

Transforming Civic Education through Ecological Citizenship Projects to Foster Deep Learning

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Abstract. Environmental degradation continues to worsen natural conditions in Indonesia, as evidenced by the country's waste generation reaching approximately 18.5 million tons per year in 2024. Today, Civic Education not only plays a role in shaping democratic and responsible citizens, but must also actively engage learners in social life and contribute to environmental sustainability. Therefore, this study aims to examine the transformation of Civic Education through Ecological Citizenship projects as an effort to promote deep learning. The research employs a qualitative method with a literature review approach, collecting data from journals, books, and other relevant sources. Data were analyzed through data reduction, data display, and verification techniques. The findings reveal that the integration of Ecological Citizenship principles into project-based learning encourages students to understand the relationship between humans and nature while also taking concrete actions to preserve the environment. This approach aligns with the principles of deep learning, which emphasize mindful, meaningful, and joyful learning, and contributes to developing graduates who are critical, creative, collaborative, and possess strong civic character. Through direct involvement in environmental projects, students evolve into agents of change who care about sustainability as an essential part of their civic identity.

Keywords: Civic Education, Deep Learning, Ecological Citizenship.

1 Introduction

The increasingly significant environmental changes of the 21st century have triggered various critical issues, including global warming, climate change, deforestation, air pollution, and the growing accumulation of plastic waste. These phenomena are the consequences of environmentally unsustainable human activities, as emphasized in the Anthropocene theory, which posits that humanity has become a dominant geological force shaping the Earth's condition [1]. The impact of this environmental crisis extends beyond ecological degradation

and biodiversity loss, carrying serious implications for the social and economic life of communities across the globe, including in Indonesia [2].

At the local level, Indonesia is facing complex environmental challenges such as forest fires, often triggered by land clearing practices for palm oil plantations, illegal logging that threatens the sustainability of tropical forests, water pollution caused by domestic and industrial waste, and suboptimal solid waste management. These phenomena reflect a weak ecological awareness among the population, which, within the framework of ecopedagogy, is identified as a form of environmental consciousness crisis [3], [4]. This low level of environmental literacy contributes to unsustainable practices that exacerbate environmental degradation and increase the risk of future ecological disasters [5].

One of the most tangible manifestations of environmental degradation worsening Indonesia's natural conditions is the increasingly complex issue of waste. According to data from the National Waste Management Information System of the Ministry of Environment and Forestry, Indonesia's waste generation reached approximately 18.5 million tons in 2024. This figure marks a significant increase, driven by population growth and shifts in consumption patterns that increasingly rely on disposable products [6].

This issue reflects the suboptimal implementation of waste management systems based on the principles of reduce, reuse, and recycle (3R), as mandated by Law No. 18 of 2008 on Waste Management. From the perspective of industrial ecology theory, the failure to establish a closed-loop system between production and consumption has resulted in increased waste generation and intensified pressure on natural resources [7]. The growing volume of waste places an additional burden on existing waste management infrastructure, which largely relies on a linear collect–transport–dispose model. Most final disposal sites (landfills) in Indonesia still do not meet proper sanitation standards.

The impacts extend beyond urban aesthetics and environmental pollution, posing serious public health risks such as the spread of diseases related to unsanitary conditions, contamination of water bodies by microplastics, and the destruction of natural habitats [8]. The inability of current waste management systems to cope with the increasing waste volume also highlights a lack of collective awareness regarding ecological responsibility, which should be an integral component of a sustainable lifestyle.

Civic Education plays a strategic role in shaping citizens who are not only democratic and responsible [9], but also actively engaged in social life and committed to environmental sustainability. In contemporary developments, global challenges such as environmental crises, climate change, biodiversity loss, and ecosystem degradation have shifted the paradigm of citizenship. It is no longer solely focused on political and legal rights and obligations, but increasingly rooted in ecological consciousness.

Within this framework, the concept of Ecological Citizenship becomes highly relevant. Introduced by Andrew Dobson (2004), Ecological Citizenship is defined as a form of citizenship that emphasizes the moral and political obligations of individuals to act in the interest of the environment, both locally and globally. Ecological Citizenship transcends the boundaries of nation-states and calls for active citizen engagement in decision-making processes that affect ecosystem sustainability—through sustainable lifestyles, environmental policy advocacy, and participation in ecological social movements [10].

