Vol. 14, No. 03, pp. 2050-2063, 2024 DOI: 10.23960/jpp.v14.i3.2024139

Jurnal Pendidikan Progresif

e-ISSN: 2550-1313 | p-ISSN: 2087-9849

http://jurnal.fkip.unila.ac.id/index.php/jpp/

# Enhancing Ecological Awareness through Innovative Green Sociology Teaching Approaches

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*Received: 08 November 2024 Accepted: 20 November 2024 Published: 29 December 2024*

**Abstract: Enhancing Ecological Awareness through Innovative Green Sociology Teaching Approaches. Objective**: This study looks at how ecological intelligence and green sociology in sociology instruction. The goal of the study is to pinpoint practical methods for fostering ecological literacy, which entails becoming aware of environmental systems and taking sustainable action. The objective is to encourage sustainable thinking and behavior in students by fusing the theoretical basis of Green Sociology with effective teaching strategies. **Methods:** Using a literature review methodology, academic sources on sustainability in education, ecological intelligence, and green sociology were examined. The study used thematic analysis to highlight pertinent teaching practices by synthesizing findings from reputable papers, books, and scholarly publications. The study focused on techniques such as case study discussions, simulations, and project-based learning (PBL) as means of successfully integrating environmental issues into sociology courses. **Result and Discussion:** The results show that Green Sociology offers a thorough framework for comprehending the intricate relationships that exist between ecosystems and civilization. Students' critical thinking and ecological intelligence are improved by using techniques like simulations, problem-based learning, and community-focused projects. Students can actively participate in sustainable practices and contextualize global issues by incorporating local environmental issues into educational activities. **Conclusion:** Green sociology serves as an important link between sociology education and environmental sustainability. Using methods such as case studies, simulations, and PBL, educators can greatly improve students' ecological literacy. This method not only broadens their theoretical understanding, but also provides them with the skills and drive to implement sustainable activities, resulting in a more environmentally conscious generation.

**Keywords:** ecological intelligence, green sociology, sociology learning.

***To cite this article:***

Ghufronudin, Liestyasari, S. I., Budiati, A. C., Parahita, B. N., Astutik, D., & Siregar, R. S. (2024). Enhancing Ecological Awareness through Innovative Green Sociology Teaching Approaches. *Jurnal Pendidikan Progresif, 14*(3), 2050-2063. doi: 10.23960/jpp.v14.i3.2024139.

## INTRODUCTION

In globalization era when interaction between human beings and living environment is getting more complex, ecological literacy is very important for students to create generations that care and responsible for the earth's future. Ecological literacy enables individuals to develop deeper understanding and consciousness of environmental issues such as climate change, pollution, and conservation (McBride et al., 2013; Jannah et al., 2013; Ikhsan et al., 2019). Through good understanding and consciousness of living environment problem, individuals usually can analyze living environment problems, identify the cause, and consider effective solution to solve the environmental problem. Individuals with good

ecological intelligence tend to behave more responsible for sustainable environmental practice, such as selecting environment-friendly products, reducing resource consumption, planting trees, and campaigning for biodiversity conservation to support sustainable development practices (Ikhsan et al., 2019; Jiménez, 2019).

Ecological literacy among students also has long term impact in creating environment-friendly mindset and behavior, and their sensibility to global issues. Ecological literacy among students is not merely an extra lesson, but is also an important foundation in preparing generations that can face and break the environmental challenge in globalization era. Through ecological literacy, students become more aware of, empathetic with and ready for contributing to the attempt of maintaining this planet sustainability. As suggested by Samini et al. (2022), ecological literacy affects positively the students' environment-friendly consumption. This indicates that the higher the ecological literacy the students have, the more environment-friendly will be the consuming behavior performed. Through a strong ecological literacy, the students can be the future leader leading the world to sustainable practice. This is also confirmed with the result of previous researches Hermawan et al., 2022; Huang & Hsin, 2023) showing that ecological literacy among students can improve their understanding on the responsibility for environment and generate the sense of belonging to the earth's future. Thus, ecological literacy implemented by schools is not only about transfer of knowledge but also reaches the development of attitudes and values supporting sustainability.

