

Advancing sustainable development through education in a Thai local community

Asian Education
and Development
Studies

Anikó Makkos

*Department of International Studies and Communication,
Szechenyi Istvan University, Gyor, Hungary, and*

Amarilla Luca Süli, Joanna Diederich and

Gemma Alina Theres Herrmann

Department of Education, University of Vienna, Vienna, Austria

Received 22 September 2025

Revised 3 November 2025

Accepted 8 December 2025

Abstract

Purpose – This study aims to examine how education for sustainable development operates within community-based, non-formal learning contexts in a rural Thai community. It explores how local actors use educational and social practices to promote sustainability and clarifies the role education plays in supporting sustainable community development.

Design/methodology/approach – The case study employed a participatory ethnographic approach based on ten days of fieldwork in Nong Bua, Thailand, as part of an international research program. Data were collected through observations, semi-structured interviews with local leaders and reflexive discussions and analyzed using grounded theory, applied both as a coding tool and model-building approach. The analysis focused on the role of education in sustainable community development and how it is enacted in practice.

Findings – Sustainability in Nong Bua is expressed through everyday practices of taking care and taking action. Education supports community development by fostering a shared mindset, collaboration and local leadership across formal, non-formal, and informal settings. Community initiatives – such as environmental campaigns, re-education programs and peer mentoring – illustrate how education enables transformative learning through participation, reflection and collective action, turning learning into meaningful social action.

Originality/value – The study proposes a conceptual model showing how education fosters sustainability through participatory, culturally grounded and transformative processes. Its originality lies in emphasizing the often-overlooked non-formal and informal initiatives that link learning with lived experience and local culture, advancing understanding of how Community-Based Education for Sustainable Development operates in practice.

Keywords Education, SDGs, Social development, Sustainable development, Thailand

Paper type Research article

1. Introduction

As communities confront increasing environmental and social challenges, there is a growing need to understand how sustainability can be advanced locally through inclusive, community-based approaches. In May 2024, an international research program organized by the Sustainable Community Development Network (SCDN) brought together academics, professionals, and students from eight countries to explore such questions in Ban Nong Bua, conducting a series of case studies. This coastal village in western Thailand, with a population of approximately 1,750, relies economically on agriculture, fishing, and tourism (Makkos *et al.*, 2025). In recent years, the community has launched sustainability efforts to address local challenges. Against this backdrop, our research focused on the social dimensions

© Anikó Makkos, Amarilla Luca Süli, Joanna Diederich and Gemma Alina Theres Herrmann. Licensed re-use rights only. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at [Link to the terms of the CC BY 4.0 licence](#).



Asian Education and Development
Studies

Emerald Publishing Limited

e-ISSN: 2046-3170

p-ISSN: 2046-3162

DOI 10.1108/AEDS-09-2025-0486

of sustainability and examined how education contributes to sustainable community development in Nong Bua, drawing on local perspectives and practices across formal, non-formal, and informal educational settings.

Education is a cornerstone of Sustainable Development, equipping individuals and communities with the skills and knowledge to address local challenges and take collective action (Ogbonnaya and Ann, 2023). It ensures that future generations can access similar opportunities and is central to the Sustainable Development Goals (SDGs), particularly Goal 4: “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2024a). Yet progress remains limited, constraining achievement of the 2030 Agenda. As both a goal and catalyst for all other SDGs (UN, 2024b), education has become central to sustainability through Education for Sustainable Development (ESD).

Although Education for Sustainable Development (ESD) has been extensively studied internationally, most research has focused on formal education systems and national policy frameworks. Far less attention has been paid to community-based, non-formal learning contexts, particularly in rural Thai communities. This represents a significant gap in understanding how local actors mobilize education and social practices to advance sustainability.

While considering global principles, this article explores how educational principles related to sustainability can be applied in local contexts, focusing on the community of Nong Bua, Thailand. Using a participatory ethnographic approach, the study investigates how local leaders perceive and promote the role of education in driving sustainable development, with special attention to non-formal and community-based strategies that have received limited focus so far.

Specifically, this study addresses the following research questions:

- (1) What role does education play in the sustainable community development of Nong Bua?
- (2) How can local leaders promote sustainable development in the community through educational initiatives?

By exploring the specific challenges and opportunities in Nong Bua, this study offers insights into the transformative potential of Community-based Education for Sustainable Development (CBESD) initiatives.

As follows, Chapter 2 outlines the *Literature Review*, introducing key concepts and debates on the topic. Chapter 3 presents the Research Design, followed by Chapter 4, which details the *Results* and the conceptual model of the role of Education in SCD. Chapter 5 provides the *Discussion* and the *Practical Implications*, while Chapter 6 summarizes the *Conclusions, Limitations, and Future Directions*.

2. Literature review

2.1 Sustainable community development (SCD) and education for sustainable development (ESD)

Sustainable Community Development (SCD) balances economic growth, social equity, and environmental protection at the local level. Building on the Brundtland Report’s definition of sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987, p. 16), SCD localizes this principle through participation, empowerment, and good governance (Morshidi, 2016; Bakare, 2013), aiming at “mutual benefit” between community and environment (Morshidi, 2016, p. 5).

Education is central to this process: it enables people to recognize shared needs and take collective action toward addressing them. According to Zachariou and Symeou (2009), community-based educational initiatives help residents understand the implications of their actions on local ecosystems and promote not only environmental awareness but also intergenerational communication and participatory action. Such programs empower people to

collaborate with local groups in identifying needs and developing solutions that improve the quality of life in the community (Zachariou and Symeou, 2009) and enhance participation in democratic processes and policymaking (Ogbonnaya and Ann, 2023). Likewise, through education, children and young people act as agents of change in community initiatives, advocating for transformative learning experiences that position them as active contributors to sustainability efforts (Percy-Smith and Burns, 2013). These perspectives show that education is not merely supportive but constitutive of community development.

2.2 Education for sustainable development (ESD)

Efforts to promote sustainable development through education led to the concept of Education for Sustainable Development (ESD), outlined in Chapter 36 of *Agenda 21* (Agbedahin, 2019), which prioritizes reorienting education, raising awareness, and promoting training (UN, 2024a, b). Defined by UNESCO (2009, p. 8) as “an approach to teaching and learning based on the ideals and principles that underlie sustainability,” ESD builds the knowledge, skills, and values needed for sustainable societies, adapting across formal, non-formal, and informal settings. These principles have been operationalized through global and national initiatives, such as the ESD Toolkit (McKeown, 2002), which supports communities in aligning curricula with local sustainability goals. Table 1 summarizes ESD’s global and regional evolution from 2006 to 2025 and the Thai implementation.

