Narrative Curriculum

Using Narratives to introduce STEM lessons

Introducing STEM – Narrative

What is Narrative Curriculum?

- Consider curriculum as a story
- Stories rarely lay out all the facts and ideas in a step- by- step fashion
- Sometimes illogical & incomplete, stories are likely to engage
- Storytellers are great teachers
- Instead of presenting a straightforward sequence of events, the storyteller deliberately raises questions and delays answering them
- Things learned in the form of a story are easier to remember
- PBL thrusts students into problem situations immediately, much like a reader is thrust into the middle of a story

Spiders: Natures Weavers (2nd)

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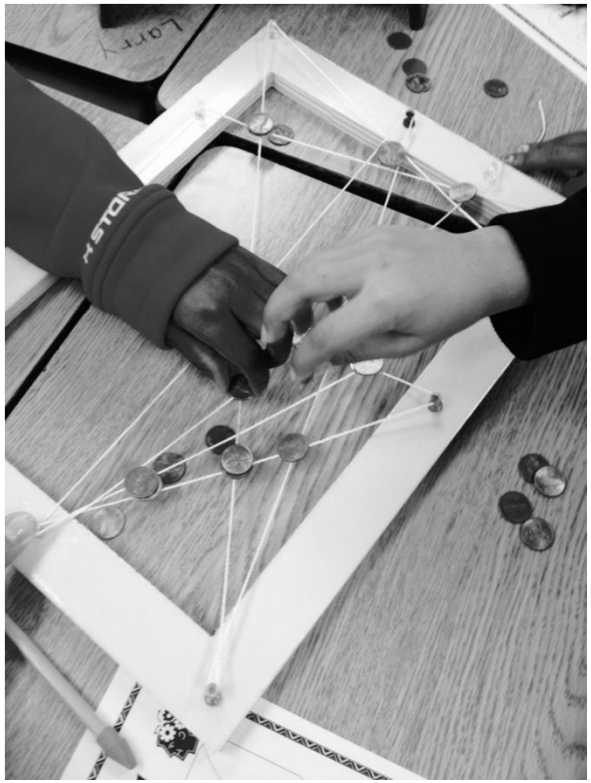


Narrative Curriculum

3 Questions answered in all Narrative Curricula

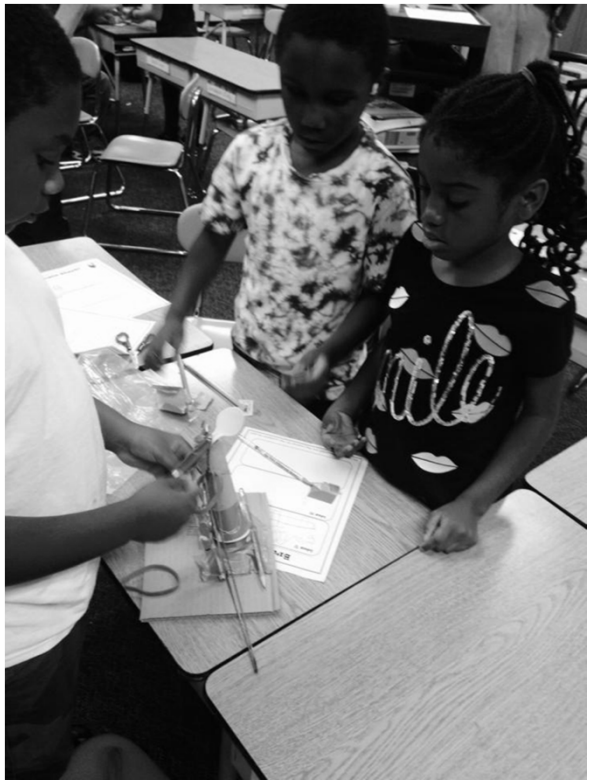
- What do we know? --What do we need to know? --How can we find out?

