

Unearthing the Voices Within: Pre-service Teachers' Critical Perspectives on the Climate Crisis through Photovoice

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Abstract— This qualitative study explores pre-service teachers' critical perspectives on the climate crisis using the Photovoice methodology. Nine pre-service teachers documented environmental realities in their communities through photographs and accompanying narratives. Thematic analysis revealed five major themes: urbanization and heat islands, deforestation, waste burning and pollution, drought and agricultural vulnerability, and flooding and infrastructure failure. The findings show that participants view climate change as both an ecological and a socio-economic concern, connecting environmental degradation with human behavior, economic survival, and gaps in policy. Photovoice proved to be a powerful tool for critical reflection and the development of environmental consciousness among future teachers.

Keywords: climate crisis, critical pedagogy, environmental education, photovoice, pre-service teachers

I. INTRODUCTION

The climate crisis is one of the most urgent and complex global challenges of the twenty-first century. It is characterized by rising global temperatures, intensified weather events, the loss of biodiversity, and widespread environmental degradation. Beyond these scientific indicators, however, climate change is deeply experienced in everyday community life.

In urban areas, climate change manifests through heat islands, pollution, congestion, and reduced green spaces. In rural areas, it is experienced through drought, crop failure, and water scarcity. These conditions affect livelihoods, health, and social stability.

Climate change is primarily driven by anthropogenic activities such as fossil fuel combustion, industrialization, deforestation, and land-use change. Reports of the Intergovernmental Panel on Climate Change (IPCC) highlight increasing global temperature trends and the rising frequency of extreme weather events. The phenomenon is not only environmental but also socio-economic, as vulnerable populations are disproportionately affected because of their limited adaptive capacity.

Rapid urbanization further intensifies these conditions. The reduction of green spaces and the expansion of concrete infrastructure contribute to urban heat island effects, in which cities experience higher temperatures than the surrounding rural areas.

Pre-service teachers play a critical role in shaping the environmental awareness of future generations, since their understanding of climate issues influences how environmental education is delivered in classrooms. Environmental education aims to develop the awareness, attitudes, and behaviors that support sustainability, and teacher preparation programs are essential in cultivating environmental literacy among learners.

Photovoice offers an innovative participatory method that allows individuals to capture lived experiences through images and to reflect critically upon them. Developed by Wang and Burris (1997), it is a participatory action research method grounded in empowerment theory that transforms participants into co-researchers and enables them to document realities, reflect critically, and communicate their experiences through visual narratives.

This study is anchored on three theoretical perspectives. Freire's Critical Pedagogy frames education as a tool for developing critical consciousness; constructivist theory emphasizes learning through experience; and Bronfenbrenner's Ecological Systems Theory explains human-environment interactions across multiple levels.

Against this background, the study explores pre-service teachers' critical perspectives on climate change through Photovoice, focusing on the environmental issues they identify and, on the causes, impacts, and educational implications of those issues. The

study contributes to teacher education, environmental literacy, curriculum design, and community awareness. It involves nine pre-service teachers who documented environmental issues in their communities using Photovoice.

II. REVIEW OF RELATED LITERATURE

2.1 Climate Change as an Educational and Socio-Ecological Issue

Climate change is widely recognized as a complex global phenomenon characterized by rising temperatures, extreme weather events, biodiversity loss, and ecological degradation. Beyond its environmental dimension, it is deeply intertwined with social, economic, and political systems that influence vulnerability and adaptive capacity. The Intergovernmental Panel on Climate Change (IPCC) emphasizes that climate change impacts are unevenly distributed, disproportionately affecting low-income and resource-limited communities. In education, climate change is increasingly framed as a socio-ecological issue that requires not only scientific literacy but also critical awareness and civic engagement.

2.2 Environmental Education and Teacher Preparation

Environmental education aims to develop the knowledge, attitudes, and skills necessary for addressing environmental problems, and it emphasizes systems thinking, sustainability, and behavioral change. UNESCO highlights that effective climate education should promote both awareness and action. However, many teacher education programs remain heavily theoretical and lack experiential learning opportunities that connect pre-service teachers to real environmental conditions. This gap limits the ability of future educators to translate environmental knowledge into meaningful classroom practice.

2.3 Photovoice as a Participatory Research Method

Photovoice, developed by Wang and Burris (1997), is a participatory action research method that allows individuals to document their lived experiences through photography and narrative reflection. Rooted in empowerment theory and Freire's critical pedagogy, Photovoice transforms participants into co-researchers. It enables critical reflection, dialogue, and the communication of lived realities. Studies show that Photovoice strengthens engagement, critical thinking, and community awareness, particularly in environmental and health-related research.