In Thailand, global ESD frameworks were implemented through a series of national development plans and educational reforms focused on curriculum management and administration, closely linked to the Sufficiency Economy Philosophy, which aims to balance economic, social, and environmental goals (Nuamcharoen and Dhirathiti, 2017). Beyond instrumental objectives, ESD training programmes were organized for schools and practitioners, often incorporating elements of community involvement. These

Table 1. Global ESD milestones and Thai implementation (2006–2025)

Year	Global/regional milestones	Thai context and implementation
2006	UN Decade of ESD (2005–2014); RCE network expansion	ESD introduced via 10th National Plan (2007–2011); aligning with <i>Sufficiency Economy Philosophy</i>
2009	Bonn Declaration: mainstreaming ESD	Sustainability and local participation integrated into curricula
2014	Aichi–Nagoya World Conference; launch of GAP (2015–2019)	National agencies and CSOs join GAP; community participation promoted
2015–2019	GAP implementation: policy, educators, youth, learning environments, communities	Participatory, non-formal learning and school–community collaboration highlighted
2020	Launch of <i>ESD for 2030</i> ; SDG 4.7 roadmap adopted	Embedded in 20-Year National Strategy (2018–2037); decentralization, community participation
2021	Berlin Declaration on ESD (UNESCO World Conference)	School–community collaboration and environmental education reforms
2021–2023	Reflect–Share–Act (UNESCO Bangkok, 2021); <i>CBESD</i> in Asia-Pacific promoted	Non-formal centers adopt participatory learning approaches
2022	ESD for 2030 Global Network established	Thai Office of the Non-Formal and Informal Education (ONIE) and universities join regional collaboration
2022–2024	Greening Education Partnership; Green School Quality Standard	Pilots green-school projects integrating ESD principles
2025 (ongoing)	ESD for 2030 continues; about 200 RCEs worldwide (UN, 2025)	Thai RCEs expand through university–community-government partnerships

Source(s): The authors’ own compilation based on: UNESCO (2014a, b, 2020, 2021, 2022, 2024), United Nations (2024b, 2025), Nuamcharoen and Dhirathiti (2017), Kaewpanya *et al.* (2021)

implementations remain consistent with the country's 20-Year National Strategies (2018–2037), which emphasize decentralization, increasing self-management of communities, and collaboration among the private sector, civil society, and local communities (Kaewpanya *et al.*, 2021). While most ESD initiatives and related studies have focused on the formal education context (Nuamcharoen and Dhirathiti, 2017; Preededilok, 2017; Suriyankietkaew and Hallinger, 2018), policy frameworks increasingly recognize local communities as key sites of educational and social progress, integrating cultural and participatory approaches at the core of sustainability education.

2.3 Transformative and instrumental dimensions of ESD

One of the main theoretical debates within ESD concerns its transformative versus instrumental orientation. Transformative learning theory defines learning as a process of critically reassessing and transforming one's "frames of reference" to develop a more inclusive and reflective worldview (Mezirow, 2008, p. 26 as cited in Lehmann *et al.*, 2025, p. 3). Building on this foundation, scholars argue that education for sustainable development must move „from learning how to understand to learning how to act and transform” (Schnitzler, 2019, p. 243). O’Grady (2023) concretizes transformative learning within an ESD framework, showing that higher education often remains at the stage of understanding rather than transformation. He argues that adopting transformative learning requires educators to critically reassess their roles and prepare students for profoundly different learning experiences. Importantly, transformation is not confined to professional practice: it has an intrinsically personal dimension, challenging both educators and learners to confront their values. This broader understanding links transformative learning to lived experience and community life, extending ESD beyond the formal educational sphere toward more participatory and socially grounded forms of learning.

Schnitzler (2019) reveals that the transformative aspect within ESD remains underdeveloped. He describes the bridge between the two as valuable yet weak, calling for the creation of spaces for collaboration and action, where reflection and experience lead to transformation. In such collaborative learning spaces, learning occurs “in relationships” and through “shared ownership” (p. 247), emphasizing participation, dialog, and co-creation as key to transformation. Sterling (2025) identifies a tension between a *process* and a *product* view of education, calling for “education beyond ESD” (p. 11) that fosters systemic rather than instrumental change. As he explains, “ESD may be seen as a precursor and agency to deeper and more wholesale systemic change across educational policy and practice” (p. 8). Yet this broader potential is often overlooked, leaving ESD constrained by instrumental aims rather than fulfilling its transformative role.

While calls for transformation have gained prominence, ESD implementation continues to face structural and contextual challenges. In Malaysia, Abidin *et al.* (2023) examined the perspectives of school leaders and identified four key barriers: encouraging positive attitudes, acquiring ESD knowledge, developing systems thinking, and adapting curricula to local contexts. They argue that overcoming these challenges requires supportive systems and innovative partnerships. In Indonesia, Alam and Hamzah (2025) found that collaborative curriculum design and parental engagement can enhance sustainability-related behavior, yet such efforts remain largely confined to formal schooling. Overall, these studies show that ESD still tends to prioritize curriculum and behavioral outcomes over participation and transformation.

Building on this, transformative learning offers a lens to reimagine ESD as a participatory and context-responsive practice, evolving through shared reflection and action. This opens pathways for non-formal and community-based approaches, where transformation emerges through collaboration and locally grounded learning.

2.4 Integrating cultural factors and local knowledge in ESD

Another major theme in recent research is the integration of cultural factors and local knowledge into ESD. Lehmann *et al.* (2025) argue that culture should be integrated as the

fourth pillar of the sustainability framework, alongside the social, economic, and environmental dimensions. Their findings show that by including cultural perspectives, transformation emerges as an ongoing process of learning that extends beyond individuals to their communities. Similarly, [Capelo et al. \(2014\)](#), examining ESD in East Timor, demonstrate that context-sensitive and participatory indicators are essential for making education relevant and actionable. Their study shows that when communities participate in defining what sustainability means for them, educational goals become socially owned and responsive to local needs. Taken together, these insights highlight that integrating culture and local knowledge strengthens ESD's transformative potential.