Key Features of Narrative Curriculum

The presence of a mystery, dilemma, or oddity is essential

- The most basic feature of all compelling stories (or problems)
- We are placed into an environment that has to be figured out
- Designed to provide drama, to offer surprises, twists, and turns
- What drives a story? What makes it worth telling? (TROUBLE)
  - Misfit between characters, their actions, the goals of the story, the setting, and the means
- A good story centers on what is essential (A big idea)

Dogzilla (3rd)



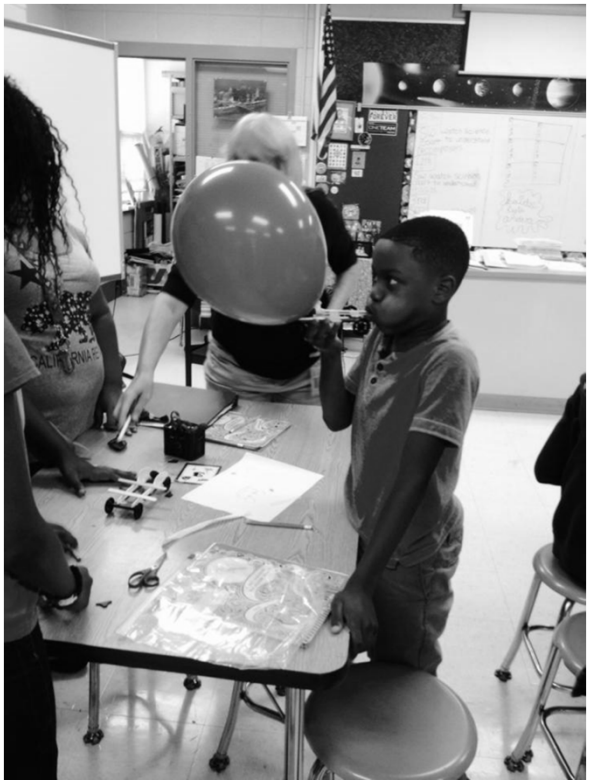
Dogzilla (3rd)

Narrative Curriculum

5 Essential Elements of a Narrative Curriculum

- Identifying importance: What is most important about this topic? Why should it matter to students?
- Finding binary opposites: What opposites best capture the importance of the topic?
- Organizing content into story form: What content most dramatically embodies the opposites
- Conclusion: What is the best way of resolving the conflicts between the opposites/solve the conflict
- Evaluation: How will we determine whether they have learned?

Race for the Future (4th)



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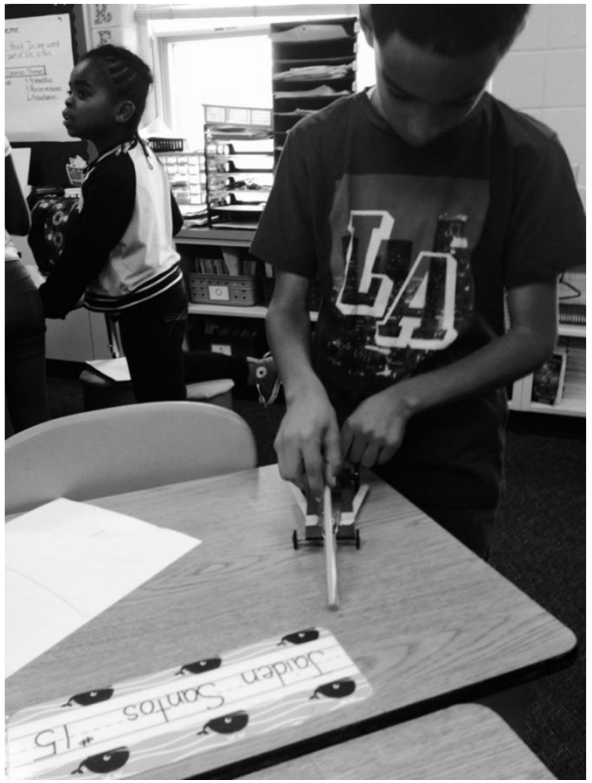


Informational Texts as Narrative Curriculum

What the standards say:

- Build knowledge through content-rich nonfiction and informational texts, in addition to literature
- Produce reading and writing grounded in evidence from the text, both literary and informational
- Regularly practice with complex text and its academic vocabulary

Informational Text Characteristics:

- Not what it once was!
- Colorful
- Fun
- Engaging
- Rich content
- Learning standards
- Not boring
- Ample opportunities for learning
- Foundation for future learning

Benefits of Using Informational Text

Exposure within early grades leads to:

- Kindergarten and ELL students have better grasp on language when reading informational text
- Increased writing and comprehension
- Positive attitudes toward reading, science, math

What learning standards can be addressed?

