

Grade Level: Second Grade

Time: 60 minutes

Brief Description of Lesson: Oh, no! Gaby and Rory have no ping pong ball to play with! In this fun, 60-minute lesson, students will be introduced to the Engineering Design Process and be guided through the process of developing, measuring, and possibly revising a solution.

*FIU-EOW offers ways to **differentiate** to provide opportunities for all students to access the curriculum or standards. These are being provided as **suggestions**.*

SCIENCE	TECHNOLOGY	ENGINEERING	MATHEMATICS
Standard: SC.2.N.1.2: Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.	Standard: 1.3 Knowledge Constructor: 1.3.c: Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.	Standard: 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.	Standard: MA.2.M.1: Measure the length of objects and solve problems involving length.
Activity: -Mix the four tablespoons of warm water and four tablespoons of cornstarch in a bowl. -Add two pinches of baking soda to the mix and stir slowly until it is dissolved. Then add two squirts of saline solution. -In a separate bowl, combine one tablespoon of glue and one teaspoon of glow-in-the-dark paint until mixed. -Combine both bowls of ingredients. Wait 1 minute and watch the ingredients react together. Then begin to stir. The material will become sticky, hard, and slimy. But don't worry- this is supposed to happen! -Mix until slime starts to form. Continue to add additional saline solution until you reach your desired consistency.	Activity: Students will showcase their slime balls on Flip, which used to be named Flipgrid, explaining their process and if they met their measurable goal. Students will be expected to comment on their classmate's videos providing a piece of feedback. Supporting Resources: How to Use Flip (Flipgrid) for Teachers How to Use Flip for Teachers in Spanish	Activity: Skill Being Taught: Engineering Design Process After the teacher provides the hook and problem to the class, the teacher will play the video supplied by SHPE. The team will introduce the engineering design process in the video and guide the students on solving the problem. Student Practice: Students will: 1. Ask: Define the problem 2. Imagine: Brainstorm possible solutions 3. Plan: Draw a plan 4. Create: Make it and Test it! 5. Improve: Based on their tests, how can students reflect and improve their creations. Hook: Gaby and Rory went to play ping pong after school and suddenly realized that the ping pong ball had gone MISSING! They	Activity: During the creation portion of the engineering design process, students must identify the appropriate tool to measure whether the ball can bounce a minimum of 23 cm when released at a height of 30 cm. Students will document their findings on their Data Records Worksheet.

-Remove the slime from the bowl and roll it into a ball. The more you roll it, the less slimy it will become. It will continue to harden but will still be squishable. -Place the ball into the refrigerator for 1 hour before bouncing! *The more you knead and play with your slime, the firmer and less sticky it will become!*		have tried to use marble, a tennis ball, and a baseball, but none worked! They need your help! The average height ping pong ball can bounce is 40mm. The bouncing size required by federation standards is at least 23 cm for free-falling table ping pong balls from 30 cm. Problem: How can we create a ball that meets the Ping Pong Ball Federations standards? Measurable Goal: Students will determine if they are successful if the ball can bounce a minimum of 23 cm when released at a height of 30 cm.	
Differentiation: Students may have tactile sensory challenges, and it may be best to provide plastic gloves when holding and forming the ball or during the entire experiment, along with noise-canceling headphones because the classroom environment may get loud due to excitement.	Differentiation: Students should be given the opportunity to include a description through a voice note or visual representation when they upload their video, description, and supporting data. This accommodation will elevate any challenges around writing or spelling.	Differentiation: When creating, students should be allowed to reference or look at a ruler to use as a visual reference to understand better the height their ball must reach. *It's important to remember that timed activities can cause a lot of anxiety to students. Please provide a visual clock and remind students how much time they have left in 10-minute increments. * Differentiated Planning Pages: Planning Page ! Planning Page @	Differentiation: Students will be given the data records worksheet that best suits their learning needs. Differentiated Recording Pages: Data Records ! Data Records @