In the Thai context, similar principles are reflected in community-based tourism (CBT). The [National Tourism Policy Committee \(2019\)](#) promotes CBT as a tool for national development, aiming to “create a learning process and lead to sustainability of the environment, local culture, and quality of life” (p. 10). It links community development and education by positioning communities as co-managers and learners in sustainability. [Kontogeorgopoulos et al. \(2014\)](#) show that CBT – “managed and owned by the community, for the community” – functions as both an economic strategy and a learning process, raising awareness of local ways of life (p. 110). While critics note persistent inequalities that limit community control ([Blackstock, 2005](#); [Butcher, 2012](#)), success in Thailand depends on supportive conditions and local leadership ([Kontogeorgopoulos et al., 2014](#)). Together, these examples illustrate sustainability as a continuous educational process, where participation and local practice foster collective learning and transformation.

2.5 Community-based and non-formal approaches to ESD

A growing body of research conceptualizes sustainability learning as a community-wide endeavor rather than a school-based intervention ([Sterling, 2025](#); [Zachariou and Symeou, 2009](#); [Wals, 2011](#)). Aligning with this perspective, [UNESCO Bangkok's Reflect–Share–Act initiative \(2021\)](#) offers the most comprehensive articulation of Community-based Education for Sustainable Development (CBESD). The framework encourages communities to reflect on local sustainability issues, share knowledge and experiences, and act collectively toward solutions. It positions ESD as a social practice and reframes learning as occurring “everywhere for everyone as an ongoing process” ([UNESCO Bangkok, 2021](#), p. 10). By that, it operationalizes [Sterling's \(2025\)](#) vision of learning communities and [Schnitzler's \(2019\)](#) bridge between transformative learning and ESD, illustrating how transformation unfolds through collaboration and collective reflection in local contexts.

In this view, community-based ESD recognizes local people as essential partners in learning. Thailand's national strategies reflect this perspective by positioning communities as key sites of educational and social progress and integrating cultural and participatory approaches into sustainability education ([Kaewpanya et al., 2021](#)). [Nuamcharoen and Dhirathiti \(2017\)](#) study this at Thailand's Bansankong School, where schools and communities co-produce learning through local culture, dialog, and shared problem-solving. By embedding community issues and practices – such as organic food production and local marketplaces – into education, ESD enables mutual learning and benefit: it strengthens community identity and turns learning into collective action for sustainable development. Comparable approaches appear elsewhere in Southeast Asia: [Nurlaela et al. \(2024\)](#) applied an Asset-Based Community Development model in Indonesia and demonstrated that transformative skills education enables local communities to manage environmental assets sustainably. [Nuttavuthisit \(2017\)](#) similarly showed that vocational and non-formal education in Myanmar and Vietnam fosters sustainability through collaborative networks linking schools, local authorities, and businesses.

Taken together, these studies mark a shift from ESD as an institutional reform agenda toward ESD as community practice, building on collective reflection, participation, and local action. Across the reviewed literature, three insights emerge: first, ESD's transformative

ambition cannot be realized through top-down, formal implementation alone; second, integrating cultural perspectives, local knowledge, and community participation enhances its contextual and transformative power; and third, research in Southeast Asia underscores the role of local leadership and collective agency in linking learning with social action. The CBESD framework synthesizes these trends, positioning education as an ongoing and situated process.

Yet important questions remain regarding how such community-based, non-formal, and informal learning processes operate in practice and how local actors sustain participation. This study addresses that gap by examining how local leaders in a Thai village facilitate education for sustainable development through participatory, culturally embedded forms of learning that connect formal, non-formal, and informal contexts, thereby exploring the lived processes through which ESD becomes community practice.

3. Research design

The participatory ethnographic research design employed in this study was conducted as part of a 10-day international research initiative in Nong Bua, Thailand. An interdisciplinary collaboration between academics, students, and practitioners resulted in diverse case studies. During this time, data collection was guided by the methodology of Grounded Theory (Strübing, 2021) to enable a comprehensive understanding of the local context.

Data collection unfolded on two complementary levels. While the entire research group actively participated in program activities and group discussions, a smaller research team, also taking part in these activities, focused specifically on education and complemented the overall data collection with interviews. During the stay in Thailand, active participation in program events and community activities constituted the primary empirical basis. Participant observations were continuously recorded in field notes and reflected on jointly by the interdisciplinary group. The preparation of field notes followed the methodological principles of qualitative social research (Przyborski and Wohlrab-Sahr, 2021). All activities were related to sustainability, with the emphasis on Sustainable Community Development (SCD) rather than on education *per se*. Examples of activities included participation in local campaigns and festivals, day programmes at a primary school, and visits to local farms and plantations applying sustainable concepts. On this level, each participant engaged with their own research interest under the shared theme of the international research program. Group discussions brought together diverse, multiprofessional perspectives, enabling multilayered reflection as experiences from different disciplinary backgrounds were related to one another. This interdisciplinary exchange proved particularly insightful in the context of sustainability and education, as complex social and ecological interrelations could be apprehended from multiple professional viewpoints. The experiences and reflective processes initiated in the field fed, in a more implicit manner, into later data interpretation by shaping the researchers' sensitivity to local dynamics.

On a second level, the smaller research team deliberately refined an education focus and planned qualitative research components accordingly. The focus on education was chosen within this smaller team and maintained throughout the stay. Observations were complemented by semi-structured, guide-based interviews specifically oriented toward educational issues. Semi-structured interviews allowed flexibility in exploring participants' perspectives while following a guiding framework (Strübing, 2021). These interviews enabled discussions of field experiences in the context of education with key actors from the local education sector. Conducted in a narrative style and using simple language, the interviews aimed to make local perspectives accessible. The substantive focus was on the meaning of education and sustainability as general concepts and in the specific community context as well. In this way, participatory experience was linked with deeper analytical reflection, contributing to the substantive saturation of the data.

This study specifically focuses on the two interviews conducted with two local leaders from Nong Bua, offering an in-depth examination of their perspectives. The two interviewees were selected purposively due to their central roles as community leaders and key actors in local educational initiatives, ensuring that their perspectives provided meaningful insights into educational challenges and opportunities in the community. Although this represents a limited number of voices, the central role of these leaders within the community, particularly in organizing and managing educational initiatives and shaping education, allows for drawing meaningful conclusions about local challenges and opportunities. To ensure anonymity, names and identifying details are omitted. A Thai colleague with strong English language skills assisted as a translator to overcome the language barrier. Interviews form the primary data source, and insights from observations and group discussions also informed the analysis and enriched the interpretation. Data collection and analysis followed the Grounded Theory methodology as outlined by [Strübing \(2021\)](#), which conceptualizes theory development as a stepwise abstraction grounded in empirical data. In the course of the study, the researchers actively chose to apply Grounded Theory not only as a coding tool but also as a model-building approach.