- Expository Text: includes definitions/explanations, compare/contrast, graphics
- Persuasive Text: states position supported by evidence, strong language to incite action
- Procedural Text: includes material list, shows steps for directions, measures of specificity, has an end result
- Nonfiction Narrative: chronological order, presents problem and solution, uses artifacts

Examples of Informational Text Design Challenges

Paddle Boat Race; Designing a paddle boat to move the fastest in the water

Disciplinary Area: STEM
Unit: Structures, Motion, Engineering, Water
Literacy: *River of Dreams* written by: Hudson Talbott

Grade Level 4

Standards:

- *Standards for Technological Literacy and Benchmark* (Energy and Power technologies): Tools, machines, products, and systems use energy in order to do work.
- *Standards for Technological Literacy and Benchmark* (Transportation Technologies): The use of transportation allows people and goods to be moved from place to place.
- *Common Core Math Standard* (Measurement and Data): Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit.
- *Common Core Science Standard* (Energy): Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Big Ideas:

- Proper use of the design loop
- Recycled materials and their ability to move across the water
- Understand kinetic energy and the improvement of water transportation
- Ability to validate and present final model to the class

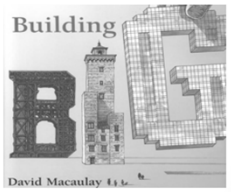
Essential Question: Can your group design a paddle boat that can travel the fastest in water?

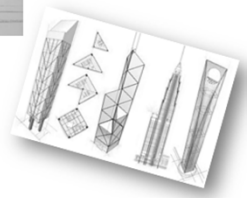
Title: Build Your Skyscraper

Grade: 3-5

Disciplinary Unit: STEM

Unit: Measurement & Data, Geometry, Forces, and Structure





Big Ideas:

- Principles of area and volume
- Attribute of shape and their effect on sustainability
- Properties of materials and their ability to survive the wind
- Proper use of the design loop
- Role of brainstorming to come up with ideas
- Ability to present final design to a group/teacher

Essential Question: Can you design a skyscraper which at least has three different geometry shapes and wind proof?

Racing For The Future

Disciplinary Area: STEM

Unit: Newton's Laws of Motion

Grade Level: 3

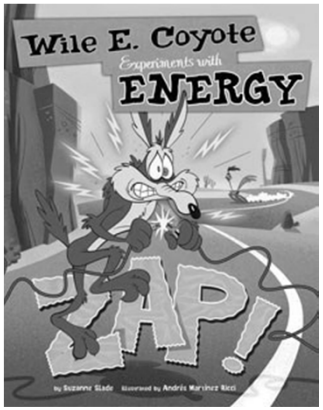
Literacy: *Eat My Dust! Henry Ford's First Race* by Monica Kulling

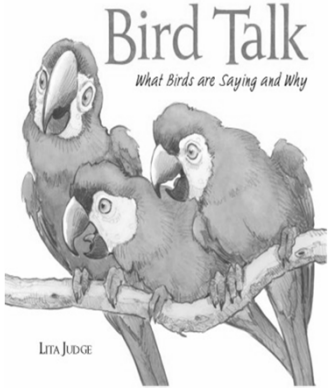
Big Ideas:

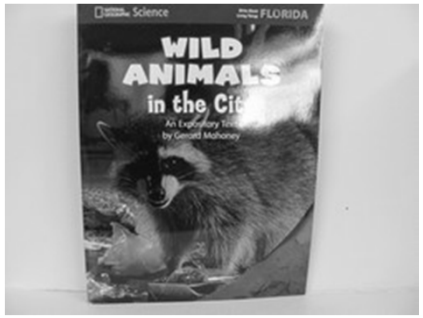
- Follow detailed instructions to complete an experiment
- Demonstrate a basic understanding of Newton's first two Laws of Motion
- Proper use of the design loop

Essential Question: After building a racecar following detailed instructions, can you apply your knowledge of Newton's Laws of Motion to modify it to go faster and farther?

Scenario: Henry Ford wants to build a car that is affordable for everyone, but he needs money to start his factory. He sees that a race is being held with a prize of $8,000, and he just knows he can win. Unfortunately, his car is just a regular car- not a racecar! Using the design loop and what you have learned about Newton's Laws of Motion, can you modify his original car design so that he can beat The Daredevil?







Creating STEM Lessons

7 Elements of a Good STEM Lesson/Project

- **Purpose and Relevance:** Is it personally relevant to the students? Does it provide a certain level of intrigue? Does it cause the student to want to invest time and effort?
- **Time:** Projects can last one class period or an entire term, but time must be provided to research, plan, build, test, debug, retest, and communicate.
- **Complexity:** The best STEM projects include content from all disciplines in STEM and the connections between these content areas.
- **Intensity:** Tap into that natural intensity that children exhibit when mastering a video game, reading a new book from a series, etc.

