

Starting Small

Growing Literacy-Based Climate Pedagogy by Enhancing Existing Curricula

I . . . really appreciate that . . . [we] made space in a way that I can, even with my limitations due to context, make small adjustments in my teaching to be able to incorporate it here and there. . . . I just feel like we saw so many different representations of how it can be done . . . I could do it on any scale.

—Ashley, middle school ELA teacher,
post-inquiry group interview

Many elementary teachers we have worked with over the years prefer to start small with their literacy-based climate pedagogy. They want to build their climate knowledge, find climate literature to foster conversations with their students, and figure out productive entry points to work within their mandated curricula and district directives. This chapter supports elementary teachers in developing literacy-based climate pedagogy by enhancing existing curriculum—for example, by adding interactive read alouds of literature or multimodal texts, topical word work, or mentor texts for writing. First, we consider where elementary teachers can find or make space in our days to begin climate education work. Then, acknowledging that there are many potential ways to start small, we organize this chapter into some entry points that we and the teachers we have worked with have found helpful: a *textual entry point*, where you add in stand-alone books or paired texts; a *skills, strategies, and practices entry point*, where you replace curricular texts/topics with climate texts/topics to teach required standards and practices; a *topical entry point*, where you find climate topics or concepts that connect with the curriculum; and a *place-based entry point*, where you make connections to local environmental issues, landscapes, knowledges, and/or organizations (see Figure 3.1).

Figure 3.1. Entry Points for Starting Small

MAKING SPACE

Bill Ayers (2017) refers to “cracks” in the school day, or spaces that are less regulated and monitored (e.g., lunch, before and after school, science and social studies), as great spaces to enhance the curriculum. The idea is that we can use these “cracks” to make more space to teach everything we need to. Depending on how regulated your context is, starting small with any enhancement to your curriculum may involve looking for these cracks.

The English language arts can support knowledge-building (Cervetti & Hiebert, 2019; Palincsar & Duke, 2004), collective problem solving (Rainey, 2017), communicative competence (Smagorinsky, 2015), and transformative social action (Janks & Vasquez, 2011). Some specific affordances of literacy-based climate pedagogy are fostering empathy and imagination; supporting critical reading and comprehension; and developing effective and clear writing (Beach et al., 2017; NCTE, 2019). And because literacy is embedded across all disciplines, there are many opportunities to find cracks across the school day, in ELA or science or social studies. Different literacy-based instructional practices also afford opportunities to engage with climate texts/ideas, too (e.g., doing interactive read alouds; using mentor texts; closely reading texts).

Teachers we’ve worked with have enhanced their curriculum to add a focus on climate change by adding new texts or concepts to their existing science units about animals and ecosystems, ELA units on fiction and

argument writing, and social studies units on the civil rights movement and global citizenship. They've incorporated climate literature and texts as read alouds and mentor texts across various disciplines and points of the day, including morning meeting and read aloud time, and in after-school spaces. Many use these initial small forays into the work as a springboard toward more extensive curricular enhancements.

The four entry points that we describe here—textual; skills, strategies, and practices; topical; and place-based—are not mutually exclusive. For example, we often choose texts for their topical connections or potential to teach particular skills. Or we start with place-based work but intentionally connect it to the anchoring themes. Thus, these sections can be read and considered on their own, or in conjunction with one another.

TEXTUAL ENTRY POINT

One of the easiest ways to begin working toward a literacy-based climate pedagogy in elementary classrooms is to find texts that support discussion of and engagement with environmental sustainability or climate change, and add them to your existing curriculum, either replacing texts, layering new texts on top of the curriculum to enhance it, or adding new stand-alone texts. While we focused primarily on picture books in Chapter 2, in this chapter we want to think explicitly about utilizing a wide variety of children's literature (e.g., short stories, graphic novels) and multimodal texts (e.g., songs, videos, documentaries, podcasts, comics, artwork, graphs, and websites). We think that children's literature should anchor the curriculum as a whole, and a wide range of texts should be used across lessons and activities to support a literacy-based climate pedagogy.

We recommend first considering how different kinds of texts—including children's literature, trade books, or multimodal texts—can be exchanged within your existing curriculum. For example, as literacy teacher educators, one of our instructional goals is to teach preservice teachers about the features and qualities of texts, so we have changed out the books we used in the past to include some with a climate focus. Now, as we study different forms of children's literature, we introduce graphic novels like *Little Monarchs* by Jonathan Case (2022) and *Luz Makes a Splash* by Claudia Dávila (2012). We share chapter books like *Thirst* by Varsha Bajaj (2022), *Fins: A Shark Incorporated Novel* by Randy Wayne White (2020), and *Hoot* by Carl Hiaasen (2002). And we share highly illustrated narrative nonfiction like *A World Without Fish*, written by Mark Kurlansky (2011) and illustrated by Frank Stockton, to demonstrate how as teachers we can use just one page of a rich informational text to engage children in conversation and deep thinking about the three anchoring themes and climate more broadly.

