The Role of Climate Change Education in ESD for 2030: Selective Adaptation of a Global Script

Maja Dahms
Teachers College, Columbia University

This paper examines the role of Climate Change Education (CCE) within UNESCO's Education for Sustainable Development (ESD for 2030) framework, focusing on its selective adoption in the UNESCO Associated Schools Network (ASPnet) in Brazil and Germany. Drawing on the concept of global scripts, the study analyzes school websites (N=514) alongside four in-depth case studies to explore how schools integrate learning about climate and environmental sustainability. The findings reveal that while ESD's broad and flexible framing allows for widespread diffusion, CCE remains unevenly integrated. In Germany, UNESCO schools are predominantly public and often emphasize sustainability and international aid projects. In Brazil, private schools play a larger role, and the analyzed websites show a stronger emphasis on socioemotional learning and bilingual education, reflecting the different types of schools represented in the two national samples. The paper demonstrates that although ASPnet holds potential to act as an innovative space for CCE, CCE has yet to become a clear priority in the network.

Keywords: climate change education, education for sustainable development, UNESCO Associated Schools, ESD for 2030, global scripts, policy diffusion

Introduction

In the field of global education policy, Climate Change Education (CCE) and Education for Sustainable Development (ESD) represent two conceptually distinct global scripts. Global scripts are defined as widely institutionalized policy models and normative frameworks that shape what is seen as legitimate and desirable globally (Meyer et al., 1997) and are often selectively adopted in local contexts (Steiner-Khamsi, 2016). While CCE focuses on enhancing climate action and awareness (MECCE, n.d.), ESD promotes a broader concept of sustainability, which encompasses not only environmental issues but also economic, social, and cultural dimensions (UNESCO, 2020).

Existing scholarship highlights both an empirical and a conceptual gap in understanding the relationship between these two scripts. The United Nations Educational, Scientific and Cultural Organization (UNESCO) represents the central international agency promoting ESD, as part of its 17 Sustainable Development Goals that aim to achieve a more sustainable future for all by 2030 (UNESCO, n.d.-a). Although UNESCO positions CCE as a key component of ESD, CCE is not yet an established part of ESD (Mochizuki & Bryan, 2015). Further, there is a lack of empirical evidence on whether ESD actually contributes to environmental sustainability (Rappleye et al., 2024). At the same time, ESD's alignment with modernization and development ideologies contradicts its transformative aspirations (Komatsu & Rappleye, 2018; Klees, 2024).

As the global network of schools promoting UNESCO's values through education, the UNESCO Associated Schools Network (ASPnet) plays a central role in promoting ESD (UNESCO, 2025). Despite this, empirical research on how schools in the network implement ESD remains scarce. This study addresses this gap by tracing the diffusion of the *Towards achieving the Sustainable Development Goals (ESD for 2030)* framework and evaluating its contribution to CCE in the case of UNESCO Associated Schools in Brazil and Germany.

Brazil and Germany are compelling cases for comparison because both have a strong tradition of UNESCO Associated Schools and are federal systems that differ substantially in their degree of centralization. Although education in Brazil is federally organized, the national Ministry of Education has significant influence nationwide by, for example, defining minimum curricular expectations through the *Base Nacional Comum Curricular* (BNCC) (Fistarol et al., 2024). In Germany, each state has its own Ministry of Education with primary authority over curricula (Fistarol et al., 2024). It is also noteworthy that both Brazil and Germany have played significant roles in global climate governance. Brazil hosted the Rio Earth Summits (1992, 2012), and two UNESCO World Conferences on ESD were held in Germany (2009, 2021).

Analyzing UNESCO Associated Schools in these two countries allows us to examine how the global script of ESD varies in its adaptation and implementation across different political and cultural contexts. This paper thus examines the following two research questions: (1) *How do UNESCO Associated Schools in Brazil and Germany selectively adopt the ESD for 2030 framework?* (2) *To what extent does the selective adoption of the ESD for 2030 framework in UNESCO Associated Schools in Brazil and Germany include CCE?* To address these questions, this study draws on an exploratory comparative content analysis of 514 school websites and four illustrative case studies that show distinct patterns of ESD implementation across the two countries. While based on the idea of global scripts from World Society Theory (Meyer et al., 1997), the analysis is informed by a conceptual framework that brings together recent critical voices on ESD's role in adapting education to the climate crisis with policy diffusion and reception theory.

Conceptual Framework

This section gives an overview of recent critical voices on the potential of ESD for climate change adaptation before situating ESD in the context of policy diffusion and reception theory. Rappleye et al. (2024) highlight the need to collect more evidence of whether ESD leads to increased sustainability. They further argue that the learner-centric approaches at the heart of ESD might be part of the problem and advocate for a different cultural approach within ESD. In line with this argument, Komatsu and Rappleye (2018) problematize the reliance of ESD on policy instruments inherited from the neoliberal era (Steiner-Khamsi, 2025), such as current efforts of building scales that measure progress towards sustainability. Instead, they emphasize the importance of reclaiming forgotten knowledge and ways of connecting to nature, underscoring that international organizations are uniquely positioned to promote the exchange of information around already existing

sustainable non-Western practices (Komatsu and Rappleye, 2018). In contrast, Mochizuki and Bryan (2015) emphasize the importance of including CCE in ESD as Climate Change Education for Sustainable Development (CCESD). They argue that the holistic character of ESD supports CCE in going beyond scientific knowledge, enabling an interdisciplinary and systems approach that does justice to the complexity of climate change.

