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Implementation of Ecological Citizenship to Increase Environmental Awareness: Systematic Literature Review

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ABSTRACT

This study aims to review empirical research on the implementation of ecological citizenship. Citizen engagement as ecological citizenship is indispensable in supporting the Sustainable Development Goals (SDGs). This is especially important to prepare the younger generation to face the challenges of global climate change. Ecological citizenship is an awareness of caring for nature and the environment based on the rights and obligations of a good citizen. The method used in this research is a systematic literature review using the Prisma protocol. Data was sourced from articles published in the last 10 years and then categorized based on the year of research, type of research, and research instruments used. Data analysis was conducted by extracting meaningful information from the selected literature and identifying and presenting findings. The findings of this research show several examples of ecological citizenship implementation strategies implemented in several countries. This study is expected to provide important information to the government and non-government in implementing ecological citizenship.

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Introduction

Environmental pollution is a challenge experienced by countries worldwide in realizing Sustainable Development Goals (SDGs). Poor environmental management is the cause of deforestation and biodiversity degradation in Indonesia. The fulfillment of human desires by realizing high economic value decreases the level of concern for nature conservation. The use of natural resources often needs to pay attention to the impact of environmental damage. The current excessive use of natural resources causes ecosystems to be vulnerable to climate disasters. It causes resource inequality between generations and causes excessive waste (Intergovernmental Panel on Climate Change, 2022).

The impact of ecological problems is not only related to motor vehicle emissions but, more broadly, to the depletion of natural resources and the destruction of wildlife. The retrieval and processing of material resources such as fossil fuels, minerals, non-metallic minerals, and biomass contribute to over 55 percent of greenhouse gas (GHG) emissions and 40 percent of the environmental impacts linked to the presence of matter (United Nations Environment Programme, 2024). The increase in the use of resources causes crises, namely climate change, biodiversity loss, and pollution. Without prompt and coordinated efforts to alter resource utilization, the extraction of material resources may rise by almost 60 percent from the levels recorded in 2020 by 2060, increasing from 100 to 160 billion tons. This rise significantly surpasses what is necessary to fulfill everyone's essential human needs by the Sustainable Development Goals (SDGs). It is crucial to tackle the utilization and management of natural resources as a fundamental factor contributing to the tri-planetary crisis to achieve sustainable development objectives (SDGs).

Recognizing the urgency of ecological concerns is not solely the duty of governments or international organizations; it is also the responsibility of individuals and corporate policies to adopt a sustainable way of life (Ahmad & Satrovic, 2024). This is marked by shared consciousness's need to attain the ecological equilibrium essential for survival. The pressing need to address ecological challenges requires input from multiple stakeholders, including individuals who embody the qualities of responsible citizens. The citizenship that needs to be built is critical democratic citizenship to realize essential engagement and social awareness on the crucial issues of one's country (Veugelers & Samsuri, 2023). In response to this, individual awareness of the role of ecological citizenship as an agent of change actively contributes to protecting the environment according to the principles of the rights and obligations of good citizens.

Citizens' awareness is essential to protecting the environment and realizing ecosystem sustainability. Inequalities in ecological participation demonstrate the need for an inclusive and equitable approach to promoting environmental citizenship (Syahri & Salahudin, 2024). This is manifested in responsible behavior to manage and preserve the environment. (Dobson & Bell, 2006) explain that ecological citizenship is related to environmentally friendly behavior change. This emphasizes the importance of citizens' responsibility for global environmental issues. Smith (1998) emphasizes that in the perspective of ecological citizenship, environmental ethics is a moral obligation of humans to respect and maintain the balance of nature and accept responsibility for environmental preservation by optimizing the role of humans on earth.

Carlsson & Jensen (2006) and Ariza et al. (2021) highlight the importance of civic education in shaping ecological awareness. Turner (2001) explained that ecological citizenship is a form of citizens' responsibility to restore and maintain the beauty of the environment. The concept of politics that pays attention to human responsibility to nature must be upheld (Dobson, 2007; Smith, 1998). Dobson (2007) further explained that the application of ecological citizenship can start from the home environment, where environmental care is part of habituation and internalization of virtue.

Ecological citizenship plays a vital role in educating the community to support environmental policies through sustainable practices and to be an example of an environmentally friendly lifestyle (Syahri & Salahudin, 2024). Ecological citizenship refers to the mindset or ethical stance of individuals with a deep sense of concern and responsibility toward the environment. This involves actively managing, sustaining, protecting, and conserving natural ecosystems (Usmi & Murdiono, 2021). This idea of citizenship implies the concept of a risk society in various countries (Sari, Samsuri, & Wahidin, 2020). The involvement of individuals as ecological citizens is significant in supporting joint efforts to realize good environmental sustainability for the future.

