

Integration of Civic Education in Climate Crisis and Natural Disaster Management in South Tangerang City

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ABSTRAK

Meningkatnya urbanisasi dan perubahan iklim di Kota Tangerang Selatan telah meningkatkan frekuensi dan dampak bencana alam. Oleh karena itu, strategi mitigasi bencana yang efektif diperlukan untuk melindungi masyarakat dan mengurangi potensi kerugian. Penelitian ini mengkaji peran pendidikan kewarganegaraan (Pendidikan Pancasila dan Kewarganegaraan - PPKn) dalam menghadapi tantangan krisis iklim dan kesiapsiagaan bencana. Dengan mengintegrasikan pengurangan risiko bencana (PRB) dalam kurikulum PPKn, penelitian ini menyoroti pentingnya membekali siswa dengan pengetahuan dan keterampilan untuk berpartisipasi dalam pencegahan dan penanggulangan bencana. Metode yang digunakan adalah tinjauan literatur yang menganalisis laporan pemerintah, data bencana dari BPBD Tangerang Selatan, serta literatur akademis terkait. Hasil penelitian menunjukkan bahwa meskipun pemerintah daerah telah menerapkan berbagai upaya mitigasi, masih terdapat kesenjangan dalam kesadaran dan partisipasi aktif masyarakat. Kurikulum PPKn dengan materi PRB dapat berperan penting dalam mengisi kesenjangan ini dengan mendidik generasi muda tentang ketahanan bencana. Penelitian ini menekankan perlunya kolaborasi antara pemerintah, lembaga pendidikan, dan masyarakat untuk menciptakan budaya kesiapsiagaan yang kuat. Integrasi strategi mitigasi bencana dalam pendidikan tidak hanya memperkuat ketahanan masyarakat, tetapi juga selaras dengan tujuan nasional untuk pengurangan risiko bencana. Reformasi kurikulum PPKn dapat berkontribusi secara signifikan terhadap ketangguhan masyarakat Kota Tangerang Selatan dalam menghadapi perubahan iklim.

ABSTRACT

Keywords:

Civic Education

Disaster Mitigation

Climate Crisis

The increasing urbanization and climate change in South Tangerang City have intensified the frequency and impact of natural disasters. Therefore, effective disaster mitigation strategies are essential to protect communities and reduce potential losses. This study examines the role of citizenship education (Pancasila and Civic Education - PPKn) in addressing climate crisis challenges and disaster preparedness. By integrating disaster risk reduction (DRR) into the PPKn curriculum, this research highlights the importance of equipping students with knowledge and skills to actively participate in disaster prevention and management efforts. The methodology employed is a literature review analyzing government reports, disaster data from the South Tangerang Regional Disaster Management Agency (BPBD), and related academic literature. The findings reveal that, despite various mitigation efforts by the local government, gaps remain in public awareness and active community participation in disaster preparedness. The PPKn curriculum, enriched with DRR materials, can play a crucial role in bridging these gaps by educating the younger generation about disaster resilience. This study emphasizes the need for collaboration among the government, educational institutions, and society to foster a strong culture of preparedness. Integrating disaster mitigation strategies into education not only strengthens community resilience but also aligns with national goals for disaster risk reduction. Reforming the PPKn curriculum can significantly contribute to enhancing the resilience of South Tangerang City residents in facing climate change challenges.



1. Introduction

Natural disasters are an increasing global challenge due to a combination of climate change and unsustainable human activities. South Tangerang City, as an urban area with rapid population growth, faces various disaster risks, such as floods, landslides, fires, and strong winds. Data from the BPBD of South Tangerang City shows that during the period 2020-2023, the number of disaster events continued to increase, especially in sub districts such as Pondok Aren and Serpong, which have high levels of urbanization (Tangerang Selatan, 2023).

Flooding, as one of the most dominant types of disasters, is caused by a decrease in environmental carrying capacity due to uncontrolled urbanization. Based on the Urban Disaster Risk theory of Nguyen et al. (2024), urban areas that experience increased development without proper mitigation tend to be more vulnerable to disaster risk (Nguyen et al., 2024). In Pondok Aren sub district, for example, flooding in 2022 reached 76 events, an indicator that drainage infrastructure is unable to keep up with the flow of water due to extreme rainfall.

