java which has the highest population density and industrial activity (Katadata, 2024). In addition, around 60% of rivers in Indonesia are heavily polluted due to industrial and domestic waste (BacteriumIPAL, 2024). This condition shows that environmental problems are no longer local, but global and systemic. Therefore, education has a strategic role in shaping the ecological awareness of the younger generation to be able to face the complexity of environmental problems in a sustainable manner.

At the global level, the United Nations (UN) through the Sustainable Development Goals (SDGs), especially goal 4.7, affirms the importance of Education for Sustainable Development (ESD) as an effort to instill the values of sustainability, social justice, and environmental concern through education (United Nations, 2023). UNESCO (2021) also emphasizes that education must be a means of social transformation, not just the transmission of knowledge. Thus, schools function as a space for value transformation that connects social, economic, cultural, and ecological aspects in realizing a sustainable society.

In the Indonesian context, the subject of Social Sciences (IPS) has a strategic position because it integrates social, economic, and cultural dimensions that can be directed to build environmental awareness and social responsibility. Social studies not only plays a role in developing social knowledge, but also fosters critical thinking skills, empathy, and civic awareness of sustainability issues (Sterling, 2014). In addition, social studies plays an important role in strengthening students' national identity and national values as part of the formation of civilized citizen character (Halimah, 2021). The Independent Curriculum provides a large space for teachers to relate learning topics to real-life contexts, including environmental issues around students.

However, the implementation of environmental education in social studies learning still faces various challenges. Many teachers do not yet have the pedagogical capacity and cross-disciplinary knowledge to integrate environmental issues into social learning in a meaningful way. The limitations of environment-based learning resources, low teaching and learning activities (Tilbury, 2011). In addition, most social studies learning approaches still emphasize the cognitive aspect, while the dimensions of attitudes and concrete actions towards sustainability have not been optimally worked on (Sterling, 2010).

To answer these challenges, a new paradigm is needed in social studies learning based on an ecopedagogical approach to education that places the environment as the center of ethical, social, and reflective learning (Tilbury, 2011; Sterling, 2014). Social studies teachers need to play the role of transformative teachers who are able to connect social knowledge with ecological awareness through collaborative and contextual learning (Hopkins & McKeown, 2019).

The novelty of this research lies in the affirmation of the role of social studies teachers as the main driver of the systematic integration of environmental education into social studies learning, which has tended to be limited to the delivery of theory. This research aims to analyze the role of teachers in integrating environmental education in schools as well as formulate effective pedagogical strategies to shape ecological awareness and sustainable behavior of students. Thus,

this research not only enriches the study of the role of social studies teachers, but also contributes to the development of Education for Sustainable Development (ESD) in Indonesia and globally.

METHOD

This research uses a qualitative method with a library research approach. This approach was chosen because it is appropriate to examine in depth the role of social studies teachers in integrating environmental education in schools and formulate effective strategies to form ecological awareness and sustainable behavior of students. This type of research emphasizes conceptual, reflective, and literature synthesis analysis to identify concepts, models, and directions for the development of continuing education in the context of social studies learning.

Research data sources were obtained from relevant secondary literature, including: Articles from national and international journals indexed by Scopus and Sinta; Academic books related to environmental education, Education for Sustainable Development (ESD), and ecopedagogy; Research and education policy reports from institutions such as UNESCO, OECD, and the Ministry of Education and Culture; and Official curriculum documents that discuss the integration of environmental education in social studies. The selection of sources is carried out by paying attention to the criteria of relevance, credibility, and novelty (publication of the last five years, 2019–2024), to ensure that the data analyzed support the research theme in an up-to-date and academic manner.

The research process was carried out through the following four systematic stages: The researcher collected various references related to the role of social studies teachers, environmental education, and sustainable development through academic databases such as Google Scholar, Scopus, as well as reports from international institutions such as UNESCO (2021) and OECD (2023). The collected literature was selected using inclusion and exclusion criteria. Inclusion criteria include the suitability of the theme with the role of social studies teachers in Education for Sustainable Development (ESD), sustainability, and the validity of academic resources (Tilbury, 2011). The literature that passed the selection was analyzed using the interactive analysis model of Miles & Huberman (2018) which includes three stages: Data reduction, namely selection and simplification of relevant information; Data presentation, which is the organization of findings in the form of thematic categories (for example: the role of teachers, challenges, learning strategies); Drawing conclusions and verification, to formulate a comprehensive understanding of the role of social studies teachers in the integration of environmental education. Based on the results of the analysis, a literature synthesis was carried out to build a conceptual framework of thinking about the role of social studies teachers as agents of change in integrating ecopedagogic and sustainability values into social studies learning. This process produces a conceptual model that can be used as a reference for the development of continuing education practices and policies.