The combination of observations, semi-structured interviews, and reflective discussions enabled methodological triangulation and contributed to data saturation, as key themes were examined from multiple perspectives and across different contexts. Due to the limited duration of the fieldwork, a stepwise theoretical sampling in the field could only be applied to a limited extent. Instead, a broad range of observations were made and interviews were collected, and the principles of theoretical sampling were subsequently applied during the analysis phase ([Helfferich, 2011](#)).

In the following, key concepts from Grounded Theory and their application will be explained. Data analysis proceeded through the three core coding procedures: open, axial, and selective coding. During open coding, the transcripts and observations were examined line by line to identify emerging concepts. Axial coding reassembled the data by relating categories and subcategories, structured by the coding paradigm ([Strübing, 2021](#)), which includes *causal conditions*, *context*, *intervening conditions*, *actions/interactions*, and *consequences*. Selective coding then focused on identifying the core category that gives coherence to the model: *Education for Sustainable Community Development*. To improve clarity and structure, thematically related categories were grouped into super categories, higher-order constructs that organize more specific subcategories under a shared theme. Some categories were further conceptualized as multidimensional constructs, defined by properties and dimensions, though this approach was applied selectively where it added analytical depth.

The core principle guiding the coding process was the constant comparative method, which involves continuously comparing data with other data segments to refine categories and identify emerging patterns. Interpretation was treated as a continuous process rather than a final step. In line with [Strübing \(2021\)](#), it involved reconstructing meaning, surfacing latent structures, and remaining attentive to the participants' cultural and social context. Memos supported this process by capturing shifts in understanding and guiding theory development. All coding decisions were systematically documented to ensure transparency and traceability.

Practicing methodological reflexivity, the authors remained critically aware of their positionality as researchers with a European background. Their perspectives were shaped by different academic and cultural traditions. Rather than impose Eurocentric assumptions, they sought to understand local meanings of sustainability and education on their terms. As temporary guests in the field, they reflected on the potential influence of their background and emphasized cultural sensitivity throughout data interpretation.

4. Results

During the interviews, it became evident that the term “sustainability” has not yet resonated deeply within the community. However, this does not mean that the community lacks

sustainable principles or practices. Instead, it was mostly described as “taking care”, which applies to various levels of life, aiming to create a “good foundation”, a “good life”, and a strong connection to their “homeland”. During the interviews, it became apparent that while the concept of sustainability, defined in this way, may be unfamiliar to educational initiatives, the underlying sustainability values and practices are already embedded in the community’s daily life.

The analysis of the data using the Grounded Theory coding paradigm (Strübing, 2021) resulted in the development of a conceptual model that explains how educational initiatives can effectively engage and include community members in sustainable development efforts. This model is composed of core categories derived inductively from the data. While the properties and dimensions of these categories are not detailed in the model, they underlie the categories and help to shape the relationships and interactions between the components. Together, the categories form an integrated framework that helps understand the role of education in sustainable community development.

The development of the model was guided by the study’s research questions, while the structure of the model and Figure 1 followed the coding paradigm proposed by Strübing (2021, p. 27), incorporating its principal functional elements (context, intervening conditions, actions/interactions, and consequences), while the content and visual representation were developed by the authors based on the empirical data.

At the center of the model is the core category: *Education for Sustainable Community Development*. The core category represents the central phenomenon that connects all other elements within the framework. Surrounding this core are five interconnected super-categories: *Inequality*, *Community*, *Resistance to change*, *Strategies and Participation*, and *Mindset*. Each represents broad thematic areas derived from the data. These super-categories encompass more specific main categories that emerged during coding, reflecting the complex and dynamic nature of education’s role in fostering sustainability at the community level.

To demonstrate how the model functions in practice, we use the example of the Trash Stop Campaign, an educational initiative led by a local community leader in Nong Bua (context). This project aims to increase community involvement (*Participation – interaction*) in protecting the environment by encouraging residents to take collective responsibility (*Mindset – consequence*) for waste management. Recognizing resistance to change (*Resistance to*

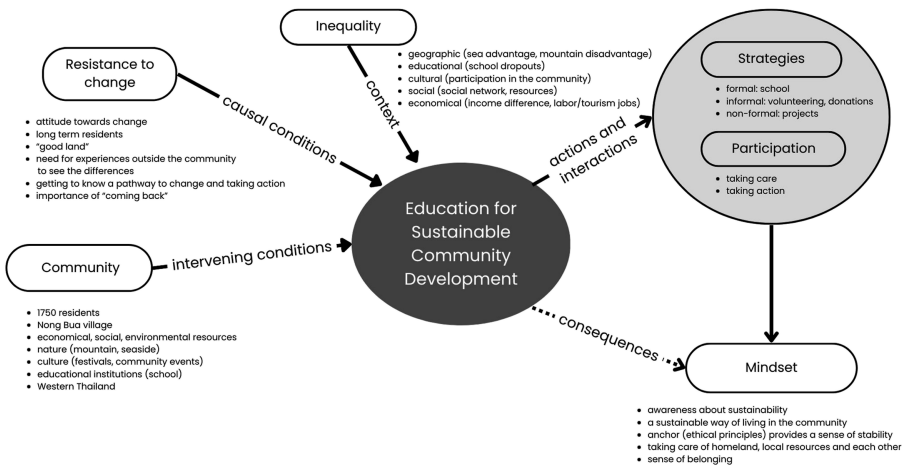


Figure 1. Grounded theory coding paradigm of the role of education in sustainable community development. Source: Developed by the authors based on Grounded Theory analysis of field data (2024), following the coding paradigm described by Strübing (2021, p. 27)

change – causal conditions) within the community, the leader drew inspiration from external examples and focused on motivating local participation. Weekly voluntary clean-up events (*Strategies – actions*) are organized where adults and community leaders act as role models, especially influencing younger generations. The waste collected is sorted and sold, with the proceeds supporting vulnerable community members (*Community – intervening conditions*) through food and other essential aid.

This initiative represents a non-formal educational strategy that promotes sustainable awareness and respect for local natural resources and culture. It builds a stable foundation and a mindset based on shared ethical values and invites everyone in the community to participate actively. Over time, this collective action contributes to shifting mindsets, encouraging participants to see themselves as responsible community members committed to sustainability. The campaign's success is celebrated in community events that bring together schools and residents, further inspiring engagement and reinforcing social bonds. The inclusive and open nature of the initiative creates a positive feedback loop, benefiting both the environment and the community.

The following chapters provide a more detailed explanation of the identified categories and their connections.