Civic education (Civics) has an important role in shaping public awareness of disaster mitigation. According to Banks (2020), civic education not only aims to build democratic insight, but also instill social responsibility in managing environmental risks (Banks, 2020). Civics can be an effective tool to increase citizen participation in preventive measures, such as keeping the environment clean and contributing to better urban planning.

For example, the landslide disaster in Setu sub district in 2023 shows the importance of land rehabilitation as a mitigation measure. However, this step is not sufficient without educating the community on the importance of afforestation and soil conservation. In this context, the Community Based Disaster Risk Reduction (CBDRR) theory of Shaw (2016) emphasizes that community based approaches are highly effective in reducing disaster impacts, especially if supported by formal education programs (Shaw, 2016).

Civic education also serves as a medium to integrate Pancasila values in disaster management. The value of gotong royong, for example, can be maximized through project based learning in schools, where students are taught to develop local disaster mitigation plans (Hikmatyar, 2024). According to Londa and Kamarudin (2023), this learning model allows students to not only understand the theory, but also apply it directly in a real context (Londa & Kamaruddin, 2023).

Another challenge faced is the low level of public awareness of the importance of disaster mitigation. A study by Hoskins and Crick (2010) shows that civic competence, which is the ability of individuals to actively participate in public issues, including environmental management, needs to be instilled from school age (Hoskins & Crick, 2010). Civics can be a platform to build this competence through contextualized and local issue based teaching.

In the case of fallen trees in Serpong sub district, for example, BPBD data recorded 12 incidents in 2022, most of which were caused by large trees that were not properly maintained. Civics can teach students to take an active role in tree inspections in their neighborhood as part of an environment based school program.

In addition, the local wisdom based education approach is also relevant in the context of disaster mitigation. A study by Musthofa and Indartono (2020) confirms that the integration of local wisdom in the curriculum can increase the effectiveness of disaster mitigation education (Musthofa & Indartono, 2020). For example, communities in the North Serpong area use the tradition of gotong royong in cleaning drainage to prevent flooding. This practice can be used

as learning material in Civics class to instill collective values.

In the policy context, civic education can encourage students to understand the role of regulation and governance in disaster mitigation. Law No. 24/2007 on Disaster Management states that mitigation is a shared responsibility between the government and the community (Aisyah et al., 2023). Students are taught to analyze local policies and provide input as part of civic engagement (Fu & Zhang, 2024).

Furthermore, Civics can also facilitate intergenerational dialogue on disaster risk management. According to Galletta and Torre (2019), participatory education can be a means to create collective awareness in facing common challenges (Galletta & Torre, 2019). This dialog is important to ensure that mitigation measures are inclusive and sustainable.

Based on empirical data and relevant theories, this study aims to explore the role of civic education in addressing disaster challenges in South Tangerang City. Using an interdisciplinary approach, this research is expected to contribute to the development of a civics curriculum that is more contextual and relevant to local issues.

2. Method

This research used a qualitative method based on literature review. This approach is in accordance with Creswell (2014), who emphasize that qualitative research allows in-depth exploration of social phenomena through data collection from various sources (Creswell, 2014). The literature review provides a solid foundation to analyze the relationship between civic education theory and disaster mitigation, especially in the context of South Tangerang City.

Data sources came from Scopus indexed scientific journals published in the last five years, official reports of the Regional Disaster Management Agency (BPBD) of South Tangerang City, and national policy documents. Literature selection was conducted using the systematic review method as described by Kitchenham and Brereton (2013), which emphasizes the importance of literature selection based on inclusion criteria, such as topic relevance, novelty, and source credibility (Kitchenham & Brereton, 2013).

Data analysis was conducted using content analysis techniques, as recommended by Vaismoradi et al. (2016), to identify key themes relevant to civic education and disaster mitigation (Vaismoradi et al., 2016). This technique enabled the identification of patterns in documents related to the implementation of civic education to increase disaster mitigation awareness. In addition, data triangulation was applied to ensure the validity and reliability of the research results (Qassimi, 2023).