Creating STEM Lessons (continued)

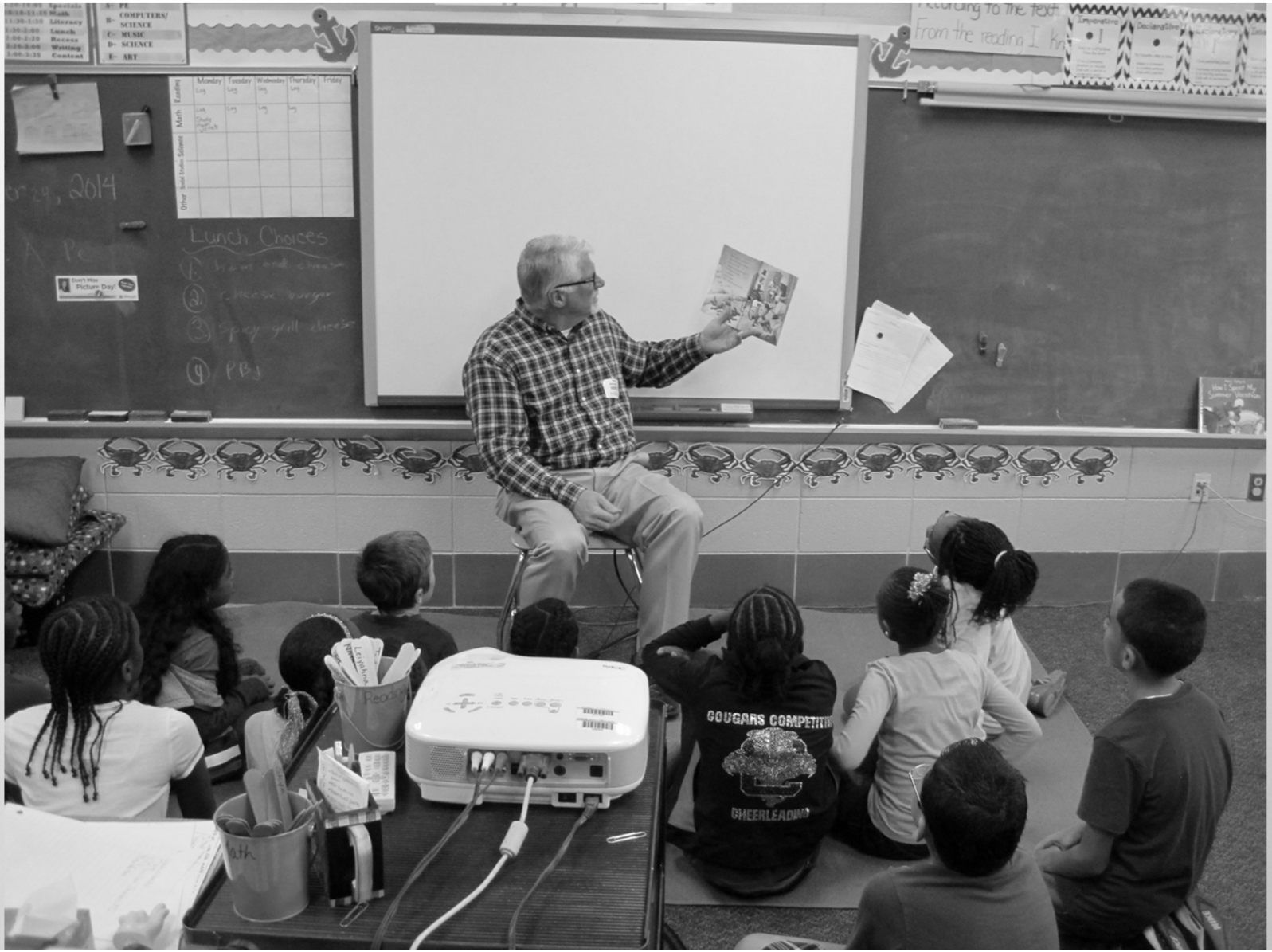
7 Elements of a Good STEM Lesson/Project

- **Connection:** Great projects or prompts force students to connect with other students, people, and ideas (think Internet) with whom they might not naturally connect.
- **Communication:** The big idea of PBL is the concept that the final solution must be shared and defended. This provides a great deal of motivation and a sense of satisfaction.
- **Novelty:** Perhaps the most important consideration in STEM. Few project ideas are so profound that they can be used year after year with the same level of success. If the teacher is bored with the idea, students will be bored with the idea.

