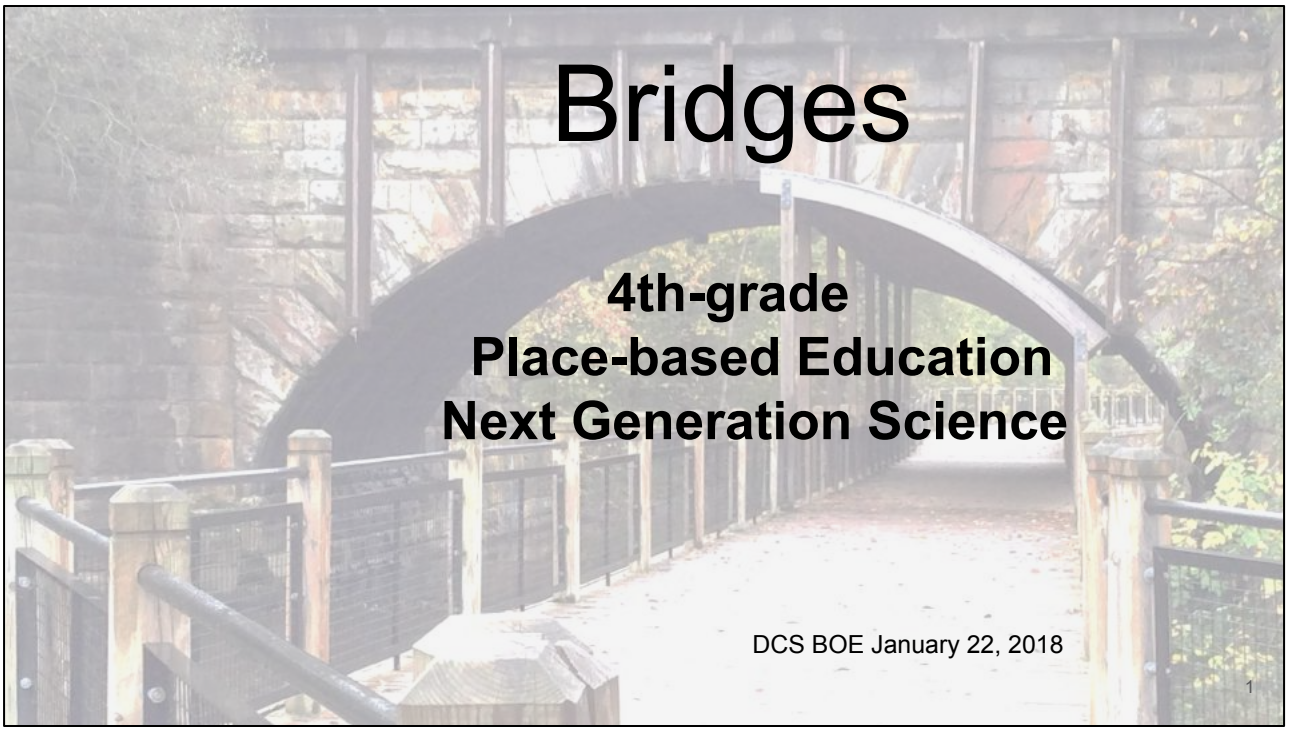


I am Jeff Dagg, an instructional coach for the district and this is Deb Eber, a 4th grade teacher. This year we have been working with other teachers to implement the new science standards and explore place-based education. We have several students with us tonight that would like to share the story of what the new science standards and place-based educational practices look like in the classroom and in the community. We will now turn the presentation over to the students.

This is us!

Good evening! We are student representatives from Mrs. Eber's, Mrs. Armbruster's, Ms. Kohler's, and Mr. Barnes' 4th grade classes. (students say your names). Any of
our team members in the audience please stand up too. Some of our teammates are at a City Council meeting tonight trying to get a student researched sign approved for Mill Creek Park.

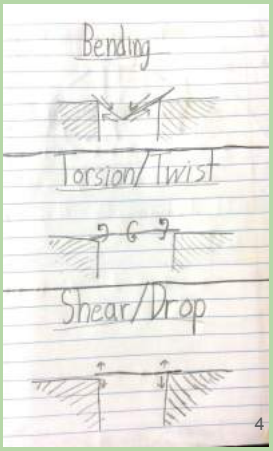
Phenomenon: Tacoma Narrows Bridge Collapse

Driving Question: How do bridges stay up?

We began our study of bridges by watching a video of the Tacoma Narrows Bridge collapsing. We generated a lot of questions about how bridges stay up. The questions fell into categories that led to several investigations.

