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Sustainability in Pictures: Photography as a Tool for Participatory Environmental Education

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Abstract

This study explores environmental literacy in primary school pupils through the use of Photovoice and group interviews, implemented as part of a participatory educational project in the Czech Republic. Conducted in three primary schools in the Moravian-Silesian Region, the research examined pupils' understanding of selected environmental concepts (e.g., pollution, energy conservation, renewable resources), their reflections on ecological innovations, and their proposals for improvement. By inviting pupils to document their surroundings through photography and share their interpretations in group discussions, the study connected everyday experiences with environmental impacts, and elicited attitudes, emotions, and critical reflections. The findings reveal that pupils are capable of recognising environmental problems, identifying their causes, and suggesting both practical and systemic solutions. These results highlight the pedagogical potential of Photovoice to foster active participation, critical thinking, and a sense of agency, positioning pupils as contributors to education for sustainable development.

Keywords: environmental literacy, participatory education, Photovoice, climate change, pupils' attitudes

1. Introduction

In recent decades, education has increasingly emphasized active student participation, the development of critical thinking, and the capacity to relate personal experiences to complex environmental and social issues. These priorities are central to contemporary pedagogical frameworks, including Education for Sustainable Development (ESD), which promote learner-centred approaches and active engagement with real-world challenges.

One innovative method that effectively supports these aims is **Photovoice**—a participatory approach that uses visual tools to empower participants, in this case primary school pupils, to document and communicate their experiences, opinions, and perceptions of environmental and social issues affecting their everyday lives. By combining photography with reflective discussion, Photovoice fosters critical awareness, strengthens pupils' ability to articulate their perspectives, and encourages dialogue between learners and their communities.

Its application in primary schools not only generates valuable educational outcomes—such as enhanced reflective and communicative skills—but also creates opportunities to amplify the social and community impact of student work. This study explores the potential of Photovoice to foster environmental literacy among primary school pupils in the Czech

Republic and examines how participatory visual methods can contribute to education for sustainable development.

2. Photovoice as a Tool for Participatory Environmental Education

In response to growing calls for educational innovation and active student engagement, the Photovoice method offers a distinctive opportunity to integrate learning with real-life experience. It enables pupils to examine their immediate surroundings, critically reflect on pressing environmental issues, and convey their perspectives through visual storytelling. In doing so, Photovoice aligns with the principles of participatory pedagogy, which emphasize learner agency, critical reflection, and the co-construction of knowledge. This section outlines the theoretical background, key principles, and practical applications of the Photovoice method, with particular attention to its potential to enhance environmental literacy in primary education.

2.1 Definition and Historical Development

Photovoice is a participatory action research method first introduced by Caroline Wang and Mary Ann Burris in 1997. Its conceptual foundations draw on Paulo Freire's critical pedagogy, feminist theory, and participatory action research. Wang and Burris designed Photovoice to empower marginalized groups to engage actively in processes of change by visually documenting their experiences and the issues affecting their lives. The method's primary aim is to amplify the voices of these groups, create spaces for reflection, and involve participants in shaping policies and community-based interventions (Wang & Burris, 1997).

Initially applied mainly in public health and community development, Photovoice proved to be an effective tool for identifying problems, fostering dialogue, and mobilizing community resources. Over time, its use has expanded to fields such as social work, education, and environmental education. In these contexts, it has demonstrated considerable potential for engaging diverse groups, including primary school pupils, in meaningful reflection and action on issues relevant to their lives (e.g., Cutler et al., 2016; Neill, 2020).

2.2 Principles and Goals

The Photovoice method is underpinned by several interrelated principles: active participant involvement in all stages of the research process, structured reflective dialogue, empowerment, and the amplification of participants' voices to reach broader communities and decision-makers. Its main goals can be summarized as follows:

1. **Empowerment** – enabling participants to become active co-creators of change by visually documenting and sharing their perspectives on important issues.
2. **Reflective discussion** – providing opportunities for in-depth reflection and critical analysis of identified problems and opportunities through dialogue inspired by participants' photographs.
3. **Participatory analysis** – involving participants not only in data collection but also in data interpretation and the formulation of potential solutions or proposals for change.
4. **Influence on decision-making** – offering authentic insights to policymakers, educators, and community leaders that can inform positive changes in local contexts and educational practices.