Ecology-oriented Civic Education serves as a strategic platform for internalizing the values of sustainability, ecological responsibility, and intergenerational solidarity [11]. This aligns with the approach of *Green Citizenship Education*, which integrates environmental awareness into civic learning processes at both school and university levels [12]. Consequently, Civic Education must be redesigned to incorporate the dimensions of ecopedagogy and critical consciousness of environmental issues. Such a transformation is essential for cultivating citizens who are not only law-abiding and democratic, but also environmentally conscious and actively engaged in environmental preservation as an integral and sustainable practice of citizenship.

Global environmental crises—such as global warming, air and water pollution, soil degradation, and deforestation—reflect a systemic failure to establish a harmonious relationship between humans and nature. These conditions indicate that education can no longer focus solely on cognitive or academic mastery; rather, it must cultivate critical consciousness, social empathy, and ecological responsibility that translate into concrete action. Freire emphasized that true education is liberating education, which awakens awareness of reality and drives social transformation through reflective action [4].

In this context, Civic Education must be transformed to become more contextual, holistic, and responsive to contemporary issues such as environmental crises. This transformation can be realized through the integration of Project-Based Learning (PjBL) a pedagogical model that positions learners as active agents who solve real-life problems as part of the learning process [13]. When PjBL is combined with the values of Ecological Citizenship, students do not merely learn about civic rights and duties in legal-political terms, but also internalize and enact ecological responsibility as a core component of their civic identity [10].

Furthermore, the transformation of Civic Education toward a more contextual and sustainability-oriented approach aligns closely with the paradigm of Deep Learning—a learning approach that emphasizes deep conceptual understanding, emotional engagement, and the ability to apply knowledge in real-world contexts [14]. Unlike surface learning, deep learning encourages students to engage fully and holistically, cognitively, affectively, and psychomotorically, so that they do not merely comprehend content, but also internalize values and connect them to personal experiences and the socio-ecological realities of their lives [15].

In the context of Civic Education, the implementation of deep learning can be realized through the integration of Ecological Citizenship-based projects, which provide students with opportunities to develop critical thinking, empathy, environmental awareness, and a consciousness of the social impacts of human actions on nature. Ecological citizenship goes beyond legal compliance; it demands voluntary and reflective actions that promote environmental sustainability as a moral responsibility of global citizens [10], [11].

Through this approach, Civic Education becomes more applicable and contextually relevant, while simultaneously strengthening 21st-century competencies such as collaboration, creativity, communication, and complex problem-solving. Therefore, this study explores the transformation of Civic Education through Ecological Citizenship projects as an innovative and essential step toward instilling sustainability values and fostering deep, transformative learning.

2 Method

This study employs a qualitative research method. The approach used in this research is a literature review [16], which is considered suitable for exploring conceptual and theoretical developments related to *ecological citizenship* and its integration into civic education. A literature review allows the researcher to synthesize previous findings and identify gaps in existing studies that inform the direction of this research. This review involves a series of activities such as reading, taking notes, and organizing sources of literature that are relevant to the research topic [17]. The literature review plays a crucial role in strengthening the theoretical foundation of the study and broadening the researcher's understanding of the issues being examined [18]. The data analyzed in this review are obtained from scientific journals, books, popular articles, and credible online sources that discuss civic education, environmental awareness, and deep learning. The inclusion criteria include peer-reviewed publications and sources published within the last ten years, while non-academic or outdated materials were excluded to ensure data reliability and validity. The data analysis is conducted using the Miles and Huberman model, which is particularly suitable for qualitative synthesis because it emphasizes systematic interpretation and continuous interaction with data. This model consists of three main stages: (1) Data reduction, which involves selecting, simplifying, and focusing on key information that aligns with the research objectives; (2) Data display, where the organized information is presented systematically through tables, charts, and thematic maps to enhance interpretability; and (3) Data verification, which entails re-evaluating patterns, comparing findings across sources, and confirming conclusions to ensure their accuracy and consistency [19]. Through this process, the Miles and Huberman framework enables a rigorous and transparent analysis of the reviewed literature, providing a solid foundation for understanding how ecological citizenship projects can transform civic education and foster deep learning.

3 Results and Discussion

3.1 Civic Education

Civic Education is a field of study aimed at shaping individuals into citizens who are aware of their rights and responsibilities and capable of actively participating in national and societal life. Through Civic Education, learners are guided to become intelligent, skilled, and character-driven individuals aligned with the values embedded in Pancasila and the 1945 Constitution of the Republic of Indonesia. As an adaptive subject, Civic Education continues to evolve in response to social, political, and cultural dynamics, with its instructional content influenced by various aspects of community life [20].