Changing the books we use to teach about the features and qualities of texts allows us to still meet our instructional goal while simultaneously supporting knowledge-building about climate change.

We also regularly use multimodal texts with preservice teachers. We've watched documentaries to inquire into the topic of water justice, such as *Living Without Water* (Kingsley & Richards, 2016); *Awake: A Dream From Standing Rock* (Dewey et al., 2017); *Flint's Deadly Water* (Ellis et al., 2019); *Thirst for Power* (Hames, 2019); and *Troubled Waters: A Turtle's Tale* (Fielding, 2019). We've also used podcast episodes from *How to Save a Planet*, *A Matter of Degrees*, *Drilled*, *Floodlines*, and *Radiolab*. As teachers watch and listen to these texts, and explore and analyze them together, they often express excitement about reading in different ways than they often do in school, and appreciation for these texts' exploration of contemporary issues and locally important topics.

Multimodal texts can be highly dynamic, using complex design elements and unusual structures, so supporting children in reading them involves attention to their complexity. For example, the NASA Climate Kids interactive website (climatekids.nasa.gov) helps children see how carbon dioxide, global temperature, sea ice, and sea levels have changed over time. Sites like this can easily overwhelm or distract readers with the multiple hyperlinks, informational graphics, and scientific content and explanations, making them challenging to navigate. Especially with online resources, it's critically important that we support children in learning to evaluate the perspectives represented, as well as credibility and bias. As we talk with teachers and children about the NASA Climate Kids site, for example, we help them to consider what that perspective offers and what it neglects.

When starting with texts, it's also helpful to consider how different text types (e.g., literary/narrative/story, informational, argument) are threaded across disciplines. For example, in elementary schools, we often limit explorations of literary texts to the ELA block, but stories can be used across disciplines. During science units focused on extreme weather, we love sharing the picture book *The Coquíes Still Sing*, by Karina Nicole González (author) and Krystal Quiles (illustrator) (2022), a beautiful story about the impact of hurricanes and the collective responses of community, to help children understand the ways in which extreme weather can affect both our social and natural worlds. We also love using hybrid nonfiction picture books that blend informational and story writing. For example, *Creekfinding: A True Story*, written by Jacqueline Briggs Martin (2017) and illustrated by Claudia McGehee, is a literary nonfiction text that tells the story of how one man brought back a creek that had been covered by farmers in need of more land. This story is a beautiful, fact-filled example of ecological restoration and stewardship of the land. The hybrid text *The Wisdom of Trees: How Trees Work Together to Form a Natural Kingdom* by Lita Judge (2021) pairs

pages of poetry and nonfiction (e.g., a poem called “Awakening” is alongside an informational section called “Telling Time”). Each page includes hand-drawn illustrations, sometimes with enlarged details. The nonfiction graphic novel *A Fire Story* by Brian Fies (2019) is the author’s firsthand account of losing his home in a Northern California wildfire in 2017. This is a beautiful text to use with middle-schoolers to consider experiences with and responses to natural disasters.

As you consider how you might add texts to enhance your curriculum, it’s important to ask: What types of texts are neglected in the curriculum? How might a different text type bring a new perspective of understanding? What text types do children gravitate toward that aren’t in the curriculum, and how might I fit them in?

One textual entry point into climate education is to begin with a text you really like, and figure out where it could enhance your existing curriculum. For example, Jasmine—a 5th-grade teacher participant in our yearlong inquiry group who had limited flexibility in her implementation of the curriculum mandated by her school—knew she wanted to incorporate some of the picture books by Native authors that we had read in our inquiry group into her teaching. She decided that her upcoming science unit on ecosystems would be a great place to add in these texts, noting that “I’d like to feature how they [Native authors] talk about respecting our land . . . [and] having [a] . . . a positive relationship [with land] to open up the unit . . . [and] show the kids . . . all the different ecosystems we have . . . in our Earth.” Jasmine noted that this unit was part of a new curriculum that her school had adopted, and the texts were heavily nonfiction. She said, “When I told them [the kids] we’re doing ecosystems, [and the unit] is heavily nonfiction, they were like, ugh.” She wanted to add in fiction texts because she thought her students “are more engaged in fiction rather than nonfiction.”

