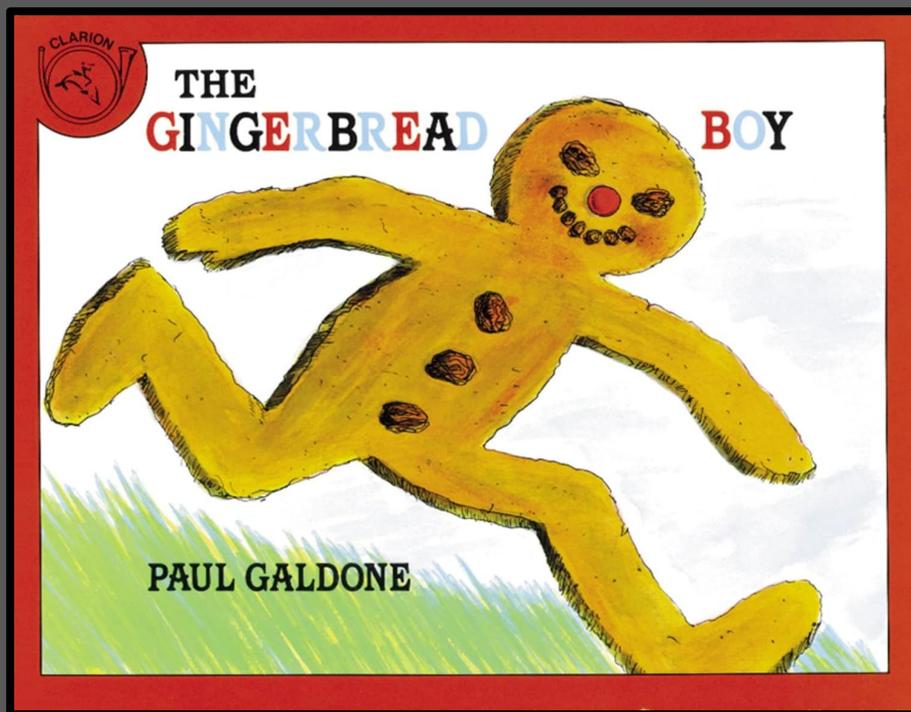


STORYBOOK STEAM LESSON PLAN:
THE GINGERBREAD BOY CHALLENGE



CREATED BY:
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LESSON PLAN: 2nd-3rd Grade Storybook
STEAM Lesson: Gingerbread Boy Challenge

DATE:

DURATION: 50
Minutes

TOPICS: Engineering Design Process, Buoyancy, Measurements, Filmmaking, and ELA
Integration with Story Structure

LEARNING OBJECTIVES:

- Students will be able to identify the basic story elements and discuss the structure of the story.
- Students will be able to identify the moral that is conveyed in the fable and give supporting details from the text.
- Students will analyze the situation that the main character is in and devise an solution to the problem that will help the main character and change the ending of the story.
- Students will be able to identify materials that will be the most buoyant and will float.
- Students will use the 4 C's of 21st century skills: collaboration, communication, critical thinking, and creativity in order to plan and create the prototype of a vehicle that will float the Gingerbread Boy across the tub of water while following the given constraints and adhering to the Engineering Design Process.
- Students will create a model of the main character in order to test their prototype vehicle.
- Students will work individually to compile their plans and ideas in their STEAM Journals.
- Student groups will video the new ending to their story and present the completed project to the class.

STANDARDS:

NGSS K-2-ETS1-1. ENGINEERING DESIGN
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

NGSS K-2-ETS1-2 ENGINEERING DESIGN
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

NGSS 2-PS1-1 PHYSICAL SCIENCE
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

CCSS.MATH.CONTENT.2.MD.A.1
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

CCSS.ELA-LITERACY.RL.2.5
Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.