4.1 Context and conditions: contextual and community influences on education

In this study, a distinction is made between *context* and *intervening conditions*, following the Grounded Theory coding paradigm based on [Strübing \(2021\)](#) to better explain the factors shaping educational initiatives.

Context refers to the broader structural and environmental background in which education takes place. Here, *Inequality* represents this super-category of context, which education seeks to address by fostering equity and inclusion. The category captures the geographic, economic, and social differences (jobs, income, and access to education) within Nong Bua. For instance, the divide between seaside and mountainous areas influences access to education and resources. The sea represents a natural resource that provides people living on the seaside with more job opportunities, whether through the fishing trade or jobs in tourism. As a local leader noted, “Most kids don’t even graduate 6th grade” from the mountainous area, and “they just don’t want to go to school anymore”. Many families and children prioritize work over education, as they realize they can earn money early on, which they see as more important than schooling. This shows how economic necessity and social realities create barriers to education.

Community is marked as an *intervening condition* in the coding paradigm. This means it acts as a mediating force that influences how education programs interact with and respond to the unequal context. The *Community* super-category includes cultural traditions, local events, social networks, and collective values that shape educational practices and participation. Intervening conditions can either reduce or reinforce inequalities, affecting the success of sustainable education efforts. As a best practice, cultural traditions and local events can be mentioned, which provide opportunities to integrate sustainability principles. A local festival was organized with concerts and dance performances, and it was combined with a fundraising campaign to improve the local water supply system in regions where it is needed.

4.2 Actions and interactions

4.2.1 Encouraging participation by taking action and taking care. In the model, *actions and interactions* are central components that shape how individuals and communities respond to their circumstances. These are represented by the super-categories *Strategies and Participation*.

Participation goes beyond mere involvement; it embodies both taking action and taking care, fostering a sense of shared responsibility and empowerment. Through volunteering and community-driven initiatives, individuals take on active roles in shaping their community's future.

- (1) Taking action refers to proactive contributions such as organizing events, participating in projects, and driving efforts to improve the community's quality of life. This ensures residents are not passive recipients but co-creators of collective progress.
- (2) Taking care emphasizes mutual support, caring for fellow community members, creating a sense of belonging, and protecting the environment and local natural resources.

By combining these two aspects, participation helps build trust, unity, and a sense of belonging in the community. The model illustrates how educational initiatives build on these qualities, empowering individuals to take responsibility while strengthening their connection to both the community and the environment. This dual focus on action and care contributes to a sustainable way of living and establishes a foundational mindset.

4.2.2 Strategies. The super-category *Strategies* includes the practices and responses that emerge as actors engage with their context (marked by *Inequality*) and navigate *intervening conditions* (such as community structures and resources). Here, *Strategies* refers to the diverse educational initiatives through which sustainable development is actively pursued, involving formal, non-formal, and informal learning environments.

Formal education, delivered through school, is the foundation of these strategies, as it offers structured, long-term learning and plays a key role in embedding core values in the mindset of young people, which aligns with the broader goals of sustainable community development.

Non-formal strategies are considered successful, as they include targeted initiatives and projects designed to meet specific needs.

- (1) The Trash Stop Campaign, which has been detailed above, promotes environmental protection through practical engagement in waste management. It shows how community-driven educational efforts can raise awareness and build social bonds.
- (2) Another example, the Behavioral Project, supports individuals with a history of imprisonment or addiction by providing re-education and training. This project promotes social reintegration by linking education with employment opportunities. According to a local leader, several participants have achieved great success in their new professions. One such success story is a woman who, after learning baking skills, was able to start a new life and now runs a successful bakery in the community.
- (3) Finally, the New Gen initiative focuses on preventing school dropouts by encouraging peer support and empowering students to motivate one another. The key aspect is that peers who have achieved academic success come back to the local school as role models and mentors, sharing their own stories to show the benefits of staying in school. Through their examples, students can see what they can become "if you study hard" highlighting the real-life impact of education on future opportunities.

Informal strategies operate through everyday social interactions. Volunteering and donation-based activities reinforce the notions of taking care and taking action. Local leaders and role models emerge as influential figures within the community: their presence and behavior deliver values and inspire sustainable practices without requiring formal instruction. They motivate others through their leadership and actions to adopt sustainable practices, thereby strengthening the community's commitment to shared goals.

These connected strategies work together to empower individuals to take responsibility for sustainability efforts and actively participate in the community's progress. A local leader emphasized the importance of education, stating: "*Education is still the most important aspect that the community needs the most*". In this context, education, in all its forms, serves as a powerful tool for driving sustainable development at the local level.

4.2.3 Consequence: developing a sustainable mindset. In line with the paradigm, the super-category *Mindset* can be understood as a *consequence* of the actions and interactions (such as specific strategic initiatives and participation) within the community, and an indirect

consequence of education for sustainable development. As one local leader put it: “*Education is not only about the degree or the job requirements, it’s also about the mindset, and the school’s role is to ensure this “anchor” is established*”. Thinking about education as a means for creating a specific mindset highlights how education actively shapes individuals’ perceptions, values, and decisions. This involves encouraging sustainable thinking and integrating sustainability values across different types of education. Elementary schools are particularly significant in this context, as they lay the foundation for long-term attitudes and behaviors. By understanding sustainable thinking as an anchor, communities can align educational efforts with sustainability goals.

While schools serve as the main institutional setting, educational efforts also target adults and community leaders, reinforcing the mindset across generations. Understanding education for sustainable development as the cultivation of a sustainable mindset means that sustainability encompasses more than just economic advancement; it involves fostering a deeper sense of care and responsibility for the community’s social, cultural, and environmental progress. By promoting this mindset, the community embraces education as a tool for collective empowerment, ensuring that decisions and actions are consistently aligned with shared goals. With the *Mindset* super-category, the model highlights how education enables individuals to internalize these principles.

However, having a sustainable mindset alone is not enough. As one of the local leaders mentioned, communities require a sustainable foundation to support and maintain sustainability: a combination of education, employment opportunities, health, and infrastructure. These form the structural backbone of development. Taken together, mindset and foundation form the internal and external dimensions of the *consequence*: a community that not only thinks sustainably but is equipped to act on it. Education thus contributes not just to knowledge acquisition but to creating the ethical and material conditions necessary for sustainable development.