Recent studies have highlighted the importance of ecological literacy in addressing environmental challenges. Smart education (SE) has been shown to effectively support digital ecological literacy (DEL) learning, enhancing students' understanding of environmental issues (Zuhriyah, 2023). Ecological literacy is essential for the public to make informed decisions about environmental policies (Hitchcock et al., 2021). To promote ecological literacy, service learning and citizen science research methods have been proposed as transformative educational strategies (Ha et al., 2022). These methods engage students and the public in ecological research, promoting a deeper understanding of local and global environmental concerns. Although an environmental education program (EEP) for sixth graders had limited effects on most of the variables measured, it reduced children's extrinsic motivation to engage in pro-environmental behaviors and increased parents' dissatisfaction with local environmental conditions (Koyama & Watanabe, 2023). These results highlight the need for further research and development of effective ecological education strategies.

In the attempt of growing the students' ecological intelligence, sociology learning plays an important role. As a social science discipline, Sociology discusses not only social concept and theory, but also extends its coverage to discussing environmental issues. This enables the students to understand not only theoretic aspect, but also how the interaction between human beings and environment is to create social structure and norm (Lidskog et al., 2015). Another study conducted by Wasino et al. (2020) on ecoliteracy learning in History learning explained that the students can think analytically and see critically that cultural environmental conservation is the responsibility of everyone that can be carried out collectively. This indicates the presence of advanced thinking about the impact of ecoliteracy activity.

The author stated that Sociology study associated with environmental issues is called *green sociology*. Green sociology is the branch of Sociology focusing on studying the interaction between community and environment. Green sociology offers an educational approach that focuses on analyzing the relationship between humans and the environment in a broader social

context. Green sociology studies the social factors that influence pro-environmental behavior, such as culture, politics, and economics, which in turn influence society's production and consumption patterns. In an educational context, this approach provides a more global perspective by teaching students to understand environmental issues from a sociological perspective (Boström et al., 2017). A study by Tusznio et al., (2023) showed that when students study environmental issues in a social context, they are better able to perceive and critique the role of society and social structures in addressing ecological challenges.

In today's educational context, the Green Sociology approach is increasingly relevant as global awareness of the environmental crisis grows. While traditional environmental education approaches teach about ecology and nature conservation, Green Sociology offers a deeper perspective on the complex relationships between society and ecosystems. This approach teaches students to see environmental issues as the result of interactions between humans and the environment, which are influenced by norms, policies, and patterns of consumption and production that apply in society. For example, the issue of plastic pollution is not just a waste problem, but also a result of a culture of mass consumption and production that does not consider environmental impacts.

Ecological literacy through the Green Sociology approach is increasingly relevant with the increasing global environmental crisis. In addition to understanding basic ecological concepts, students need to be encouraged to analyze how everyday social practices, such as plastic consumption and energy use, affect ecosystems. This approach allows students to see issues such as global warming and deforestation not only as natural problems but also as the result of interactions between humans and the environment. Through the integration of Green Sociology into the curriculum, students can be equipped with the knowledge and skills needed to become agents of change in society that contribute to sustainability (Prastiwi et al., 2019; Cole et al., 2024; Arif & Changxiao, 2022).

In modern educational journey, learning not merely attains knowledge but is also a journey of in-depth learning to understand complex society dynamic. This article entitled "Building Ecological Intelligence through Green Sociology Learning" details conceptual foundation and implementation of green sociology learning as an innovative approach to improve the students' social intelligence. Through a thorough literature review, this article presents the perspective of various academic sources, explores the concept of sociological intelligence, and identifies the important role of green sociology learning in building in-depth understanding on social structure and environmental issues. Literatures used include studies explaining the relationship between sociological insight and awareness of more urgent environmental challenges. In line with the spirit of sustainability, the Green Sociology learning brings new dimension into social studies, integrating sociological knowledge into in-depth understanding on ecology. This article also explains how this approach encourages the students' active participation in living environment project and thereby encourages proactive social engagement in global issues. In discussion section, this article provides conceptual representation about ecological consciousness and how green sociology learning improves the consciousness effectively.

With this theoretical basis, this article aims to explore the role of Green Sociology in developing students' ecological intelligence. The formulation of the problem in this study is how Green Sociology can contribute to strengthening students' ecological literacy and ecological intelligence, as well as helping them become environmentally conscious future leaders. The results of this study are expected to provide a

strong conceptual basis for the integration of Green Sociology into the curriculum, while offering effective strategies to increase ecological awareness and sustainability attitudes among students.

## METHOD

### Types of Research

This study uses a literature study approach to analyze and synthesize various sources of literature related to green sociology learning and the development of students' sociological intelligence.