Another option is to consider a text in your existing curriculum that you might be able to replace. When Kristine told a middle school teacher, William Peek, how much teachers in her children’s literature class loved the novel *Dry* (2019) by Neal Shusterman and Jarod Shusterman (a climate fiction book about desperation and survival in a California suburb that has run out of water), he switched it out for his curriculum’s usual focus on reading *The Outsiders* by S. E. Hinton, published in 1967. William already had numerous critiques of *The Outsiders*—including that it felt outdated and reinforced sexist and heteronormative stereotypes—but he liked that it let students consider the story from other characters’ points of view, and its potential as a mentor text for first-person narration. But, he told us, “*Dry* does that so much better and it’s relevant. [We can talk about] climate change, water shortage, watching people turn on each other. These are the issues that our students have seen/experienced in their lifetimes.”

Beyond layering in new climate literature (like Jasmine) or switching out existing texts for climate literature (like William did), another option is to just add a stand-alone read aloud. When Becca visited a 1st-grade classroom for an afternoon, she read aloud the picture book *Have You Ever Seen a Flower?* by Sean Harris (2021), a visually stunning book that prompts children to explore flowers through all five senses. During the reading, children smelled and touched flowers and acted out how they grow. Afterward, they looked closely at their flowers and painted them in the close-up style of Georgia O'Keefe, an artist they had been studying. In the conversation and activity, children discussed how life is in us and all around us, and the importance of paying close attention to nature. In the next chapter on going big with literacy-based climate pedagogy, we'll extend these ideas about selecting and adding stand-alone texts toward creating text sets and incorporating them across curricular units and over time.

In addition to the considerations we have already posed about modality and text type, it is important to think about relevance and representation. There are many existing instructional tools for critically analyzing texts that attend to issues like diversity and representation (e.g., the author and characters' identities), critical literacy (e.g., what gaps or silences there are; the historical context for the text), and reader considerations (e.g., will this text reflect children's identities and interests; will it motivate my students). See the online resources accompanying this book for various tools for critically analyzing texts (www.teachingforsustainablefutures.com). For climate texts, it is also important to consider the disciplinary and ecological perspectives the texts promote. Are these texts forwarding humanistic or technical understandings? While both are important in climate work, they tend to have different purposes and utilize different strategies.

Another way to think about a text's perspective is to consider what ecological stories it emphasizes. Damico et al. (2020) apply a term from Stibbe (2020), called "stories-we-live-by," to think about *ecological* stories-we-live-by as "the larger narratives that guide individual and collective sense-making about relationships between humans and the environment" (p. 683). They compare examples of ecologically destructive stories-we-live-by (e.g., humans are the center of existence) to more beneficial and justice-oriented stories-we-live-by (e.g., we can reinvent a clean *and* just economy). As we critically examine texts with teachers, we figure out what ecological stories are embedded in the text. For example, whereas *The Giving Tree* by Shel Silverstein (1964) describes an individualistic and extractive relationship between humans and trees, *Stand Like a Cedar* by Nicola I. Campbell and Carrielynn Victor (2021) features a communal and relational relationship between humans and trees. Identifying and comparing ecological stories in texts is an important addition to the other common ways that we can critically analyze texts when exploring climate literature.

SKILLS, STRATEGIES, AND PRACTICES ENTRY POINT

While there are many ELA skills, strategies, and practices emphasized across disciplines, we are going to focus broadly on overarching and interdisciplinary foci: reading, writing, and language study/word work.

Reading

Reading comprehension strategies and skills (e.g., activating prior knowledge, inferring, questioning, visualizing) are taught in order to help children make meaning as they engage with different kinds of texts. We teach children these strategies and skills to help them engage with literary texts (e.g., stories, dramas, and poetry), informational texts (e.g., literary nonfiction, historical scientific, and technical texts), and argument-based texts (e.g., essays and op eds). Whatever literacy skills, strategies, or text types you need to teach, there are ways to connect to a climate focus.

For example, learning to comprehend informational texts—including multimodal texts like websites, interactive maps, and diagrams—is particularly important in content areas like science and social studies. It is also important in understanding climate change, which requires synthesizing across many different kinds of informational texts by inferring, determining importance, and drawing conclusions. Linda Kucan and Annemarie Palincsar have developed thoughtful discussion guides to support teachers in helping children to synthesize across texts through robust text-based discussion (see Kucan & Palincsar, 2013). In one example, they pair YouTube videos of coral reefs and jellyfish with the short read *Coral Reefs* by Joanna Solins (2013), which includes many photographs of coral reefs, and a diagram explaining the process of coral bleaching, including cross-section views of living, dying, and dead polyps. Their plan supports teachers in helping children make meaning across texts and text features to understand the features of the coral reef ecosystem and their roles and the interdependence of polyps and algae, and to synthesize their learning to understand the relationship between coral reefs and the Earth and why global warming is impacting coral reefs.