5. Discussion

5.1 Key insights

Education plays a central role in advancing Sustainable Community Development (SCD) by fostering collective learning, empowerment, and participation at the local level. In Nong Bua, sustainability is not understood through abstract terminology but as a lived practice expressed in the principles of *taking care* and *taking action*. These values, deeply rooted in cultural and social life, form the moral foundation of community-based sustainability and connect environmental, social, and cultural dimensions. Addressing the first research question – “What role does education play in the sustainable community development of Nong Bua?” The findings show that education acts as both a catalyst and a connective force in community development. It fosters a sustainable mindset, promotes participation, and enables collective action across formal, non-formal, and informal contexts. In formal education, schools nurture an “ethical anchor” that shapes long-term attitudes and provides a foundation for sustainable living. Non-formal pathways, such as volunteering, donations, and traditional celebrations, engage diverse groups in addressing local challenges, including inequality, pollution, or youth dropout. Through informal learning, this mindset is reinforced by role models and community leaders. Addressing the second research question – “How can local leaders promote sustainable development through educational initiatives?” The study finds that local leaders mobilize cultural traditions, non-formal activities, and community networks to transform education into a participatory and action-oriented process that strengthens long-term sustainability.

5.2 Theoretical positioning within ESD and transformative learning debates

The findings also provide empirical support for [UNESCO Bangkok’s Reflect–Share–Act \(2021\)](#) framework, showing how reflection, cooperation, and shared responsibility emerge

organically from community-led initiatives. Nong Bua demonstrates that transformation in ESD occurs collectively – through relationships, dialog, and social practice – rather than solely through individual cognitive change. This perspective contributes to debates on the *transformative versus instrumental* orientation of ESD (Schnitzler, 2019; O’Grady, 2023; Sterling, 2025). While instrumental approaches focus on measurable outcomes or curricular reform, Nong Bua exemplifies the transformative potential of community-driven education rooted in participation and local meaning-making. It also supports the argument that culture represents a “fourth pillar” of sustainability (Lehmann *et al.*, 2025; Capelo *et al.*, 2014), illustrating that education achieves transformative depth when embedded in shared cultural identity and local practice. In this way, the study bridges transformative learning theory and SCD, conceptualizing education as a constitutive social force that enables collective action toward sustainable futures.

The model developed by the authors (Figure 1) illustrates how such educational initiatives aim to reduce inequalities and equip individuals and communities to address social, economic, and environmental challenges. The potential of community-oriented and participatory approaches becomes evident, emphasizing education’s ability to empower communities through ownership and active involvement in local initiatives. This corresponds with the principles of CBESD (UNESCO Bangkok, 2021), where reflection, cooperation, and shared action create lasting transformation.

Building on these findings, the following section outlines practical recommendations derived from both empirical evidence and theoretical insights, translating the conceptual implications into actionable strategies for educators, policymakers, and community stakeholders.

5.3 Practical implications

The recommendations are grounded in the principles of *Agenda 21* (UN, 1992) and align with the *ESD for 2030* framework (UNESCO, 2020). To effectively address local sustainability challenges, it is essential to tailor educational initiatives to each community’s unique needs and context.

5.3.1 Reorienting education toward sustainable development. Education should be closely aligned with local realities, reflecting the geographic, cultural, and socio-economic conditions of the community. Local governance can promote sustainability by drawing on existing cultural practices – such as festivals, community events, and local traditions – which serve as natural learning spaces. Schools can connect classroom learning with lived experience by involving students in projects that address local environmental and social issues, such as volunteering initiatives, like in the example of *Trash Stop Campaign*. These participatory practices empower learners of all ages with the skills and mindset needed to act sustainably, bridging the gap between knowledge and everyday action.

5.3.2 Increasing public awareness and participation. Public awareness depends on the creation of inclusive spaces for dialog and shared learning that foster a collective identity around sustainability. Local authorities play a key role in facilitating community events that bring together residents, leaders, and experts to exchange ideas and co-develop initiatives. Partnerships with local businesses – such as in promoting community-based tourism – can further strengthen these efforts. Highlighting and celebrating existing sustainable practices reinforces community identity and shared responsibility. Initiatives like the *Behavioral Project*, illustrate how education can generate long-term social and economic value. Local media, storytelling, and cultural gatherings can further enhance reflection, collaboration, and community ownership of sustainability practices.

5.3.3 Promoting training and capacity building. Training programs should equip individuals and leaders with the competencies needed to support sustainability in their communities. This includes vocational training, teacher education, and leadership programs that integrate community-based ESD principles. Such programs should adopt a multi-

perspective approach – combining cultural, ecological, social, and educational dimensions – while emphasizing participatory and inclusive learning accessible to all members of society, including marginalized groups. Examples such as the *New Gen Initiative* demonstrate how practical, inclusive training can involve the community in these intergenerational learning processes. On-site training in rural or remote areas could further facilitate collaboration among groups. Stronger partnerships between governmental and non-governmental organizations are essential to ensure the long-term sustainability and relevance of these initiatives.

The insights and recommendations presented above form a bridge between the empirical findings and the study's broader theoretical and practical implications. By situating education within local realities, promoting participatory and culturally grounded learning, and reinforcing local leadership, these strategies operationalize the principles of CBESD. The following section synthesizes these insights, highlighting the study's contribution, limitations, and directions for future research.

6. Conclusion

6.1 Theoretical contribution

This study advances the theoretical understanding of CBESD by highlighting community-centered, non-formal, and informal approaches to sustainability learning. Using participatory ethnography, it provides empirical evidence of how education mediates social, cultural, and ecological interactions through collective and transformative processes that reshape community practices and relationships. Transformation in this context is understood as a collective and relational process – one that reshapes community practices, mindset, and relationships rather than merely transmitting knowledge. The study clarifies the dynamic linkages between education and SCD, positioning CBESD as a means of overcoming the limits of formal, instrumental ESD. Overall, it frames education as a participatory, culturally grounded, and transformative process enabling communities to learn and sustain change collectively.

6.2 Limitations

As noted in Chapter 3, this study has several limitations. Its focus on a single community in Nong Bua, Thailand, restricts the generalizability of the findings to other socio-cultural contexts. The ten-day fieldwork provides only a snapshot, without capturing long-term or seasonal dynamics. While local leaders' perspectives are emphasized, the voices of youth and marginalized groups remain underrepresented. Moreover, as a qualitative study, it offers rich contextual insights but does not measure the long-term impacts of these educational initiatives.

6.3 Future research and replication

Rather than serving as a prescriptive design, the model emerging from this study offers a flexible interpretive structure that can be used to explore how education unfolds in different local contexts. As a first version, it may inspire the development of similar models aimed at deepening the understanding of how social, cultural, and ecological factors interact across multiple levels. Future research may refine this framework by analyzing how education functions as a core transformative process within SCD. Moreover, the model could be of help in designing ESD initiatives while considering transformative and community factors. Finally, it could help to explore how CBESD can be further embedded in local practice.