Ontologically, the content of Civic Education is rooted in moral values and ethical conduct as the foundation for nurturing responsible citizens. Epistemologically, it is developed through a comprehensive academic approach that encompasses the dimensions of conscience (*olah hati*), intention (*olah karsa*), emotion (*olah rasa*), and intellect (*olah pikir*) in an integrative and holistic manner. Axiologically, Civic Education primarily aims to cultivate moral virtues, strengthen national character, build a spirit of nationalism, and foster a deep love for the homeland in every citizen [21].

From a legal standpoint, Civic Education is grounded in legal frameworks that affirm its primary objective: to foster a sense of nationalism and love for the homeland among learners, particularly university students. Terminologically, Civic Education was initially understood as an educational program focused primarily on political democracy. However, its scope has since expanded through the integration of diverse sources of knowledge, including the positive influences of the school environment, community, and family. All of these elements are synthesized through an educational process designed to develop critical and analytical thinking skills, as well as to cultivate democratic attitudes and behaviors. Thus, Civic Education serves as a strategic instrument in preparing younger generations to live democratically, grounded in the values of Pancasila and the 1945 Constitution of the Republic of Indonesia [22].

In general, the primary objective of Civic Education is to contribute to the success of national education in fostering an enlightened and intellectually capable society. This goal is realized through the holistic development of Indonesian citizens—individuals who possess strong faith in God Almighty, uphold moral integrity, demonstrate adequate knowledge and skills, and maintain both physical and mental well-being. Furthermore, Civic Education aims to cultivate a strong, independent, and responsible character, both in social and national contexts. Through this process, learners are prepared to actively participate in civic life, contributing meaningfully to society, the nation, and the state [23].

Thus, Civic Education serves as a strategic field of study with a vital role in shaping individuals who are faithful, morally upright, intelligent, skilled, and aware of their rights and responsibilities as citizens. Civic Education is not only grounded ontologically in moral values and ethical conduct, but is also developed epistemologically through a comprehensive academic approach. Furthermore, it is directed axiomatically toward instilling national character and patriotism. Supported by a strong legal foundation and a terminological framework that adapts to the evolving times, Civic Education functions as a key instrument in nurturing a younger generation that thinks critically, acts democratically, and is prepared to contribute to national life based on the principles of Pancasila and the 1945 Constitution of the Republic of Indonesia.

3.2 Ecological Citizenship

Ecological Citizenship pertains to the status, rights, and participatory processes of citizens in addressing environmental issues. It functions as a conceptual framework through which individuals seek recognition and actively engage in shaping forms of citizenship that are responsive to ecological challenges. In academic literature, the term Ecological Citizenship appears in various forms—some scholars refer to it directly as Ecological Citizenship, while others use the term environmental citizenship. Despite terminological differences, both share a common foundation: emphasizing the strategic role of citizens in tackling environmental problems and promoting sustainable living practices [24].

Ecological Citizenship emphasizes the duties, responsibilities, and ethical consequences of citizens in managing natural resources in harmony with the needs of other living beings. It serves as a means for individuals to fulfill their obligations to protect the environment while fostering mutually beneficial relationships within their ecosystems. The core aim is to meet human needs without compromising environmental sustainability, ultimately ensuring long-term benefits for all [25]. Furthermore, the practice of Ecological Citizenship contributes to social justice, as its positive impacts are distributed equitably across society. Beyond national borders, it also holds the potential to advance global justice, reinforcing the reciprocal relationship between citizens

and their environment. Active participation in environmental development plays a crucial role in fostering ecological balance and collective well-being [10].

Dobson (2004) firmly asserts that Ecological Citizenship is closely linked to both the responsibilities of citizens and their rights to a livable environment within defined limits. He emphasizes that development policies implemented across various regions must create political opportunities for citizen participation while remaining oriented toward environmental preservation. In his view, governments are expected to provide the necessary space for the public to engage in development programs. Furthermore, Dobson (2004) explains that Ecological Citizenship fundamentally involves a dialogical process among stakeholders in assessing and implementing environmental control measures. A key dimension of Ecological Citizenship, he notes, is the active engagement of citizens in the public sphere, particularly in initiatives aimed at safeguarding environmental sustainability [10].