Closely linked to the legacies of colonial exploitation, climate change disproportionally burdens the Global South, despite its "minimal contribution to global emissions" (Gürçam, 2025, p. 19). However, as Duvvuri (2025) points out, the ESD for 2030 framework pays little to no attention to systemic issues and fails to "acknowledge systems of dehumanisation and exploitation" (p. 217) by not mentioning racism or colonialism. Similarly, Klees (2024) argues that system change away from patriarchal racial neoliberal capitalism is the only way to achieve the SDGs, emphasizing that "despite all the rhetoric, it has been business as usual" (p. 2). Precisely because of the ambiguous nature of ESD, it is crucial to examine whether the ESD for 2030 framework has so far contributed to greater climate change education. Not only is it a currently very influential framework in global education policy, but the education sector also "remains underutilized as a strategic resource to mitigate and adapt to climate change" (Mochizuki & Bryan, 2015).

According to Steiner-Khamsi (2025), diffusion refers to the spread of a policy across contexts regardless of whether it is effective, whether its content changes during the process, or whether it becomes institutionalized. It is striking that the ESD for 2030 framework includes a "reform package inherited from the neoliberal era" (Steiner-Khamsi, 2025, p. 15), namely performance-based regulation tools and accountability measures, in this case, the SDG indicators and targets (UNESCO, n.d.-a). On the one hand, performance-based governance tools make ESD easily adoptable for states accustomed to working with indicators. On the other hand, they centralize power at both the national and global levels where they are administered (Savage et al., 2021). In this way, performance-based assessments strengthen UNESCO's power and reproduce hierarchies among member states. UNESCO, in this case, is the organization that speaks "on behalf of the 'global'" (Steiner-Khamsi, 2025, p. 25) about what ESD means and what it should look like. Although UNESCO's language suggests inclusivity, ESD, like most global initiatives, remains characterized by clear power structures. As Steiner-Khamsi (2025) points out, the choice of policy instrument is deeply political. Cuban's (1998) perspective on school reforms and changes provides an important differentiation on the critique that the ESD for 2030 framework consists of more policy rhetoric than actual action. The author emphasizes that not only do reforms change schools, but also "schools change reforms" (p. 453). This perspective complements the theories of policy diffusion and reception by highlighting how, even when official policy reforms are lacking, policy rhetoric can nonetheless be consequential.

Taken together, these perspectives show that ESD for 2030 represents an ambiguous and politically contested global script. While it aims towards transformative learning in theory, it is unclear to what extent this promise is kept in practice. At the same

time, schools also play an active role in interpreting and reshaping the implementation of global agendas such as ESD for 2030, highlighting the importance of examining how ESD is locally adapted within different educational and cultural contexts.

Background

The concept of Education for Sustainable Development emerged at the United Nations Conference on Environment and Development 1992 in Rio de Janeiro, where it was first mentioned in the conference's concluding document, Agenda 21. It represents a shift in the discourse on education and sustainability, which was previously dominated by the Environmental Education movement (Pizmony-Levy, 2011). UNESCO has been the leading agency for Education for Sustainable Development since 2002 (UNESCO, 2020). The *Education for Sustainable Development: Towards achieving the Sustainable Development Goals (ESD for 2030)* framework was approved in 2019 at the 40th UNESCO General Conference and launched globally in 2021 at the UNESCO World Conference on Education for Sustainable Development in Berlin. At first glance, ESD seems promising for climate action. After all, it acknowledges the importance of education for environmental sustainability. On its website, UNESCO emphasizes "We urgently need to take action", and "We must learn to live for our planet!" (UNESCO, n.d.-a).

The ESD for 2030 framework further aligns with the goals of the Agenda 2030, which was adopted in 2015 alongside the 17 Sustainable Development Goals. While the broader Agenda 2030 promotes the implementation of all SDG 4 targets, ESD for 2030 focuses on SDG 4.7 (UNESCO, 2020). The goal of ESD for 2030 is to mobilize action towards the SDG 4.7 target that focuses on promoting 'Global Citizenship Education' and Education for Sustainable Development (UNESCO, 2020). UNESCO's understanding of Education for Sustainable Development is characterized by a whole-system and skill-focused approach that aims to prepare students for contributing to a more sustainable future. A central part of ESD for 2030 is the monitoring and evaluation of countries' progress towards SDG 4.7, conducted both through global and regional monitoring by the UNESCO Institute of Statistics and through country-driven Voluntary National Reviews (UNESCO, 2020).

