

Todo Está Conectado

Mapping Connections and Incorporating Identity, Language, and Community in Middle School Science

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Abstract

This unit was implemented with 6th grade students in a Spanish Immersion classroom in Saint Paul, Minnesota. The curriculum moves beyond traditional science instruction by grounding climate literacy in identity, language, community, place, and connection. Through multi-day instructional activities, students were asked to make personal, local, and global connections with the world around them. The following texts, *Old Enough to Save the Planet / Ya soy mayor y puedo salvar el planeta* and *Our World Out of Balance* were used to help students identify and explain relationships and interconnectedness with the Earth and with one another.

Keywords

Place-based learning, collective climate action, interconnectedness, youth voice, climate change, climate crisis

Narrative Framing: Centering Identity in the Science Classroom

Teaching middle school Earth Science within a Spanish Immersion Dual Language Program has allowed me to center identity, language, community, and connection in the classroom. Historically, our climate learning was only a part of our weather unit and our natural disasters unit. Students received basic information about climate change, but they weren't afforded opportunity to study it deeply. This unit was designed to help students to build their capacity for collective climate action and to help form connections with one another and the world around them. Students were able to go more in-depth with topics that interested them and we were able to have authentic conversations in Spanish about nature, the environment, science, and the climate crisis. True to the title of the unit, "Todo Está Conectado," students moved from viewing climate change as a distant data point to understanding it as a web of relationships involving their own lives and global communities. They were able to see physical connections with the culminating project: a 3D poster and mapping project.

Instructional Sequence

Part 1: Climate Connections through Stations

The unit begins by grounding students in nature through interactive stations. Using the picturebook *Everything Is Connected*, students recorded their "Observaciones, Preguntas, y Sentimientos" (Observations, Questions, and Feelings), and they critically reflect on their emotions and their experiences regarding changes in the world around them (Figure 1). Students created visual symbols representing "nature"—often featuring trees, water, and wildlife—and contrasted them with symbols for "climate change," these symbols often included things such as factories, melting ice, and fire (Figure 2). These initial stations allow students to ground their previous science learning in real-world narratives, personal stories, and feelings. Students also shared their own experiences and created a class map related to their identities, cultures, and experiences.



Figure 1: Student work from the 6th grade science stations (Part 1)



Figure 2: Symbols of nature (on left) and symbols of climate change (on right)

Part 2: Research places and stories

In the second part of the unit, students moved from general concepts to specific, personally meaningful locations. Each student chose a country or state to which they had a personal connection—whether through family heritage, travel, or interest. They conduct research focused on:

- **The Past and Present:** Identifying the Indigenous caretakers of the land and the current state of its air, water, and soil.
- **The Climate Story:** Investigating how climate change is specifically impacting the people, land, animals, and plants in that location.
- **Direct and Indirect Impacts:** Analyzing temperature changes, natural disasters, and shifts in landscape or lifestyle.

Students were also asked to answer the following questions about their connection to a place (¿Cuál es tu conexión con un lugar en el mundo?):

- ¿Dónde? (Where) ¿Por qué? (Why)
- ¿Qué sabes de este lugar? (What do you know about this place?)
- Es importante para mí porque.... (It's important to me because...)
- ¿Cuál es su historia personal en relación al tiempo y clima? (What is your personal climate story in relation to this place?)

Finally, they needed to conduct research (Investigar/Buscar Información):

- Información sobre el lugar
- Información sobre las personas, animales, plantas
- El pasado, el presente, y el futuro
- Impactos del cambio climático (impactos directos e indirectos)

Part 3: “Mapping Connections” - 3D poster prism (Summative Project)

To synthesize their research, students created a 3D triangular prism that serves as a model of their learning. Each side of the prism was dedicated to a specific theme (Table 1; Figure 3)). Students chose a country or state of their choice that has some meaning or connection to them.