By exploring existing empirical research, this study aims to provide a detailed examination of ecological citizenship implementation strategies. A thorough analysis of existing empirical research is essential to understand the strategy inherent in the ecological citizenship approach comprehensively. In achieving this goal, this study raises the following questions: (1) What is the implementation strategy of ecological citizenship? (2) How are the study's findings on implementing ecological citizenship synthesized?

Method

The research utilized a systematic literature review by PRISMA guidelines (Page et al., 2021) to analyze previous studies and collect data on implementing ecological citizenship. This study aims to qualitatively assess the articles by integrating findings from existing research through meta-aggregation. This method emphasizes collecting and summarizing research results to address the research questions, ultimately producing a synthesis of various pertinent studies (Siswanto, 2010).

The literature search was conducted on September 29, 2024, using Scopus as the database. Scopus was selected for its reliability, provision of high-quality information, user-friendly data access, and relevance to the study's focus. According to Francis & Baldesari (2006), the systematic literature review involves five steps: 1) defining research questions; 2) searching for relevant articles; 3) filtering articles based on specific criteria; 4) analyzing and synthesizing the findings; 5) implementing quality control; and 6) preparing the final report.

Results and Discussion

Result

The initial search for the full text based on the criteria is outlined in the table below.

Table 1. Eligibility Criteria

It	Inclusion Criteria	Exclusion Criteria
1	Articles published between 2014-2024	Published before 2014
2	Text in the form of research journal articles	Text is not published in the form of a research journal
3	Text in English	Text not in English
4	Journals indexed by Scopus and Google Scholar	Articles or proceedings that Scopus does not index
5	Related to field research on the implementation of Ecological Citizenship	Not related to field research on Ecological Citizenship

Searching for articles begins by typing the keyword "Ecological Citizenship" on the Scopus page. A search on the page yielded 765 related articles. The articles will be selected based on the criteria set, and nine articles will be obtained for analysis. Quality research is carried out to ensure that the articles to be studied in this study are credible so that the study results can be accepted for accuracy.

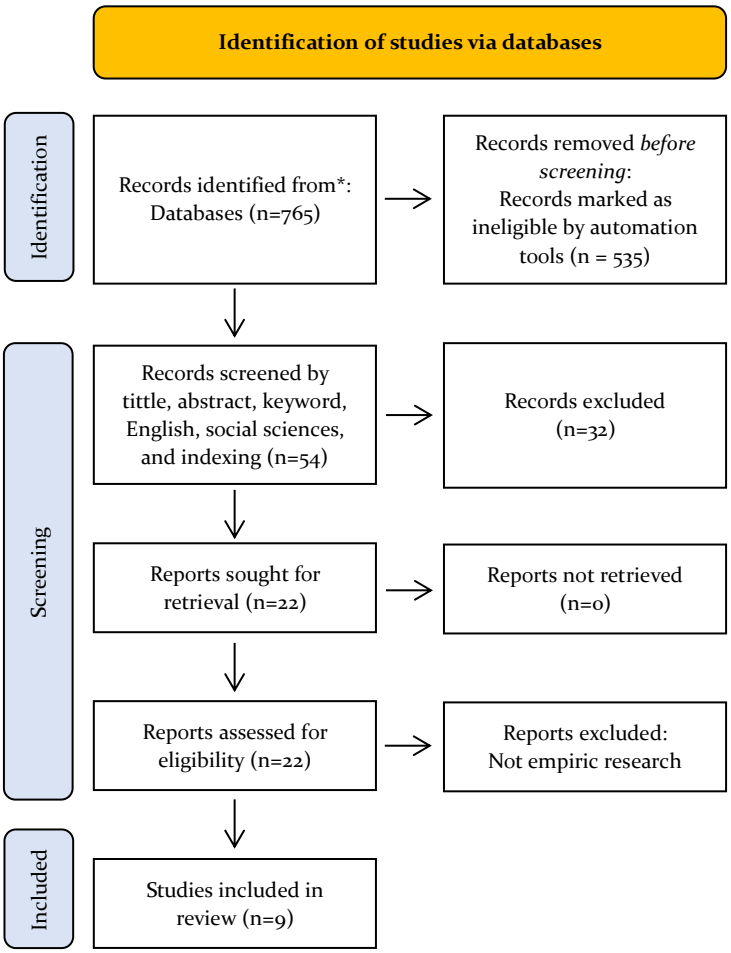

Figure 1. Prisma Flow

Citizens in ecological citizenship should not be positioned as passive observers but can support environmental policies, provide education on sustainability practices, and be role models in an environmentally friendly lifestyle (Syahri & Salahudin, 2024). Several strategies for the implementation of ecological citizenship can be carried out, namely:

Table 2. Ecological citizenship strategy

Author (years)	Strategy
(Park & Kim, 2020)	Developing three-step project activities in a climate change club in high school
(Anantharaman, 2014; Dalimunthe et al., 2024)	Creating a waste or waste management program through the concept of Reuse, Reduce, and Recycle (3R)
(Chung, 2018);(Biskupovic, Maurines, Carmona, & Canteros, 2022);(Misra, 2023)	Local food garden creation and maintenance practices
(Lummis, Morris, Lock, & Odgaard, 2017)	Developing Education for Sustainability *(EfS)* in all fields of study in all areas of study in schools
(Jagers, Martinsson, & Matti, 2014)	Developing individual responsibility for the natural environment
(Binawan, 2023)	Environmental Care and Culture Movement in Schools (PBLHS Movement)

Discussion

Development of Project Activities in the Young Generation

Research by Park & Kim (2020) reveals that implementing three-step project-based activities within climate change clubs can enhance ecological competence. This study aimed to investigate the nature of the activities and the artifacts created by learners, focusing on how their ecological citizenship evolved because of their involvement in the club project. The activities are designed to be student-centered and interactive, conducted in small groups through a series of steps: 1) investigating the local causes of environmental issues, 2) planning actionable solutions to climate change challenges, and 3) executing these actions. Through learning experience, students generate artifacts proving their efforts to tackle these issues. Following their participation in the club project, students exhibited competencies across five dimensions of ecological citizenship, including knowledge, responsibility, justice, sustainability, and engagement in student activities.

Reuse, Reduce, and Recycle Waste Management Site Program (3R)

Waste management is crucial to overcome the unresolved waste problem. Research Findings Dalimunthe et al. (2024) outline the waste management site program Reuse, Reduce, and Recycle (3R) through environmental development programs and the formation of non-help groups of environmental friends that can reduce the problem of waste that cannot be decomposed. This is in line with the findings of the research Anantharaman (2014) that develop ecological citizenship by forming a community network of sustainable waste management. The community is involved in various initiatives, such as recycling programs, waste reduction, and environmental education. They can collaborate and disseminate information about eco-friendly practices by leveraging technology and social media platforms.

The Practice of Making Local Feed Farms

The formation of ecological values is not only the government's responsibility but also the surrounding community's aesthetic experience and personal values. The steps taken by Japan have become an example of how gardening and maintenance can be a moral planting step (Chung, 2018). This aligns with the research findings (Biskupovic et al., 2022); communities in France and Chile are also taught to grow food locally and sustainably as a form of individual responsibility to the environment. Similar research by (Misra, 2023), the Ecological Citizenship Strategy through Community-Supported Agriculture (CSA) aims to support local agriculture, reduce carbon footprint, reduce waste, and encourage a more sustainable food production chain. This principle is more empowered because the community controls more sustainable food production sources (Biskupovic et al., 2022; Misra, 2023). Establishing the park encourages people to interact with nature more deeply and reflectively.

Education for Sustainability

Australia is a country that has implemented Education for Sustainability (EfS) as a priority in all fields of study and curriculum. In the context of a green country, ecological citizenship must be applied through a combination of public policies that support environmental sustainability and public education to increase environmental awareness (Melo-Escrihuela, 2015). Findings Lummis et al. (2017) sustainability is a mandated part of the Australian Curriculum that requires primary school teachers to pursue professional teacher education that includes environmental education to improve teachers' readiness to teach sustainability values and learning experiences about sustainable lifestyles. The concept of EfS is related to the three pillars of sustainability of UNESCO (2005): the relationship with the environmental, economic, and socio-political aspects of sustainability.

Individual Responsibility for the Natural Environment

Theory The Gandhian initiated by Gandhi emphasized the urgency of everyone's moral

responsibility to protect nature as an act of citizenship. Principle Swaraj (self-control) and Ahimsa (non-violence) are the basis for citizens to think about human well-being and ecological balance. This implementation can be seen in practices such as organic farming, using renewable energy, and increased awareness of sustainability at the community level (Dash, 2014). Ecological awareness and responsibility encourage participation in social campaigns or movements that demand stricter environmental policies.