Environmental sustainability is one of the planetary challenges UNESCO aims to address with its ESD for 2030 framework (UNESCO, n.d.-a.). In this context, CCE has become a higher priority for UNESCO in recent years, particularly in the context of its Greening Education Partnership launched in 2022. This partnership addresses climate change through a whole-system approach within the broader ESD agenda (UNESCO, n.d.-b). In this context, UNESCO published two guiding frameworks in 2024: the Green School Quality Standard (GSQS) and the Greening Curriculum Guidance. While the GSQS aims to transform "at least 50% of schools in each country into green schools by 2030" (UNESCO, 2024b), the Greening Curriculum Guidance represents its technical counterpart, outlining learning outcomes for integrating climate and sustainability in education curricula (UNESCO, 2024c). This shows that UNESCO focuses on the promotion of CCE through initiatives that

operate within the broader global script of ESD for 2030, framing CCE as a "key component" (UNESCO, n.d.-b) of ESD. In addition to examining regional variations in the framework, this study also aims to clarify the relationship between ESD and CCE, especially in light of UNESCO's recently launched Greening Education Partnership (UNESCO, 2024a).

The Process of Becoming a UNESCO Associated School

Globally, almost 10,000 educational institutions, mostly schools, are part of ASPnet. The network has existed for 71 years and now includes 181 national networks. It represents one of the oldest and largest school networks worldwide (UNESCO, 2025) and explicitly aims to provide "transformative education" (p. 5). To this end, it focuses on three thematic areas: Peace Through Global Citizenship Education (GCED), Education for Sustainable Development (ESD), and Intercultural Learning and the Appreciation of Cultural Diversity and Heritage. Schools must choose at least one of those three as their focal area (UNESCO, 2025). As a field closely related to ESD, CCE would fall under the second thematic area.

To become a UNESCO Associated School, institutions must go through an approval process. Although the steps vary slightly from country to country, the process generally involves an initial approval by the national coordinator, followed by a second approval by the International Coordinator of ASPnet (UNESCO, 2021). Once a school receives the status of a UNESCO Associated School, it remains part of the network for between three and six years (depending on the country before undergoing a re-evaluation process (UNESCO, 2021). To qualify for an ASPnet membership, schools are expected to commit to UNESCO's values and clarify how they integrate these values into their daily school life. Being a UNESCO Associated School also includes a system of accountability: schools are expected to submit an annual work plan as well as an annual report to their respective National Coordinators (UNESCO, 2021, p. 7).

In Germany, the approval process for becoming a UNESCO Associated School further consists of three steps. First, schools become interested, then collaborate, and, finally, are recognized. Before being able to move up a step, schools have to participate actively for at least two years on each step. Thus, it takes six years in total to become a recognized UNESCO Associated School, a process that aims to support schools' development towards aligning their communities with the goals of UNESCO (Netzwerk der UNESCO-Projektschulen in Deutschland, 2020). In Brazil, in contrast, becoming a UNESCO Associated School usually takes about two years (PEA UNESCO Santa Catarina, n.d.). The different processes for schools to join ASPnet are a first indicator of the variety in the reception of the ESD global script in the context of national UNESCO Associated Schools Networks. The following section examines whether, and how, this variation is also reflected in practices inspired by ESD.

Methods

Data Collection

To examine the selective adoption of the ESD for 2030 framework at UNESCO Associated Schools in Brazil and Germany, the analysis follows a two-step approach. First, I conduct a systematic review (Stansfield et al., 2016) of the content provided on 514 official school websites from UNESCO Associated Schools[1] in Brazil and Germany. Second, I use qualitative website content analysis (Mayring, 2014) to analyze four exemplary UNESCO Associated Schools–one established and one recent–in both countries. This two-step methodological approach aims to capture both broader trends across a large sample and detailed insights into the four illustrative cases.

For the systematic website content review (Stansfield et al., 2016), I gathered all associated schools available on the countries' official UNESCO ASPnet websites (PEA UNESCO Brazil, n.d., Deutsche UNESCO-Kommission, n.d.), in an Excel table. In the case of Brazil, the final Excel list consisted of 551, and in the case of Germany, of 223 UNESCO Associated Schools. My fluency in Portuguese and German allowed me to code all websites in their original languages to ensure that no information was lost in translation.

For the case study using qualitative website content analysis (Mayring, 2014), I selected four schools based on the time point of their accreditation as UNESCO Associated Schools to capture both established and recent cases. Because data on the date of accreditation was needed, the case study sample focuses on schools that explicitly mention their UNESCO membership online. For both Brazil and Germany, I chose the established school based on the earliest found accreditation date. Further, I purposively selected the recent UNESCO Associated Schools to exemplify the patterns that had emerged from the preceding systematic website content review. The theoretical framework of World Society Theory (Meyer et al., 1997) sharpened the focus of the coding process. In particular, I placed attention on identifying practices inspired by the global script of CCE and differentiating them from broader ESD-related practices.

Analytical Approach

I used school websites as a proxy for school practice because, as schools' official online representations, they reflect what schools intentionally choose to communicate about their activities and priorities (DiMartino & Jessen, 2018). In this context, searching institutional websites has been recognized as a reliable approach to accessing information not captured in bibliographic databases (Stansfield et al., 2016). For the case study, I chose the approach of qualitative content analysis that is well established within social sciences (Mayring, 2014).