When middle school teacher Ashley was initially considering how to bring an exploration of climate change into her existing ELA curriculum, she thought about how her poetry unit explored “emotional rhythm” by reading closely to determine how the author builds suspense by shifting the mood through rhythm and repetition and how that influenced readers’ interpretation of the poem. She noted that one of the poems from the anthology *All We Can Save* could work well to explore this in place of the poems provided by her school district. In particular, when she saw “November” by Lynna Odel—a short poem with a refrain beginning with “if” (e.g., “If I

can't save us . . .” “If this will drown or burn . . .” “If we are dying . . .”)—she realized it could be an excellent text to use with her class. She told us about the importance of bringing her own experiences reading this poem, and other personally impactful texts, to her selection process, saying, “These are the ones I want to do with kids because they’re the ones that are stirring up the most in me, so I think I’ll teach them really well.” For Ashley and many other educators we have worked with, the teaching of reading skills (e.g., different types of figurative language), can easily be situated within texts about climate change.

In another instance, a 2nd-grade teacher approached us about adding a focus on climate change to an existing unit focused on fables, folktales, and legends that was designed to support children’s retellings and their understandings of lessons and morals. We searched for folktales about the environment to replace the traditional texts used in this unit—texts that were mostly the very same as the ones we read when we were 2nd-graders. We were amazed by the texts we found and how closely they linked with our anchoring themes, while still allowing for the kind of standards-driven instruction the teacher was seeking. The teacher decided to use a Chamorro legend from Guam, “How the Women Saved Guam,” which tells the story of how the people took from the Earth without giving anything in return. The spirits of nature responded by sending drought and thus famine across their land, and then a fish to destroy the island. Men attempted to trap the fish in their individual nets, without luck. Then the women discovered where the fish were hiding and together wove a sturdy net from their hair, which enabled them to catch the fish.

With the 2nd-graders, the teacher discussed many aspects of legends, including how they are written as stories that discuss the action of humans, share important cultural beliefs, convey a lesson—in this case, that the collective effort is what solves the problem—and include figurative language such as hyperbole. Legends, fables, and folktales often feature important ideas about the environment from different cultures and perspectives and, therefore, are easy to swap in for more standard texts included in your curriculum in order to teach the necessary skills emphasized in standards and district curricula.

Critical reading and media analysis are also excellent activities with climate texts. When we do critical media analysis with preservice teachers, we ask them to analyze the following elements: perspective, purpose, intended audience, authority, production techniques (e.g., portrayal of people and places, visual design), and media bias. We share multiple texts on a similar topic and have them analyze and compare. Each year we switch out the kinds of texts we use to focus on relevant contemporary topics and issues. Recently, to better thread a focus on climate change into our course, we analyzed the following advertisements representing different opinions on energy and the oil industry: (1) “Life Runs on Energy, Connected by

Oil and Gas” (Energy Transfer, 2022); (2) “Overtime: 15” (Climate Power Education Fund, 2021); and (3) “Aramco: This Is the Real World” (Warner Chappell Production Music UK, 2020). While “Life Runs on Energy” and “Aramco: This Is the Real World” represent pro-oil sentiments, “Overtime: 15” takes an anti-oil stance. We discussed effective techniques to appeal to and convince consumers and readers, as well as methods of manipulation (e.g., the technique of *greenwashing*, where companies use misinformation to appeal to aspiring green/sustainable consumers). We also talked about the power and politics of media, including funding sources, and the necessity of teaching children to be critical consumers. Critical media analysis can also be done with articles, images, and websites.

Writing

Elementary teachers are also responsible for teaching children to write narrative, informational, and argumentative texts. Some curricula focus on writing processes (e.g., prewriting; drafting; revising; publishing) and using mentor texts and modeling to teach the qualities of these different text types. Switching out the mentor texts you use to support writing, or slightly shifting or extending the focus of your writing, are both ways to start small in teaching climate change through writing.