### Research Design and Procedure

Relevant literature was identified through searches in academic databases such as Scopus, and Google Scholar, as well as through digital libraries. The search keywords used included "sociological intelligence," "green sociology learning," "green sociology education," and "social intelligence development," with variations of keywords to include synonyms and other related terms.

Literature inclusion criteria included works published within the last 10 years, relevant to the research topic, and based on empirical research or theoretical studies. Conversely, literature that was not fully accessible or less relevant to the focus of the study was excluded from the analysis.

### Instrument

A simple coding framework was developed to extract key information from the selected literature. This framework included details such as publication year, focus area, and strategies discussed. The coding process ensured that important ideas were consistently identified and categorized.

### Data Analysis

The synthesis process was carried out using a thematic approach, with literature grouping based on similar themes or research focuses. Qualitative analysis was applied to identify patterns, relationships, and differences in the collected research results. The results of this synthesis are expected to provide a deeper understanding of green sociology learning and how this approach can support the development of students' sociological intelligence.

## RESULT AND DISCUSSION

### Understanding Ecological Intelligence Concept as a Form of Ecological Literacy

Ecological intelligence, a concept arising in modern era, not only includes intellectual intelligence but also emphasizes individual and community's ability of interacting with natural environment wisely. Ecological intelligence reflects the awareness of close relationship between human life and ecosystem surrounding. Goleman (2010) stated that ecological intelligence is human's ability of adapting to ecological niche where they live. Ecological intelligence is skill or ability the students need in treating situation arising in their environment and applying it to daily life. Gardner (2013) calls ecological intelligence a naturalistic intelligence. Naturalistic intelligence, according to Gardner, is human ability of understanding natural phenomenon, indicating ecological consciousness and sensibility to natural forms.

In line with this, Orr (Setiawati, 2016) suggests that the description of an ecologically smart person can be characterized as the responsible one. Such person has practical ability necessary to act based on knowledge and feeling. It means that an individual ecological knowledge understands the importance of comprehending the relationship and correlation between ecological components, ecosystems and those interested in the work. It means understanding what should be done and how to deal with it.

Supriatna (2016) suggests that the development of ecological intelligence is very important in the learning process because the school graduates play the following roles: having

knowledge, insight, attitude, and action to maintain sustainability; 2) the actors aware of the problem related to limited natural resources and global warming; and 3) ecological intelligence and living environment. Ecological intelligence is a form of ecological literacy including in-depth understanding on complex relationship between human beings and natural environment. Ecological intelligence includes skills needed to read, understand, and respond to ecosystem dynamic and impact of human activity on environment. Understanding the concept of ecological intelligence as a form of ecological literacy, individuals can contribute more effectively to nature conservation and sustainability.

Ecological intelligence as a form of ecological literacy requires individuals to understand natural cycle, food chain, and relationship between organisms in ecosystem. This understanding helps read and interpret environmental dynamic comprehensively. Ecological intelligence involves an ability of evaluating the impact of human activities on environment. This involves understanding on pollution, deforestation, climate change and other environmental challenges due to human action. Ecological literacy through ecological intelligence not only teaches the living environmental problem but also encourages individuals to engage in sustainable solution. This involves knowledge on environment-friendly technology, environment-friendly practice, and individual's role in creating positive change.

Ecological intelligence and ecological literacy have a complementary relationship. Ecological intelligence provides cognitive and affective skills that are the basis for understanding the relationship between humans and the environment (Ha et al., 2023; Sigit et al., 2024). Ecological literacy, on the other hand, expands this understanding by adding elements of targeted action to support environmental conservation. For example, ecological intelligence allows students to understand the impact of human activities on water pollution, while ecological literacy involves students in finding solutions and taking concrete steps to reduce such pollution. Thus, ecological literacy develops through the development of components such as: **E**nvironmental Knowledge-through Green Sociology, students can understand the relationship between social and ecological phenomena, such as the impact of globalization on deforestation. For example, students are invited to analyze a case study on the impact of agrarian policies on changes in local ecosystems. Pro-Environmental Attitudes-Group discussion-based learning on issues such as environmental justice helps students develop a critical awareness of the social and environmental impacts of public policies. These discussions can trigger empathy and a sense of responsibility for the environment in students. Action Skills-Students can be empowered through collaborative projects such as designing a digital campaign to reduce plastic use in schools or organizing local greening activities. These activities allow students to apply theory to real-world practice.