Quantitative research patterns Jagers et al. (2014) outlines that implementing the concept of ecological citizenship involves developing environmental awareness, where citizens are seen as responsible to the country and the planet. Ecological citizenship behavior can be realized through daily actions to reduce the negative impact of environmental damage, such as reducing consumption, supporting environmental policies, and engaging in collective activities to protect nature.

Movement to Care and Culture Life in Schools (PBLHS Movement)

The Ecological Citizenship Movement seeks to reach out to formal education with the aim of providing understanding to students to preserve the environment as a form of ecological citizenship education. Findings (Binawan, 2023), he environmental care program implemented by the government in Indonesia targets formal education in schools through the Adiwiyata School Award through the Movement for Environmental Care and Culture in Schools (PBLHS). According to the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 52 of 2019, the PBLHS Movement is a joint action carried out consciously, voluntarily, coordinated, and sustainably by schools to implement environmentally friendly and caring behavior. The Adiwiyata program provides education and ecological awareness, emphasizing students' understanding of environmental problems. The programs carried out in support of the program include planting trees, managing water, and managing waste and garbage.

Synthesis of Findings

The implementation of ecological citizenship in several countries has been carried out through education and practice in the community. Many efforts have been carried out in several countries to raise citizens' awareness of the need to protect the environment. However, the equitable distribution of the implementation of environmental education in Indonesian regions still needs to be determined. The practices positively affect ecological awareness in the cognitive, affective, and psychomotor dimensions. Starting with increasing knowledge and understanding and changing behavior. Ecological citizenship provides excellent potential to mobilize individuals to participate in environmental protection efforts, with several challenges that must be overcome. First, more support or infrastructure for sustainable lifestyles is a barrier to implementing ecological citizenship (Bourban, 2022).

Based on the findings of 9 articles, several factors support the implementation of ecological citizenship to run effectively: (1) interactive programs (Park & Kim, 2020); (2) collaboration between communities (Anantharaman, 2014; Dalimunthe et al., 2024); (3) Teacher professional education that has an environmental education curriculum strengthens collective solidarity and teachers' social advocacy (Lummis et al., 2017); (4) Government awards to schools that can run the Adiwiyata program (Binawan, 2023); (5) internal factors in the form of ecological responsibility (Jagers et al., 2014).

The impacts obtained through the implementation strategy of ecological citizenship that have been implemented include (1) avoiding the inflexibility of the school education system by using extracurricular activities (Park & Kim, 2020); (2) Reducing the amount of waste, reducing air pollution levels, providing education related to the environment, and selecting the

type of waste to the community, as well as helping the community's economy (Anantharaman, 2014; Dalimunthe et al., 2024); (3) reducing dependence on food systems and industry and by promoting food democracy (Biskupovic et al., 2022); (4) Developing ecological awareness in daily life (Chung, 2018); (5) The education has a significant influence on the understanding and actions of teacher students about environmental problems (Lummis et al., 2017); (6) The application of the principles of harmony between humans and nature that deepen the responsibility for nature (Chung, 2018).

A program must face challenges in its implementation. Challenges in the implementation of ecological citizenship include: (1) A cross-disciplinary and integrated approach that often crosses the current system, namely separate subject boundaries and certified teachers in subject areas in schools (Park & Kim, 2020); (2) Limited sources of funds to carry out environmental education programs (Anantharaman, 2014; Dalimunthe et al., 2024); (3) Lack of continuity and commitment due to uncertainty regarding concrete impacts on large-scale change (Binawan, 2023); (4) Lack of adequate structural and policy support (Jagers et al., 2014).

Conclusion

The results of this study carry both contextual and practical significance. It is essential to encourage ecological citizenship to enhance individual accountability for the environment, especially in the prevailing climate crisis. Ecological citizenship contributes to encouraging changes in the behavior of environmentally friendly citizens. Efforts to instill ecological citizenship should be carried out sustainably and consistently, starting from the educational environment to entering the community. The implementation strategy of ecological citizenship implemented by several countries has varied, including developing three-step project activities in climate change clubs in schools, creating a waste or waste management program through the concept of Reuse, Reduce, and Recycle (3R), the practice of making and maintaining local food gardens, developing Education for Sustainability (EfS) in all fields of study in the school, developing individual responsibility in daily life, as well as the environmental care movement.

Suggestion

Governments and non-governmental organizations must work together to develop and support these strategies. Policy support and adequate funding are critical to successfully implementing these programs.

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