We often encourage teachers to start with story writing. Stories are an important part of climate change work. They can persuade others by helping make the impact of climate change, which can seem abstract and far away, more real (Gustafson et al., 2020); they can also make inaccessible information more relatable (Climate Stories Project, n.d.); and they are essential to building inclusive and effective movements. As part of the critical reading work we just described, we explore how stories are used in advertisements and the news, and how they impact us as readers. When teaching narrative/story writing, we focus on character, plot, setting, and strategies including dialogue, inner thinking, rich description, and action. We often use short stories, including picture books, as mentor texts to study and guide personal narrative and fiction writing. We’ve started switching out some texts we have previously used for stories with an environmental focus, using stories like *Watercress* by Andrea Wang (2021), *Jayden’s Impossible Garden* by Méline Mangal (2021), and longer fictional stories from Arizona State University’s *Everything Change* anthologies (<https://climateimagination.asu.edu/>). We’re able to teach all the important qualities of narrative writing through these texts while also supporting conversations about the environment and our climate futures.

Teachers of grades 6–8, especially, have a great opportunity to pivot fiction writing units to a focus on climate fiction (cli-fi), a growing branch of literature that deals with the effects of climate change on society. Cli-fi

often explores different possible futures—sometimes scenes of chaos and uncertainty, sometimes scenes of incredible hopefulness and reimagining. Teaching young people to write cli-fi also requires some teaching about climate change as youth consider possible futures. In the next chapter, we'll highlight a unit that middle school teacher Ashley and her colleagues did where they incorporated cli-fi reading.

Climate change work also requires clear informational writing and compelling argument writing. We've worked with a 1st-grade teacher who revised their usual collaborative informational ABC book writing's "caring for community" focus to instead explore "caring for the environment." Children used informational writing techniques (e.g., the use of headings and subheadings; images with captions; highlighting vocabulary) as they wrote pages about topics like bees, composting, and plastic. Similarly, Becca revised an argumentative photo essay assignment that she typically does with preservice teachers to focus on the topic of sustainability. Teachers learned about elements of argument (e.g., making assertions and using evidence), and about effective multimodal writing (e.g., how images and words work together). Spanning across narrative, informational, and argumentative genres, *Youth-Created Media on the Climate Crisis: Hear Our Voices*, edited by Richard Beach and Blaine E. Smith (2023), is a great book with accompanying website about storytelling in different media made by young people about the climate crisis. The website includes practical support to help you justify the pedagogical value of media production, engage students in media production, and provide students with media production methods. We love that many of these examples of writing are connected to meaningful purposes and audiences beyond their teacher.

Language and Word Study

Another key aspect of the English language arts that is threaded across disciplinary instruction is language and word study. Across the elementary grades, teachers work to expand children's vocabulary because rich understandings of word meanings, both in isolation and in relation to other words, are necessary to monitor and deepen comprehension (Duke, Ward, & Pearson, 2021) and communicate ideas clearly while writing (Graham et al., 2020). As children learn about a climate topic by reading and talking about texts, they are repeatedly exposed to topic-specific vocabulary. The combination of exposure and use expands children's vocabulary.

The educators we work with have connected vocabulary lessons to climate topics by exploring words related to read alouds. For example, after doing a read aloud using the text *The Gardener* by Sarah Stewart (1997), 2nd-grade teacher Cathy Doyle used an activity called *list-group-label* to explore gardening words (Reading Rockets, n.d.). Together, the class

brainstormed a *list* of gardening vocabulary, including words like *soil*, *tomatoes*, *vegetables*, *sunshine*, *water*, and *minerals*. Then they clustered the words. For example, they put *soil*, *water*, and *sunshine* in a *group*. Cathy stressed that there wasn't one right way to group the words, as long as the children could explain their reasoning for clustering words together. Finally, they came up with a descriptive title to *label* the cluster of words. So *soil*, *water*, and *sunshine* were grouped under the title Things That Plants Need. This strategy provided an opportunity for children to expand their vocabularies and be curious about words as they engaged in conversation to support the grouping.

Climate topics also provide an interesting space for students to explore common and scientific names. While working with 5th-graders in a community garden, Kristine shared the poem “Latin Nomenclature” from the anthology *Behold Our Magical Garden: Poems Fresh From a School Garden* by Allan Wolf (author) and Daniel Duncan (illustrator) (Wolf, 2022), which exposed the children to scientific labels used for common plants in a garden, all of which are in Latin. They explored an illustration that contained a picture of a vegetable, the common name (e.g., eggplant), and the scientific label (e.g., *Solanum melongena*). This piqued the children's curiosity about etymology (the origin and evolution of words) and also created a space in which students began to talk about the relationship between words.