I coded school websites manually using a structured coding sheet in Excel. To preserve the systematic procedure of content analysis (Mayring, 2014), I decided on the following deductive categories as part of my analysis: existence of a school website, federal state or region, type of administration (public or private), religious affiliation, alternative pedagogical concept, involvement in aid programs,

[1] A small number of the organizations that are part of ASPnet are not schools. For the sake of readability and because of the small number of cases, the word *schools* is used throughout the paper.

identification as a UNESCO school, and explicit references to climate and sustainability (see Table A1 in the Appendix).

As part of the deductive analysis, I searched keywords manually on the websites and included terms such as "climate change," "sustainability," "environmental protection," and "environmental awareness," reflecting common terminology in climate change education. I further combined deductive categories with inductive analysis (Mayring, 2014) by observing recurrent patterns related to climate and sustainability integration. In this context, I developed the seven levels of CCE integration through an iterative process during coding (Mayring, 2014), identifying similar practices across schools. They represent the different dimensions of implementation of the global script of CCE (Meyer et al., 1997) at the school level.

I coded widely recognized alternative pedagogical models (e.g., Montessori, Waldorf, and special education) as schools with an alternative concept. Based on a notable cross-country difference in schools' engagement in international aid initiatives, I also included the presence of aid programs as a category. I excluded social media accounts from the analysis as including them would have required the development of different analytical criteria, which was beyond the scope of this study.

After the pilot testing of the system of categories, I revised the category system and the coding rules before continuing with the analysis. To further strengthen reliability, I revisited unclear cases and compared them with similar cases with the help of a coding memo to ensure consistency in the interpretation of categories across the dataset (Mayring, 2014).

Limitations

While this analysis does not capture implementation, it sheds light on how UNESCO Associated Schools integrate ESD for 2030 at the school level. Looking at the actual implementation would have required a more in-depth focus through ethnography or interviews. Examining website data, on the other hand, can give insight into the broader trends in the reception of ESD at UNESCO Associated Schools across Brazil and Germany. The analysis focused exclusively on ESD as the second focal area of ASPnet schools. The exclusion of 260, mostly public, Brazilian UNESCO Associated Schools due to nonexistent websites represents a further limitation, as it restricts the analysis to primarily private Brazilian ASPnet schools. As private schools generally have more financial resources to maintain a website and present their activities online in comparison to public schools (DiMartino & Jessen, 2018), this could further influence the patterns identified in this analysis.

For the case study, including the accreditation date as a case selection criterion introduces a potential selection bias, as schools that publicly highlight their UNESCO status may be more engaged with UNESCO activities than schools that do not publicly highlight their membership. While complete representability cannot be guaranteed, the four chosen cases do meaningfully exemplify the distinct national patterns identified in the large-N analysis.

Results

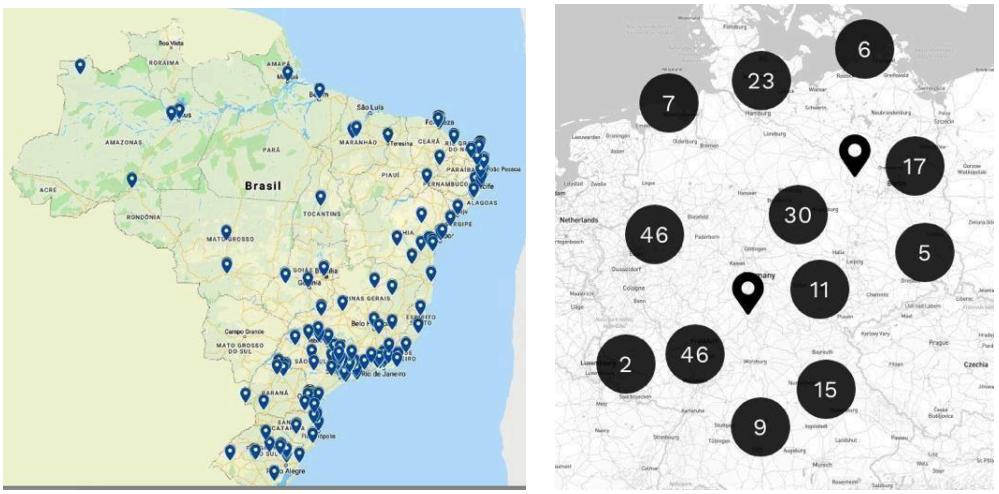
Distribution of Public and Private Schooling

The analysis of the websites shows differences between the distribution of public and private schooling in the context of UNESCO Associated Schools in Brazil and Germany. In Brazil, 59% (N=325) of the UNESCO Associated Schools listed online are private and 41% (N=224) are public. Almost half of the Brazilian ASPnet schools (47%), mostly public, do not have their own websites. Of 551 total schools, 260 were excluded from the analysis due to nonexistent websites. Regarding the school's website presence, a large discrepancy between public and private UNESCO Associated Schools in Brazil can be observed: While 87% of Brazilian private schools that are associated with UNESCO have their own websites, only 4.5% of Brazilian public schools that are part of ASPnet have a website presence. As a consequence, the further results of this analysis mainly reflect private UNESCO Associated Schools in Brazil, which is important to consider when interpreting cross-country differences in ESD implementation. In contrast, 92% of German UNESCO Associated Schools are public, and there were webpages available for all of them.