Table 1: Instructional guide for creating triangular prism

Side 1 of "3D Poster/Prism"	Side 2 of "3D Poster/Prism"	Side 3 of "3D Poster/Prism"
Themes Facts Connections/Meaning Who represents this place Quotes from people that live here. Quotes from people doing the work in the community. What represents this place?	Themes The present (land, water, and air connections) Changes Climate impacts What is happening now? What is impacted Who is impacted? How? Natural disasters and/or problems	Themes Hopes for the future Solutions Ideas Actions What can you commit to doing for the Earth?
Scaffolding for students: What do you like about this place? What is some unique information about the place? Who are the people indigenous to this land?	Scaffolding for students: Temperature changes Natural disasters Changes to landscape Changes to lifestyle	Scaffolding for students: Small solutions and actions that we can do now. What is being done? (visibility) Big hopes and dreams. Empower the youth.

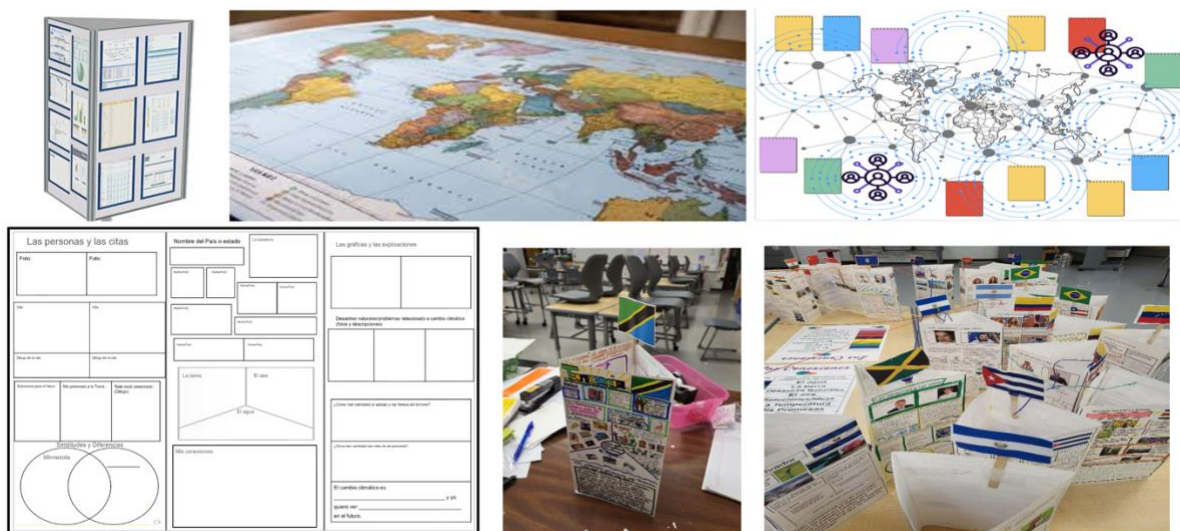


Figure 3: These images represent the global connections and the 3D prism that students created to show their learning and understandings.

Part 4: Bringing it all together: Mapping Connections and Reflecting

The unit culminates in a physical "Mapping Connections" activity. Students place their 3D prisms in map order on a table, and they use different colored strings to physically connect their chosen locations to those of their classmates (Figure 4). Students collaborate to decide what the string colors represent—such as shared climate impacts (e.g., water scarcity in both Nebraska and France) or common solutions (e.g., a shared desire to reduce pollution in Ethiopia and China). This visual web reinforces the overarching theme that what happens in one part of the world affects us all, “Todo está conectado.” Following the creation of the web, students discuss the following:

- ¿Cuáles son las conexiones o similitudes entre tu lugar y los lugares de tus compañeros? (What are the connections or similarities between your place and the places of your classmates?)
- Acción colectiva por el clima (Collective actions for the climate)?
- Soluciones/ideas para el futuro (Solutions/ideas for the future)?