Elementary teachers also support children in growing their knowledge (and curiosity!) about how letters, sounds, and words work. In early grades, the focus lies heavily on developing multiple aspects of phonological awareness, phoneme–grapheme correspondence, and the ability to recognize phonetically irregular words at sight. While systematic phonics instruction ensures that word study is not haphazard, there is also great benefit in contextualizing some instruction around these foundational skills within rich climate texts, lessons, or units. We have seen teachers use climate-related vocabulary to support children in learning to segment and blend sounds through oral wordplay. While engaging in a shared reading lesson using the text “The Secret Seeds” from the anthology *Behold Our Magical Garden* (Wolf, 2022), Kristine engaged in some textually situated word study that offered children an opportunity to reinforce their understandings about vowel digraphs they had already learned, like *ee* in *seeds* and *ai* in *wait*. They also had opportunities to apply their recent learning about the phonetically irregular words *what* and *watch*. Again, while these types of activities do not replace systematic foundational skills instruction, they provide a rich context for students to apply their learning in text with appropriate levels of support from the teacher and peers.

When appropriate, students can engage in morphemic analysis, as they develop deeper knowledge of morphemes—the smallest part of a word that carries meaning—enabling them to extract meaning from multisyllabic and

disciplinary vocabulary. In our work with preservice teachers, we have taught them about the PQRST Strategy (Goodwin et al., 2012), which supports young people in finding morphemes, understanding their meaning, and identifying the collective word meaning. Our students found the following mnemonic (Goodwin et al., 2012, p. 465) to be particularly helpful:

- P = Prefix; find the prefix and identify its meaning
- QR = Queen Root; find the root (which is queen of the word) and identify its meaning
- S = Suffix; find the suffix and identify its meaning
- T = Total; put the meanings of the units together to gain the total word's meaning

In our water justice unit, we identified Prefix, Queen Root, and Suffix of words like *desalination* and arrived at the Total meaning, “the process of removing salt,” and then utilized this new word knowledge to explore how desalination can be a useful approach to addressing water scarcity.

As we described in Chapter 1, language is an asset, and English language arts teachers should honor and support children in using their full linguistic repertoires in school spaces. One way in which we do this is by investigating how authors of climate texts use translanguaging in their writing. For example, as characters journey through seasonal and daily rituals with the land in the book *Stand Like a Cedar* by Nicola I. Campbell (author) and Carrielynn Victor (illustrator) (2021), the author incorporates questions in Nle?kepmxcín to draw attention to relationships humans have with animals, plants, and other elements of the natural world. As we read this book with elementary teachers and children, we explore how this kind of work with words conveys understandings about cultural perspectives that are deeply linked with environmental understandings and identities.

TOPICAL ENTRY POINT

Many teachers we've worked with like to look for topical connections to their existing curricula. For example, 1st-grade teacher Tiffini, who participated in our yearlong inquiry group, had a unit in the reading curriculum called Justice for All, where children spend time learning about historical figures like Ruth Bader Ginsburg and Colin Kaepernick. The unit already included read aloud texts like *We Are Water Protectors* by Carole Lindstrom and Michaela Goade (2020) and *The Boy Who Harnessed the Wind* by William Kamkwamba, Bryan Mealer, and Elizabeth Zunon (2012). She told us in an interview that it naturally lent itself to explore action and advocacy and the “route of environmental climate justice.” She hoped she could also

extend her students' persuasive speech/writing unit, which usually focuses on rallying peers to create justice in their own communities, by orienting them to consider environmental issues during the unit.

At Becca's kids' Chicago public school, the 1st-graders do a unit about their cultures and where their ancestors come from. They add each child's information to a world map and discuss how our ancestors' proximity to the equator impacts the amount of melanin in their skin. One example of how to add a topical focus on climate change/environmental sustainability to this unit would be to explore humans' connections to the land and how our histories and identities are tied to a nature-culture nexus. Students could study how the temperatures in these places have changed and will continue to change. They could ask questions like: Will there be more heat waves or droughts or flooding? More intense and frequent storms? In 50 years, what may life be like for the people living in our ancestral lands? What similarities and differences are there from the past to the future, and across different locations around the world? A great multimodal text to support this discussion is the Climate Impact Lab's *Climate Impact Map* (<https://impactlab.org/>) (n.d.), which allows you to view temperatures in a place from four perspectives: historically (1986–2005), and what is predicted in the next 20 years (2020–2039), mid century (2040–2059), and end of century (2080–2099).