The validity of the data is maintained through the triangulation technique of sources and theories, by comparing findings from various relevant sources and theories to produce an objective and comprehensive analysis (Creswell, 2018). The analysis was carried out reflectively by tracing the consistency between ESD theory, national education policy, and pedagogical practices of social studies teachers.

Through this approach, the research is expected to provide a comprehensive understanding of the role of social studies teachers in integrating environmental education for sustainable

development, as well as fill the gap in academic studies on how teachers can function as facilitators of ecological awareness based on social and civic values.

RESULTS AND DISCUSSION

A. The Role Of Social Studies Teachers In Environmental Education

As one of the main components of the education system, teachers have a strategic role in shaping students' mindsets, attitudes, and behaviors towards social and environmental issues. In the context of Education for Sustainable Development (ESD), teachers play a role not only as transmitters of knowledge, but also as agents of socio-ecological transformation (Tilbury, 2011; UNESCO, 2021).

The role of social studies teachers in environmental education can be explained through three main dimensions: Social studies teachers play the role of facilitators who connect social theory with environmental reality through contextual approaches and place-based learning. Through this strategy, students are invited to analyze real problems such as waste management, local climate change, and land use conflicts (Halimah & Sonya, 2024). Social studies teachers foster students' ecological awareness through a transformative approach that involves direct interaction with the surrounding environment. Activities such as field studies, eco-mapping, or environmental community projects help students internalize sustainability values (Hopkins & McKeown, 2019; OECD, 2023). Social studies teachers have the responsibility to form the character of caring for the environment through character-based learning. The values of responsibility, empathy, and social solidarity are instilled as the basis for the formation of sustainable behavior (Halimah, 2023; Sterling, 2010). These three roles are intertwined and contribute to building students who are critical, reflective, and have a moral commitment to social and environmental sustainability.

B. Strategy for Integrating Environmental Education in Social Studies Learning

Environmental education is a systematic effort to foster care, knowledge, attitudes, and skills in preserving the environment (Tilbury & Cooke, 2005). In schools, this education does not stand as a separate subject, but is integrated into various fields of study, including social studies (UNESCO, 2024).

Some of the relevant integration strategies for social studies learning include: Social studies teachers can relate social topics such as urbanization, sustainable economy, or migration to environmental issues, such as land degradation or water crisis. A cross-disciplinary approach strengthens the linkages between social, economic, and ecological aspects in learning (Sterling, 2014). Students are involved in real-world activities such as researching the quality of river water around the school, analyzing the impact of plastic use in the community, developing recycling projects, or conducting environmental awareness campaigns through social media. This approach fosters problem-solving skills and environmental responsibility (OECD, 2023). The integration of local wisdom in these activities can also strengthen students' cultural identity and civic values (Halimah, 2023).

The integration of environmental education can be strengthened through collaboration between social studies, science, and PPKn teachers. Through cross-disciplinary activities, students understand sustainability from various scientific perspectives and civic values (UNESCO, 2021; Hopkins & McKeown, 2019). Teachers can use digital technologies such as virtual field trips, interactive simulations, or environment-themed augmented reality to increase students' interest in

learning (Digital Learning Council, 2024). This media allows students to experience experiential learning even though they are not always in the field. The use of digital technology such as artificial intelligence (AI) components can also enrich the adaptive and innovative social studies learning experience in the technological era (Halimah, 2021).

C. Challenges in the Implementation of Environmental Education in Social Studies Learning

The implementation of environmental education in social studies is inseparable from various obstacles both internal and external (Kurniawan, 2024; Halimah, 2023). This includes the limited understanding of social studies teachers on the concepts of ecology and sustainability science, low motivation to integrate environmental issues, and lack of creativity in designing innovative learning (Tilbury, 2011). Some teachers still consider environmental issues as the responsibility of the science field alone, not part of social studies. This includes the dense curriculum that limits the exploration of environmental topics in depth, limited resources such as teaching materials and facilities, weak institutional support, and low environmental awareness of the community around the school. This challenge has direct implications for the effectiveness of sustainability-based learning (OECD, 2023). Social studies teachers often do not receive ongoing training related to ESD and ecopedagogy. This has an impact on teachers' low ability to develop authentic evaluation and action-based learning (Hopkins & McKeown, 2019).