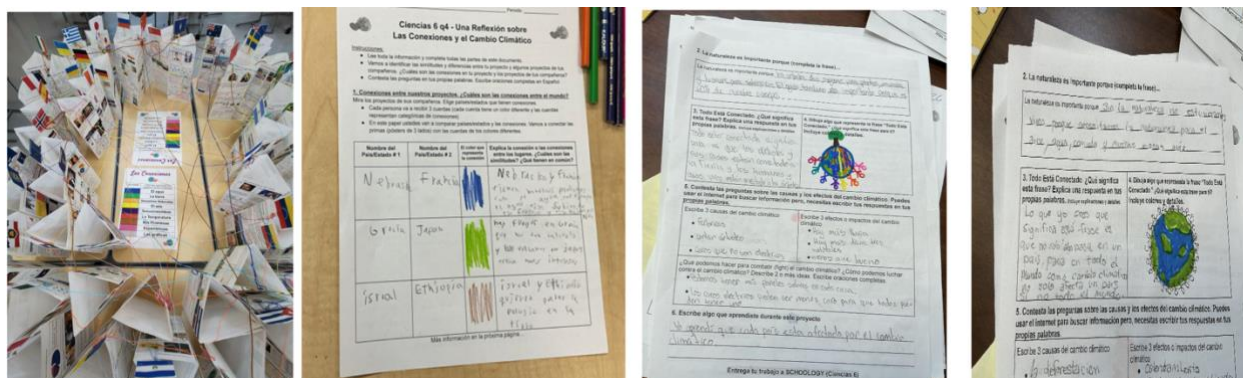


Figure 4: Examples of student work, including the connected prisms and discussion notes.

At a Glance

Title	<i>Todo está conectado (Everything is Connected)</i>
Unit Time	<i>3 week unit (block schedule - every other day)</i>
Grade Level(s)	<i>6th Grade (Spanish Immersion Earth Science)</i>

Core Texts	• <i>Old Enough to Save the Planet / Ya soy mayor y puedo salvar el planeta</i> by Loll Kirby • <i>Our World Out of Balance</i> by Andrea Minoglio
Supporting Texts	• Mapmaking with Children: Sense of Place Education for the Elementary Years • Direct Impacts of Climate Change
Climate Literacy Terms	Climate adaptation, climate emotions, climate literacy, Earth care, Earth systems, place-based knowledge, social inequality, solutions, and systems care
Objectives	• Students will be able to make connections between the past, present, and future, in regard to climate change impacts and they will be able to make connections to personal/local and global communities. • Students will create a final 3D product that will show different connections with a country or state around the world. Students will share their science knowledge as well as their new knowledge that they learned about climate change and climate literacy. Students will also present their projects to the class in a gallery walk style activity to show their knowledge and understanding of how these connections to places help shape our interactions and experiences with the world. • 6E.3.2.1.3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. • 6E. 1.1.1.3 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
Materials and Resources	Instructions for Everything is Connected Stations Student Notebook Pages for Climate Stations

	Investigación: • Investigar un país o estado - ¿Cuáles son tus conexiones? • Reflexión sobre las conexiones y el cambio climático • Plantilla para el póster (la sumativa) Research: • Summative research about a place that you connect with (this could be a country or state) • Reflection about connections and climate change • Template for Summative Poster (12x18) <i>World maps (printed copies /digital copies)</i> • Simulating Climate Futures in En-ROADS • Resource Center for Environmental and Climate Action Changemakers
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Going Forward

In future versions of this unit, we—my students and I—intend to further expand the storytelling component through mapmaking. Integrating digital tools like the Climate Stories Map will complement our physical string-mapping, allowing students to see their local stories and connections as part of a global narrative. By centering the linguistic and cultural identities of Spanish Immersion students, we ensure that climate science is relevant and accessible to all learners. When students see their own family and community histories reflected in climate stories, they move from being passive learners to active, empathetic climate problem-solvers and climate doers. Furthermore, we plan to deepen this work through interdisciplinary collaborations. In the future, we would love to partner with the Minnesota Studies history class to bridge the gap between environmental science and the history of land caretaking. By exploring Indigenous histories and historical shifts in Minnesota’s landscape, students can better understand the "why" behind current climate impacts. Collaborating across disciplines—such as art, language arts, and math—will further reinforce the idea that climate literacy is a collective effort, essential to understanding our shared future

References

- Kirby, L. (2021). *Old enough to save the planet*. Magic Cat Publishing.
- Kirby, L. (2020). *Ya soy mayor y puedo salvar el planeta*. Norma Editorial.
- Minoglio, A. (2021). *Our world out of balance*. Blue Dot Kids Press.