Another example comes from Eva, a pre-K teacher who was part of our inquiry group, who made a topical connection and extension to a unit her colleagues were doing on Arctic animals. The other pre-K teachers were supporting children's learning about polar bears, Arctic foxes, and icebergs during the wintertime. Children were making "pictures of snowy scenes with icebergs that really make it feel more like winter, [which was great] because our winter hadn't been snowy at all." Eva decided to do her own deep dive into the Arctic before teaching about it, noting that "the more I learned about Arctic animals, the more concerned I became about what's happening to their habitat. I still wanted to teach about these cute and interesting animals, but I felt a strong sense of duty to make sure my pre-K class knew what was happening to them."

Eva's class spent the first part of their unit wondering about polar bears and then learning about them. They explored questions such as: Where do they live? What do they eat? How do they survive in the harsh tundra? Using picture books like *If Polar Bears Disappeared* by Lily Williams (2018) and *The Last Polar Bear* by Jean Craighead George (2009), they started learning about what was happening in the Arctic, and how the warming ocean is melting the icebergs that the polar bears depend on for survival. Eva said, "My students were sad at the thought of polar bears having to travel far distances for food or worse. They grieved the declining polar bear population. But then we learned what we can do for the polar bears, how

we can fight for them since they have no voice.” Her class created polar bear artwork from recycled paper and made a painting depicting ‘the last polar bear.’ They talked about how they can educate others on what’s happening in the Arctic and what even small kids can do to help. They also made posters about saving polar bears and stopping the warming climate. Reflecting on the unit, Eva said, “Now, a month later, they still are reminding each other to only use two paper towels when they dry their hands because the less resources we use, the better for the polar bears. They still enjoyed the Arctic unit as much as other classrooms, but they now have a strong sense that they can help be part of saving the polar bears.” We love how Eva saw a topical opening to elevate an existing unit, and her emphasis on how young children can take action and help. Like her, we believe that these are seeds that children can grow over time to make a difference in their communities and the world.

For teachers looking to make topical connections like these, we encourage you to return to anchoring themes and subthemes that we described in Chapter 2: interconnectivity, relationality, and action. As you read books that could explore these themes, add them to an ever-evolving list. Look for curricular cracks where it could make sense to explore these themes. Could an ELA unit focused on characters and their relationships be pushed to look beyond human–human relationships toward human–nature relationships (interconnectivity)? Could a unit focused on communities explore about our responsibilities to one another and to the natural world around us (relationality)? Could a unit on argument writing be oriented to writing sustainability-focused pieces for real purposes and audiences (action)? As you build your climate knowledge and book knowledge, we think you’ll begin to see more and more opportunities to add topical connections to your existing curriculum.

PLACE-BASED ENTRY POINT

A final way teachers we’ve worked with have started small with literacy climate education in elementary classrooms is by making place-based connections to local environmental issues, landscapes, knowledges, and organizations. Place-based pedagogies connect to the local community, including humans, plants, and animals. They engage local heritages, cultures, landscapes and environments, and experiences as rich opportunities for interdisciplinary learning. Perhaps most importantly, these pedagogies view the local community, including its landscapes, as a primary source of knowledge. Many early elementary educators we know draw from similar ideas in their pedagogies: they intentionally make familial and cultural

connections, highlight what children know, and facilitate connections to local places, spaces, and community members.

Place-based pedagogies are popular in sustainability work and climate change education as a way to recognize people's emotional attachments with specific places and landscapes (Schweizer et al., 2013); acknowledge that children have different but profoundly interrelated local experiences as they grow up global (Somerville, 2010); highlight the relevance of global climate change through local impacts (Hu & Chen, 2016); and support attachments to our local places that help us to see the natural world differently (Somerville, 2010).

One of our favorite entry points into climate education with young children is community walks and mapping projects. As children walk their neighborhoods, they can map both important social spaces (e.g., post offices, schoolyards, libraries) and important natural spaces (e.g., a site where birds thrive; parks; community gardens). Templeton and Vellanki (2022) document examples of young children and teachers photographing their communities and the potential of such a project to shift our often adult-centered views of local places toward child-centered views and understandings. The researchers suggest that these photographs can tell us about children's experiences in connection to nature and one another.

Educators can also pay attention to local environmental topics and news for their curricular possibilities. In Chicago, where we live, there have been multiple newsworthy environmental issues in recent years, including an accidental implosion of an old coal plant in 2020 that left the Little Village neighborhood coated in dust (Chase, 2022), and successful protests against a proposed plan to add a metal recycling plant on the Southeast Side (Moore, 2021). These examples offer curricular opportunities to explore the complexity of local environmental issues, including links among industry, health, politics, and equity.