Moreover, *Ecological Citizenship* is inherently linked to the political obligations of citizens. In daily life, individuals hold a political responsibility to maintain environmental and social balance based on the principles of sustainability. This implies that every action taken by citizens must consider its long-term impact on future generations, ensuring that they too can benefit from the decisions made today [26]. Furthermore, Smith and Pangsapa (2008) highlight the strategic role of citizens in environmental preservation efforts. They reinterpret citizenship not merely as a legal status within a specific nation-state but as a broader concept in which individuals, as global citizens, bear both rights and responsibilities to contribute to initiatives that have far-reaching effects. This perspective increasingly blurs the line between personal autonomy and collective responsibility in everyday life [26].

Ecological Citizenship is an expanded and renewed conception of citizenship developed in response to global environmental challenges, such as climate change, mass extinction driven by human activities, and ozone depletion. Unlike traditional notions of national citizenship, this concept transcends geopolitical boundaries and emphasizes the interconnectedness of individuals within a global ecosystem. It places a strong focus on the environmental consequences of economic actions and political choices, not only on local communities but also on geographically distant populations and future generations [27].

Ecological Citizenship is a concept that integrates the principles of ecological democracy with global sustainability issues. It aims to address problems arising from unsustainable development, including ecological degradation, economic instability, and social injustice. This concept emphasizes both individual and collective responsibility in making decisions that impact environmental quality and community well-being at local and global levels [28].

Furthermore, Ecological Citizenship promotes a relevant framework for understanding the importance of participation and cooperation in addressing environmental and societal challenges. It reflects the values of nationhood grounded in mutual assistance (*gotong-royong*), active civic engagement, collaboration, and social harmony. In the post-reform era, civil society has emerged as a powerful force, increasingly influential across multiple domains of life. The traditional wisdom that "a single twig breaks, but the bundle of twigs is strong" resonates deeply with the concept of national resilience and the collective effort required to build a sustainable and just society [29].

This concept promotes active civic engagement in democratic decision-making processes, particularly in the context of globalization, which demands fair and sustainable global governance. Ecological Citizenship seeks to integrate the relationship between society and nature through education, regulation, and political as well as social participation. It encompasses the understanding that every individual holds a responsibility to preserve ecological balance and support the sustainable management of resources for both present and future generations. Moreover, Ecological Citizenship emphasizes the importance of transforming values, behaviors, and social structures to build a more sustainable world. In this regard, education plays a critical role in fostering citizens' critical awareness and enhancing their capacity to contribute to governance systems that prioritize environmental sustainability and social justice [28].

The primary goal of Ecological Citizenship is to achieve a sustainable ecological footprint. This principle asserts that individual actions should not compromise the ability of current or future generations to lead dignified lives. This responsibility entails reducing excessive ecological consumption and compensating those affected by unsustainable practices. Ecological Citizenship represents a transformative effort to reconstruct traditional notions of citizenship toward a more inclusive framework, one that transcends national borders and generational boundaries to address the pressing challenges of global environmental degradation [27].

In conclusion, Ecological Citizenship is a concept of citizenship that emphasizes both individual and collective responsibility in maintaining environmental balance and supporting the sustainability of global ecosystems. It goes beyond the notion of rights and legal status by demanding active engagement in political and social processes to advocate for environmentally responsible development policies. Ecological Citizenship serves as a framework for gaining recognition, fostering more responsive forms of citizenship to environmental concerns, and bridging the relationship between humans and nature. In practice, this concept transcends the limitations of traditional citizenship by embracing a global civic role in addressing critical issues such as climate change, resource exploitation, and social injustice. Through this approach, individuals are expected to participate in sustainability-oriented decision-making processes at both local and global levels, ensuring that future generations can enjoy a decent quality of life.

3.3 Transforming Civic Education through Ecological Citizenship Projects to Support Deep Learning

The worsening global environmental crisis demands collective awareness and responsibility to preserve nature. Ongoing environmental issues—such as global warming, air and water pollution, and large-scale deforestation—have exacerbated the degradation of the planet. Therefore, a concept is needed that can encourage individuals and communities to actively engage in environmental conservation. One such concept is *Ecological Citizenship*, which refers to the awareness and active participation of citizens in protecting and sustaining the environment at both individual and social levels. In the Indonesian context, the strengthening of *Ecological Citizenship* can be promoted through *Civic Education*, which plays a vital role in shaping environmentally conscious attitudes and civic character [30].

Ecological Citizenship emphasizes citizens' responsibility to ensure environmental sustainability through eco-friendly consumption practices, prioritization of local products, and active participation in environmental preservation initiatives. This concept extends beyond simple acts like keeping the surroundings clean or planting trees; it involves a deep understanding of the interdependence between humans and nature, as well as the ecological

consequences of everyday actions. Instilling ecological awareness from an early age is crucial to preparing future generations to face environmental challenges with wisdom and resilience [31].

