8. Framing Climate Change

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FRAMING CLIMATE CHANGE

"Framing" refers to how communicators use features of a message to evoke ideas and ways of thinking that audiences use to interpret that message.[1] Frames make different ideas more noticeable or important, or what communication researchers refer to as "salient." This in turn can affect how audiences assess information. In this chapter, we focus on emphasizing aspects of a message, including appeals that draw on an audience's preexisting knowledge, to guide their understanding. We can think of frames as "interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it."[2] As environmental educators, we frame the information that we share using a variety of strategies.

Communication researchers distinguish between two broad categories of frames: equivalency frames and emphasis frames. Both kinds of frames link concepts together, assisting the reader in recalling and interpreting ideas.[3] Emphasis frames use specific words to appeal to particular areas of an audience's knowledge or interest.[4] Take the statement "warmer temperatures are causing changes around the world, such as melting glaciers and stronger storms."[5] This statement frames climate change impacts as global, occurring "around the world," and as affecting natural features and systems like glaciers and weather. Let's contrast that with another statement about climate change and weather: "Do you live in the Northeast? You've experienced the very biggest rainstorms getting 70 percent bigger in the last 55 years."[6] This statement frames climate change impacts as local to the Northeast and as highly personal to the reader—perhaps as a means of

making the message feel psychologically close. These different frames are likely to activate different thoughts or even different mental models people use to interpret the information.[7] Framing the statement about weather and climate in terms of the Northeast may activate an audience's mental representations of what it's like to live in the Northeast, whereas the mention of big rainstorms can evoke stored knowledge and memories of previous experiences with major precipitation events.

Like emphasis frames, equivalency frames draw attention to certain aspects of a story. Equivalency frames present logically equivalent information but emphasize one part of the information to affect preferences.[8] A familiar example comes from the meat counter at the grocery store, where meat packages labeled as "80 percent lean" outnumber (and presumably outsell) meat labeled "20 percent fat." Because people evaluate statements based on what is emphasized, they are inclined to view the same information in a more positive light when it deemphasizes fat content.[9] In the context of climate change, the statement "97 percent of scientists agree that global climate change is happening" could be equivalently phrased as "3 percent of scientists do not agree that global climate change is happening." While the statements may be equivalent in a logical or mathematical sense, they emphasize different things—the first statement emphasizes consensus, whereas the second emphasizes contention—which carries implications for how audiences will process the message.[10] Consensus frames have been shown to increase people's acceptance of anthropogenic climate change,[11] and the "97 percent" frame better underlines scientific consensus on climate change.

Framing is ubiquitous in everyday communication and an active area of research across the social sciences, including in communication, political science, psychology, and behavioral economics. A good source for framing information is the National Network for Ocean and Climate Change Interpretation (NNOCCI), which draws on this research and research conducted by the FrameWorks Institute to provide guidance for climate change educators on how to frame their programs. Below we cover research on frames used in climate change communication, including framing around identities, and for hope, self-efficacy, solutions, values, and particular audiences. We also discuss how to apply this research to environmental education.

Frames Used to Communicate about Climate Change

Most adults learn about climate change and other scientific issues from the media. Thus, examining media frames can help shed light on whether and how the public chooses to act to address climate change.[12] The media (and many environmental

groups) use predominantly negative, doomsday scenarios when framing climate change (table 8.1). They also provide few practical and effective actions for the audience to take, which may lead audiences to tune out the message—a problematic outcome for communicators and educators.[13] Frames may emphasize the economic risks or benefits of climate change or present climate change as a moral or ethical issue. Other frames emphasize scientific uncertainty or underscore the scientific consensus surrounding climate change impacts. Doomsday scenarios might help to gain the public's attention, but without clear solutions that audiences can implement, appeals to fear often fail to inspire action. In an attempt to adhere to the journalistic norm of balanced coverage, the media have also been criticized for giving equivalent voice to climate skeptics and framing climate change in terms of debate, controversy, and uncertainty, thus adding to the public's perception of a lack of scientific consensus.[14]

TABLE 8.1 Common climate change frames and examples from the media, adapted from Matthew Nisbet, "Communicating Climate Change"