2.3 The Use of Photovoice in Pupils' Education

Photovoice has proven to be particularly effective in primary education, as it draws on pupils' natural interest in photography and visual expression. In the context of environmental education, children can use this method to document environmental problems, everyday practices of sustainability in their surroundings, or examples of both effective and problematic approaches within the community. The photographs then serve as a stimulus for structured reflection in focus groups, where pupils not only describe what they have captured, but also interpret the significance of the topic, its impact on their lives, and possible solutions.

Previous research (e.g., Wang & Burris, 1997; Strack, Magill, & McDonagh, 2004; Warne, Snyder, & Gillander, 2013) has shown that Photovoice supports the development of critical thinking, environmental literacy, and social competences, while enhancing pupils' ability to articulate and share their views and to participate actively in community life.

An illustrative example is the Science, Camera, Action! programme implemented by the U.S. National Oceanic and Atmospheric Administration (NOAA), which guided pupils aged 10–12 in critically reflecting on climate change and proposing solutions through photography and discussion. Evaluation results indicated a significant increase in knowledge about climate change and positive shifts in environmental attitudes and behaviours (NOAA, 2020). Similarly, a study of urban youth aged 9–15 found a marked improvement in environmental awareness and STEM-related competences among participants in Photovoice activities compared to a control group (McGarry & Marston, 2021).

Other research has highlighted the method's capacity to help children link personal experiences with global environmental challenges. Trott and Weinberg (2022) demonstrated that through photographs and group discussions, children expressed concerns and opinions and formulated practical solutions, leading to deeper understanding and stronger engagement.

Given this evidence, Photovoice emerges as a promising approach to fostering environmental literacy in formal education. The present study applies this method to explore how primary school pupils in the Czech Republic perceive environmental issues and the concept of energy transition.

2.4 Methodology of the Research

The Photovoice method was selected as the primary participatory tool to examine how pupils in the 5th and 6th grades perceive environmental issues and the concept of energy transition. These grades were chosen because pupils at this stage combine a growing ability for abstract thinking with strong engagement in concrete, experience-based learning.

2.4.1 Research Sample and Context

The research was conducted in three primary schools located in the Moravian-Silesian Region of the Czech Republic, representing different socio-economic and environmental contexts (urban, suburban, and rural settings). The participating schools were selected purposively to capture a diversity of perspectives and experiences.

Participation of pupils was voluntary, and they could withdraw at any point without consequence. Informed consent was obtained from parents or legal guardians, and verbal assent was confirmed with the pupils prior to data collection.

2.4.2 Research Design and Phases

The research was implemented in two main phases:

Phase 1 – Introduction and Preparation

Pupils were introduced to the topics of environmental literacy and energy transition through interactive discussions and short educational activities. Key concepts (e.g., renewable and non-renewable resources, energy conservation, pollution, ecological innovation) were explained in age-appropriate language. Pupils were introduced to the Photovoice method, including ethical guidelines for taking and sharing photographs. Each pupil was then asked to take 3–5 photographs from their everyday environment that, in their view, represented aspects of energy transition, energy consumption and waste, ecological innovations, and local sources of pollution.

Phase 2 – Sharing and Reflection in Focus Groups

In the second phase, the photographs were collected and used as prompts for structured focus group discussions. Groups consisted of 6–8 pupils to ensure active participation from all members. Each pupil presented their photographs and described why they chose them. The facilitator then guided the discussion using open-ended questions targeting three main areas:

1. perceived causes of the depicted situation,
2. its perceived impact on the environment and community, and
3. potential solutions or improvements.

The discussions encouraged collaborative reflection, critical analysis, and the generation of practical suggestions for sustainable changes at the school and community level.

