

From Forests to the Future: A Virtual International Exchange on Climate Adaptation and Sustainability

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Tags

Cross-Cultural Issues; Internationalization and Global Learning; Partnerships; Program Design; Program Assessment; Technology; University/Higher Education

Setting

A cross-national educational partnership linked university classrooms in Catalonia, Spain and Taiwan through a virtual exchange focused on climate change, forest adaptation, and the Sustainable Development Goals (SDGs)—particularly SDG 13 (Climate Action) and SDG 15 (Life on Land). Emerging from a shared commitment to sustainability education, the initiative sought to transform ecological research into an experiential learning opportunity that would empower young people as global citizens.

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In Catalonia, consecutive droughts, heatwaves, and wildfires have placed significant pressure on forests of *Pinus sylvestris* trees, causing die-offs and shifts toward drought-tolerant species. Local ecological research documenting these changes inspired educators to explore how scientific findings might be translated into meaningful learning experiences for students. Half a world away in Taiwan, coastal regions faced erosion and increased typhoon frequency—environmental challenges that mirrored Catalonia’s ecological stress but in very different forms. Educators on both sides recognized a shared opportunity: to help students see that while climate change manifests differently across contexts, its impacts are globally connected.

Case

The virtual exchange project was intentionally designed as a collaborative, inquiry-based learning experience rather than a one-way transmission of information. Its goal was to merge ecological science, intercultural dialogue, and the SDGs into a single educational framework. Facilitators adopted an action-oriented approach, keeping detailed process notes and observations to guide reflection and improve future iterations. The central pedagogical question emerged early on: Could integrating real-world data, intercultural collaboration, and sustainability frameworks encourage deeper learning and student engagement than traditional classroom lessons?

Drawing upon climate research on drought-induced forest mortality in Catalonia, the curriculum emphasized how to interpret ecological data, relate it to local conditions, and connect it to coastal and marine resilience studies in Taiwan. In this design, students were positioned not only as students but as co-researchers exploring how science, community, and sustainability intersect.

Project Implementation

The program launched with a joint videoconference, where students from both regions met virtually for the first time. Educators prepared structured prompts to foster dialogue and ensure equitable participation. Catalan facilitators introduced photo sequences showing landscapes before and after major droughts, while Taiwanese facilitators guided students to share short narratives about typhoon-induced damage in their communities. Storytelling helped students link emotional responses to environmental realities, creating an immediate connection between the two locations.

Initial sessions reflected differing communication norms. Catalan students were inclined toward spontaneous discussion and debate, while Taiwanese students tended to listen for prolonged periods before speaking. To bridge these differences, facilitators introduced small cross-cultural breakout groups of two to four students and increased the use of asynchronous tools such as collaborative whiteboards, map annotation activities, and weekly online journals. These refinements allowed every participant to contribute at their own pace and helped offset the seven-hour time difference between the two regions.

Educators documented that engagement deepened significantly once participants began independent research projects in mixed-national teams. Each team analyzed a shared dataset—forest mortality records from Catalonia and coastal vegetation maps from Taiwan—and reflected on how environmental data can inform

community-level adaptation. Synchronous sessions provided momentum and energy, while asynchronous collaboration fostered sustained, thoughtful analysis.

Intercultural and Societal Dimensions

The exchange revealed nuanced cultural differences in environmental attitudes. Catalan students often focused on land management, water scarcity, and wildfire prevention—issues tied to local rural identity. Taiwanese students emphasized community solidarity, disaster preparedness, and the role of technology in climate adaptation. These divergent perspectives enriched group discussions, showing that sustainable development is shaped not only by environmental context but also by cultural values and social narratives.

Facilitators observed that intercultural understanding grew steadily through recurring dialogue. Early sessions were characterized by hesitation and politeness, but subsequent ones reflected greater relational familiarity. As trust developed, participants began to question assumptions about human–nature relationships and discuss broader ethical dimensions of climate action. One educator reflected that “success was not only in the exchange of knowledge but in the creation of a safe space where different worldviews could coexist and inform each other.”

Assessment of Learning

Assessment of learning was both informal and structured. Educators evaluated reflective journals, collaborative maps, and group presentations to gauge conceptual understanding and intercultural growth. Informal facilitator notes provided additional insight into student participation patterns, communication progress, and the critical thinking demonstrated during discussions.

In post-program reflections, educators recognized the need for a more formal assessment framework for future iterations. They proposed the introduction of pre- and post-program surveys to measure gains in ecological literacy, intercultural competence, and sustainability awareness. Future evaluation methods might also include peer-assessment rubrics or digital portfolios to capture the evolution of students’ collaborative work.

Programmatic Challenges

Despite its success, the virtual exchange faced logistical and pedagogical challenges. Time zone differences complicated synchronous scheduling, and disparities in English proficiency occasionally slowed discussion. Technical issues—such as connectivity interruptions and uneven access to digital tools—further challenged equity of participation. However, these obstacles became opportunities for creative adaptation. Facilitators continuously refined the model, adding asynchronous alternatives, encouraging visual contributions when language barriers arose, and celebrating incremental improvements in communication.

The differing classroom participation norms also required sensitivity and design adjustments rather than correction. As one educator noted, “quietness is not disengagement; it is reflection. Our job was to build structures where every voice could matter.” This relational approach, grounded in empathy and responsiveness, helped foster an inclusive and balanced learning environment.

Implications

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By the end of the semester, educators and students alike appreciated that global environmental learning is not simply about data interpretation but about agency and empathy. Participants concluded that the ultimate educational outcome should be empowerment—the understanding that they can analyze environmental issues and take action locally and collectively.

To strengthen the action-oriented component, facilitators proposed extending the program into a second phase focused on applied projects. Ideas included joint biodiversity monitoring of local species, comparative ecosystem reports on Catalan forests and Taiwanese mangroves, and awareness campaigns linking urban and rural communities. Each proposal embodied the principle of “learning by doing,” uniting students around shared global goals expressed through local action.

This virtual exchange demonstrated that integrating climate science with international education can produce more than factual comprehension—it can cultivate ecological literacy, cultural empathy, and a sense of collective responsibility. Through structured facilitation, intercultural engagement, and reflective assessment, the project connected scientific knowledge with human experience. The case illustrates how educators can align research, dialogue, and sustainability commitments to design transformative learning experiences that prepare students to think critically, collaborate across cultures, and contribute meaningfully to a more resilient planet.

Discussion Questions

As you consider this case, discuss:

- What are the strengths of this virtual exchange program partnership? How could they build on those strengths?
- In this case, the educators added a research project to the virtual exchange. What are the benefits and limitations of integrating scientific research into intercultural sustainability education in this way?
- In what ways can virtual exchanges deepen understanding of global environmental challenges and local impacts?
- How can educational initiatives foster equity and ethical engagement in climate resilience and biodiversity conservation?
- What intercultural communication challenges might arise in virtual international programs, and how can they be addressed?
- How can technology facilitate global learning, support diverse students, and promote global citizenship?
- Virtual classroom-to-classroom collaborations can exist on a spectrum from simple exchange of information to jointly partnering in a complex project. What are some examples of activities from each end, and the middle, of this spectrum? How can international partners gradually build from a simpler to a more engaged partnership over time?