FRAMES	EXAMPLES FROM MEDIA HEADLINES
Economic development and competitiveness	"Climate Change Will Be an Economic Disaster for Rich and Poor, New Study Says"[15] "Gambling the World Economy on Climate: The Emission-Cut Pledges Will Cost $1 Trillion a Year and Avert Warming of Less Than One Degree by 2100"[16]
Scientific and technical uncertainty	"Climate Science Is Not Settled"[17]
Doomsday, tipping point	"Climate Catastrophe Will Hit Tropics around 2020, Rest of World around 2047, Study Says"[18]
Morality and ethics	"Is the Environment a Moral Cause?"[19]

Studies of framing in climate change education provide insight into students' reactions to frames and how educators use frames (table 8.2). A German study found that undergraduate students who read sensationally framed information about climate change exhibited higher levels of knowledge retention than did students who read neutral information.[20] The sensational frame also increased student perception of climate change risk, and in turn led to stronger negative emotions toward climate change. However, terror management theory (see chapter 7) would predict that the negative emotions elicited by the sensational frames might hinder students' willingness to act on climate change. A study of how U.S. environmental educators use climate change communication research in their practice found that most educators use local frames, focus on solutions as a way of inspiring hope in their audiences, and view science frames as aids in maintaining political neutrality.[21] Finally, a study in California found that science teachers predominantly use scientific and global frames to discuss climate change (see table 8.2).[22] Although the researchers did not test the effectiveness of different

frames, they suggested based on previous literature that including the human side of the issue may be more effective than science frames at activating the emotions that drive action.[23]

TABLE 8.2 Climate change frames used in environmental education programs, adapted from K. C. Busch, "Polar Bears or People?" and Anne Armstrong, "Climate Change Communication in Environmental Education"

FRAME CATEGORIES	EXAMPLES
Global impacts	Warmer temperatures are causing other changes around the world, such as melting glaciers and stronger storms.[24]
Local/proximal	Addressing climate change in ways that the audience has actually seen—more insect outbreaks, devastating wildfires, and how forests are being managed.[25]
Science based	Average global sea temperature has been rising gradually over several decades, 0.7°C in the past thirty years alone, which is generally believed among the scientific community to be due to global warming.[26]
Human-impacts based	Climate-related changes can make it difficult for Inuit hunters to reach the places where they hunt.[27]
Collective solutions	Pointing out things that are going on right now that people are doing; for instance, in our county, many businesses and organizations have actually have been very successful promoting renewable energy.[28]
Individual solutions	Deforestation to plant palm plantations adds to climate change, so make sure to buy products labeled with "Roundtable of Sustainable Palm Oil (RSPO)" and help promote sustainable palm production.[29]

Framing with Audience Identities in Mind

Although subtle differences in wording may seem trivial, they can have important effects on how people process climate change information. For instance, research suggests that the public responds differently to the labels "global warming" and "climate change."[30] Survey experiments conducted in the United States find that the public reports greater belief in the existence of "climate change" as compared to "global warming," an effect that is especially pronounced among Republicans and conservatives.[31] U.S. conservatives also have been found to associate more heat-related climate impacts with "global warming" than with "climate change," whereas liberals associate impacts with both phrases equally.[32] Another study further demonstrated that the use of the term "global warming" reduced Republicans' but not Democrats' belief in climate change and weakened both groups' perception of scientific consensus.[33] Not only does choosing one phrase over the other affect an audience's interpretation based on their social identity; the

phrases themselves are not scientifically interchangeable. Global warming is the rise in average global-level land, air, and water temperature, and climate change results from these warming temperatures.

Religion and morality have recently received attention as possible focal points of climate change messaging. Although some research suggests that climate change fails to activate our moral judgment,[34] following Pope Francis's release of his climate change encyclical, *Laudato Si*, Americans were more likely to consider climate change a moral or ethical issue.[35] Additional research suggests that even brief exposure to a picture of the pope and a statement about his views on climate change increased the likelihood of regarding climate change as a moral issue among Democrats and Republicans.[36] This finding implies the pope may be a figure who bridges political boundaries, although in another study, conservatives who were aware of the papal encyclical were less likely than liberals to view the Pope as a credible source of climate change information.[37] Religious frames may offer environmental educators new modes of communicating about climate change and may open opportunities for organizational partnerships.[38] Educators interested in developing programs around faith may want to connect with local faith leaders who are trusted sources of information and values.

