Climate Change Education Resources

I. **IPCC Communications Handbook**

A. *Climate Outreach*: Principles for effective communication and public engagement on climate change

1. Be a confident communicator
2. **Talk about the real world, not abstract ideas**
3. Connect with what matters to your **audience**
4. Tell a human story
5. Lead with what you know
6. Use the most effective visual communication

II. **Frameworks Institute**

. How to talk about climate change and the ocean

1. "In sum, multiple frame elements can be recruited to reliably and productively expand Americans' conceptual repertoire for thinking about ocean and climate change. An effective narrative must match tool to task strategically, starting from the knowledge of where people get stuck in understanding core concepts. FrameWorks' research argues that it is only by assembling a coherent narrative that addresses these specific holes that communicators can make progress in understanding and engagement. Taken together, these tools tell a story that "fills in" the gaps in people's knowledge and also aligns their thinking with deep beliefs about their responsibility to the environment and their vision of the world they wish to leave to the next generation. This narrative approach is oriented neither to head nor heart, but to both. The FrameWorks Institute designed and empirically tested the Heat Trapping Blanket Explanatory Metaphor over a decade ago. Since that time, it has proven to be a useful tool and is in frequent use in public discourse, by a wide range of science communicators - academic scientists, educators and interpreters in aquariums and zoos, policymakers from the Environmental Protection Agency, and more. In this latest round of research, we have developed new tools that hold the potential to help climate communicators further translate the science of climate and ocean change. The findings suggest that these new tools will be just as "sticky" when communicators use them consistently and intentionally. Climate scientists and other science translators may have initially started as reluctant advocates, but their work has inspired millions of people across the globe to take action on this issue. Our hope is to contribute in some way to what many believe to be the most critical act of science translation in the century."

A. Getting to the heart of the matter: using metaphorical and causal explanation to increase public understanding of climate and ocean change

III. Scholastic Parents - Communicate with your kids about climate change

. For kids under 8

1. "First, consider your child's age. If he's under 8, it's best not to broach the subject unless you have to. Instead, strive to strengthen his relationship with the environment so that when the time comes, he will have already developed a passion and appreciation for nature. Hiking, camping, gardening, and just stopping to notice natural beauty are all great ways to enhance this relationship.

Reading books about forests, oceans, plants, or animals are also great ways to foster a relationship between your child and the natural world.

2. If your youngster does ask you about global warming, respond with a short, reassuring answer. Stress that adults are working very hard to solve the problem. Unfortunately, one of the stigmas that accompanies climate change is that it is a burden that will be left to the next generation. But this burden is far too heavy for young children to wrap their minds around."

A. For older children

1. "Now you can handle the topic a little differently. Kids in grades 3 through 8 begin to develop the ability to think abstractly about more complex topics. They are ready to learn about current events, including global warming. More importantly, kids of this age are very likely to pick up both accurate *and* inaccurate information from peers and even teachers. So create opportunities to talk with your child about what she knows and doesn't know about global warming. Answer questions to the best of your ability, but admit defeat when you don't know something (then do some research together). This will encourage your kids to do the same in the future, and help them learn how to seek out answers.
2. Watch TV news shows or read print coverage aloud to each other. This can help you weigh your child's reactions to the issue. Is she bored with the scientific jargon? Scared of what will happen to the earth? Or excited to get involved and start making a difference? Your child might grasp the problem and say, "I want to help!" Fantastic! You've just created a budding environmentalist, and the world certainly needs them. Encourage this enthusiasm along with optimism, emphasizing the fact that it is not too late to save the planet. You might discuss careers that help the environment (such as forest resource officer, hydrologist, geologist, agricultural technologist, biofuels engineer, solar sales representative, wind development associate, atmospheric scientist, meteorologist)."

IV. Mashable - How to talk to kids about climate change without scaring them

. Help them develop an appreciation for the environment before explaining climate change

1. "Stacie Paxton Cobos, senior vice president for communications and marketing at The Climate Reality Project, a nonprofit organization founded by Al Gore, says parents should first help their children develop an appreciation of the natural world before trying to explain climate change.
2. That can mean watching a nature documentary, visiting a wildlife center or natural history museum, or introducing a child to natural habitats like a creek, beach, or forest. Such experiences gives kids a sense of why taking care of the earth is important, which ultimately helps them grasp the stakes of climate change — and care about preventing it."

a. "Cobos, a parent of two children under the age of five, uses everyday opportunities like watering flowers, visiting the farmers' market, and walking instead of driving to help her kids understand different aspects of nature and conservation.

b. Emily Edmonds-Langham, manager of elementary education at the American Museum of Natural History in New York City, says parents should pay close attention to their child's interest in the natural world. If they're fascinated by birds they see walking home from school, try learning more about that species and how your family can help them thrive.

c. "It's about running with your child's interest ... rather than overwhelming them with all of the issues around climate change," she says.

d. Edmonds-Langham also recommends modeling and explaining household choices focused on conservation (think recycling, avoiding unnecessary plastic products, and selecting food items that produce less greenhouse gases). When you connect such activities to protecting the planet and its resources, children develop a deeper understanding of how human behavior can affect the earth."