Geographical Distribution and School Characteristics in Brazil and Germany

As shown in the two official maps (Rede PEA-UNESCO, 2024; Deutsche UNESCO-Kommission, n.d.) in Figure 1, UNESCO Associated Schools are fairly evenly distributed across Germany relative to the country's size and population. In Brazil, however, they are concentrated in the more socioeconomically advantaged and urbanized Southeast coastal region, reflecting existing national inequalities (OECD, 2021). This difference may also be related to the countries' contrasting sizes: Brazil's land area is about 24 times larger than Germany's (World Bank, 2023). In Brazil, the states with the largest numbers of UNESCO Associated Schools are São Paulo (191), Rio de Janeiro (74), and Pernambuco (55). In this dataset, Pernambuco illustrates the disparity between public and private schools in terms of website visibility. Out of the 55 UNESCO Associated Schools in Pernambuco, websites could be identified for only four schools, all of which were private. The high number of UNESCO-Associated Schools in Pernambuco in this dataset is noteworthy, since the state is located outside more socioeconomically advantaged regions (e.g., São Paulo and Rio de Janeiro in the Southeast) in Brazil's poorer Northeast (OECD, 2021).

Figure 1: Distribution of UNESCO Associated Schools in Brazil and Germany



Source: Rede PEA-UNESCO (2024); Deutsche UNESCO-Kommission (n.d.)

In both countries, only a minority of UNESCO Associated Schools are religious (15% in Brazil, 3.6% Germany) or follow an alternative pedagogical concept (4.1% in Brazil, 1.8% in Germany). This is surprising since one could assume that schools with alternative concepts might be particularly interested in engaging with UNESCO's idea of transformative education. Interestingly, UNESCO is mentioned much more frequently on the websites of German (216 of 223) than Brazilian (176 of 294) ASPnet schools.

Involvement in International Aid Projects

A notable pattern is also that 55% of German UNESCO Associated Schools are involved in aid projects, some local but most of them international, a practice whose importance is emphasized in German ASPnet quality guidelines (Netzwerk der UNESCO-Projektschulen in Deutschland, 2020). The most common recipient countries appear to be Tanzania, Senegal, Rwanda, and Nepal. In contrast, in Brazil, only 9% of UNESCO Associated Schools mention aid programs on their websites, and if they do, it always involves national aid or donations in Brazil. These patterns also highlight broader priorities within ASPnet, which become clear when examining how schools position themselves within UNESCO's three thematic areas.

The Relevance of ESD Within ASPnet's Three Thematic Areas

The most central aspect for UNESCO schools, particularly in Brazil, but also noticeable in Germany, is peacekeeping through intercultural exchange. This aligns with UNESCO's history of being created in 1945, immediately after World War II, to promote peace and prevent future wars (UNESCO, 2020). Overall, this analysis shows that among ASPnet's three thematic areas, area 2 (ESD) seems to be the least relevant.

Patterns of CCE Integration Across UNESCO Associated Schools in Brazil and Germany

What stands out in both countries is that the presence of climate and environmental education initiatives on schools' websites varies significantly. It ranges from not being mentioned at all to being mentioned superficially in the context of single activities to being addressed at a whole school level. In comparison, UNESCO Associated Schools in Germany mention climate and/or sustainability much more frequently (89%) than Brazilian schools (51%). In contrast, Brazilian UNESCO Associated Schools have a stronger focus on the topics of socioemotional learning and bilingual education. Those differences are possible since UNESCO Associated Schools are, although encouraged to incorporate several, only required to incorporate at least one of UNESCO's focal areas (UNESCO, 2025).

It is noteworthy that in both Brazil and Germany, the integration of CCE at the curricular level is limited, at least based on what is presented on the analyzed schools' websites. This clearly shows that being a UNESCO Associated School does not necessarily involve the prioritization of CCE. What UNESCO Associated Schools share are their values, such as respect for diversity, democracy, and international solidarity (UNESCO, 2021). In terms of ESD-related actions, on the other hand, there is a high variety. Based on the analysis, I identified seven distinct levels of CCE integration, which are summarized below (and defined in detail in Table B1 of the Appendix):

Levels of Integration of CCE

1. Curricular: integration across subjects or dedicated new subjects
2. Extracurricular: working groups and clubs (e.g., sustainability, UNESCO)
3. Organizational: school-wide practices such as gardens, energy-saving, recycling
4. Civic-political: climate parliament, student cooperative, and representation
5. Community: partnerships with local farms, NGOs, environmental organizations
6. Governance: mission statements, accreditation programs such as Eco-Schools
7. Special Initiatives: UNESCO Project Days, climate breakfast, clean-up day

The selective adaptation of the ESD script becomes visible in which levels schools choose to emphasize. Therefore, examining the variety of different ways of integrating climate and sustainability into schools more closely can provide crucial insights into the varied integration of the ESD script. To illustrate how these different levels of integration manifest in practice, the following case studies of four UNESCO Associated Schools in Brazil and Germany highlight concrete examples of how climate and sustainability are embedded into school structures. These levels demonstrate how schools selectively adapt different elements of the ESD for the 2030 global script, reflecting both the flexibility of global scripts and the dynamics of policy diffusion and reception.