Environmental educators appeal to their audiences' regional, professional, and interest group identities through framing.[39] Educators who trained foresters using Project Learning Tree's *Southeastern Forests and Climate Change* framed climate change around impacts to forest health in their region, whereas educators working with municipal leaders appealed to climate change action as preserving quality of life in the community. An educator working with bird-watchers framed climate change in terms of the impacts on the birds that her audiences love. Another educator appealed to his audience's religious identities by creating a skit that framed climate change action around the idea that God wanted humans to be good stewards of the earth. Recognizing social identities is an important part of "knowing your audience" and an important strategy for developing suitable program language and content.

Framing for Solutions

Framing climate change solutions is as important as framing information about climate science and impacts. When the media do present solutions, the solutions rarely match the scale of climate change as a global and intergenerational issue. The problem with this approach is "that it easily lapses into 'wallpaper'— the domestic, the routine, the boring and the too-easily ignorable. It can be lacking in energy and may not feel compelling. It is often placed alongside

alarmism—typified by headlines like '20 things you can do to save the planet from destruction.'"[40] Solutions that do not appear to match the significance of the threat can deplete people's sense of "response efficacy," or their perception of whether recommended actions will address the problem. As climate change presents threats at different scales, educators who do focus on the global scale would want to offer suggestions for how to link to global action. Similarly, educators highlighting local climate change impacts can focus on local climate change actions.

Although individual behaviors are certainly important and have the potential to substantially reduce greenhouse gas emissions,[41] collective actions may feel more appropriate given the scale of the problem. One way to bridge individual and collective actions is for audiences to share their individual actions through social networks—helping to make that action part of a collective movement.[42] Returning to our vignettes, Jayla takes this approach and recommends that visitors support local renewable energy initiatives in their city—an individual action that, if performed by many, will promote renewable over fossil fuel energy at a regional level. Will and Elena both plan collective stewardship actions, while Jayla includes suggestions for collective action in her exhibit. Will's students plan a tree-planting program, and Elena recruits a group of volunteers to create a living shoreline.

Citizen scientists in one study exhibited increased interest in a carbon footprint activity when they read messages that were framed in terms of collective action.[43] As an example of this in practice, NNOCCI trains educators to highlight community-level solutions in their programs, like joining community renewable energy collectives or working within their communities to enhance bike transportation. Research suggests that successful campaigns for individual or household-level climate action also include a social dimension in the form of marketing through social networks—making the individual who takes action feel like part of a collective movement.[44]

Framing for Self-Efficacy and Hope

NNOCCI educators cited community-level solutions as a means of providing their audiences with hope.[45] Feelings of hope, along with self-efficacy, are related to willingness to engage with climate change information.[46]

Self-efficacy is a "foundation for [environmental] action" because it "contributes to a sense of self-worth and resolve necessary to set and reach challenging goals."[47] Communication researchers have tied self-efficacy to climate change

action. People feel a greater sense of self-efficacy and believe their actions will decrease climate change impacts if they receive messages that frame climate change in terms of what they gain from action versus what they lose from inaction (e.g., "If *we act, we can* mitigate climate change impacts," versus "if we *don't* act, we *won't be able* to mitigate change impacts."). In short, more positive statements may better promote self-efficacy.[48]

Whereas self-efficacy is the expectancy that you can meet a goal, hope involves not only the expectancy but the ways in which to achieve the goal.[49] Hope consists of goals (what we want to happen), pathway thinking (our ability to figure out how to meet those goals), and agency thinking (motivation to use those pathways).[50] Sources of hope for Swedish and U.S. high school students include trust in themselves as individuals, trust in others, and positive reappraisal (cognitively reframing something as more positive).[51] High school students in North Carolina were more likely to engage in pro-environmental behavior if they were hopeful about climate change solutions.[52] For Swedish teenagers and young adults, hope in one's own and others' ability to meet the challenges of climate change predicted higher rates of energy conservation. Other emotions like worry may interact with hope to promote behavior. For example, among Swedish adults, hope predicted environmental behaviors like recycling, but only for people who were worried about climate change.[53]