CCSS.ELA-LITERACY.RL.3.2
Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

STRATEGIES:

- STEAM Integration
- Project-Based Learning
- 4 C's of 21st Century Skills
- Technology Integration
- Cooperative Learning
- Differentiated Instruction
- Graphic Organizers
- Visual Aids
- Inquiry-based learning
- Read Aloud
- Journaling

VOCABULARY:

Engineering Design Process, Prototype, Float, Buoyant, Story Structure, Fable

ENGAGE:

Discussion Questions

Media

Activate Prior Knowledge

MATERIALS

- In a whole group mini-lesson, briefly discuss the definition of a fable and review the basic story elements and structure of a story utilizing the anchor charts as a guide.
- Read the story, The Gingerbread Boy by Paul Galdone and discuss the moral of the story and the story elements and structure.
- Ask the students to consider the ending of the story and what they could do to help the character to change the ending. Students should suggest other ways for the Gingerbread Boy to get across the river.
- Explain to the students that they have a set amount of materials that they can use to help the Gingerbread Boy get across the river.
- Watch the video on buoyancy to help students understand what materials would be best for creating their vehicle and how they might construct them to have the best chance of floating the Gingerbread Boy across the river.

<https://www.youtube.com/watch?v=RbCMwVklRzE>

- The Gingerbread Boy by Paul Galdone
- Materials for model: cardboard, popsicle sticks, markers, LEGOs, pipe cleaners, 5 feet of tape, tape measure, scissors, colored paper, glue, 6 paper towel tubes, one foot of foil, tub of water
- STEAM Journal
- Fable Anchor Chart
- Story Elements Anchor Chart
- EDP Anchor Chart
- Our Story Map Worksheet

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EXPLORE:

- Explain that an engineer is someone who creates things to solve a problem and they use the Engineering Design Process. Use the anchor chart and review the EDP with the students.
- Assign students to groups of 3-4 and explain that they are to come up with a solution that will help the Gingerbread Boy get across the river to safety. They can only use the provided materials on the materials list. They will need to measure out some of the materials to have the correct amount. Students will utilize their STEAM Journals to walk through the EDP to plan out a physical model using only the materials provided and in the set amount of time.
- Students will have 10 minutes to collaborate, plan, and complete the Ask and Imagine sections of their STEAM Journal.
- Students will then have another 10 minutes to complete the Plan section of their STEAM Journals.

EXPLAIN:

- Student will have an additional 15 minutes to work collaboratively and create their model using only the provided materials. They will use measurement skills to ensure that they are only using the allowed amount of materials. The model must be small enough to fit in the tub of water provided. The groups will need to utilize their critical thinking, creativity, communication and collaborative skills to complete the challenge in the set amount of time. Students will also create a model Gingerbread Boy character with the materials provided. Students will then test their prototype with their Gingerbread Boy and make any improvements necessary.

ELABORATE:

- The groups will then utilize the model that they created and film a new ending for the story of the Gingerbread Boy, where he does not get eaten by the fox. As an extension, students can use the Our Story Map worksheet to analyze the story and add their new alternate ending.

EVALUATE:

Summative Assessments:

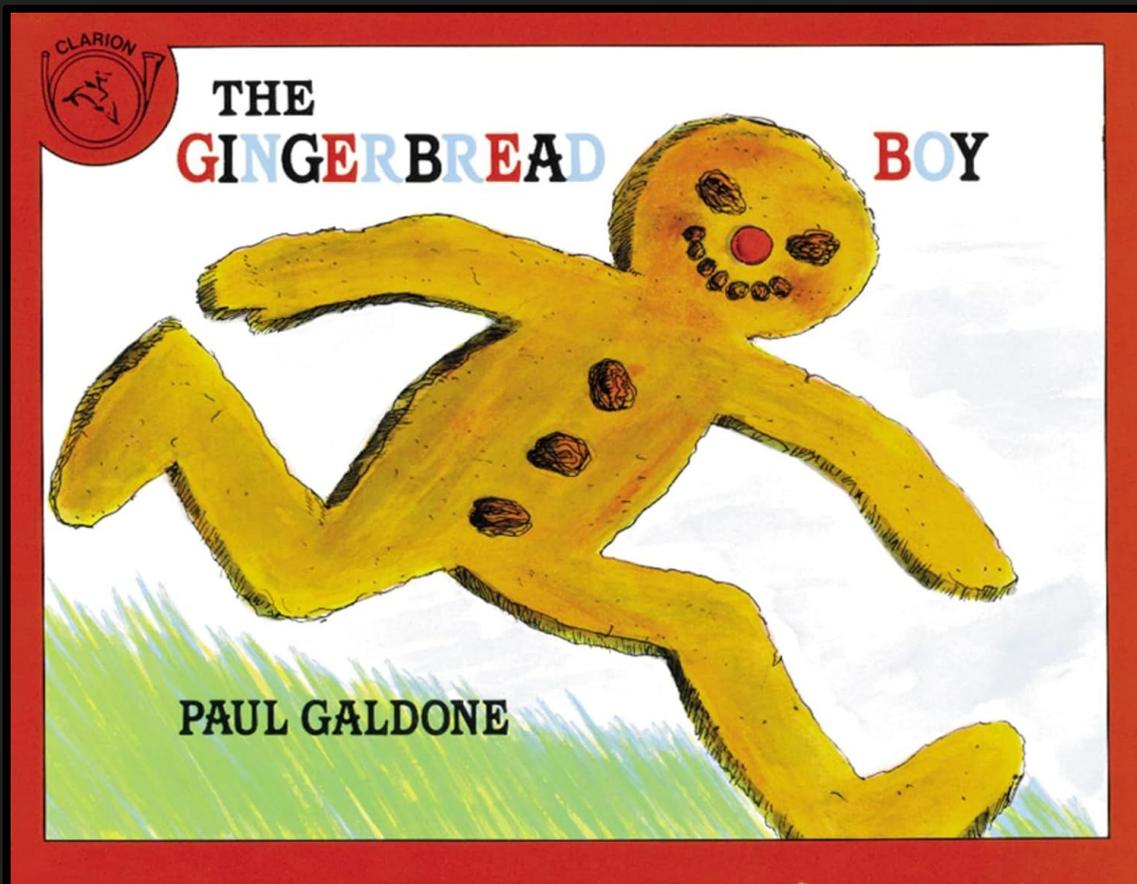
- Groups will present the videos of their alternate story ending to the class. They will explain their thought process and how they constructed them.
- Students can also submit their Our Story Map worksheet.

Formative Assessments:

- Students will submit their completed STEAM Journals that took them through the Engineering Design Process.
- Class will discuss the Engineering Design Process and the process of creating a prototype. In addition, the whole group will discuss the story elements, story structure and buoyancy in order to demonstrate concept mastery.

DIFFERENTIATION:

- Students will learn in whole group, small groups, and complete work individually.
- Students are encouraged try new things and make improvements when needed.
- Students will show that they met the learning objectives through various types of formative and summative assessments.
- Students will learn concepts through print materials, visual aids, and media.

