Save Amos!

3rd Grade
Unit 2 – Inspired by the Sea
Text Connection: *Amos and Boris* by William Steig

Design Challenge Summary

Challenge: What will the students be required to do?

While Amos was overwhelmed by the beauty and the mystery of everything, he rolled over and over and right of the deck of his boat and into the sea. Unfortunately Amos' boat flipped over and his life jacket was trapped underneath. Amos has to find a way to get his life jacket on in order to survive the storm!

Standards: What standards are addressed?

Science:

NS.1.3.1 Communicate observations orally, in writing, and in graphic organizers
NS.1.3.2 Develop questions that guide scientific inquiry
NS.1.3.3 Conduct scientific investigations individually and in teams
NS.1.3.4 Communicate the results of scientific investigations
NS.1.3.6 Collect and analyze measurable empirical evidence as a team and/or as individuals
NS.1.3.7 Make and explain predictions based on prior knowledge
NS.1.3.8 Use simple equipment, age appropriate tools, technology, and mathematics in scientific investigations
NS.1.3.9 Apply lab safety rules as they relate to specific science lab activities

3-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem

Math:

3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.

ELA:

W.3.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
W.3.10 Write routinely over extended time frames and short time frames for a range of discipline-specific tasks, purposes, and audiences.
SL.3.1 Engage effectively in a range of collaborative discussions with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Result: What will students know, value, and be able to do as a result of the lesson? What's the big idea?

Know and apply the engineering design loop.
Students will know the process of the engineering design loop.
Students will be able to implement the engineering design loop.
Students will work collaboratively to place the life jacket around Amos' body.

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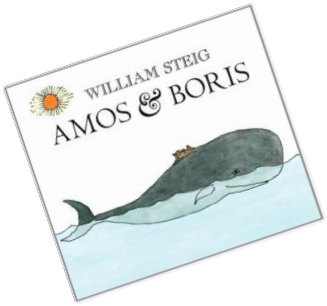
Assessment: What evidence will be used to determine student learning?
Were they able to place the gummy life saver over the gummy worm? Were they able to correctly graph their time on the line plot? Did they follow the design loop process? Did they work collaboratively?
Prior Knowledge/Experiences: What prior content knowledge and skills will the students need?
Experience with the Engineering Design Loop process Connections to the Mathematical Practices Investigations/inquiry in Science Have read the book Amos and Boris Prior experiences in making line plots
Summary/Connections: How will this design challenge connect with new/future learning, other content areas, real world experiences, etc.?
This lesson will help students develop problem solving skills and collaboration skills that are essential in succeeding in the 21st century. It will allow students the opportunity to transfer and apply skills from various content areas within one task. Extension: Have students attempt to use hard candy life savers instead of gummy life savers. Have students attempt to use pipe cleaners or straws instead of gummy worms. Students could write a narrative about how Amos got his life jacket back and what steps he took to do so.
Materials/Equipment/Preparation: What materials and equipment will students need to successfully complete this design challenge?
Small clear plastic cups Gummy worms (or pipe cleaners) Gummy candy life savers (or metal washer) Paper clips

Additional Information

Grouping Students and Procedures Recommendations:
Step One: Have students work individually to brainstorm ideas (worksheet provided) using a picture or words.
Step Two: Bring students together whole group and discuss a couple of ideas that they came up with.
Step Three: Put students in groups of four and give students one minute each to share their brainstorming ideas.
Step Four: Allow students to try each group member's idea and record the time it takes on their recording sheet.
Step Five: Create a class line plot on the smartboard with each group member's times.
Step Six: Discuss what worked the best and how Amos was saved the quickest and why as a whole group.

http://6sci.pbworks.com/f/Save+Fred+ebook.pdf



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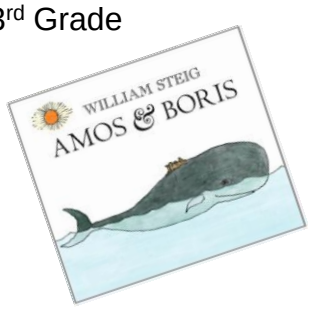
Student Recording Sheet

Brainstorm

How do you think you could save Amos using the four paper clips in the fastest amount of time? Draw a picture below or use words to describe your thinking.

Predict how long you think it will take you to save Amos and get his life jacket on:

_____ minutes



Save Amos

Student Recording Sheet

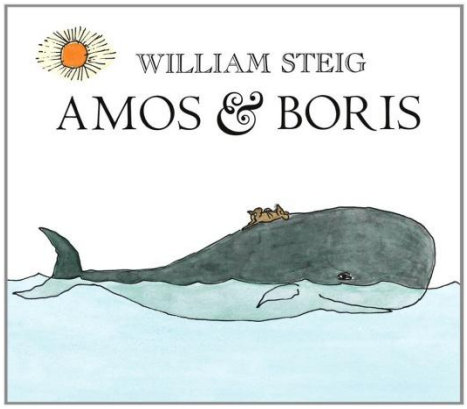
After you try each group members strategy, record how much time it takes below.

Strategy	Time
One	
Two	
Three	
Four	

Line Plot

Try to plot your members times below:

Save Amos



Design Challenge Scenario/Task

While Amos was overwhelmed by the beauty and the mystery of everything, he rolled over and over and right of the deck of his boat and into the sea. Unfortunately Amos' boat flipped over and his life jacket was trapped underneath. Amos has to find a way to get his life jacket on in order to survive the storm!

Materials:

Small clear plastic cups
Gummy worms (or pipe cleaners)
Gummy candy life savers (or metal washer)
Paper clips