In the educational context, *Civic Education* serves as a strategic vehicle for instilling the values of *Ecological Citizenship* in students from an early age. This enables learners not only to understand their rights and responsibilities as citizens but also to develop a deep awareness of the importance of protecting the environment for future generations [31]. Thus, the concept of Ecological Citizenship does not merely shape environmentally conscious individuals, but also encourages them to actively contribute to efforts aimed at environmental preservation.

Despite its significance, the implementation of the Ecological Citizenship concept in education continues to face several challenges. Key obstacles include the low level of public awareness, the lack of innovation in environmental programs, and limited community involvement in collective activities such as mutual cooperation and productive land use. Many people still perceive environmental preservation as the sole responsibility of the government or certain organizations, resulting in minimal participation in tangible actions. A study conducted in Nagari Toboh Ketek, Padang Pariaman, revealed that the majority of community members lacked understanding of the importance of environmental stewardship and were not actively involved in ecological initiatives that had been designed [30]. This highlights the urgent need for further efforts to promote Ecological Citizenship so that individuals can better comprehend and embrace their roles in preserving nature.

The implementation of Ecological Citizenship can be observed in various grassroots movements. One notable example is the anti-sand mining group in Selok Awar-Awar Village, Lumajang, which actively advocates for the right to a healthy environment. This community organizes public outreach, environmental campaigns, and direct actions to prevent the exploitation of natural resources that threaten the local ecosystem. Their success demonstrates that public awareness and active civic participation are crucial in safeguarding environmental sustainability [32]. Additionally, the Adiwiyata program implemented in schools across Indonesia represents a formal educational effort to instill Ecological Citizenship. This program encourages students to take active roles in maintaining a clean and green school environment, planting trees, and reducing plastic use [33]. Through such initiatives, students gain hands-on experience in environmental stewardship and are introduced to sustainable living practices in their daily lives.

Civic Education plays a strategic role in fostering ecological awareness among students. By incorporating the concept of Ecological Citizenship into the curriculum, learners can better understand the importance of environmental stewardship and how their actions affect ecosystems. This form of education can be delivered through various methods, including classroom discussions, environmental project-based learning, and extracurricular activities focused on conservation. In the long term, ecological-based education aims to produce citizens who are not only environmentally conscious but also capable of applying ecological values in their daily lives. As a result, students are expected to evolve into individuals who care deeply about the environment and serve as agents of change who inspire broader societal responsibility toward nature.

Ecological Citizenship, therefore, emerges as a crucial concept in ensuring environmental sustainability. Through Civic Education, this framework can be instilled in students to enhance

both their awareness and practical skills in environmental protection. Although its implementation faces numerous challenges, the success of various community movements and educational programs demonstrates that Ecological Citizenship offers a promising and effective solution to today's pressing environmental issues.

To ensure the effectiveness of the Ecological Citizenship approach, innovation in instructional methods is essential—one of which is the implementation of project-based learning within the context of Civic Education. Through concrete projects such as school waste audits, energy-saving campaigns, or the revitalization of green spaces, students gain not only conceptual understanding but also practical skills that are directly relevant to their daily lives. This represents a tangible integration of Civic Education and Ecological Citizenship as a pedagogical strategy that fosters emotional engagement and encourages students to take meaningful, real-world action.

Furthermore, the Ecological Citizenship approach within Civic Education aligns well with the core principles of deep learning. The deep learning curriculum emphasizes four key elements: deep conceptual understanding, collaborative learning, inquiry-based approaches, and active student engagement throughout the learning process [34]. These components are strongly synergistic with the goals of environmentally focused project-based Civic Education. For instance, when students engage in an ecological audit project at their school, they not only collaborate in teams but also develop critical thinking skills, explore environmental issues through inquiry, and connect their knowledge to concrete action all of which are fully consistent with the deep learning framework..

The element of mindful learning within the deep learning framework is particularly relevant in this context. Students are encouraged to become aware of the environmental consequences of their actions, shifting the learning process from mere knowledge transmission to the cultivation of awareness regarding the meaning and implications of their behavior. Meaningful learning is reflected when students connect academic content with the environmental realities they face—for instance, not only learning about the importance of forests, but also understanding how illegal logging directly affects their communities. Meanwhile, joyful learning emerges when environmental projects are implemented in engaging and enjoyable ways, such as school garden competitions or recycling festivals packaged as educational and creative activities [35], [36].