Green sociology learning provides an opportunity to integrate the concept of ecological intelligence into the learning process, so that students can understand the close relationship between social dynamics and environmental sustainability(Lidskog & Waterton, 2016). One way to improve students' ecological intelligence is through the use of experiential learning methods. Teachers can direct students to engage in field projects, such as mapping the impact of deforestation on local communities. Through this activity, students not only learn about environmental impacts but also understand how social interactions can influence and be influenced by ecosystem conditions.

The application of ecological intelligence can be done through green sociology learning by involving students in simulations or real-case-based discussions (Scoville & McCumber, 2023). For example, students can be invited to analyze the impact of single-use plastic bans on

consumer behavior and socio-economic dynamics. This discussion not only instills an understanding of ecological literacy but also builds critical awareness of how environmental policies directly affect society.

Previous research has shown that the integration of ecological intelligence in education can be done through project-based learning strategies. Boström et al. (2017) found that environmental issue-based projects, such as school waste management, not only improved students' understanding of ecology but also motivated them to engage in real actions that support environmental sustainability. In the context of sociology, this approach can be adapted to emphasize the social dynamics involved, such as community participation in recycling programs or greening initiatives.

In a green sociology curriculum, teachers can introduce the concept of environmental justice, which examines how the impacts of climate change are unevenly distributed across social groups. Through group discussions, students can analyze the impacts of urban flooding on low-income communities. With this approach, students not only understand sociological theory but also develop the ability to evaluate social and ecological challenges holistically.

To ensure that the ecological intelligence students gain can be applied to their daily lives, green sociology lessons need to be designed to include concrete steps. For example, students can be directed to reduce their personal carbon footprint by tracking household energy consumption and evaluating more sustainable practices, such as using public transportation. Additionally, students can be empowered to lead school-based environmental projects, such as vertical gardens or recycling programs, which allow them to connect sociological theory to real-world action.

Through active learning based on Green Sociology, students can understand that every action they take has consequences for the environment. Activities such as school environmental audits not only teach analytical skills but also form critical awareness of the importance of sustainability. Environmental action campaigns allow students to influence collective behavior in their communities, making a direct impact on reducing waste or carbon emissions. In this way, learning does not only focus on theory but also on transforming students' attitudes and behaviors to support environmental sustainability.

**Green Sociology Learning: Understanding the Relationship between Community and Environment**

Green Sociology as a relevant approach to help students understand the relationship between human society and the natural environment (Boström et al., 2017; Islam, 2017). In the classroom, this concept can be applied by integrating environmental issues such as pollution, deforestation, and climate change into sociology learning themes. For example, when studying the topic of social conflict, students can be encouraged to analyze conflicts related to the use of natural resources, such as agrarian conflicts or mining land disputes. This approach allows students to understand social issues from an ecological perspective, thereby strengthening critical thinking skills and environmental empathy.

For example, a learning project that teachers can do is to invite students to create a digital campaign with the theme 'Environmentally Friendly Lifestyle'. This campaign includes creating short videos, digital posters, or infographics that contain information about the impact of energy consumption and solutions to save it. Through this campaign, students learn how to use media to influence people's behavior, which reflects the role of Green Sociology in connecting individuals and communities with sustainability solutions.

The Green Sociology approach is in line with learning outcomes in the sociology curriculum that emphasize critical and analytical thinking

skills. In the context of Phase F (Grades XI and XII), this learning can direct students to propose critical solutions to social issues related to environmental sustainability. For example, students can be asked to evaluate local environmental policies, such as the management of city parks, and provide recommendations based on the field data they collect. This activity is not only academically relevant but also supports the formation of an attitude of environmental concern.

The outcome of Sociology learning in the end of E phase (Grade X) indicates that the students can understand the function of sociology as a scientific subject studying society and providing foundation of critical, analytical, and creative thinking to deal with social phenomena occurring within society. Meanwhile, in Phase F (Grades XI and XII), the outcome of Sociology learning leads to the students that can pose critical and creative solution to the dynamic of social life in the dynamic social digital context today. Considering the two learning outcomes, teachers have modified the learning stage flow (Indonesian: *alur tahapan pembelajaran* or ATP) by including environmental issue teaching materials such as environmental pollution, deforestation, natural disaster and other various environmental issues into Sociology material to be taught to the students. Such learning can be defined as green sociology learning.