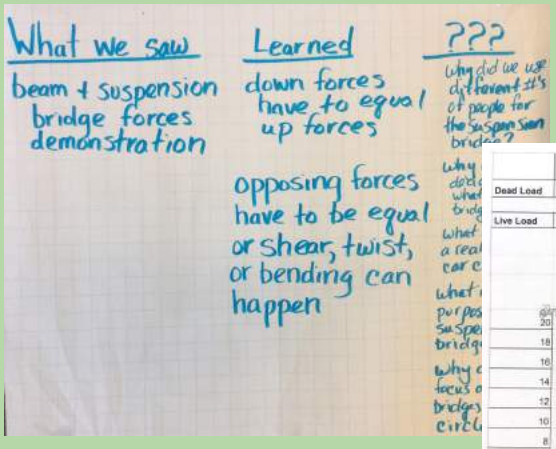
Investigations:

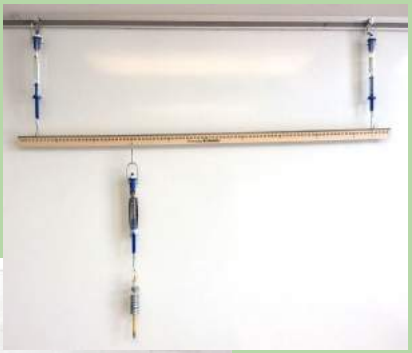
- sinking support
- paper bridges
- “Building Big” website
- suspension bridge loads

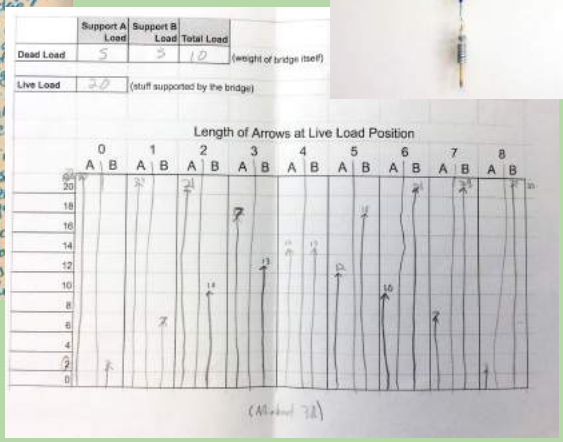


One example of an investigation was the paper bridge challenge. We worked in teams to design bridges that had to meet certain specifications with limited resources and a limited budget. We loaded the bridges until they collapsed. We used what we learned about structure failures to build better bridges the next time.

Inquiry Charts



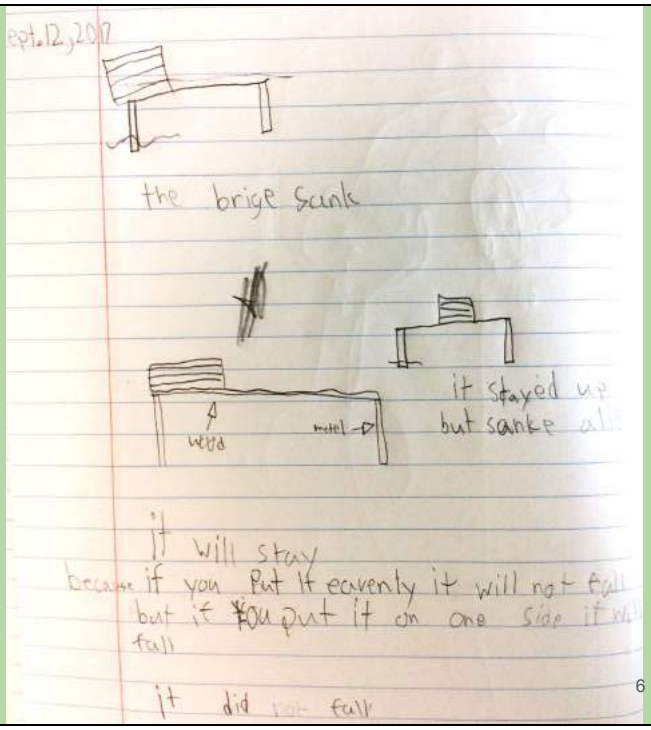




After each investigation, we filled out an Inquiry Chart. This is an example from when we studied loads on suspension bridges. We discussed what we observed, summarized what we learned, and generated more questions.