Case Analysis of Four Exemplary UNESCO Associated Schools in Brazil and Germany

The in-depth analysis of four UNESCO Associated Schools in Brazil (Colégio Magno/Mágico de Oz, Julio Verne Centro de Estudos) and Germany (Helene Lange Gymnasium, Gutenberg Gymnasium) illustrates and deepens the patterns identified in the broader website analysis, especially regarding the ways that climate and sustainability are embedded into school structures. While all four schools address CCE, they differ in what aspects they emphasize.

Colégio Magno/Mágico de Oz (Brazil, São Paulo, SP, ASPnet since the 1990s) can be seen as a pioneer model for a sustainable school at an organizational level. Its initiatives range from solar panels to its own biogas production to organic gardens and composting. One of its school units produces 100% of its electricity from solar panels, making Magno a rare case of an energy self-sufficient school. It highlights a holistic vision of learning covering academic, social, ethical, and aesthetic dimensions. Further, it sends student representatives from the school's climate conference working group regularly to the Conference of the Parties (COP) conferences, which, according to its website, is the only Brazilian school to do so. Alongside this organizational commitment, it also involves students in extensive environmental projects such as monitoring the water quality of a nearby river.

In contrast, Julio Verne Centro de Estudos (Brazil, Diadema, SP, ASPnet since 2017) stands out through its strong cultural focus, offering an exceptionally high variety of different cultural activities which culminate in an annual performance that follows a theme related to the SDGs. It addresses climate and sustainability themes mainly in the context of its community-oriented educational city project initiated in 2014, which includes tree planting, street clean-ups, and a sustainable clothing market organized by parents in the school's neighborhood.

Helene-Lange-Gymnasium (Germany, Hamburg, ASPnet since 1954) illustrates the case of an established ASPnet school. As Germany's oldest UNESCO school, it has been part of the network for 70 years and shows a particularly high level of institutionalization of sustainability. Since 2012, the bilingual school has also been certified as a climate school, a status sustained through the work of its UNESCO climate working group, which organizes project days, tree-planting actions, and other school-wide climate initiatives. The institutionalization of UNESCO is also illustrated by the student representatives' meetings, which consist of two UNESCO representatives from each class, ensuring that the values of UNESCO are actively embedded across the student body. Further, the school offers UNESCO as an elective subject in grade 9 and cooperates with over 210 other German UNESCO schools.

Gutenberg-Gymnasium (Germany, Bergheim, Nordrhein-Westfalen, ASPnet since 2017, recognized since 2021) represents the profile of a more recent ASPnet member that has a strong culture of institutionalizing UNESCO's values through different thematic working groups. These include a *Green Team*, an Erasmus+, and a human rights working group, as well as a teachers-led school development team guided by the values of UNESCO. Further, the school explicitly references Agenda 2030

through its "GuGy Goes Green 2030" campaign, which frames sustainability as a priority for its long-term development. It cooperates on sustainability both with partner schools from Europe, financed by Erasmus+[2], as well as with local environmental NGOs, municipal actors, and climate institutes.

Taken together, these case studies provide insights not only into the contrast in ESD for 2030 between Brazil and Germany but also into the trajectories of older versus newer UNESCO schools. In Brazil, Magno emphasizes the organizational level, complemented by civic/political and extracurricular initiatives, while Julio Verne focuses primarily on the community level. In Germany, Helene Lange integrates the curricular, extracurricular, civic/political, and organizational levels, whereas Gutenberg emphasizes the extracurricular level, complemented by governance, organizational, and community dimensions. Interestingly, the newer schools in both contexts (Julio Verne and Gutenberg) show more explicit references to the SDGs and Agenda 2030, suggesting that recent members of ASPnet are more likely to frame their activities in line with global agendas. The two German schools share common practices such as institutionalizing sustainability through working groups and maintaining school partnerships. The two Brazilian schools, on the other hand, focus on sustainability at an organizational and community level alongside a stronger focus on bilingual learning and cultural projects. This diversity highlights the flexibility of UNESCO's ESD for 2030 framework, as summarized below in Table 1. While it can be adapted to different institutional needs, it also results in CCE remaining unevenly prioritized within ASPnet.

Table 1.
ESD 2030 in UNESCO Associated Schools in Brazil vs. Germany

Dimension	Brazil	Germany
Process of becoming an ASPnet school	2 years	6 years (multi-stage process)
Framework	Four pillars of education as defined in UNESCO's *Learning: The Treasure Within* report (Delors, 1996)	Six pillars of education as defined in the national Six Pillars Framework (Netzwerk der UNESCO-Projektschulen in Deutschland, 2020)
Implementation of ESD	Emphasis on socioemotional learning and bilingual education	Emphasis on climate/sustainability and international aid cooperation
Predominant Level of Integration of CCE	Organizational, community, and extracurricular; implemented through community and cultural projects	Extracurricular, organizational, special initiatives; institutionalized through working groups and school partnerships

[2] Erasmus+ is the EU's programme to support education, training, youth and sport in Europe (European Commission, n.d.).