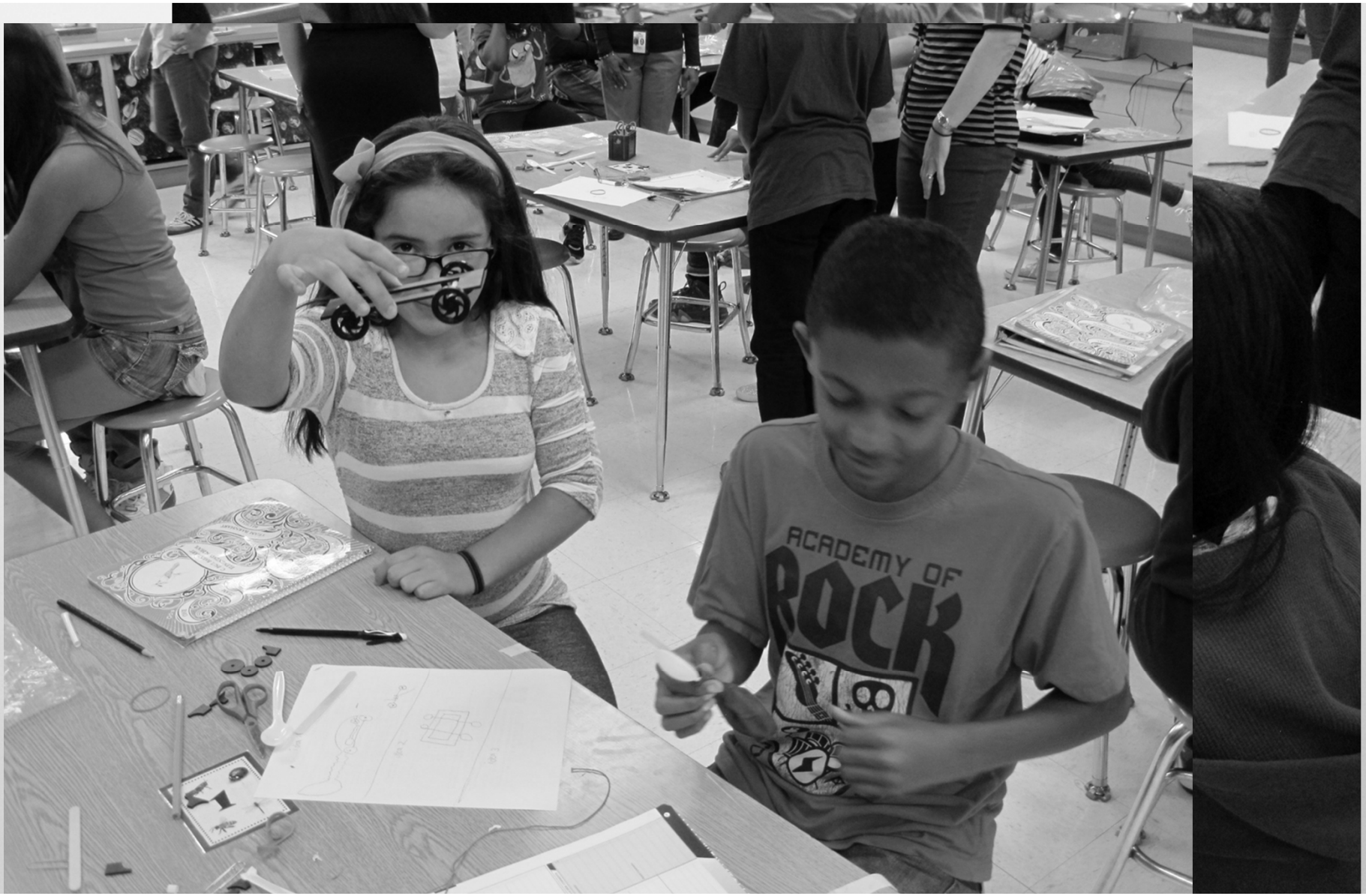
Creating STEM Lessons - PBL

Five Essential Features for Narrative Curriculum Problems:

1. Have a clear purpose that ties directly back to the text.
2. Focus be on process, product, or both
3. No simple right or wrong answers; solutions must be assessed along some sort of continuum.
4. Focus on *degrees* (e.g., quality, proficiency, understanding, etc.).
5. Share performance-based scoring information with students early—as a guide


Lunch Choices
Picture Day!
COUGARS COMPETITIVE
CHEERLEADING


Silver
CALIFORNIA


ACADEMY OF
ROCK


got bug?