How does one frame for hope? In addition to focusing on positive, solutions-based messaging, educators may want to consider framing climate change in terms of public health. Communication researchers tested the effects of framing climate change in terms of public health, national security, and risks to the environment on emotions including hope and anger. Authors connected climate change actions, like redesigning cities for safer foot and bike travel and public transportation, to reductions in traffic injuries. They also linked these actions to the benefits of increased physical activity and to the accompanying reductions in carbon emissions. The health frames evoked the most hope among political independents and conservatives. Moreover, conservatives and independents were more likely to support climate change mitigation when they read about climate change in terms of public health.[54] These findings suggest that some segments of the public may find health a more approachable, tangible subject than climate science, thus eliciting more hopeful feelings and inspiring climate action.[55] Framing environmental concerns around public health may be familiar to some environmental educators. For example, Project WET incorporates public health into watershed lessons, such as learning about hand-washing or solving a mystery about the origins of a cholera epidemic in nineteenth-century London.[56]

Framing for Values

Researchers have explored which values influence climate-friendly behavior, and environmental groups have started promoting values-based messaging as a way of targeting particular audiences.[57] Values play a role in defining social identities, such as political or religious identities, and can be another piece of the puzzle that explains climate change attitudes.[58] Values serve as guiding principles in our lives; they can be acquired through interactions with social groups and through individual experiences.[59] Some examples of values that we hear about in day-to-day conversation include family values or environmental values. Three types of values, altruistic (focus on the welfare of other people), biospheric (focus on the welfare of the environment), and egoistic (focus on oneself), have been used to help explain pro-environmental behaviors.[60] You might join a community renewable-energy collective for a variety of reasons that correspond to any one of these values; for example, you might perceive joining the collective to be the most affordable option (egoistic), believe that renewables help mitigate climate change impacts on human communities (altruistic), or you might see climate change mitigation as a way of minimizing impacts on the environment (biospheric).

Early in the climate change movement, groups tailored their messages to the pro-environmental values that their members held, focusing on "save the earth" messages or biospheric values.[61] Intuitively, you might expect biospheric or altruistic values to be especially predictive of environmental behavior, but research findings are mixed. A study conducted in the UK identified altruistic values (in particular, values related to social justice) as stronger motivators of low-carbon behavior than biospheric values.[62] Research involving residents from Michigan and Virginia found that altruistic values, along with traditional and family values like honoring one's parents or showing respect, correlated with support for climate change mitigation policies.[63] Some researchers argue that seemingly altruistic acts may actually be motivated by self-interest alongside altruism.[64] As opposed to selfishness, or operating without concern for others, self-interest is about taking care of your needs so you can continue to function and achieve a sense of happiness. Happiness can be tied to a variety of outcomes, including seeing others succeed and environmental improvement. When Elena says, "We all want to protect this area," she appeals to town members' altruism and self-interest.

Framing that appeals to strongly held values can provide a shortcut for audiences as they judge how and whether information is relevant to them.[65] A study of forest landowners tested four different videos framed around stewardship (a biospheric value) and timber (an egoistic value). When viewers' values aligned with the particular frames in the videos, they reported liking the video, trusting

the messenger in the video, and they registered higher rates of intending to take forest stewardship actions and actions to address climate change.[66] Other research suggests that framing pro-environmental appeals to resonate with national-level cultural values can bolster environmental engagement, as when appeals to purity increased purchases of carbon offsets among airline travelers from India, whereas appeals to individual choice increased such purchases among Americans.[67]

Beyond Word Choice—Developing a Program around Frames

You may wonder how to frame climate change in an entire program, beyond strategically choosing a few words or phrases. Fortunately, frames do more than elicit a particular interpretation; they can also communicate about a problem, its causes, and solutions. This conception of framing links to the work of the sociologists Robert Benford and David Snow on framing for social movements. Their explanation of core framing tasks is helpful for considering how to frame messages throughout an environmental education program.[68]

