



## REFLECTION

By Christine Zhu

I knew I wanted to write about a local environmental issue, and seeing as we were in Maine, nothing seemed more perfect than lobster. I've always been interested in the most seemingly mundane aspects of life, including wondering where things end up. With lobster in such high demand, what happens to the parts unfit for human consumption?

My mentor eagerly offered me advice, noting that lobster exoskeletons may just end up in the trash. After a quick Google search, I discovered that a lobster exoskeleton contains a material called chitin. This polymer can be reused for commercial, agricultural and industrial purposes. I researched and contacted several chitin repurposing companies to learn more.

Initially, my biggest roadblock was my fear of calling complete strangers and essentially pestering them for information. More often than not, I was greeted by a voicemail message as opposed to an actual human. Aside from chitin repurposing companies, I called researchers to inquire about their work with chitin and local restaurants to ask how they dispose of their exoskeletons. In one scenario, upon hearing that I wanted to interview and not order food, a restaurant briskly hung up on me. I'm sure they were quite busy, but it was rather demotivating. This experience, like many others, taught me to keep trying no matter what. Sure, I faced rejection in the form of answering machines. Nevertheless, I didn't give up. Through my persistence, I eventually gathered enough information — and quotes! — to complete my mission: writing an environmental news article.

Often, when scientific reports emerge, the average person may not have the time or energy to parse through and figure out what's going on. In other situations, they may try but not understand the scientific language. It's crucial for reporters to translate these somewhat confusing reports into information that readers can consume quickly and effortlessly. And it's essential for readers to remain up to date about the world around us. After all, we're living in it.



IEJ student Christine Zhu and Will Olsen learn about proxies by measuring the circumference of a tree at the College of the Atlantic in Bar Harbor, Maine. Photo by Katrina Paron

IEJ students tour the NYT newsroom in New York City. Photo by Sandhya Viswanathan

## Teen activists want climate education earlier in curriculum

By Madeleine Klass

The debate for teen environmentalists is clear: How many Fridays can they miss school to join their local School Strike for Climate Change? The debate for environmental educators is murky: When should they start teaching students about climate change?

Teen activists are asking that climate education be taught earlier in school curricula. But some teachers fear that introducing the concept too soon could scare or turn kids off the topic.

"Climate education should play a really prominent part of this generation's education because it's not just a topic in science; it's something we're going to be having to deal with in every aspect of our lives," said 16-year-old activist Ember Penney, a junior at Woods Charter School in Chapel Hill, North Carolina.

While passionate students insist on changing the K-12 curriculum to emphasize climate education earlier, some environmental educators have a different opinion. They argue that if taught too early, climate change can lead to either extreme eco-anxiety or — worse — denialism.

"We know that teaching concepts like climate science can be very challenging to students' prior notions of humanity's impact on the planet, but it's also impactful to mental health and mental well-being," said Cheryl Manning, the former president of the National Earth Science Teachers Association and an Albert Einstein Distinguished Fellow at the National Science Foundation.

In 2017, the American Psychological Association published a study revealing that people could develop depression, post-traumatic stress disorder, fatalism, grief and relationship issues, and could lose their own identity when trying to understand their role in the complex topic. "Although everyone is able to cope with a certain amount of stress, the accumulated effects of compound stress can tip a person from mentally healthy to mentally ill," the study's authors wrote.

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IEJ participants Abby Beaugard and Lydia Valentine participate in a trust exercise on the first day of camp. Photo by Bianca Fortis

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That can be particularly true for children, researchers found. Kids who have trouble expressing their emotions might display physical syndromes such as headaches or might change their behavior to cope with the stress.

Manning has seen the effects of eco-anxiety on teens firsthand as an Advanced Placement environmental teacher. “You hear things like, ‘I just want to go live by myself in the woods.’ So there is a sense of a desire to

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**AMANDA RING, educator  
Clean Foundation**

withdraw from society,” she said. “There are kids who just feel absolutely hopeless about the whole situation.” She recommends keeping earth science classes in high school, while slowly introducing students to specific smaller environmental topics starting in kindergarten. A curriculum guide provided by the National Academies of Sciences supports that approach. Brian Eberly, a math and science teacher at SunRidge School in Sebastopol, California, said he thinks that fifth or sixth grade is the earliest students should be learning about climate change. He agrees with Manning that children in earlier grades should be learning about their planet more broadly. Without doing so, children will be more apathetic to climate change when they are older.

Until the fifth grade, “you want to be talking about how cool animals are to get them excited and like it,” Eberly said. “When they become old enough to think abstractly about the bigger problems, they already are caring about it.”

Like other passionate student activists, Penney disagrees with those theories. Her school offered an introduction to earth science class in sixth grade but did not discuss climate change extensively until seventh and eighth grade. Penney, who is a fellow with the nonprofit organization Alliance for Climate Education, said she was scared when first learning about climate change. But there was comfort in knowing that she and her fellow students were in it together.

“If I learned about it in, say, elementary school it probably would’ve felt like a bigger deal because the things you learn at a young age are kind of the things that shape you for the rest of your life,” she said. “Everything you learn at that age is said to be the important things like arithmetic, the alphabet and things like that.”

Penney said if she were teaching climate change, she would make a point to include current developments in technology and other fields that are combating climate change to give students hope.

Organizations like the Clean Foundation, a nonprofit environmental science education organization that teaches young students from kindergarten to eighth grade about earth science and climate change, use this hopeful, uplifting and narrative approach. For students in kindergarten to third grade, the organization uses a superhero puppet named Eddie to inspire kids to help their planet while teaching them about specific issues.

Amanda Ring, a 24-year-old bilingual enviro-educator with the Clean Foundation, said it’s about mutual respect. “I know people are really concerned, but I think they underestimate the power of youth to be hopeful, to believe in themselves and to believe that they can have an impact,” she said.