2.4 Critical Pedagogy and Environmental Consciousness

Freire's Critical Pedagogy (1970) emphasizes education as a practice of freedom that encourages reflection and action, or praxis. In environmental education, it helps learners identify the structural causes of ecological degradation, such as industrialization, policy gaps, and unsustainable practices, and it shifts learners from passive recipients of knowledge to active agents of change. This framework is essential in understanding how pre-service teachers interpret environmental issues in their communities.

2.5 Ecological Systems Theory and Environmental Interpretation

Bronfenbrenner's Ecological Systems Theory (1979) explains human development through nested environmental systems: the microsystem, mesosystem, exosystem, and macrosystem. In the context of climate change, this theory helps explain how local environmental experiences are shaped by broader structural forces. Flooding or pollution at the community level, for example, is often influenced by urban planning, governance, and national environmental policies.

2.6 Photovoice in Environmental and Climate Studies

Recent studies demonstrate that Photovoice is an effective tool in environmental research because it allows participants to visually represent environmental degradation such as pollution, deforestation, and waste mismanagement. It promotes critical reflection and empowers participants to propose solutions. In teacher education, Photovoice strengthens pre-service teachers' ability to connect theory with lived experience and enhances their environmental awareness.

2.7 Synthesis of Related Literature

The reviewed literature indicates that climate change education must go beyond theoretical understanding and incorporate experiential and participatory approaches. Photovoice, grounded in critical pedagogy and ecological systems theory, provides a powerful method for engaging pre-service teachers in environmental reflection. It bridges the gap between environmental knowledge and lived experience, supporting the development of environmentally conscious educators.

III. METHODOLOGY

3.1 Research Design

This study employed a qualitative research design using the Photovoice methodology. A qualitative approach was appropriate because the study sought to understand the meanings that pre-service teachers attach to the environmental realities they encounter in their communities, rather than to measure variables or test hypotheses. Photovoice, a form of participatory action research developed by Wang and Burris (1997), was selected because it positions participants as co-researchers who generate data through their own photographs and accompanying narratives. Grounded in empowerment theory and in Freire's notion of critical consciousness, the method is well suited to surfacing lived experience and to encouraging participants to reflect critically on the conditions of their own communities.

3.2 Participants

Nine pre-service teachers served as participants and co-researchers in the study. As future educators, they occupy a strategic position in shaping the environmental awareness of the learners they will eventually teach, which makes their perspectives on the climate crisis particularly relevant. Each participant documented environmental issues observed within their own community, so that the data reflected a range of urban and rural settings across the group.

[Author note: confirm and insert the sampling procedure, the participants' year level and degree program, and the specific community or campus setting, then remove this note.]

3.3 Data Collection

Data were collected through participant-generated photographs and written narratives. Each participant was asked to take photographs representing environmental issues that they personally observed in their community. For every photograph, the participant composed a narrative that followed a consistent reflective structure: describing what the image shows, explaining what is really happening, identifying why the situation exists, articulating how it affects people's lives, and proposing possible solutions.

This structure mirrors the guided questioning that is characteristic of Photovoice, in which participants move from simply describing an image toward analyzing its causes and consequences and toward identifying action. The pairing of image and narrative allowed each participant to communicate both the visible evidence of an environmental issue and their own interpretation of it, which together formed the primary data of the study.

[Author note: insert study-specific details such as the photo prompt or theme assigned to participants, the number of photographs requested, the time frame for data gathering, and any orientation, group discussion, or debriefing sessions that were conducted.]

3.4 Data Analysis

The photographs and narratives were examined using thematic analysis following the six-phase approach of Braun and Clarke. The researcher first became familiar with the data by repeatedly reading the narratives and viewing the accompanying photographs. Initial codes were then generated to capture recurring ideas across the dataset, and these codes were sorted and collated into candidate themes.

The candidate themes were reviewed against the coded extracts and against the dataset as a whole to ensure that they accurately represented the participants' accounts, after which the themes were defined and named. This process produced the five major themes that organize the findings presented in the next section. Throughout the analysis, the participants' own words and images were retained wherever possible so that the interpretation remained grounded in their lived experience.

3.5 Trustworthiness and Ethical Considerations

To support the trustworthiness of the findings, interpretations were kept close to the participants' narratives, and each photograph is presented alongside the analysis so that readers can examine the evidence on which a theme rests. Ethical considerations included informed and voluntary participation and the assurance of confidentiality, with participants identified only by pseudonyms.