To expand the research scope and methodology, future studies should employ mixed-methods or longitudinal designs and compare urban, rural, and international contexts to gain deeper insights into how community-centered education adapts to diverse conditions. Studies could also examine how these strategies affect both immediate and intergenerational sustainability outcomes. Comparative and cross-cultural research would help assess the transferability and long-term impact of such initiatives. To enhance inclusivity and

measurability, future work could integrate diverse community perspectives and combine ethnographic insights with quantitative evidence.

Acknowledgments

The authors wish to express their sincere gratitude to Prof. Dr Miklós Bánhidi for organizing the international research program during which this study was conducted and for his valuable comments on the manuscript. Special thanks are extended to Peggy Sontisiriklit for translation support and assistance in overcoming language barriers. The authors also warmly thank all research participants and project organizers whose contributions made this work possible.

References

- Agbedahin, A.V. (2019), "Sustainable development, education for sustainable development, and the 2030 agenda for sustainable development: emergence, efficacy, eminence, and future", *Sustainable Development*, Vol. 27 No. 4, pp. 669-680, doi: [10.1002/sd.1931](https://doi.org/10.1002/sd.1931).
- Alam, S. and Hamzah, R.A. (2025), "The role of parental involvement in promoting education for sustainability in primary schools", *Asian Education and Development Studies*, Vol. 14 No. 3, pp. 563-578, doi: [10.1108/AEDS-07-2024-0151](https://doi.org/10.1108/AEDS-07-2024-0151).
- Bakare, T. (2013), "Sustainable community development efforts in Nigeria: the effect of integrating sustainability principles into the community development process", *OIDA International Journal of Sustainable Development*, Vol. 6 No. 12, pp. 41-60, available at: <https://ssrn.com/abstract=2392791>
- Blackstock, K. (2005), "A critical look at community based tourism", *Community Development Journal*, Vol. 40 No. 1, pp. 39-49, doi: [10.1093/cdj/bsi005](https://doi.org/10.1093/cdj/bsi005).
- Butcher, J. (2012), "The mantra of 'community participation' in context", in Singh, T.V. (Ed.), *Critical Debates in Tourism*, Channel View, Clevedon, Vol. 57 No. 2, pp. 102-108, doi: [10.1080/02508281.2010.11081634](https://doi.org/10.1080/02508281.2010.11081634).
- Capelo, A., Santos, C. and Pedrosa, M.A. (2014), "Education for sustainable development in East Timor", *Asian Education and Development Studies*, Vol. 3 No. 2, pp. 98-117, doi: [10.1108/AEDS-03-2013-0021](https://doi.org/10.1108/AEDS-03-2013-0021).
- Helfferich, C. (2011), *Die Qualität Qualitativer Daten*, VS Verlag für Sozialwissenschaften. Springer, Fachmedien Wiesbaden GmbH, doi: [10.1007/978-3-531-92076-4](https://doi.org/10.1007/978-3-531-92076-4).
- Kaewpanya, N., Mangkhang, C. and Dibyamandala, J. (2021), "Community-based transdisciplinary learning innovation in social studies through Miang wisdom for promoting green citizenship of secondary school students", *Psychology and Education*, Vol. 58 No. 3, pp. 875-884, available at: <http://psychologyandeducation.net/pae/index.php/pae/issue/view/14>
- Kontogeorgopoulos, N., Churyen, A. and Duangsaeng, V. (2014), "Success factors in community-based tourism in Thailand: the role of luck, external support, and local leadership", *Tourism Planning and Development*, Vol. 11 No. 1, pp. 106-124, doi: [10.1080/21568316.2013.852991](https://doi.org/10.1080/21568316.2013.852991).
- Lehmann, T., Iyer-Raniga, U. and Mahoney, K. (2025), "Learning for sustainability: adult transformative learning through sustainability and culturalism perspectives", *Social Sciences and Humanities Open*, Vol. 11, 101523, doi: [10.1016/j.ssaho.2025.101523](https://doi.org/10.1016/j.ssaho.2025.101523).
- Makkos, A., Tsai, C.L. and Tóth, J.S. (2025), "Metaphors in tourism promotion: a case study of a Thai village and the beehive concept", *GeoJournal of Tourism and Geosites*, Vol. 60 No. 2, pp. 1050-1070, doi: [10.30892/gtg.602spl01-14xx](https://doi.org/10.30892/gtg.602spl01-14xx).
- McKeown, R. (2002), "Education for sustainable development toolkit (Version 2)", Center for Geography and Environmental Education, available at: http://kpe-kardits.kar.sch.gr/Aiforia/esd_toolkit_v2.pdf
- Mezirow, J. (2008), "An overview on transformative learning", in Sutherland, P. and Crowther, J. (Eds), *Lifelong Learning: Concepts and Contexts*, Routledge, pp. 24-38, available at: https://www.researchgate.net/publication/388476589_P_Sutherland_J_Crowther_Eds_Lifelong_learning_Concepts_and_contexts