Moreover, deep learning also supports the development of the eight dimensions of learner profiles, including critical thinking, creativity, independence, and civic character all of which are closely aligned with the values of ecological citizenship [37]. Through environmentally focused Civic Education projects, students cultivate social awareness and the courage to take action for the common good. This may involve participating in environmental advocacy campaigns or designing sustainable solutions for local issues. As a result, students are not only shaped to become law-abiding citizens but also responsible stewards of their ecosystems.

To support the implementation of project-based Civic Education rooted in Ecological Citizenship, educators may adopt a structured project-based learning syntax designed to instill ecological awareness, social responsibility, as well as critical and collaborative thinking skills in students. This instructional framework not only promotes meaningful and contextualized learning but also provides students with opportunities to engage actively in real-world activities that directly contribute to environmental sustainability.

Table 1. Learning Syntax for Ecological Citizenship Project-Based Civic Education

Phase	Activity Description	Teacher role	Students' Role
Orientation and Exploration	Introducing local environmental issues and the concept of Ecological Citizenship.	Presenting the context of environmental issues and explaining the concept of ecological citizenship.	Observing and identifying environmental issues and engaging in discussions on relevant topics.
Project Planning	Designing environmental projects based on Ecological Citizenship, such as waste banks, medicinal plant cultivation, or eco-enzyme production.	Facilitating discussions, assisting in the development of project plans, and organizing student teams.	Drafting project proposals, assigning group roles, and setting project goals.
Project Implementation	Executing the project in real-life settings within the school or community through teamwork and collaboration.	Guiding and monitoring the project's implementation while providing feedback as needed.	Carrying out project plans, collaborating in teams, and documenting the process.
Monitoring and Reflection	Evaluating the process, compiling reports, and reflecting on the experiences gained during the project.	Directing reflective activities and guiding the preparation of project reports and documentation.	Analyzing project outcomes, assessing project success, and conducting both individual and group reflection.
Presentation and Dissemination	Presenting project results through exhibitions or public forums within the school or community.	Organizing presentation sessions, providing feedback, and assessing students' performance.	Presenting project outcomes, highlighting environmental benefits, and responding to audience questions.
Project Evaluation	Assessing the process and outcomes of the Ecological Citizenship project, both individually and collaboratively.	Conducting authentic assessments based on project success criteria and student participation.	Receiving feedback, reflecting on the learning experience, and developing improvement plans.

The integration of Ecological Citizenship projects can be guided by the work of Hodriani et al. (2025), titled "Pendidikan Kewarganegaraan Berbasis Ecological Citizenship". This book introduces various environment-focused projects as practical applications of Ecological

Citizenship concepts, such as the development of waste banks, mangrove cultivation, family medicinal plant gardens, ecoprint creation, ecobricks, and eco-enzyme production. Each project is accompanied by a detailed implementation guide structured as a Team-Based Project, aiming to provide students with hands-on experience in applying the principles of Ecological Citizenship. Furthermore, the book discusses the role of exhibitions as a platform for reflection and dissemination of the learning outcomes achieved through these environmental projects [38].

4 Conclusion

Civic Education based on Ecological Citizenship represents a strategic and transformative approach to cultivating students' ecological awareness, civic responsibility, and commitment to sustainability amidst the escalating global environmental crisis. By integrating the principles of ecological citizenship into project-based learning, this model not only enhances students' conceptual understanding of the interrelationship between humans and nature but also empowers them to take tangible actions that contribute to environmental preservation and community resilience. The findings of this study highlight that such an approach aligns closely with the philosophy of deep learning, which emphasizes meaningful, reflective, and transformative learning experiences. It fosters graduate profiles that are critical, creative, collaborative, and civically engaged—qualities that are essential in shaping responsible and active citizens in the 21st century.

Moreover, this study underscores the potential of Civic Education to serve as a catalyst for ecological transformation within educational institutions. Educators are encouraged to integrate ecological citizenship projects into their curricula to nurture environmental empathy and social participation. Policymakers and stakeholders should also support initiatives that promote civic-ecological integration through curriculum innovation, teacher training, and cross-sectoral collaboration. Future research could explore the implementation of ecological citizenship projects in diverse educational contexts, examining their long-term impact on students' civic behavior, environmental commitment, and community engagement. Such efforts would further strengthen the role of Civic Education in building a generation that not only understands its rights and duties as citizens but also upholds environmental stewardship as an inseparable element of civic identity..

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