Green sociology learning is an approach in learning field focusing on understanding and analyzing complex relationship between human beings and natural environment. This concept includes an understanding on the impact of community on environment and vice versa, and the attempt of building sustainable solution. Green sociology learning not only studies living environmental issues but also involves students in thinking critically and acting constructively. Applying this concept, education can be a potent means of building generation with in-depth understanding on the relationship between human beings and environment and participating actively in creating sustainable solution.

In a work entitled *" Environmental Sociology: From Analysis to Action*, Roberts (2007) emphasizes the importance of green sociology approach in a study on human's consumption and use and their effect on environment. Furthermore, Islam, (2017) and Boström et al. (2017) explain that green sociology study brings an impact on the environmental change into the better one as an impact of globalization. In Green Sociology study, teachers can apply the green sociology learning strategy by referring to the learning outcome existing. This learning encourages critical thinking of consumer behavior and its implication to sustainability. Green sociology encourages the students to use sociological imagination to explore the wide spectrum of problems faced by the environment today. In this study, the students are invited to use their critical reasoning to analyze social and environmental issues such as food justice, climate change, and so on. The concept of active and collaborative learning in Green Sociology is stressed verily. This learning involves such methods as field project, simulation, and group discussion to encourage the students' active participation.

The *Green Sociology* learning has great potency to improve the students' consciousness of living environmental problems through a comprehensive and integrated approach. The followings are several argumentations as alternative to green sociology learning strategy that can contribute to improving the students' consciousness of environmental issues. Green sociology learning helps the students comprehend environment as a complex system. They learn how the element of community interacts with ecosystem and influences each other. This results in a new perspective on the impact of human activity on environment and strengthens the consciousness of in-depth relationship between the two entities. The students are invited to

analyze the social impact of human decision and action on environment. Through this learning, they can evaluate the impact of consumption pattern, government policy, and community behavior toward ecological sustainability.

Besides that, green sociology learning encourages the students to participate actively in field project, research or environmental initiative. Through practical experience, the students can connect theory to practice, improve their understanding on environmental issues and improving their consciousness of the need for taking action effectively. Group discussion and collaboration in green sociology learning enables the students to share their view and experience concerning living environmental problem. This process not only enriches perspective but also improves public consciousness of the challenges faced by environment and community. Then through integrating case studies and contemporar environmental issues into green sociology curriculum makes the learning more relevant to the students. This helps them identify the relationship between sociological theories and real world issues and thereby improves the consciousness of the urgency of environmental issues today.

Media and technology use in green sociology learning can make the material more interesting and more understandable. The students can be connected to recent information, visualize environmental concept and develop deeper understanding through using multimedia resource. Green sociology learning concerns not only how to understand environmental problem but also how to develop attitude to and responsibility for sustainability. The students are invited to think of solution and specific action they can take to support nature conservation.

By implementing collaborative and project-based learning strategies, students not only gain a theoretical understanding of green sociology but also experience its practical impact firsthand. Activities such as school environmental projects and digital campaigns provide students with opportunities to experience firsthand the importance of collective action in supporting sustainability. As a result, students not only become more aware of environmental issues but are also encouraged to take an active role in environmental protection efforts in their communities.

**Green Sociology Learning Model: Design, Strategy and Implementation**

In designing green sociology learning, teachers need to consider comprehensive approach including concept of green sociology and sustainability, and give the students direct experience and active participation all at once. Some learning models including problem based learning, project based learning, and other cooperative learning models can be applied by teachers as an aid to create a meaningful learning. Some studies have found the effectiveness of process and product of the learning model use by teachers (Ramadanti et al., 2022; Rajab et al., 2022; Firdaus, 2022).

The concept of Green Sociology can be incorporated into various sociology courses. For example, when discussing the topic of social change, teachers can relate it to environmental issues such as urbanization and its impact on ecosystems. Students can be asked to analyze how social change affects energy consumption patterns, transportation, and waste, and propose community-based solutions to reduce negative impacts. In addition, through activities such as group discussions, students can explore the role of technology in creating sustainable solutions, such as renewable energy.