A. Explaining the science

1. "Michael Mann, a distinguished professor of atmospheric science at Penn State, says adults often make two mistakes when it comes to discussing climate change with kids: They assume it's too difficult a concept for them to grasp and believe that they're not in a position to do anything about it."

B. Focus on solutions and skills

1. "By the time children reach the first or second grade, parents can try having more complex discussions about the causes of climate change and the effects of global warming, provided they use simplified or relatable language.
2. Edmonds-Langham says elementary school-age children who participate in the museum's classes and educational programming most often want to know how to help. By fourth grade, kids can understand why climate change threatens habitats and animals, and that human activity is to blame.
3. "I think one of the things we try to stress is success stories and trying to be action-oriented," she says. "We want to empower them to make steps toward advocacy."
4. Parents can help children focus on making a positive impact, no matter how small. NASA's Climate Kids site offers practical suggestions for children, including planting their own fruits and vegetables, turning off lights when they're not needed, and drinking tap water instead of bottled water. Parents can also share inspiring stories of youth activists working to stop climate change.
5. Empowerment can also come via education. Third graders at the museum, for example, spent some of their time in a yearlong class learning about the difference between climate and weather and developing the basic skills to understand data collection. That included hearing about the types of evidence climate scientists collect or measure, like ice cores, tree rings, and other visible or tangible examples of how climate has changed over the millennia.
6. Learning why climate and weather aren't the same is critical for children (and their parents), particularly given that some falsely insist extreme weather events — a blizzard in April, a heat wave in October — mean climate change isn't real.
7. Evan Rothstein, an earth and planetary science educator at the American Museum of Natural history, frequently works with middle school children and says they tend to question whether the conclusions of climate science are true. They want to know if polar ice caps are really melting or if the ocean is becoming more acidic.
8. Rothstein cautions against giving yes or no answers to such questions but instead teaching children the critical thinking skills to read, analyze, and assess various claims they might encounter. The goal is to help adolescents in that developmental stage have an informed conversation.
9. Regardless of a child's age, parents should avoid emphasizing fear or helplessness when they talk about climate change.
10. "The trick is honesty," says Rothstein. "You have to find that balance between freaking them out and explaining the changing world they're living in."

11. Parents who are nervous about bringing up climate change with their child might wait instead for a teacher to raise the subject first. But Edmonds-Langham says parents have a distinct advantage over educators because the former know their children's interests, their emotional intelligence, and how they'll be affected by news that's difficult.
12. "You can find ways of supporting them, and find ways to make them not quite so sad about it," says Edmonds-Langham.
13. When parents focus on solutions and highlight success stories, it can fundamentally change the way children think about climate change — and what role kids see for themselves in changing the planet's future."

V. CC education for homeschoolers
   . How do homeschooled kids stay connected? - Local homeschool groups
   A. What is their required curriculum? - Most of the time there are state requirements
   B. How can we reach homeschoolers more easily about climate change? - Reach out to **local homeschool groups** and coordinate events with them (field trips, volunteer opportunities, co-ops, academic enrichment opportunities, conventions on climate change, etc). Maybe reach out to the state to see if they would incorporate climate change into homeschool curriculum as well.
   C. http://marylandpublicschools.org/about/pages/dee/npsa/index.aspx
   D.

VI. CC education for private school kids
   . How do we contact all private schools efficiently? - Compile a list of all private school primary contacts and send out a mass email about incorporating climate change into curricula, and about **organizing events related to climate change**
      1. **Propose something to hand out or discuss at open houses** related to climate change/environmental awareness, since those are popular among private schools
   A. https://www.aimsmddc.org/ - Resource for private schools

VII. MCPS Resources
   . https://www.montgomeryschoolsmd.org/curriculum/outdoored/outreach/garden.aspx
   A. https://dnr.maryland.gov/Education/pages/greenschools.aspx
   B. https://www.montgomeryschoolsmd.org/uploadedFiles/190925%20Climate%20Change%20Prevention%20Initiatives.pdf
   C. https://www.montgomeryschoolsmd.org/uploadedFiles/departments/facilities/greenschoolsfocus/FY18_MCPS_ESMP.pdf