Let’s explore.
Sketch your sand dollar.

- Use your mounted white paper.
- Make it at least as big as actual size.
- Position your drawing to leave room for text.
- Suggestion: pencil then black pen.
- Be ready to say your sand dollar questions aloud.
Using Tools
We Wonder...
Exploring Our Questions

Choose some questions and answer them using text.

Choices:
› Mini book
› Internet

Share your answers for our chart.
Put it in Writing!

- Construct some well-composed language to capture one or more new things you learned about sand dollars.
- Write it on your sand dollar card.
- You have choices!
  - Shape poem?
  - Haiku?
  - Paragraph?
  - Or...
Begin your writing with “I Didn’t Know That…”

Complete the prompt with one or more sentences that use at least one new word. (The more the merrier!)
THAT was inquiry based learning. Let’s Analyze It.

What’s your response?
Why Inquiry-Based Instruction?
Inquiry Teaches Students How to Learn

- Inquiry teaches content with understanding (not rote memorization).
- “The need to know” is a human drive. Inquiry-based instruction is very motivating.
- When students learn through inquiry, they learn the content AND how to learn...forever!
The Next Generation Science Standards
1. **Engage**: Pique interest, questions.
2. **Explore**: Hands-on involvement to address questions.
3. **Explanation**: Answering the qs in formal terms.
4. **Extension**: Use the information.
5. **Evaluation**: Everyone assesses what was learned.
Leading Inquiry-Based Learning

Structures and Tips
Tips: Talk like Scientists and Engineers

- Devise situations that encourage questions about the built and physical environment.
- Create problem/question settings and paths to explore them.
- Talk less. Listen more.
- Productive questions
  - What are you wondering?
  - What’s the problem?
  - How can you find out?
  - What’s an alternative explanation?
  - Does it work when you try it?
  - What’s your evidence?
Let’s Live It Again!

Engineering Example
PROBLEM!! We need a boat that can carry a HUGE number of pennies!

Constraints:
- Foil
- 6X6 inches
- Right now!

Talk about it!

Build one. Try it.

Build a second. Try it again. Compare.
The Three Phases of Engineering Design

- Defining problems
  - Criteria
  - Constraints

- Develop Solutions
  - Consider multiple possible solutions

- Optimizing solutions
  - Test solutions and compare
  - Consider trade-offs
  - Assess impacts
Ticket Out!

What can YOU do better MONDAY to encourage kids to inquire?
Thanks for coming!

Go forth and inquire!