2.4.3 Data Collection and Analysis

Data consisted of pupils' photographs, their verbal descriptions, and the transcripts of focus group discussions. All discussions were audio-recorded and transcribed verbatim. A thematic analysis was conducted in three stages:

1. Initial coding – identifying recurring concepts and categories directly from the data;
2. Categorisation – grouping codes into broader thematic areas related to environmental literacy dimensions (knowledge, attitudes, behaviours, and proposed solutions);
3. Interpretation – comparing findings across schools and grade levels to identify commonalities and differences.

Coding was conducted independently by two researchers, and discrepancies were resolved through discussion to enhance reliability. The photographs were analysed in conjunction with the pupils' narratives to ensure that visual and verbal data were interpreted consistently.

2.4.4 Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. All photographs were screened to avoid identifiable images of individuals without consent. Pupils were instructed not to photograph people in identifiable ways unless explicit consent had been obtained. Anonymity was ensured in transcripts, and all data were stored securely in accordance with GDPR requirements.

2.5 Comparative Analysis of Pupils' Environmental Literacy: SWOT and Photovoice Perspectives

The analysis of pupil responses from three primary schools—coded as School 1, School 2, and School 3 to preserve anonymity—shows that all observed groups demonstrated environmental awareness and a value orientation toward nature protection. Differences emerged between the schools in pupils' understanding of key concepts, their ability

to critically reflect on ecological innovations, and their capacity to formulate specific proposals for solutions.

By combining structured group discussions with the participatory Photovoice method, the research provided layered insights into pupils' environmental thinking. The inclusion of pupils' own photographs and interpretations added depth and authenticity to the findings, as images frequently served as catalysts for personal reflection and peer-to-peer dialogue.

Strengths – Everyday pro-environmental behaviours and personal responsibility

Across all three schools, pupils demonstrated awareness of everyday environmental behaviours such as recycling, energy saving, and waste management. Their statements reflected not only factual understanding but also a degree of personal engagement:

> *"I check if the TV is off when nobody's watching. At home I tell my parents not to leave things plugged in."*

> *"We sort waste at home, and at school I make sure others do too. I don't like when trash is in the wrong bin."*

Weaknesses – Gaps between knowledge and behaviour

Some pupils expressed inconsistencies between their environmental knowledge and actual practices. Economic convenience, ingrained habits, and limited understanding of global environmental systems emerged as barriers:

> *"I know ordering from China is not good for the planet, but it's cheap and arrives quickly."*

> *"Sometimes I just forget what bin is for which waste. It's confusing and nobody checks it."*

Opportunities – Enhancing environmental education through school initiatives

Pupils suggested concrete ways to integrate environmental topics more effectively into school life. These included interdisciplinary teaching, project-based learning, and student-led initiatives such as eco teams:

> *"We should talk about nature and the environment in other subjects too, not just science."*

> *"We could have a team at school that cares for nature. Maybe check lights or plants, and tell others what to do."*

Threats – Institutional and systemic barriers

The main obstacles to environmental learning were perceived as institutional. Pupils noted that time constraints, curriculum overload, and limited adult follow-through often reduced the priority given to sustainability:

> *"The teacher said we don't have time for that now, we need to study for the test."*

> *"Nobody really cares if lights are left on. There's no rule, just sometimes someone says something."*

2.5.1 Understanding of Key Environmental Concepts

Across all three schools, pupils demonstrated a sound understanding of core environmental concepts such as pollution, energy conservation, and renewable resources. Their explanations were grounded in concrete, everyday examples and linked to perceived environmental impacts.

The most comprehensive conceptual grasp—including broader contexts such as the economic implications of renewable energy or distinctions between sustainable and unsustainable behaviour—was observed among pupils at School 2. School 1 showed solid comprehension, particularly among 6th-grade pupils, who connected patterns of consumption to climate change. Pupils at School 3 displayed practical awareness, yet certain technical terms (e.g., *solar panel*, *energy transition*) required further explanation, suggesting a need for more targeted instruction.

2.5.2 Perception of Ecological Innovations and the Energy Transition

Pupils across all schools generally associated ecological innovations with technical or organisational measures designed to make households and schools more environmentally friendly, such as LED lighting, solar panels, or water-saving systems.