[Author note: describe the specific trustworthiness measures used, such as member checking or peer debriefing, and confirm the consent procedure, any ethics review or approval, and consent for the use of the participants' photographs, then update this paragraph accordingly.]

IV. RESULTS AND DISCUSSION

Thematic analysis of the participants' photographs and narratives produced five major themes. Each theme is presented below together with the participants' titled photographs and an account of their narratives.

4.1 Urbanization and Heat Islands

The first theme concerns the intensification of heat in built-up urban environments.

Cruzada's photograph, titled "The City Street and High-Rise Building," shows massive concrete buildings and busy highways that have replaced what used to be green spaces, creating what he described as concrete heat islands. The road traps solar radiation and combines with vehicle exhaust, leaving the city hotter and affecting residents' living conditions and comfort. Cruzada attributed this to rapid urbanization in which nature is ignored, and he called on urban planners to prioritize green spaces and walkable streets.



Figure 1. "The City Street and High-Rise Building." Photograph by Cruzada.

Cruzada's account connects directly to the urban heat island phenomenon noted earlier, in which the replacement of vegetation with concrete and asphalt raises local temperatures. What is notable is that he did not stop at naming the discomfort; he traced it to a development pattern that overlooks nature and proposed a planning response. Read through Bronfenbrenner's ecological systems perspective, the photograph situates an individual experience of heat within the wider, macro-level decisions of urban planning, while the call for green and walkable spaces reflects the kind of critical, solution-oriented awareness that environmental education seeks to cultivate.

4.2 Deforestation

The second theme centers on the loss of forest cover through logging and charcoal production.

In a photograph titled "Cutting of Trees," Vicente documented felled tree trunks and observed that logging and land development are wiping out trees that provide clean air, shade, and food. He linked the problem to human development being prioritized over the preservation of nature, and he recommended planting new trees and protecting those that remain so that the environment can recover.



Figure 2. “Cutting of Trees.” Photograph by Vicente.

Gelo’s photograph, titled “Silakbo ng Abo,” captures thick smoke surrounding a rural road, where large piles of freshly cut trees are burned to produce charcoal. He noted that residents are forced to inhale the smoke, which can harm their lungs, and that the practice also drives deforestation. Recognizing that families turn to charcoal making in order to survive, he advocated for eco-friendly and sustainable livelihoods that protect both human dignity and the forests.



Figure 3. “Silakbo ng Abo.” Photograph by Gelo.

Together, Vicente’s and Gelo’s photographs frame deforestation as both an ecological loss and a livelihood issue. Vicente emphasizes the services that trees provide, such as clean air, shade, and food, echoing the ecological balance discussed in the literature, while Gelo foregrounds the economic pressures that push families toward charcoal production. The juxtaposition is significant: rather than condemning those who cut and burn trees, Gelo reframes the problem as one of survival that calls for sustainable alternatives. This reflects an emerging critical consciousness in the Freirean sense, in which environmental harm is read alongside the social and economic conditions that produce it.

4.3 Waste Burning and Pollution

The third theme groups three accounts of waste burning and pollution.

Titled “Burn,” Menor’s photograph shows flames rising from a large pile of trash. He explained that this open burning releases toxic smoke into the air that the community breathes every day, and that the neighborhood resorts to it because it lacks proper waste collection. He recommended shifting to the composting of organic waste and consistent recycling.



Figure 4. “Burn.” Photograph by Menor.

Perla’s photograph, titled “Ang Sunog na Pag-asa,” documents a thick plume of dark smoke rising behind green trees from backyard burning, locally known as pagsisiga, which releases harmful pollutants and threatens community health. She observed that people often dismiss backyard burning as a minor issue compared with factory emissions, and she urged residents to stop burning household waste, to report illegal burning, and to compost instead.



Figure 5. “Ang Sunog na Pag-asa.” Photograph by Perla.

In a photograph titled “Improper Plastic Waste Disposal,” Mara captured a barren stretch of land littered with plastic waste, where the soil has been so degraded that grass and plants can no longer grow. She traced the problem to the careless use and irresponsible disposal of plastics and called for greater mindfulness through waste segregation, the proper use of trash bins, and recycling.



Figure 6. “Improper Plastic Waste Disposal.” Photograph by Mara.