Dimension	Brazil	Germany
Curricular Integration of CCE	Limited; mostly project-based	Limited, mostly in elective subjects

Discussion

The analysis of UNESCO Associated Schools in Brazil and Germany clearly demonstrates that ESD is a very broad concept that can, but does not have to include CCE. On the one hand, the broadness of ESD as a global script allows its selective adoption as described by Steiner-Khamsi (2025), which is probably one of the reasons why the concept was able to spread worldwide. On the other hand, this "pick what you want" approach results in a lack of accountability for CCE and the risk of ESD being used performatively as a way to gain legitimacy through aligning with the global script (Steiner-Khamsi, 2025). This loose but non-committal relationship between ESD and CCE explains how ESD may have become a global phenomenon (UNESCO, 2020), and at the same time, there is still a widespread lack of CCE (UNESCO, 2024b). These findings further align with Cuban's (1998) argument that schools change reforms as the interpretation of the ESD for 2030 framework is highly shaped by different school-level practices.

The different proportions of private schools between the two countries reflect the different roles of private schooling in their education systems: In Brazil, historically, there have been significantly more private than public UNESCO Associated schools (PEA UNESCO 2017) even though in recent years, National Coordinators made significant efforts to include more Brazilian public schools in ASPnet (PEA UNESCO 2017, p. 20). Further, in Brazil, around 20% of schools are private (Education International, 2024). Parents choose private schools as they provide a greater number of resources and opportunities (Nascimento et al., 2022) or as an investment in social mobility (Costa Filho & Rocha, 2020). In Germany, while private schooling has increased, it accounts for only around 9% of all schools (Autorengruppe Bildungsberichterstattung, 2024, p. 58).

In this website-based sample, the distinct showcase of climate and sustainability initiatives in Brazil compared to Germany could be related to socioeconomic and cultural factors. Because the Brazilian sample of the content analysis consists predominantly of private schools, their websites can be seen as a reflection of market-oriented priorities. Even though Brazil has a longstanding tradition of environmental activism (Alonso et al., 2010), CCE may compete with other priorities that might be perceived as more attractive to families investing in private education. Brazil is characterized by multiple cultural identities, shaped by its colonial history (Bosi, 1992), and influenced by, among others, different Indigenous and African cultures (da Silva Araujo, 2024). The colonial legacies still present in the country (Bosi, 1992) might explain why the school websites analyzed largely reflect a standardized and uniform model of modern schooling. In Germany, by contrast, the UNESCO Associated Schools in the sample represent predominantly public schools following education norms and values that have been shaped by a national tradition of Environmental Education (Bolscho & Hauenschild, 2006). These sample

differences and distinct contexts may help explain why, in the studied sample, German UNESCO schools more frequently integrate sustainability and climate-related activities.

For most schools in both countries that address CCE across the seven different levels of integration identified, it remains a superficial engagement, thus representing a case of "discursive borrowing" (Steiner-Khamsi, 2025, p. 19). This can also be seen in the global Eco-Schools network, which follows UNESCO's ESD for 2030 framework (Foundation for Environmental Education, n.d). A baseline study from Mongolia (Pizmony et al., 2014) showed no significant differences between Eco-schools and regular schools "in terms of greater sensitivity towards social, cultural or economic inequalities" (p. 15), with the difference mostly lying in environmental-themed after-school activities. This demonstrates how the effects of CCE remain limited when only addressed superficially.

Beyond school-level practices, this lack of prioritization of CCE is also visible at the policy level. The Green School Quality Standard, published in 2024, is not included in the UNESCO Associated School Networks' most recent strategic document. This document provides a comprehensive collection of ideas on how to integrate climate and sustainability in schools and explicitly states that its target group is school accreditation programs such as ASPnet. However, the UNESCO Associated Schools Network Strategic Framework for Action, published in 2025 (UNESCO, 2025), does not mention the Green School Quality Standard even once. This is surprising given the fact that the Greening Education Partnership already encouraged ASPnet member schools to become Green Schools in 2024, closely after the publication of the Green School Quality Standard (UNESCO & Greening Education Partnership, 2024). Not including the Greening Schools Quality Standard at the center of ASPnet's mission statement thus represents a missed opportunity for UNESCO to prioritize Climate Change Education.

In the context of the analysis of UNESCO Associated Schools in Brazil and Germany, some CCE initiatives stood out by going beyond superficial engagement. For example, one school offered an eco-profile class for high school students that combines the subjects of ecology and economics. Others encouraged the creation of a student-led school-cooperative on environmental protection or engaged in collaboration on sustainability initiatives with their wider communities. It is striking that none of the analyzed schools appeared to challenge the underlying ideology of the modern educational paradigm (Rappleye et al., 2024).