In the context of theory, this research refers to the citizenship education framework developed by Banks (2020), which highlights that citizenship education should include dimensions of social participation and environmental awareness. This theory is relevant to the finding that communities with civic awareness tend to be more responsive to disaster mitigation efforts. Other research, such as that conducted by Ardoin et al., (2023), confirmed that the integration of environmental issues in formal education can increase community involvement in disaster mitigation (Ardoin et al., 2023).

The data table on disasters in South Tangerang City presented in this study provides an empirical picture of the types of disasters that have occurred and the mitigation measures that have been taken. This data is not only practically relevant but also serves as a basis for analysis to understand the role of civic education in building disaster resilient communities.

Through this approach, the research is expected to make theoretical and practical contributions in strengthening the relationship between civic education and disaster mitigation, particularly in specific local contexts. This is in line with recent findings in the environmental

education and disaster mitigation literature, which suggest the need for integration of interdisciplinary approaches to deal with complex global challenges.

3. Result and Discussion

Civic education in Indonesia has a very important role in shaping the character and social awareness of its citizens, especially in terms of disaster preparedness (Amri et al., 2017). In this context, Pancasila and Civic Education (PPKn) subjects not only function as a means to teach basic values such as rights and obligations as citizens, but also as a vehicle to instill awareness and understanding of social responsibility towards the environment and others (Usmi & Murdiono, 2021). Natural disasters, which often occur in Indonesia, such as floods, earthquakes and landslides, require effective and responsive handling from all elements of society (Berliani & Widowati, 2023). Therefore, civic education needs to include material related to disaster mitigation, so that each individual not only knows what to do, but also has the readiness to deal with emergency situations.

Through civic education, students are expected to understand the importance of mitigation measures, such as planning and structuring disaster prone areas, building disaster resistant infrastructure, and awareness to evacuate in an organized and safe manner (Aprilyanto et al., 2021). It is also important to teach them how to participate in disaster prevention efforts from an early age, such as first aid training, knowledge of evacuation routes and the use of emergency aid kits. By integrating this knowledge into the curriculum, schools can shape a younger generation that not only cares for their own safety, but also for the sustainability and safety of the community at large.

Civic education that includes aspects of disaster mitigation also promotes a culture of preparedness (Sayuti et al., 2021). Communities that are well educated about disaster mitigation will be better prepared to deal with the impacts of disasters effectively and more able to act quickly and appropriately when disasters occur (Rusmana et al., 2024). The integration of disaster mitigation education into civic education will equip students with practical skills that can be applied in daily life, as well as increase solidarity and a sense of responsibility for community safety (A Gani et al., 2023). Therefore, it is important for the government and educational institutions to be more serious in developing a curriculum that can accommodate this need, so that civic education does not only stop at understanding theory, but also makes a real contribution to better disaster preparedness (Rachman et al., 2024). This is in line with the theory of civic education which states that the purpose of education is not only to produce intelligent citizens, but also those who are able to play an active role in society, including in dealing with disasters (Susanto & Saylendra, 2018).

Based on data collected from the South Tangerang Regional Disaster Management Agency (BPBD), it appears that various types of natural disasters often occur in this area, ranging from floods, fires, landslides, to falling trees. Data on disaster events recorded from 2020 to 2023 shows that flooding is one of the most frequent disasters in Pondok Aren Sub district, with 14 events in 2020 and 76 events in 2022. The following table illustrates more clearly the types of disasters and mitigation measures implemented in each sub district:

Table 1. Data on Disaster Events and Mitigation Measures in South Tangerang City (2020-2023)

No.	Year	Type of Disaster/Event	District	Number of Occurrences	Mitigation Measures
1	2020	Flood	Pondok Aren	14	Additional capacity of waterways
2	2021	Fire	Ciputat	8	Simple fire-fighting education

3	2022	Flood	Serpong	7	Drainage channel maintenance
4	2022	Landslides	Serpong	3	Wall erection and cliff reinforcement
5	2022	Strong Winds	Serpong	1	Educate the public on home security
6	2022	Fallen Tree	Serpong	12	Pruning of trees prone to falling
7	2022	Flood	Serpong Utara	12	Drainage optimization
8	2022	Landslides	Serpong Utara	1	Installation of sheet piling
9	2022	Fallen Tree	Serpong Utara	4	Regular pruning
10	2022	Flood	Pondok Aren	76	Structuring flood-prone areas
11	2022	Landslides	Pondok Aren	2	Improvement of water disposal system
12	2022	Earthquake	Pondok Aren	3	Evacuation socialization
13	2023	Fallen Tree	Serpong	2	Regular inspection of large trees
14	2023	Landslides	Setu	5	Slope land rehabilitation