The three accounts in this theme converge on the everyday management of waste and its consequences for air, soil, and health. Menor and Perla both identify open and backyard burning as harmful practices that persist because of inadequate waste collection and a perception that small-scale burning is harmless, while Mara turns attention to the slow degradation of soil by plastic. Across the three, the participants consistently link a visible environmental problem to a behavioral and structural cause and then to a concrete remedy such as segregation, composting, and recycling. This movement from observation to proposed action is precisely the reflective process that Photovoice is designed to elicit, and it suggests that the participants see themselves as agents capable of influencing community practice.

4.4 Drought and Agricultural Vulnerability

The fourth theme reflects the vulnerability of agriculture and rural livelihoods to drought.

Ursula's photograph, titled "Depleted," shows cracked and drained farmland. She described a field that should be full of life but is now drying up and can no longer be planted, warning that if the soil continues to dry, the community will lose its food source. She attributed the condition to heatwaves worsened by climate change and urged immediate care for the environment to avoid worse consequences.



Figure 7. "Depleted." Photograph by Ursula.

Titled "The Reality in a Rural Community," Teddy's photograph captures dry, cracked ground that looked, in his words, as if it were begging for water after intense heat and a lack of rain. Because farming is the community's life, food, and income, he stressed that when the land suffers, so do livelihoods and water sources, and he called for collective action such as harvesting rainwater and planting drought-tolerant crops.



Figure 8. "The Reality in a Rural Community." Photograph by Teddy.

Ursula's and Teddy's photographs give a human face to the agricultural impacts of climate change. Both connect cracked, depleted soil to heatwaves and reduced rainfall, and both extend the consequences beyond the field to food security, water availability, and livelihood. Teddy's description of land that appears to be begging for water illustrates the affective dimension

of Photovoice, in which an image carries emotional as well as informational weight. Their proposed responses, such as rainwater harvesting and planting drought-tolerant crops, indicate an awareness that adaptation is necessary and that communities can take practical measures rather than remain passive in the face of change.

4.5 Flooding and Infrastructure Failure

The fifth theme addresses flooding and the failure of community infrastructure.

Mario's photograph, titled "Luha ng Kalikasan," shows rainwater flooding a local public market that had burned down months earlier, leaving the ruined stalls submerged in stagnant water. He observed that the flood is paralyzing the community's efforts to rebuild, destroying livelihoods and posing health hazards, and that existing infrastructure is unprepared for the extreme weather brought by climate change. He recommended building climate-resilient structures and better drainage systems.



Figure 9. "Luha ng Kalikasan." Photograph by Mario.

Mario's photograph captures the compounding nature of environmental risk, in which a market already destroyed by fire is then submerged by floodwater. His narrative locates the cause not only in heavy rainfall but in infrastructure that is unprepared for increasingly extreme weather, and his call for climate-resilient buildings and improved drainage reflects an understanding of adaptation at the level of community systems. Viewed ecologically, the account links a single neighborhood's hardship to the broader failure of planning and infrastructure to keep pace with a changing climate.

4.6 Cross-Theme Synthesis

Taken together, the nine narratives reveal that pre-service teachers interpret climate change as a lived, visible, and structural issue rather than a distant scientific abstraction. Three patterns cut across the themes.

First, the participants consistently connect environmental degradation to human behavior and to economic survival, recognizing that practices such as charcoal making or waste burning are bound up with livelihood and with limited alternatives. Second, almost every narrative follows the same reflective arc, moving from describing a problem, to explaining its causes, to naming its effects, and finally to proposing a community-level response. This arc demonstrates the critical consciousness that Freire's pedagogy describes and that environmental education seeks to develop. Third, the participants situate local experiences within larger systems, echoing Bronfenbrenner's ecological perspective by linking household and neighborhood realities to urban planning, policy, and infrastructure.

For future teachers, this capacity to read the environment critically is significant, because the way they understand the climate crisis will shape how they bring it into their own classrooms. The findings therefore point not only to what pre-service teachers notice about their environment, but also to the pedagogical potential of Photovoice as a tool for forming environmentally conscious and critically reflective educators.

V. CONCLUSION



This study explored pre-service teachers' perceptions of the climate crisis using the Photovoice methodology. The findings indicate that pre-service teachers demonstrate strong environmental awareness and an emerging critical consciousness regarding climate change, viewing it as both an ecological and a socio-economic phenomenon. Photovoice proved to be a powerful tool for critical reflection and for the development of environmental consciousness.

On the basis of these findings, the study recommends integrating Photovoice into teacher education programs, strengthening environmental literacy across the curriculum, and promoting experiential learning approaches that connect future teachers with the environmental realities of their communities. A limitation of the study is its small number of participants, and future research may extend the approach to larger and more varied groups of pre-service teachers.

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