Science Journals

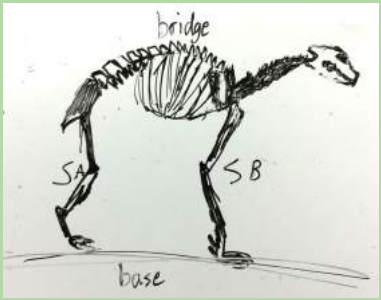
- predictions
- data
- illustrations
- reflections
- models

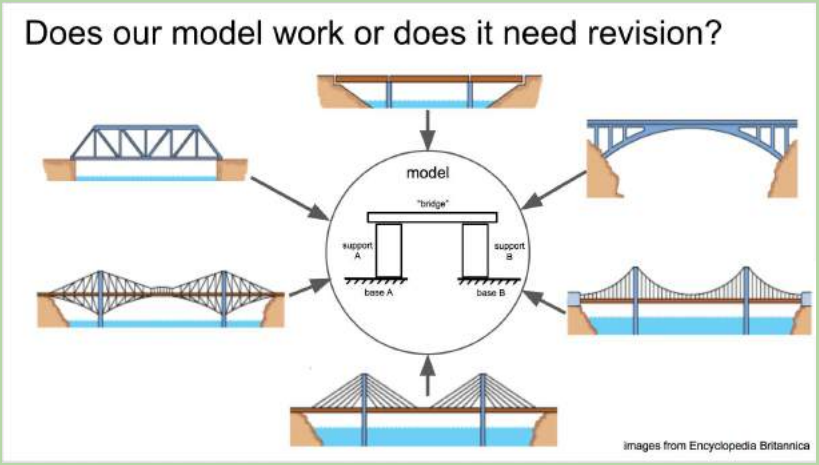


We have been keeping science journals for our drawings, predictions, observations, and models.

Modeling

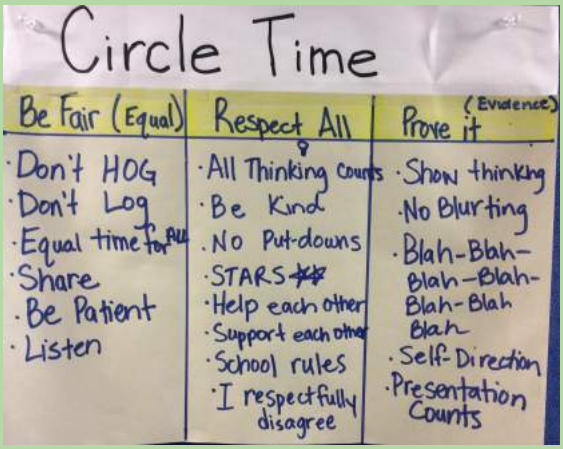
- simple
- general
- make predictions
- revisable





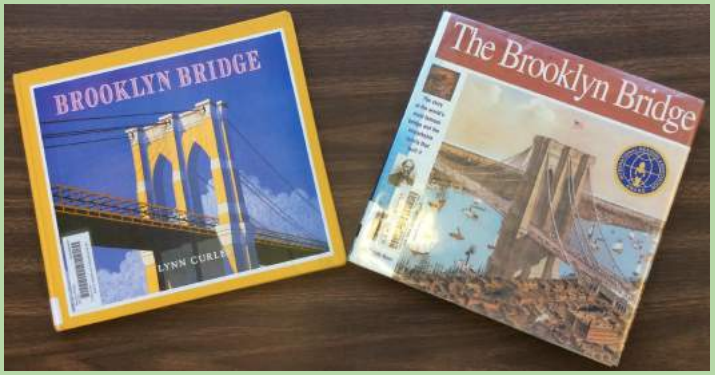
We learned the difference between scientific models and scale models. All bridges have similarities. Bridge models can be applied to other structures.

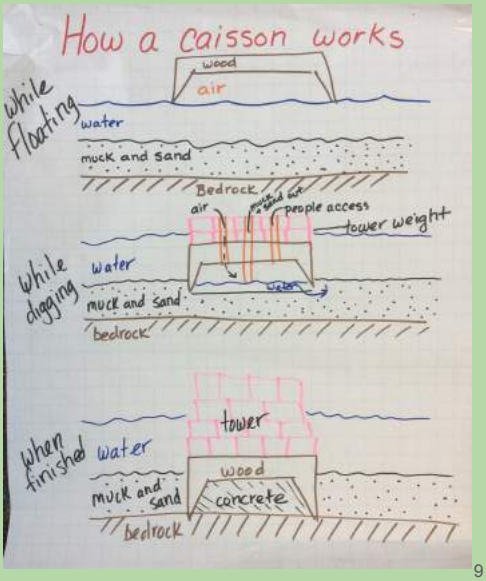
Circle Discussions



The students sit in a circle for class discussions. We call on each other and challenge ourselves not to be “hogs” or “logs”. When we contribute to the discussion, we say “I agree”, “I would add”, or “I respectfully disagree” and give evidence to support our thinking.