D. The Impact of Limitations on the Effectiveness of Environmental Education in Social Studies Classrooms

Limited resources and policy support have a direct impact on the effectiveness of the implementation of environmental education in social studies classrooms. The dense curriculum makes it difficult for teachers to add sustainability materials contextually. The lack of media, modules, and learning facilities hinders teachers' creativity in developing meaningful learning experiences (Kurniawan, 2024). In addition, the low environmental awareness in the community makes it difficult for students to internalize the learning message. As a result, environmental education tends to stop at the cognitive level, not yet touching the affective and behavioral realms (Halimah & Sonya, 2024). This condition shows the need for a more reflective, contextual, and action-based learning strategy in order to achieve the goals of Education for Sustainable Development.

E. Efforts and Recommendations for Strengthening the Role of Social Studies Teachers

To optimize the role of social studies teachers in environmental education, several strategic steps need to be taken:

1. Continuous training based on ESD and sustainability science needs to be held to strengthen teachers' competence in integrating environmental issues (Wijayanti & Harsono, 2024). The formation of a community of practice between teachers can be a forum for sharing experiences and innovations.
2. The use of locally-based modules, interactive digital technologies such as augmented reality, virtual field trips, and simple social-ecological-based experiments can increase student engagement (Digital Learning Council, 2024).

3. The integration of sustainability themes in the Learning Objectives Flow (ATP), the implementation of authentic project-based assessments, and cross-disciplinary collaboration are key to strengthening the implementation of ESD (Ministry of Education and Culture, 2023).
4. Affirmative policies are needed through the implementation of the Eco-School Policy, the provision of special budgets for environmental education, and partnerships with NGOs and the business world in school sustainability programs (Green, 2023). In addition, civic education has an important role in strengthening the values of national resilience in schools, which is in line with the social studies learning goals in shaping social and environmental resilience (Halimah, 2022).
5. Schools can be used as living laboratories by involving students in community projects such as waste banks, mangrove planting, and urban farming (Suryanto, 2024). Family participation in environmental activities also strengthens the habituation of sustainable behavior.
6. Collaboration with international institutions such as UNESCO and the OECD can increase the capacity of social studies teachers in implementing best practices in environmental citizenship education at the global level (UNESCO, 2024; OECD, 2023).

F. Implications for 21st Century Education

The integration of environmental education in social studies is in line with 21st century competencies, especially in forming critical thinking, collaboration, communication, and creativity (4C) that are oriented towards sustainability (Partnership for 21st Century Learning, 2019). Social studies teachers who master ESD have the potential to foster a sustainable mindset of the younger generation—namely the ability to think systemically, empathic, and be reflective of global and local issues.

CONCLUSION AND RECOMMENDATIONS

This study confirms that Social Sciences (IPS) teachers have a strategic role as the main driver in integrating environmental education into the learning process oriented to sustainable development (Education for Sustainable Development / ESD). Through literature review and conceptual analysis, it was found that social studies teachers play a role as facilitators of contextual learning, agents of socio-ecological change, and developers of ecological characters. This role shows that social studies teachers are not only tasked with transferring social knowledge, but also shaping students' critical awareness, empathy, and ecological responsibility towards the sustainability of life. The integration of social, cultural, and ecological values in social studies learning reflects the essence of ecopedagogy, which is education that combines moral, social, and environmental dimensions in its entirety. The novelty of this research lies in strengthening the position of social studies teachers as transformative environmental educators, namely educators who are able to bridge the gap between social sciences and sustainability science. This approach emphasizes that environmental education in social studies is not just an additional topic, but an integral part of equitable and sustainable global citizenship character education. Overall, this research reinforces the view that social studies education has a central role in shaping a young generation that thinks systemically, acts ethically, and is committed to global sustainability. Social studies teachers are a bridge between social knowledge and ecological awareness; between classroom learning and real life. Through the integration of environmental education in social

studies learning, schools can become learning spaces that not only educate, but also foster human values, ecological empathy, and global responsibility. Thus, social studies education contributes directly to the realization of a sustainable, inclusive, just, and civilized society as the ideals of the Sustainable Development Goals (SDGs) and the spirit of 21st century education.