The followings are measures and components the teachers can take into account in designing green sociology learning: 1) Learning Objective: to determine obvious, measurable, and relevant objective of learning by developing students' ecological intelligence. Teachers should identify skills and knowledge expectedly achieved

by the students after completing the lesson. 2) Integrating green sociology concept: teachers identify key concept of green sociology the teachers want to deliver to the students. Teachers can connect these concepts to contemporary living environmental issues and sustainability challenges. 3) Material and resource selection: teachers can select relevant contemporary teaching materials conforming to the students' understanding level. Teachers can use various resources, including text, video, and digital resource to support the learning. Teachers can utilize technology and media to increase learning material variation and to make it more attractive. Teachers can use online platform to share resources, to provide additional material, or to support collaboration between students. 4) Interactive teaching method: teachers can use interactive teaching methods such as group discussion, case study, and simulation to improve students' engagement. Teachers can facilitate discussion building shared understanding and encouraging the students to share perspectives with each other. 5) Environment project and field activity: teachers can design environmental project through students' direct participation. These projects can be field research, environmental action or participation in sustainable activity within society. Teachers can encourage the students' active participation by giving them responsibility for designing and implementing environmental project. 6) Formative and summative assessments: teachers can implement formative assessment during the teaching process monitor the students' progress and to adjust teaching method if necessary. Summative assessment is used to evaluate the students' understanding and achievement entirely. 7) Empowering the students and growing positive attitude: teachers can encourage the students to play active role in dealing with the environmental problems surrounding. They give emphasis on the development of positive attitude toward sustainability, social responsibility and participation in sustainable solution. The implementation of learning strategy including ecological principle can enrich the students' learning experience and improve their understanding on the relationship between human beings and environment. Teachers can apply several learning strategies in the learning process, as presented in Table 1.

**Table 1.** Green sociology learning strategy

| Learning Strategy | Description | Objective |
|---|---|---|
| *Project based learning* | Designing and implementing ecological project related to environmental problems. | To give practical experience in implementing ecological concept, to understand the impact of human action and to design sustainability solution. |
| *Simulation and Ecological Model* | Using simulation or ecological model to visualize and to understand ecological concept such as food chain, interaction between organisms and ecosystem change. | To help students internalize ecological principles through simulation experience that can be explained visually. |
| *Field Research* | Inviting the students to conduct field research and observation on the nature to collect data about their environment | To encourage direct interaction with nature, to observe ecosystem dynamic, and to stimulate curiosity with biodiversity. |
| *Case based learning* | Teachers can use case study to explore the complex contemporary environmental | To connect ecological principles to real life condition, to develop contextual understanding and to encourage critical |

| | | |
|---|---|---|
| | issues and to discuss its social and ecological impacts. | thinking. |
| *Discussion and debate* | Teachers can organize class discussion or debate on controversial environmental issues or sustainable solution. | To encourage the students to express their opinion, to understand others' point of view, and to develop more in-depth understanding on complex problems. |
| *School Environment Program* | Preparing environmental program in school, including waste management, tree planting, or campaigning for saving energy. | To encourage the students to participate in practical action to involve them in environment conservation in school. |

The concept of Green Sociology can be applied in classroom learning through case studies on the impact of human interaction on nature or simulations of ecosystem interactions and human activities. Case studies are an effective way to show the relationship between human activities and environmental change. Through this activity, students understand the impact of human interaction on nature and develop critical and analytical thinking skills. Teachers can choose local or global issues as discussion material. Teachers present case studies on the impact of deforestation on local communities. then students are asked to analyze the causes and socio-ecological impacts of deforestation. Discuss solutions, such as reforestation policies or sustainable land management and present the results of the discussion in group presentations.

Simulations allow students to experience firsthand how human decisions can affect ecosystems. This activity strengthens students' understanding of the complexity of social-ecological relationships and the importance of collaboration in decision-making. For example, teachers can create role-playing simulations in which students play stakeholders such as farmers, government officials, and environmental activists. Scenarios that can be played include conflicts over land use for agriculture, development, and environmental conservation. Students are then asked to negotiate and design joint solutions that take sustainability into account.

Teachers can apply the green sociology approach through the use of problem-based learning (PBL) models. The PBL model is a method that encourages students to explore real issues and find solutions based on data and analysis. The purpose of using this model is for students to learn to apply theory to real practice, increase ecological intelligence, and understand ecological impacts directly. Through the use of this learning model, teachers can direct students to identify environmental problems around them, such as waste management or river pollution, and study them through PBL steps. Some steps that teachers can apply include: 1) Problem Identification: Students work in groups to identify environmental problems in their community, for example, unmanaged plastic waste. 2) Research and Data Collection: Students collect data through interviews, surveys, or observations. 3) Problem Analysis and Solutions: Using sociological theory and sustainability principles, students evaluate the causes of the problem and design solutions. 4) Real Action and Evaluation: Students implement small solutions, such as recycling campaigns at school, and evaluate the results.