Instead, the analysis of UNESCO Associated Schools in Brazil and Germany demonstrates that the selective adoption of ESD in schools from both countries across the network largely remains within the frame of a highly individualistic learner-centric pedagogy, strongly influenced by the current dominant form of schooling (Rappleye et al., 2024). The UNESCO Associated Schools Network could strengthen its commitment to sustainability by opening up to educational approaches that diverge from the 'modern Western' model of education shaped by standardization and the idea of rational 'progress'. This could include, for example,

promoting practices of relationality (Duvvuri, 2025) and interdependence, as well as learning about sustainability approaches grounded in different cultural frameworks (Rappleye et al., 2024). Such increased cultural openness and reflectivity might also allow the network to engage more critically with how the ESD for 2030 framework is shaped by Western modern schooling traditions, and to reflect on ESD's complicity in reproducing colonial legacies, as pointed out by critical scholarship on ESD (Duvvuri, 2025; Klees, 2024).

This paper highlights patterns in the UNESCO Associated Schools network and raises questions for further research, rather than providing definitive conclusions on the integration of CCE within ESD for 2030. Overall, the findings reveal both the limits and the potential of the UNESCO Associated Schools network in promoting CCE that contributes meaningfully to increasing environmental sustainability.

Conclusion

This study analyzes how UNESCO Associated Schools selectively adopt ESD, and to what extent this adoption includes CCE, raising questions about the capacity of the ESD for 2030 framework to promote CCE. In line with the theory of selective adoption, the adoption of ESD varies significantly between Brazil and Germany. I find that in Brazil, private schools play a significant role, and there is a focus on socioemotional learning and bilingual education. In contrast, German UNESCO Associated Schools are usually public, more frequently address climate and sustainability on their websites, and prioritize international aid projects. These findings reflect wider differences in the significance of private schooling between the two countries as well as the market-driven nature of the private education sector. The analysis also suggests that the implementation of ESD for 2030, as represented on schools' websites, is predominantly culturally homogeneous and aligned with Western models of schooling.

It is striking how much schools across both countries differ in terms of whether their selective adoption of ESD includes CCE. In this context, I identify seven different levels of CCE integration, ranging from the curricular and extracurricular level over organizational, civic-political, and community levels to the levels of governance and special initiatives. Further, even at those distinct levels, the depth of integration of CCE varies.

Together, these findings demonstrate that, while UNESCO Associated schools have to align with UNESCO's values, they do not necessarily need to prioritize climate change education and environmental sustainability. Thus, the findings illustrate the broadness of ESD for the 2030s' understanding of sustainability. While there has been increased attention to CCE in the context of UNESCO's Greening Education Partnership, those Greening Education efforts are not yet being reflected in ASPnet, representing a missed opportunity to prioritize CCE in the network.

As one of the first comparative content analyses of Climate Change Education in the context of the UNESCO Associated Schools Network, this study raises several

questions to be explored in future research: How can UNESCO strengthen the role of its Associated Schools Network in promoting CCE? How can the ASPnet learn from other school networks, as well as from different cultural approaches to sustainability? And to what extent do the changes introduced by CCE actually lead to increased environmental awareness and sustainability? Future research could examine those questions using methods such as ethnography and interviews to capture what the implementation of CCE looks like in practice. This would complement the existing theoretical contributions of the relationship between ESD and CCE, highlighting the impacts at the community level.

Maja Dahms *is a master's student in the Comparative and International Education program at Teachers College, Columbia University, supported by Fulbright Germany and the German Academic Exchange Service. She has contributed to research in International and Comparative Education at Humboldt University, Teachers College, and UNESCO. At Teachers College, she serves as a Research Associate at the Center for Sustainable Futures and Co-President of the Sustainability Task Force. Her research interests focus on the intersection of education policy and climate justice.*

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Appendix A

Table A1

Structure of Coding Sheet Used for Large-N Website Analysis

School name	Website	State	Administration (public/private)	Religious affiliation	Alternative educational concept	Aid program	Mentions UNESCO	Mentions climate/ sustainability
				Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Note. This table illustrates the structure of the coding sheet. The full dataset includes 774 schools (551 in Brazil and 223 in Germany) and is available upon request.

Appendix B

Table B1

Definitions of the Seven Levels of Integration of Climate Change Education (CCE)

Level	Description	Illustrative example
1. Curricular	Integration of climate change into existing subjects or the creation of new subjects on climate change.	Elective subject on the economy and sustainability
2. Extracurricular	Integration of climate change into extracurricular activities.	Sustainability and climate-related working groups, extracurricular projects
3. Organizational	Integration of climate change into school-wide practices.	School gardens, own honey production
4. Civic-political	Integration of climate change into the school's political structures.	Student councils on climate change
5. Community	Integration of climate change into projects and initiatives that extend into the wider communities of the schools.	Cleaning up the neighborhood
6. Governance	Integration of climate change in the school's mission or vision statement, or active engagement of school leadership in efforts to make the school more sustainable.	School development team consisting of teachers that follows UNESCO pillars with a focus on sustainability
7. Special Initiatives	Integration of climate change into special initiatives that only take place occasionally.	UNESCO project days.