School 3 pupils distinguished themselves by situating these innovations within broader systemic contexts, reflecting on topics such as overproduction in the fashion industry, the environmental costs of e-commerce logistics, and the importance of community-level initiatives. Their understanding of *energy transition* approached the formal definition—as a deliberate shift in energy production and consumption toward sustainable sources. In contrast, pupils at Schools 1 and 2 often interpreted the concept more intuitively, framing it as a general "move toward better solutions."

2.5.3 Attitudes and Value Orientation

All three schools exhibited strongly pro-environmental attitudes. Pupils at School 3 expressed empathy toward nature, a sense of personal responsibility, and engagement with specific narratives—for example, concern over plastic waste in forests or food waste. Pupils at School 1 emphasised shared responsibility and frequently referenced local environmental concerns.

School 2 was notable for pupils who coupled environmental sensitivity with critical reflection on societal structures, offering critiques of overconsumption, marketing strategies, and insufficient regulation of car use. As one pupil stated:

"Shops always try to make us buy more, even if we don't need it. That's not good for nature or for people."

2.5.4 Ability to Propose Solutions

All three schools demonstrated the ability to progress from identifying problems to formulating concrete solutions.

At School 3, proposals focused mainly on the immediate school environment—such as turning off lights, increasing the number of recycling bins, and improving waste separation. Pupils at School 1 often suggested technical measures applicable both at school and at home, including installing solar panels, switching off appliances, and planting greenery.

The most extensive range of solutions emerged from School 2, where pupils proposed not only practical measures but also systemic and legislative interventions. Suggestions included banning combustion engines, offering tax incentives for environmentally friendly solutions, and initiating school-led awareness campaigns.

2.6 Implementation of the Principles and Goals of the Photovoice Method

Integrating Photovoice into the research process yielded several benefits. First, it positioned pupils as engaged observers capable of identifying environmental themes embedded in their everyday contexts. Second, the photographs provided a shared visual reference point during

focus groups, enhancing the depth and relevance of subsequent discussions. Third, the method supported key pedagogical objectives such as empowerment, critical thinking, collaboration, and real-world applicability—aligning closely with the goals of education for sustainable development (ESD).

The following subchapters examine the implementation of the four core objectives of Photovoice—empowerment, critical reflection, participatory analysis, and influence on decision-making—drawing directly on pupils' contributions.

2.6.1 Empowerment – Strengthening Pupils as Agents of Change

In all three schools, pupils actively identified environmental issues that affected them directly, such as wastefulness in school operations, local pollution, and unsustainable adult behaviours. Through their photographs and accompanying narratives, these issues were made visible from pupils' perspectives—often with notable precision and critical insight.

Importantly, pupils formulated concrete proposals for change, ranging from straightforward measures (turning off lights, improving waste separation) to more ambitious visions (banning single-use plastics, installing solar panels, launching eco-campaigns). This active agency reflects the essence of empowerment as defined in participatory pedagogy: enabling learners to shape and influence their environment through informed action.

2.6.2 Reflective Discussion – Critical Analysis Through Photography and Dialogue

The focus group format facilitated multi-perspective reflection. Pupils commented on each other's photographs, offered alternative interpretations, and drew broader connections to societal issues such as fast fashion, overcrowded public transport, and household energy consumption.

These discussions encouraged self-examination of personal habits and reinforced environmental values. Pupils were not passive recipients of information but active contributors, prompting peers to think more deeply. As one participant noted:

"When I saw my friend's photo of clothes piles, I realised I don't even wear half of what I have. Maybe I should stop buying so much."

2.6.3 Participatory Analysis – Joint Interpretation and Solution Design

Beyond data collection, pupils played a central role in interpreting their own visual material. They explained the meaning behind their photographs, the significance of the depicted scenes, and the intended messages.

This collaborative meaning-making process transformed the role of pupils from study subjects to co-researchers. Joint analysis during focus groups led to collectively developed solutions—ranging from local interventions within the school to community-level proposals—demonstrating the capacity of participatory methods to produce actionable knowledge from the learners' perspective.