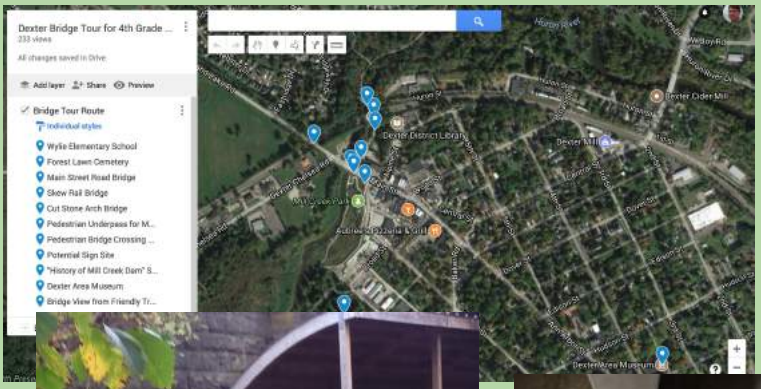
English Language Arts

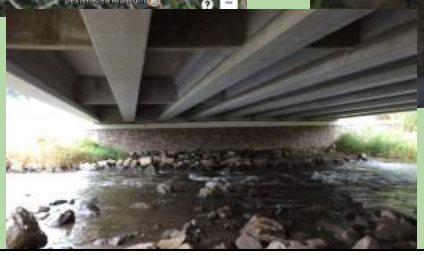




In a “read-aloud”, we learned the story behind the design and construction of the Brooklyn Bridge. Building the bridge was hard and workers got “the bends” from working deep below the surface of the river in sunken wooden caissons. We learned how Emily Roebling managed much of the project after her husband became disabled from the long term effects of the bends.

Walking Tour of Dexter Bridges





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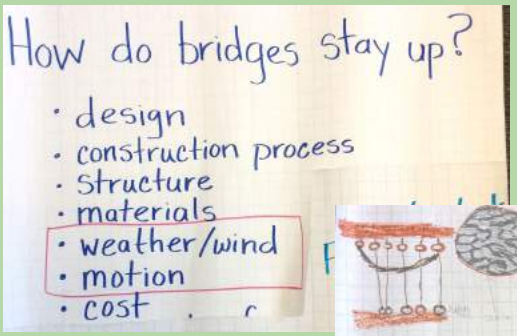
Our teams took a walking tour of Mill Creek Park to learn about the history and structure of our local bridges. We saw where the main street bridge replaced the previous bridge and dam. We talked about the stone arch bridges. We also discussed the pedestrian bridge under the Mill Creek Bridge. On the way back to the school, we studied the interpretive signs in Mill Creek Park and stopped at Forest Lawn Cemetery to pay our respects to Mrs. Warner, who died crossing the railroad tracks before the viaduct was built.

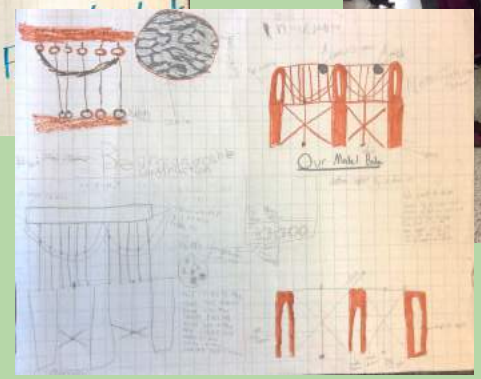
Local Resources

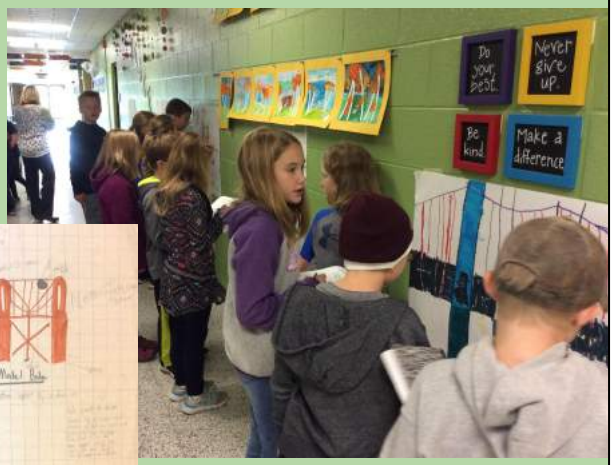
- civil engineer from Washtenaw County Road Commission
- authors/historians
- Dexter Historical Society
- Washtenaw County Historical Society
- U of M - Engineering and CSED
- Michigan Aerospace Corporation

Just like the Brooklyn Bridge has a story, we learned that Dexter's stone arch bridges have a story. The skew bridge was created after citizens petitioned the railroad to make the crossing safer where Martha Warner was struck by a train. Both stone bridges were designed by Frederick Pelham, the first African-American, to receive an engineering degree from the University of Michigan.

