




New Program Helps Texas Schools Teach Carbon Capture

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From left to right: Texas middle school science teachers Cynthia Hopkins, Julia Dolive and Stephanie Hurst work with the Gulf Coast Carbon Center to develop lesson plans for their students.

When Cynthia Hopkins returned to her 7th grade science classroom in Corpus Christi this fall she had a little something extra in her toolkit — ready-made lesson plans and materials to teach her students about carbon emissions and methods of safely trapping them underground.

The lessons aren't just topical, they're geographically important for Hopkins' students at Harold C. Kaffie Middle School. The Gulf Coast is a hot spot for the burgeoning carbon capture and storage (CCS) industry, with more than 50 projects underway or in the planning phase.

CCS is a method of taking greenhouse gases emitted by power plants, industrial facilities or even directly from the air and storing them underground in geological formations that will reliably and securely hold them. It is one of the emerging strategies to counter

human-caused climate change. The industry is opening up new career paths, too.

“Things are coming to Corpus, and I want our kids to understand that there are opportunities for them,” Hopkins said. “The only way they can understand is to know what (carbon capture and storage) is.”

Hopkins was among the first cohort of Texas science teachers to take special training over the summer offered by The University of Texas at Austin’s Gulf Coast Carbon Center. The goal was to come up with a K-12 curriculum on carbon capture that is ready-fit for the classroom.

“We recruited three master teachers from the Houston and Corpus areas, and they were just awesome,” said Sue Hovorka, the principal investigator at the Gulf Coast Carbon Center. “Really, they mentored us on how to do this correctly.”

The carbon center is part of the Bureau of Economic Geology at the UT Jackson School of Geosciences. It has been researching and testing CCS for decades, and was recently chosen by the U.S. Department of Energy (DOE) to lead a consortium of regional universities to provide information about CCS to people along the Gulf Coast. With more CCS projects popping up, people have questions about their safety and reliability. The consortium’s job is to help answer those questions. The other partner universities are Texas A&M University-Kingsville, Texas A&M University-Corpus Christi, University of Houston, Lamar University and Louisiana State University.

The consortium’s efforts are supported by a \$2.5 million DOE grant and involve every level of education, including the K-12 program spearheaded by the Gulf Coast Carbon Center.

Hovorka and her team worked with the teachers to come up with lessons that meet the requirements set by Texas Essential Knowledge and Skills – or TEKS. These are a collection of knowledge and skills determined by the Texas Education Agency to be taught by a specific grade. The team even developed a comic book explaining carbon capture to help engage the young audience.

Hopkins has already implemented some of the lessons in her 7th grade class, where she used Styrofoam balls provided by the program to help her students build carbon dioxide molecules.

“I know that may not sound like a lot, but those things can really add up for teachers,” she said. “My kids were so excited because they got to do it hands-on. The fact that I was supported by these materials, it really engaged my kids.”

Stephanie Hurst, an 8th grade science teacher at Cleveland Middle School in Cleveland, Texas, was also part of this summer training.

The program introduced her to CCS, and she came away impressed by the potential.

“I had not heard of carbon capture before and was amazed with how much we can actually store in the ground,” she said.

Hurst said that Texas TEKS require her to teach the carbon cycle, greenhouse gases and deforestation beginning in late January, which means the summer training offers a perfect opportunity to work the new lessons into her curriculum. She’s also excited about the opportunity to create a science project for her National Junior Honors Society students based on carbon capture and storage, but is still trying to figure out how to do it.

Hopkins and Hurst were introduced to the program at last year’s Texas Conference for the Advancement of Science Teaching. The duo, and Hovorka, will be presenting at this year’s conference in San Antonio from Nov. 14-16, where they will be looking to get more teachers interested in the new CCS program.

Hurst said she can’t wait to show her fellow science teachers how it all works.

“Because we’re in the classroom, we’re able to pull carbon capture into this TEKS flawlessly,” she said. “[Science teachers are] going to be able to take what we have and take it straight into their classroom, and all they have to do is come up with a little bit of prep work.”

For more information on the program, lesson plans and educational resources, see <https://gccc.beg.utexas.edu/put-it-back> (<https://gccc.beg.utexas.edu/put-it-back>)

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The UT City Climate CoLab has released its Winter Outlook for 2025, and is forecasting a season that is warmer than normal.

See previous reports and more information about the CoLab here: <http://www.austintexas.gov/departments/office-resilience-initiatives> (<http://www.austintexas.gov/departments/office-resilience-initiatives>)  (<https://twitter.com/txgeosciences/status/1875262146550104243>)

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This year, the Jackson School launched a new major in climate system science – a first for the state of Texas.

Learn more about our newest major and how climate expertise at the school and the growth in climate careers helped make it a reality.

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