A focus on an environmental topic—let's say, water—may look different in different places. For example, in Chicago, oil refineries and manufacturers are polluting Lake Michigan, our drinking water source, with toxic forever chemicals (Hawthorne, 2023), and there are dangerous levels of lead contamination in Chicago Public Schools' drinking water (Editorial Board, 2022). Our place-based water inquiries in Chicago often tie back, in some way, to Lake Michigan. Teachers and researchers from the University of Arizona focus on water in a completely different way, based on their location in the Sonoran Desert; this team has been exploring *agrivoltaics*, a dual use of land for agriculture and energy generation (<https://research.arizona.edu/stories/what-is-agrivoltaics>; see Rivera & Castek, 2022). Teachers in Mississippi interested in exploring water may focus, instead, on the ongoing water crisis there that has been particularly impactful on Jackson's primarily

Black community (Adams, 2023). Exploring a topic like water through the lens of place can allow children to consider local problems and also to make global connections.

Another easy way to incorporate place-based work is to invite in local experts, including your students' relatives, to share with children. For example, years ago when Kristine was teaching dual-language kindergarten, she invited a parent who owned his own landscaping company to support the children's tree exploration. The dad was thrilled and visited the class to talk about what different kinds of trees need to thrive and why we find some trees in particular areas but not others. Through this experience, both he and his child felt connected to the curriculum and school community, and he was able to share knowledge—including rich disciplinary-specific vocabulary in Spanish—that enhanced the unit and the children's understandings. Distributing a home survey with questions about familial expertise with land, water, air, animals and other creatures, farming, and energy can reveal many potential sources of local knowledge—including those sources that do not tend to be recognized as valuable in schools. This can help you begin to honor many different kinds of rich expertise about the environment and sustainability that already exist in your classroom community.

STARTING SMALL PLANTS SEEDS

We began this chapter with a quote from Ashley, a middle school ELA teacher in our climate change inquiry group, talking about how she felt limited in how much she could do as a new teacher at her school, and her appreciation for the ability to “make small adjustments to my teaching.” This is what starting small is all about—finding cracks in the curriculum or day where you can enhance what children are already learning.

But starting small with literacy-based climate pedagogy doesn't have to feel disconnected. We think of it more like planting a seed that, when nourished, has the potential to grow into something bigger. As we transition to Chapter 4's focus on going big, we end as we began, with a reflection from Ashley that speaks to this idea:

[There are] so many little ideas that I have that I know I can implement and see how they go. But I really want it to be this cohesive thing . . . at the end of the year. That's going to take a year of trying. I always talk about how there are ways to dip your toe in the water, right? And you start small, but you're not even just starting small because you're thinking about building towards . . . [bigger] experiences.

SUGGESTIONS AND QUESTIONS TO GUIDE DISCUSSION, REFLECTION, AND ACTION

Develop Your Climate Knowledge

1. Watch or listen to one of the multimodal texts described in this chapter—either a documentary (e.g., *Awake: A Dream From Standing Rock*, *Flint's Deadly Water*, or *Troubled Waters: A Turtle's Tale*) or a podcast (e.g., *How to Save a Planet*, *A Matter of Degrees*, *Drilled*, or *Floodlines*).
2. Grow your place-based knowledge. Learn about ways *your* local community, including its landscapes and particular histories, can serve as a primary source of knowledge. Learn about how local places, organizations, and people support and foster connections to the local environment.

Develop Your Literacy-Based Climate Pedagogy

1. Begin looking for curricular cracks where it could make sense to add explorations of the anchoring themes and relevant topics. Where can you layer in new texts, or expand the focus of work you already do?
2. Explore how the standards guiding different disciplines (e.g., Next Generation Science Standards; National Curriculum Standards for Social Studies; Common Core; Social Justice Standards) can connect to and support climate education.
3. Create and distribute a home survey with questions about familial expertise with land, water, air, animals and other creatures, farming, energy, and the environment or sustainability more broadly, to find sources of local knowledge that can be honored as rich expertise in your classroom.

Support for Teacher Inquiry Groups

1. If you are doing your own teacher inquiry into climate change, assign yourselves a goal before your next meeting to add one text to your existing curriculum that will extend it to add a focus on climate education. This might involve reading aloud a picture book, discussing a series of photos, or watching a short video. As you plan, consider: What anchoring theme can I explore? What ELA standard or skill can be supported? What interesting and meaningful text(s) should I use?

2. We recommend reading the following contribution from the edited collection *All We Can Save: Truth, Courage, and Solutions for the Climate Crisis* (edited by Ayana Elizabeth Johnson and Katharine K. Wilkinson) as you consider the importance of starting small in climate education: "A Field Guide for Transformation" by Leah Cardamore Stokes.