Tacoma Narrows Bridge Redesign







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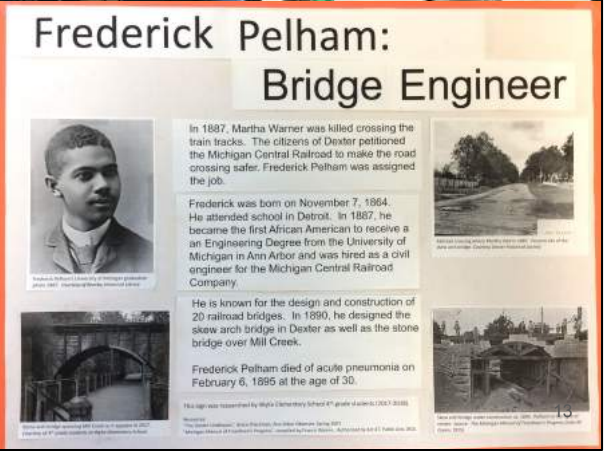
After all our investigations, we came back to our original question of “How do bridges stay up?” We formed teams to redesign the Tacoma Narrows Bridge. Our teams also acted as experts to offer suggestions to other teams to help them make revisions before they submitted their final designs.

Social Studies Connection

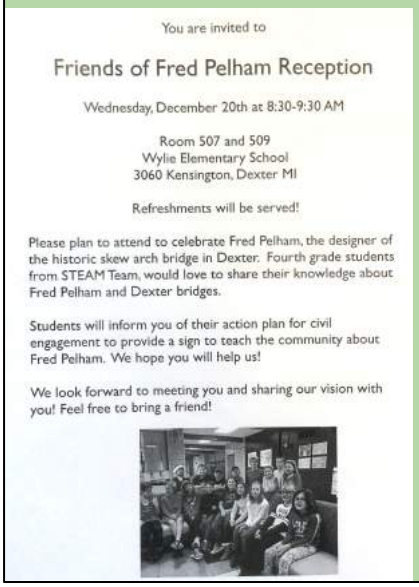
Civic engagement opportunities:

- lunchroom petition
- Parks and Recreation
- Arts, Heritage, and Culture
- City Council
- community reception & fundraising
- upcoming: EMU Community Forum



We became interested in creating a sign for Mill Creek Park to tell the story of the stone bridges. A lot of us volunteered to come in during lunch and a few recesses to work on the sign project. We got 374 signatures on a student petition at Wylie. We have been doing community presentations ever since and have a few more to go.

Community Reception


You are invited to

Friends of Fred Pelham Reception

Wednesday, December 20th at 8:30-9:30 AM

Room 507 and 509
Wylie Elementary School
3060 Kensington, Dexter MI

Refreshments will be served!

Please plan to attend to celebrate Fred Pelham, the designer of the historic skew arch bridge in Dexter. Fourth grade students from STEAM Team, would love to share their knowledge about Fred Pelham and Dexter bridges.

Students will inform you of their action plan for civil engagement to provide a sign to teach the community about Fred Pelham. We hope you will help us!

We look forward to meeting you and sharing our vision with you! Feel free to bring a friend!

We wanted to share our bridge studies and our sign proposal with our peers, our families, the people who supported our research, and the community so we held a reception in our classrooms. We tested our plan with other classes in the building and invited Mrs. Steadman's class to visit from Bates. The Dexter Bakery donated a cake with a picture of Fred Pelham on it for the real event. Mayor Keogh came to the reception and did the honors of cutting the cake. We had visitors from the University of Michigan, the WISD, the Michigan Department of Education, and the local historical societies. A reporter from MLive did a story on us. We have raised enough money to cover the estimated $2,000 needed for the sign. Any additional funds we raise

will go toward other civic engagement projects connected with the history and natural areas of Dexter. If the city approves the sign, we hope to get it built and installed before the end of the year. We have contacts who know Fred Pelham's relatives and hope to invite them to an unveiling ceremony.

Additional Science and Engineering Explorations

- Michigan Fossils
- Lakeshore Erosion
- Wylie Whirlwind
- Physics of Sledding
- Genius Hour

Future

- Waves (with Music)
- Stormwater and Land Use

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The bridge project was just the first of our local science projects. We have done several others and the teacher's are planning more for the rest of the school year.

Questions?

Thank you for allowing us to present tonight. We will now take questions from the board.