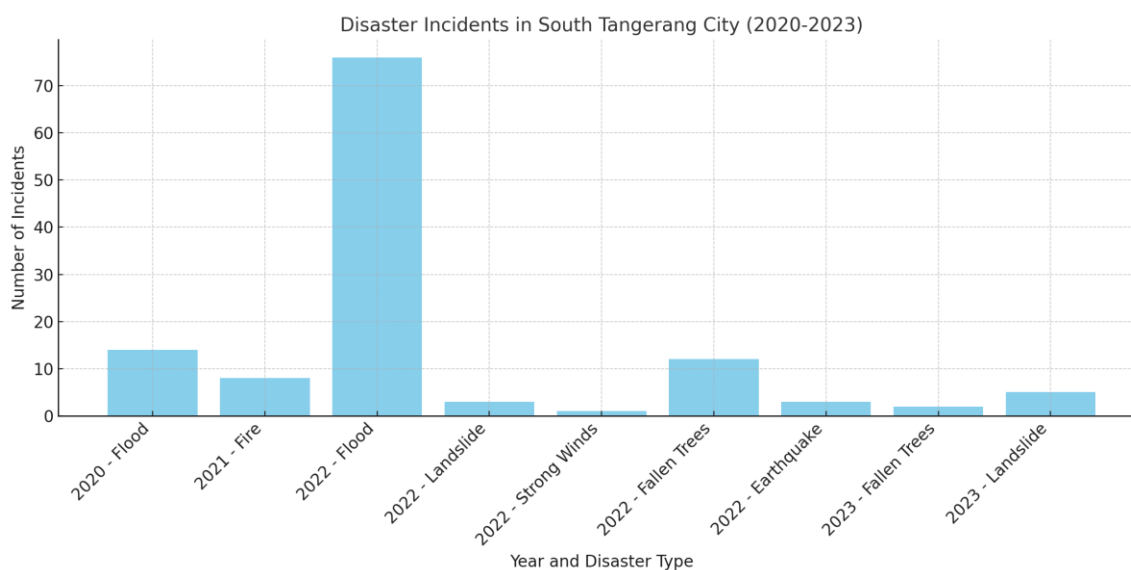


Figure 1. Disaster Incidents in South Tangerang City (2020-2023)

The chart above illustrates the distribution of disaster incidents in South Tangerang City from 2020 to 2023 by type of disaster. The data highlights that flooding is the most frequently occurring disaster, particularly in 2022, with a total of 76 incidents. Other disasters, such as fires, landslides, and fallen trees, were recorded less frequently. In 2023, there was a general decrease in the number of incidents compared to the previous year, with landslides and fallen trees being the primary recorded disasters. This chart provides valuable insights for local governments and communities to understand disaster patterns, enabling more effective mitigation efforts, especially for the most prevalent issue, flooding.

The data shows that Pondok Aren and Serpong sub districts have a high propensity for natural disasters, especially floods. This requires the community to be more vigilant and prepare themselves in the face of possible natural disasters. Therefore, it is important to include disaster mitigation education in civic education in schools, so that students not only understand civic theory, but also have practical skills to deal with disasters that may occur in their environment (Rahma et al., 2024).

In the context of disaster mitigation, the measures implemented by BPBD South Tangerang include various actions such as increasing the capacity of waterways, maintaining drainage channels, and pruning trees prone to falling. This shows that the local government has implemented proactive measures to reduce the impact of disasters. However, although these mitigation measures are good enough, there are still some challenges in their implementation, especially in terms of coordination between various agencies and the level of community awareness about the importance of disaster mitigation (Prihantoro et al., 2024). For example, although the structuring of flood prone areas has been carried out in Pondok Aren, the high number of flood events shows that more comprehensive handling is still needed.