REFERENCES

- BacteriumIPAL. (2024). National Report on River Pollution in Indonesia. Jakarta: Ministry of Environment and Forestry.
- Creswell, J. W. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.
- Digital Learning Council. (2024). *Innovative Pedagogies for Sustainability Education*. Singapore: DLC Press.
- Freire, P. (2018). *Pedagogy of the Oppressed*. New York: Continuum.
- Green, A. (2023). *Eco-School Policy Implementation in Developing Countries*. London: EarthWatch.
- Halimah, L. (2021). The Influence of Civic Education Learning on the Nationalism of Cimahi City High School Students. *Journal of Civic Education*.
- Halimah, L. (2021). The utilization of artificial intelligence components in technology era's learning. *Jurnal PPKn dan IPS*, 3(2).
- Halimah, L. (2022). Strengthening the values of national resilience in schools through civic education. *Journal of National Resilience*, 28(1).
- Halimah, L. (2023). Internalization of the value of civic education in the tradition of the Blanakan Sea Party. *Journal of Local Wisdom and Citizenship*, 2(1).
- Hopkins, C., & McKeown, R. (2019). *Teacher Education and Education for Sustainable Development*. Tokyo: United Nations University Press.
- Katadata. (2024). *Data on Air Pollution and Its Impact on Health in Indonesia*. Jakarta: Katadata Insight Center.
- Ministry of Education and Culture. (2022). *Guidelines for the Implementation of the ESD-Based Independent Curriculum*. Jakarta: Ministry of Education, Culture, Research, and Technology.
- Ministry of Education and Culture. (2023). *Policy on the Integration of Environmental Education in the Independent Curriculum*. Jakarta: Ministry of Education and Culture.
- Kurniawan, B. (2024). Challenges in the application of environmental education in social studies learning. *Journal of Social and Environmental Education*, 5(1), 12–24.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2018). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- OECD. (2023). *Education for Sustainable Development and Global Competence*. Paris: OECD Publishing.
- Partnership for 21st Century Learning. (2019). *Framework for 21st Century Learning*. Washington, DC: P21.
- Sipos, Y., Battisti, B., & Grimm, K. (2008). Achieving transformative sustainability learning: Engaging head, hands and heart. *International Journal of Sustainability in Higher Education*, 9(1), 68–86.

-
- Sterling, S. (2010). Transformative learning for sustainability. *Learning and Teaching in Higher Education*, 5(2), 17–33.
- Sterling, S. (2014). *Sustainable Education: Re-visioning Learning and Change*. Devon: Green Books.
- Suryanto, A. (2024). School as a living laboratory: Strategies for the implementation of environmental education in Indonesia. *Journal of Green Education*, 6(2), 88–101.
- Tilbury, D. (2011). *Education for Sustainable Development: An Expert Review of Processes and Learning*. Paris: UNESCO.
- Tilbury, D., & Cooke, K. (2005). *A National Review of Environmental Education and ESD*. Canberra: Australian Government Publishing Service.
- UNESCO. (2021). *Reimagining Our Futures Together: A New Social Contract for Education*. Paris: UNESCO Publishing.
- UNESCO. (2024). *Global Report on Environmental Education 2024*. Paris: UNESCO.
- United Nations. (2023). *The Sustainable Development Goals Report 2023*. New York: United Nations.
- Wijayanti, R., & Harsono, D. (2024). Strengthening the competence of social studies teachers in continuing education. *Journal of Transformational Education*, 11(1), 41–53.
- World Economic Forum. (2020). *Schools of the Future: Defining New Models of Education for the Fourth Industrial Revolution*. Geneva: WEF.
- Yusof, N., & Hassan, R. (2022). Integrating environmental education in social studies: A Malaysian perspective. *Asian Journal of Social Education*, 8(4), 77–91.
- Zulkarnain, M., & Arifin, A. (2023). Environmental literacy and civic engagement in Indonesian secondary schools. *Journal of Environmental Education Studies*, 15(2), 122–139.