2.6.4 Influence on Decision-Making – From Classroom to Community Impact

Although the study did not aim to influence formal policy directly, its findings hold potential for multi-level decision-making. At the **school level**, the results can inform environmental audits, support the formation of eco-teams, and inspire student-led campaigns. At the **municipal level**, proposals related to waste management, transport, and green infrastructure could inform local environmental initiatives. Within the **educational system**, the study provides evidence supporting the integration of participatory approaches into environmental education curricula.

By amplifying children's voices and making their perspectives visible to educators, administrators, and community stakeholders, Photovoice demonstrates its capacity as both an educational tool and an advocacy mechanism.

3. Discussion and Conclusion

Discussion

The present study illustrates the potential of the Photovoice method as both an educational and a research tool for engaging primary school pupils in critical discussions about environmental sustainability and the energy transition. By combining participatory photography with structured group reflection, pupils across the three participating schools demonstrated the ability to identify key environmental issues, articulate related emotions and values, and propose concrete solutions. These findings align with previous research showing that participatory visual methods can enhance learners' environmental literacy, agency, and capacity for systemic thinking (e.g., McGarry & Marston, 2021; Trott & Weinberg, 2022).

Distinct patterns emerged between schools. Pupils at **School 1** combined factual knowledge—particularly among older pupils—with practical technical solutions applicable at both school and home. **School 2** stood out for its systemic perspective and critical engagement with both environmental and societal phenomena, integrating knowledge, attitudes, and proposals for change. **School 3** demonstrated strong everyday environmental awareness, with pupils sensitive to wastefulness, knowledgeable about ecological measures, and willing to take practical action.

While variations were evident in the depth of conceptual understanding and critical thinking, pupils across all schools were able to connect environmental themes to everyday activities, recognise broader societal and ecological contexts, and suggest actionable solutions. The use of Photovoice supported key elements of transformative environmental education: learner agency, reflective dialogue, and participatory analysis—dimensions often underrepresented in traditional didactic approaches.

Recommendations for Further Research

Future studies could extend this work by:

- Comparing Photovoice outcomes across a larger and more diverse sample of schools;
- Longitudinally tracking changes in pupils' environmental attitudes and behaviours following Photovoice interventions;
- Investigating the method's impact on other key competencies, such as civic engagement or collaboration skills;
- Exploring teacher perspectives on integrating Photovoice into environmental education.

Final Reflection

By amplifying pupils' voices and recognising their ability to think and act systemically, Photovoice demonstrates its potential to contribute to sustainable, inclusive, and participatory learning environments. These qualities position the method as a valuable component of contemporary environmental and civic education, resonating with global calls for transformative approaches to education for sustainable development.

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References

Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369–387. https://doi.org/10.1177/109019819702400309

Strack, R. W., Magill, C., & McDonagh, K. (2004). Engaging youth through photovoice. *Health Promotion Practice, 5*(1), 49–58. https://doi.org/10.1177/1524839903258015

Warne, M., Snyder, K., & Gillander Gådin, K. (2013). Photovoice: An opportunity and challenge for students' genuine participation. *Health Promotion International, 28*(3), 299–310. https://doi.org/10.1093/heapro/das011

National Oceanic and Atmospheric Administration. (2020). *Science, camera, action! – Engaging youth in climate change education through photovoice.* https://cdn.oceanservice.noaa.gov/oceanserviceprod/education/planet-stewards/earthscientists/pdf/climate-change-engagement.pdf

McGarry, O., & Marston, G. (2021). Photovoice as a tool for youth engagement and environmental education: Evidence from urban settings. *International Journal of Qualitative Methods, 20*(1), 1–12. https://doi.org/10.1177/16094069211016719

Trott, C. D., & Weinberg, A. E. (2022). Children's climate change meaning-making through photovoice: Empowering children to learn, care, and act through participatory process. *Environmental Education Research, 28*(9), 1372–1390. https://doi.org/10.1080/13504622.2022.2096798