An example of the application of PBL is "Reducing the Use of Plastic in Schools". The problem that can be used as a case study is related to the excessive use of single-use plastic in the school canteen. Teachers can design activities that direct students to design a plastic

reduction program by distributing tumblers and creating a drinking water refill area. Then the result of this PBL activity is that this campaign not only reduces plastic waste but also teaches students the importance of collective action in supporting sustainability.

In implementing the Merdeka (Freedom) Curriculum, teachers can consider the learning outcome constituting the competence the students should achieve in the end of a stage. Therefore, teachers should design learning objective flow (Indonesian: *alur tujuan pembelajaran* or ATP) systematically and logically in the learning procedures to help the students achieve the learning outcome. The learning objective flow will guide teachers and students to achieve the learning outcome in the end of a phase. Each point in the learning objective flow is ordered chronologically by learning time. Teachers can develop a series of learning objectives dependent on the students' condition and need in the class. The essence of learning objective outcome in green sociology main competency in cognitive, affective, and psychomotor aspects that can be integrated by teachers into sociology learning is presented in the table below

**Table 2.** The essence of learning objective outcome in green sociology main competency

| Basic competency of Centre for Ecoliteracy | Subcompetency of Centre for Ecoliteracy Basic Competency | Integration into Green Sociology |
|---|---|---|
| ***Cognitive aspect*** | • Understanding environmental problems and challenges viewed from the perspective of ecological balance and sustainability.<br>• Understanding ecological principles<br>• Thinking critically, solving problem creatively, and applying knowledge to new situation.<br>• Evaluating the impact of human behavior and applying technology to environment in making decision, considering long-term effect of decision. | • Including ecological knowledge material such as global warming issue, environment pollution, forest fire, not-environment-friendly technology, and etc. in basic material of Sociology learning in both phases E and F.<br>• Teachers can use PBL and PJBL learning models to contextualize sociology material with environmental issues.<br>• In the phase E of Grade X, teachers can include ecological insight into the materials of sociology function, self-identity, social action, social relation, social institution, multicultural society and social research method.<br>• In phase E grade XI, teachers can include ecological insight into the materials of social group, social problem, social conflict, and peace<br>• In phase F of grade XII, teachers can ecological insight into the materials of social |
| ***Affective aspect*** | • Showing care, empathy, respect to others and other living creatures.<br>• Respecting different backgrounds, motivations, and intention interaction, consistent with respecting cooperative values.<br>• Supporting equality, justice, inclusion, and respect to everyone. | |
| ***Psychomotor Aspect*** | • Creating and using tool, object, and producer needed for sustainable society<br>• Applying the understanding on ecological balance in practical and | |

| | |
|---|---|
| ecological balance in practical and effective action<br>• Balancing the consumption of energy and resource<br>• Evaluating and using appropriately | into the materials of social change, globalization, social gap, local wisdom, and community empowerment<br>• All materials can be contextualized in the unit of analysis on natural issue studied from various different topics. |

Schools can support the implementation of Green Sociology by providing resources and facilities that encourage environmentally-based learning. Schools can develop a library or digital collection that contains books, videos, and articles about environmental sustainability. Teachers can access these resources to enrich their learning materials. School gardens as living laboratories where students can learn directly about ecosystems, food chains, and the benefits of greening. Teachers can use these facilities for activities such as field observations or small experiments. Schools can support student initiatives to run environmental programs, such as recycling waste or carbon footprint reduction campaigns. Teachers can use these programs to link real actions to classroom learning.

The integration of Green Sociology into everyday learning not only enriches students' insights into environmental issues but also encourages a change in mindset that supports sustainability. By engaging students in discussions, simulations, and field projects, teachers can help them develop analytical skills, collaboration, and real action to protect the environment. At the school level, support for learning facilities and environmental initiatives can strengthen the collective commitment to sustainability-based education.

## CONCLUSION

The successful application of green sociology is highly dependent on leader and school administration's commitment. This is also affected by institutional consciousness and commitment to create strong foundation to build school culture supporting long-life learning. Teacher training is the key factor to ensure an effective green sociology teaching. The trained teachers can integrate environmental principles into the curriculum better and involve the students. Further researches need to be conducted on the development of green sociology learning model to provide more variation in the discourse of green sociology learning.

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