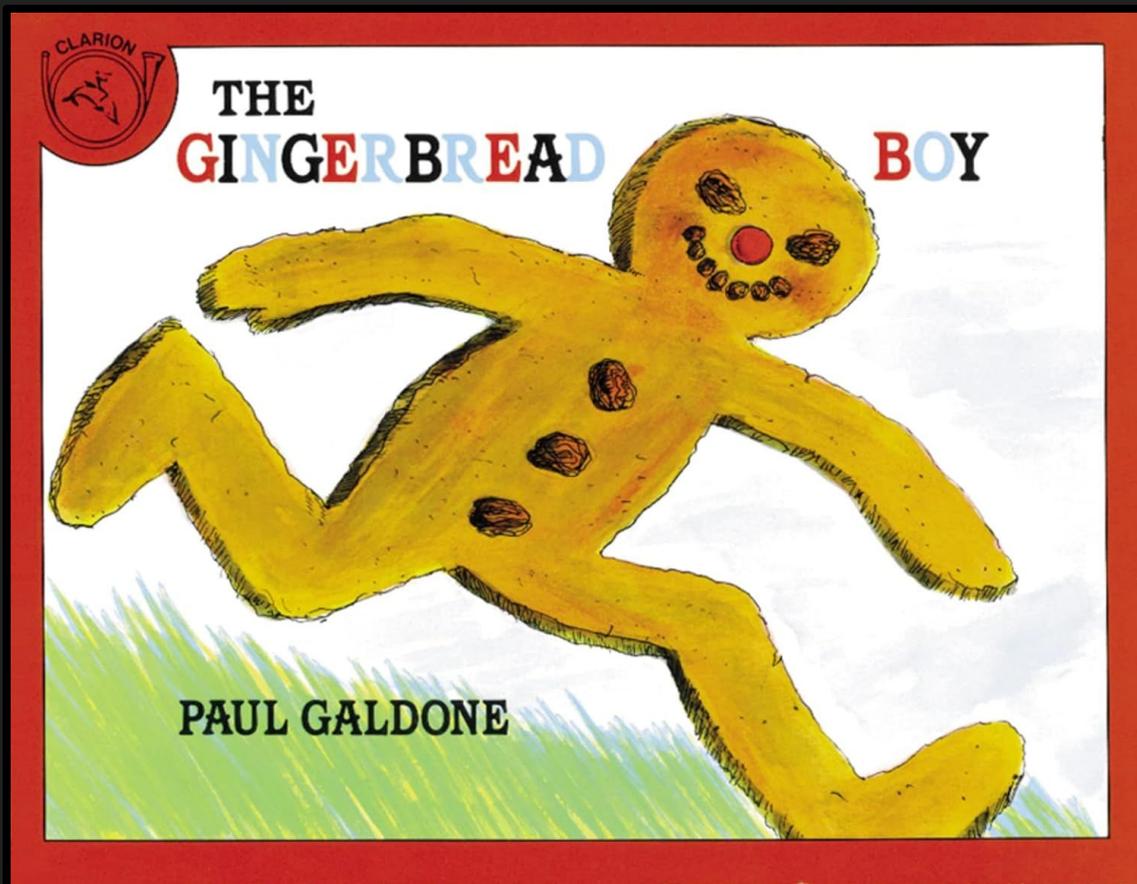


WHAT IS A FABLE?

A fable is a short story that typically uses animals or objects that act like humans in order to teach a lesson or moral.

WHAT IS THE MORAL OF A STORY?

The moral of a story is the lesson the author is attempting to teach the reader about what is right in a situation.



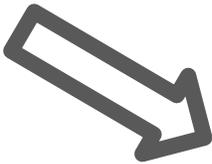
WHAT ARE THE STORY ELEMENTS?

SETTING
CHARACTERS
PROBLEM
SOLUTION

WHAT IS THE BASIC STORY STRUCTURE?

BEGINNING
MIDDLE
END

ASK
?



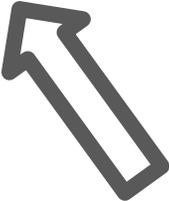
IMAGINE



PLAN
Blueprint



CREATE
Prototype



TEST
✓



IMPROVE

Test 1	Test 2	Test 3	Test 4
10	30	15	40

**ENGINEERING
DESIGN PROCESS**



_____’S

**STEAM
JOURNAL**

Name: _____



Write down the problem that you are working to solve?



Let's put on our problem-solving hats and brainstorm several ways to solve the problem. Draw pictures or describe a few prototypes. Circle the one you feel will best solve the problem.

Name: _____



Select your best prototype idea and create a sketch of your design.

Describe your prototype design with words. Be sure to include the materials you will use.

Name: _____



Construct your prototype based on your design. Use the materials that you listed in your plan.



Test your prototype to see if it works as you expected it to work.



Based on your tests, what could you do to your design plan to improve your prototype. Sketch or describe your changes.

Name: _____

OUR STORY MAP

STORY TITLE:

CONFLICT:

SETTING:

STORY STRUCTURE

BEGINNING

RESOLUTION:

MAIN CHARACTERS:

MIDDLE

THEME:

END