The first core framing task is to identify the problem and to explain who or what caused the problem. This is called "diagnostic framing." In a climate change education program, this could take the form of the introduction to a main climate-related topic covered in the program (e.g., climate change impacts on a local endangered species or on human health) and why climate change is occurring. The second core task is to propose solutions to the problem, or "prognostic framing." In a climate change education program, this might include a discussion of what your organization or people in the community are proposing to do about climate change and even a discussion of proposed solutions that you think will be ineffective. While prognostic framing proposes solutions, motivational framing (the third core task) is a call to action that encourages audiences to be agents of change who work toward those solutions. These core framing tasks could take many forms in an educational program, from lectures to dialogue to games to actual climate change mitigation or adaptation actions

Elena demonstrates how an educator can focus on intended outcomes (her town taking collective action to adapt to climate change by restoring coastal ecosystems) and can adapt her message depending on the audience (figure 8.1). She starts by involving her audiences and asks them to define the problem by sharing their experiences locally with coastal flooding and land change (diagnostic framing). She then explains why the problem exists. She uses a "climate change" rather than a "global warming frame" and emphasizes impacts related to sea level rise. Although she meets with resistance to her "diagnosis" about what
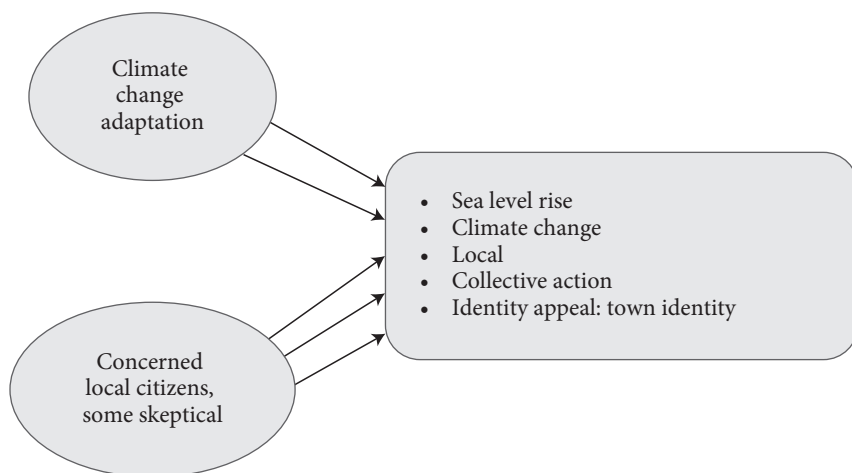
FIGURE 8.1   How Elena's outcome and audience inform her frames

causes flooding, she is still able to motivate her audiences by focusing on how they can address flooding through volunteering at a living shoreline event. In addition, Elena elicits her audience's local "town" identity; protecting the shoreline becomes a way to protect the town and its identity. Finally, Elena focuses on a collective action rather than individual behavior to inspire collective efficacy and the expectation that the town will meet climate change adaptation challenges in an environmentally sound way.

Jayla's outcome is climate change literacy, and she chooses a mix of regional and local frames to describe climate change (for example, she writes about climate change in California and in her nature center). Her nature center audience is concerned about climate change, but her volunteers explain that she needs to make a stronger case for why visitors should care about chaparral by appealing to their biospheric values and highlighting the uniqueness of chaparral systems.

Will seeks to build student climate literacy but also wants to achieve positive youth development through his students' action projects. Knowing some of his students might resist discussing climate change because of their conservative social identity, he begins by asking students to consider each other's opinions, hoping this will make all students comfortable discussing their ideas about climate change.

Bottom Line for Educators

Just as educators choose particular activities to meet their educational outcomes, they can choose frames that aid in achieving those outcomes. Choosing between "coastal flooding" and "climate change" has implications for how particular

audiences interpret the message, and therefore their overall understanding and willingness to take action. Building messages around hope and self-efficacy also enhances the likelihood audiences will act. Framing using values can provide a shortcut for audiences as they judge whether information matters to them. Educators can also organize their programs around diagnostic, prognostic, and motivational framing tasks. In general, using a positive frame by showing how people can take collective action to address a local problem is good practice.