- Morshidi, A. (2016), *A Bottom-Up Participatory Governance Institutional Framework for Sustainable Community Development in a Malaysian Sub-Urban Area*, University of Salford, United Kingdom, available at: https://salford-repository.worktribe.com/file/1386959/1/PhD%20MA%20UOS%201%20Final_.pdf
- National Tourism Policy Committee (2019), "Criteria for Thailand's community-based tourism development", (DASTA), available at: https://www.dasta.or.th/uploads/file/202108/1629368685_b2ddd72914e81812b5ee.pdf
- Nuamcharoen, S. and Dhirathiti, N.S. (2017), "A case study of the co-production approach to the implementation of education for sustainable development in Thailand", *Policy Futures in Education*, Vol. 16 No. 3, pp. 327-345, (Original work published 2018), doi: [10.1177/1478210317739487](https://doi.org/10.1177/1478210317739487).
- Nurlaela, N., Saadjad, D.Y. and Puspapatriwi, D. (2024), "Revitalizing the arboretum tourist park: transformative skills education for sustainable community development in Bumi Harapan", *ABDIMAS: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, Vol. 9 No. 4, pp. 886-901, doi: [10.26905/abdima.v9i4.14328](https://doi.org/10.26905/abdima.v9i4.14328).
- Nuttavuthisit, K. (2017), "Vocational education for sustainable community development: building collaborative efforts in Myanmar and Vietnam", *Community Development Journal*, Vol. 52 No. 1, pp. 125-143, doi: [10.1093/cdj/bsw053](https://doi.org/10.1093/cdj/bsw053).
- Ogbonnaya, K.A. and Ann, O.E. (2023), "Enhancing women's participation in community development through community education for sustainable development in South-East Nigeria", *International Journal of Sustainable Development and Planning*, Vol. 18 No. 7, pp. 2293-2300, doi: [10.18280/ijstdp.180734](https://doi.org/10.18280/ijstdp.180734).
- O'Grady, M. (2023), "Transformative education for sustainable development: a faculty perspective", *Environment, Development and Sustainability*, Vol. 27 No. 9, pp. 20745-20761, doi: [10.1007/s10668-023-03609-y](https://doi.org/10.1007/s10668-023-03609-y).
- Percy-Smith, B. and Burns, D. (2013), "Exploring the role of children and young people as agents of change in sustainable community development", *Local Environment*, Vol. 18 No. 3, pp. 323-339, doi: [10.1080/13549839.2012.729565](https://doi.org/10.1080/13549839.2012.729565).
- Preededilok, F. (2017), "Education for sustainable development in the faculty of education, Chulalongkorn university, Thailand", in Merrill, M., Burkhardt-Holm, P., Chang, C.-H., Islam, M.S. and Chang, Y. (Eds), *Education and Sustainability: Paradigms, Policies and Practices in Asia*, 1st ed., Routledge, pp. 202-212, doi: [10.4324/9781315109992](https://doi.org/10.4324/9781315109992).
- Przyborski, A. and Wohlrab-Sahr, M. (2021), *Qualitative Sozialforschung: ein Arbeitsbuch*, 5. überarbeitete und erweiterte Auflage, De Gruyter Oldenbourg, Berlin, Boston, doi: [10.1515/9783110710663](https://doi.org/10.1515/9783110710663).
- Schnitzler, T. (2019), "The bridge between education for sustainable development and transformative learning: towards new collaborative learning spaces", *Journal of Education for Sustainable Development*, Vol. 13 No. 2, pp. 242-253, doi: [10.1177/0973408219873827](https://doi.org/10.1177/0973408219873827).
- Sterling, S. (2025), "Truly transformative? Why ESD falls short in epochal times", *Journal of Education for Sustainable Development*, Vol. 19 No. 2, pp. 235-247, doi: [10.1177/09734082251336543](https://doi.org/10.1177/09734082251336543).
- Strübing, J. (2021), *Was it Grounded Theory?*, Springer Fachmedien, Wiesbaden.
- Suriyankietkaew, S. and Hallinger, P. (2018), "Empirical research on education for sustainable development in sufficiency-based schools", *European Journal of Sustainable Development*, Vol. 7 No. 3, pp. 205-216, doi: [10.14207/ejsd.2018.v7n3p205](https://doi.org/10.14207/ejsd.2018.v7n3p205).
- UNESCO (2009), "UNESCO world conference on education for sustainable development", available at: <https://www.unclearn.org/wp-content/uploads/library/unesco42.pdf>
- UNESCO (2014a), *Roadmap for Implementing the Global Action Programme on Education for Sustainable Development*, UNESCO, Paris, available at: <https://unesdoc.unesco.org/ark:/48223/pf0000230514>
- UNESCO (2014b), "Shaping the future we want: UN decade of education for sustainable development (2005-2014) – final report", available at: <https://unesdoc.unesco.org/ark:/48223/pf0000230171>

- UNESCO (2020), "Education for sustainable development: a roadmap", doi: [10.54675/YFRE1448](https://doi.org/10.54675/YFRE1448).
- UNESCO (2022), *Greening Education Partnership – Concept Note*, UNESCO, Paris, available at: <https://www.unesco.org/en/sustainable-development/education/greening-future>
- UNESCO (2024), *Greening Curriculum Guidance*, UNESCO, Paris, available at: <https://www.unesco.org/sites/default/files/medias/fichiers/2024/09/Greening%20curriculum%20guidance%20Teaching%20and%20learning%20for%20climate%20action.pdf>
- UNESCO Bangkok (2021), *Reflect–Share–Act: A Guide to Community-Based Education for Sustainable Development*, UNESCO Asia and Pacific Regional Bureau for Education, Bangkok, available at: <https://unesdoc.unesco.org/ark:/48223/pf0000377052>
- United Nations (1987), "Report of the world commission on environment and development: our common future", available at: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- United Nations (1992), "Agenda 21, Chapter 36: promoting education, public awareness and training", available at: https://sustainabledevelopment.un.org/content/dsd/agenda21/res_agenda21_36.shtml
- United Nations (2024a), "Goal 4: quality education – department of economic and social affairs", available at: <https://sdgs.un.org/goals/goal4>
- United Nations (2024b), "Education – topics", available at: <https://sdgs.un.org/topics/education>
- United Nations (2025), "Annual report 2025", available at: <https://www.un.org/en/annualreport/2025/sustainable-development>
- Wals, A.E.J. (2011), "Learning our way to sustainability", *Journal of Education for Sustainable Development*, Vol. 2 No. 5, pp. 177-186, doi: [10.1177/097340821100500208](https://doi.org/10.1177/097340821100500208).
- Zachariou, A. and Symeou, L. (2009), "The local community as a means for promoting education for sustainable development", *Applied Environmental Education and Communication*, Vol. 7 No. 4, pp. 129-143, doi: [10.1080/15330150902744152](https://doi.org/10.1080/15330150902744152).
- Zainal Abidin, M.S., Mokhtar, M. and Arsat, M. (2023), "Education for sustainable development from the lenses of Malaysian school leaders: a preliminary study", *Asian Education and Development Studies*, Vol. 12 Nos 2-3, pp. 150-165, doi: [10.1108/AEDS-01-2023-0011](https://doi.org/10.1108/AEDS-01-2023-0011).

Further reading

- Ison, R. and Straw, E. (2020), *The Hidden Power of Systems Thinking: Governance in a Climate Emergency*, Routledge, doi: [10.4324/9781351026901](https://doi.org/10.4324/9781351026901).
- UNESCO (2016), "Education for people and planet: creating sustainable futures for all", Global Education Monitoring Report, available at: <https://unesdoc.unesco.org/ark:/48223/pf0000245752>
- United Nations (2015), "Transforming our world: the 2030 agenda for sustainable development", available at: <https://sdgs.un.org/2030agenda>

Corresponding author

Amarilla Luca Süli can be contacted at: amarilla.luca.sueli@univie.ac.at