Civic education that integrates disaster mitigation topics can play a very important role in creating a more disaster-prepared society. According to research from Blitstein-Mishor et al., (2023), educational programs involving disaster simulations such as evacuation and introduction to fire extinguishers have been proven effective in improving community preparedness (Blitstein-Mishor et al., 2023). Such programs should be part of the civic education curriculum, which addresses not only the obligations of citizens, but also the social responsibility to contribute to disaster risk reduction.

In addition, based on findings from Mitsuhara et al., (2023), experiential learning, such as evacuation drills and disaster simulations, can strengthen students' knowledge and skills in dealing with disasters (Mitsuhara et al., 2023). Therefore, schools in South Tangerang, as in other areas, need to increase such drill programs, so that students are better prepared for real disasters. Education that focuses on disaster preparedness can also accelerate the learning process for students, as they get hands on experience that makes it easier for them to remember mitigation measures.

The involvement of technology in disaster mitigation education is also an important factor that cannot be ignored (Berlian et al., 2024). With the rapid development of information technology, the use of digital applications and platforms to educate the public on disaster mitigation measures is increasingly becoming an attractive alternative. Technology enables rapid and wide distribution of information, especially to younger generations who are more familiar with digital media. For example, the use of mobile applications that inform potential disasters and appropriate mitigation measures can improve community response to impending disasters (Putri & Awalia, 2024).

In addition to technology, it is important to actively involve the community in the disaster mitigation education process. Through a community based approach, as is done in disaster mitigation programs in some areas, communities can jointly design mitigation measures that suit local needs. This approach will be more effective because it involves the active participation of citizens in planning and implementing appropriate mitigation measures. According to Pradipta et al., (2024), active participation of communities in disaster mitigation education can increase their sense of responsibility in facing and reducing the impact of disasters (Pradipta et al., 2024).

The role of schools as formal educational institutions is also very important in shaping students' understanding of the importance of disaster mitigation. By integrating knowledge

about disaster mitigation in Civics subjects, students are expected to understand the relationship between citizenship and disaster preparedness. Through this understanding, students are expected to educate their families and surrounding communities about mitigation measures that can be taken to reduce disaster risk (Yani et al., 2024).

Overall, civic education that integrates aspects of disaster mitigation is needed to form a society that is more responsive and prepared to face disasters. Although several mitigation measures have been implemented by BPBD South Tangerang, to achieve maximum preparedness, collaboration between the government, educational institutions and the community is needed. Thus, it is hoped that the community can face disasters more prepared and have adequate skills to reduce the impact of disasters.

A more holistic education on disasters, which includes technical knowledge, practical skills, as well as good citizenship attitudes, will result in a more disaster resilient society. This, of course, must be matched by more intensive efforts in disseminating information and raising public awareness about the importance of disaster mitigation at every level of their lives.

4. Conclusion

Climate change is a global challenge that not only affects environmental aspects but also the social and economic lives of communities. In South Tangerang, the impacts of climate change, such as increased flooding frequency and heatwaves, are becoming more pronounced. In addressing this crisis, citizenship education plays a vital role in shaping public attitudes and behaviors toward environmental issues. Through education grounded in Pancasila values, citizens can be equipped with an understanding of their rights and responsibilities toward the environment, as well as the importance of social solidarity in overcoming environmental challenges.

Based on the literature review, numerous studies emphasize the importance of active public involvement in climate change policies. Citizenship education that promotes community participation, using project based approaches and direct engagement, can enhance awareness and social responsibility toward environmental sustainability. Therefore, it is crucial for local policies in South Tangerang to integrate citizenship education into climate change mitigation efforts.

As a next step, collaboration between the government, private sectors, and communities is necessary to create sustainable, community based solutions. Programs involving direct community participation, such as waste management and tree planting, can accelerate climate change mitigation goals. Additionally, education based on direct experience and collaboration involving various sectors will strengthen public commitment to environmental preservation.

Overall, effective citizenship education will be a driving force in developing a society that is not only concerned about environmental issues but also actively engaged in mitigation efforts. South Tangerang can serve as a model for other regions by integrating citizenship education focused on environmental issues to achieve sustainable and eco friendly development.

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