Staying Dry

1st Grade

Science Unit 2: Structure, Function, and Information Processing – Animals and Plants

ELA Unit 2 Text Connection: *What's It Like to be a Fish?* by Wendy Pfeffer

Design Challenge Summary
Challenge: What will the students be required to do?
Have you ever been swimming or caught in the rain and worried that something might get wet? Humans can solve their own problems by mimicking how animals solve their problems. Your challenge today is to design a way to keep your paper cell phone dry for 30 seconds.
Standards: What standards are addressed?
Science: 1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. 1-ETS1-1 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. **Math:** Mathematical Practice Standards - Perseverance **ELA:** SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups SL.1.3 Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood. SL.1.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts or feelings SL.1.6 Produce complete sentences when appropriate to task and situation.
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 process. Demonstrate ability to modify designs based on observations and predictions. Work collaboratively on solving a problem. Use materials to design a solution to a human problem by mimicking how an animal uses its external parts to help them survive, grow, and meet their needs. (scales and slime coating on fish)
Assessment: What evidence will be used to determine student learning?
Did they work towards a design that kept the cell phone dry (persevered?)? Did they follow the design loop process? Did they work collaboratively? Were they able to ask and answer questions involving their design and others?
Prior Knowledge/Experiences: What prior content knowledge and skills will the students need?
Experiences with the Engineering Design Loop process Connections to the Mathematical Practices Investigations/inquiry in Science Persevere and solve problems Animal adaptations Watch a video of a water slide, boat ride, or a pool experience

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 student the opportunity to transfer and apply skills from various content areas within one task. As a summary activity, you could engage students in: **W.1.3** Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure. **Extensions:** Repeat the experiment, but also include lotion, shortening, Vaseline (slime), glue
Materials/Equipment/Preparation: What materials and equipment will students need to successfully complete this design challenge?
Per group: One foot of plastic wrap One foot of aluminum foil Various tape (masking, scotch, packing, etc.) Various sizes of cups (both paper and plastic) (examples: Dixie cups, condiment cups, nut or mint cups) Cell phone template printed on dark paper, multiple copies per group depending on how many trials they make (It will be easier to see water marks on dark paper.) Plastic Easter egg that does not seal well Per class: Stop watch or timer Tub of water

Additional Information:

Read aloud What's It Like to be a Fish? by Wendy Pfeffer.

Page 12 and 13 refer to the fish scales and slime.
This book could be used after students problem solve and share. Then connect to how fish have adapted to survive in the water. Have students build on their prior experience and observations by using the Vaseline (slime), shortening, glue, or lotion to extend the experiment.

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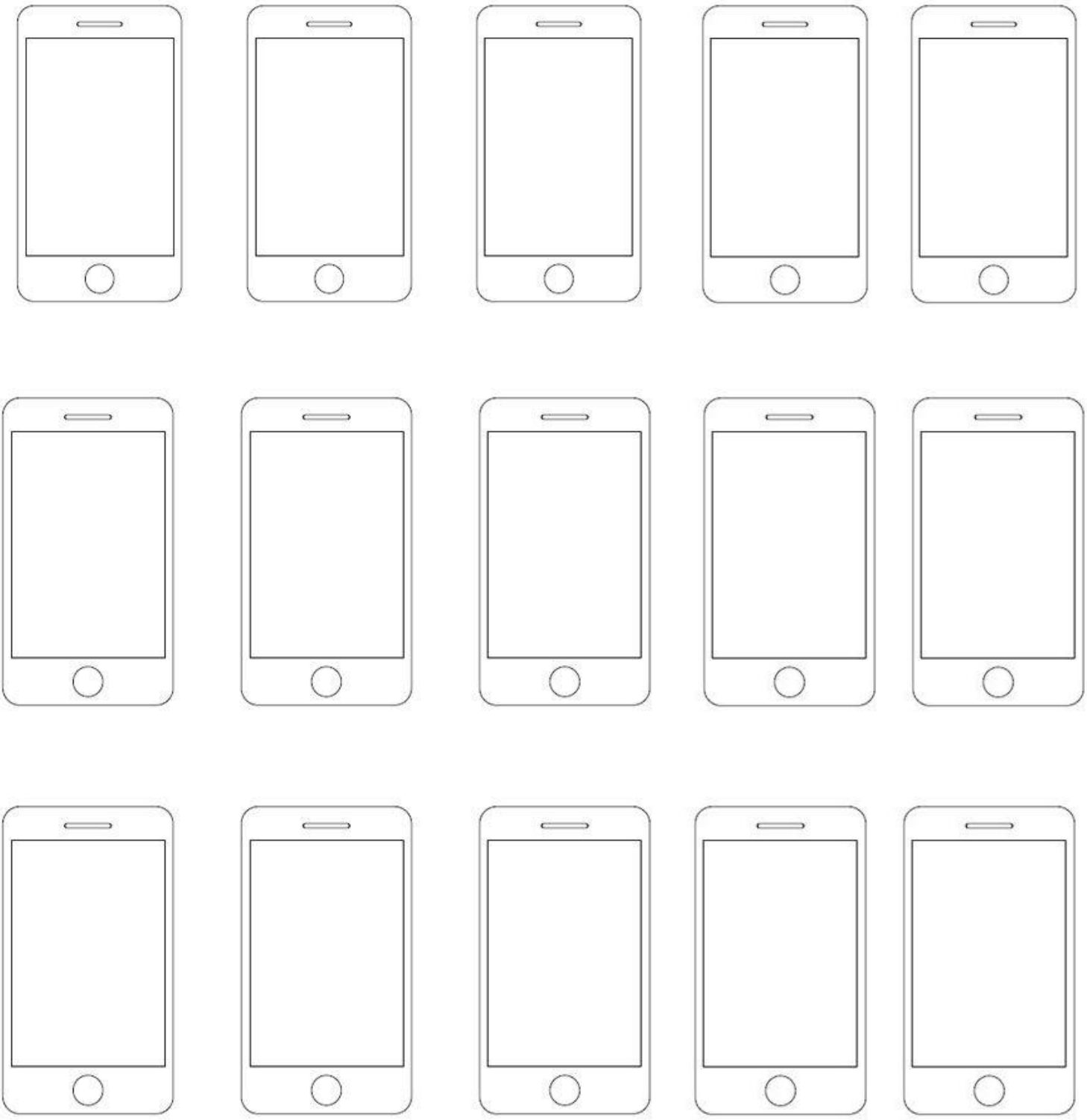

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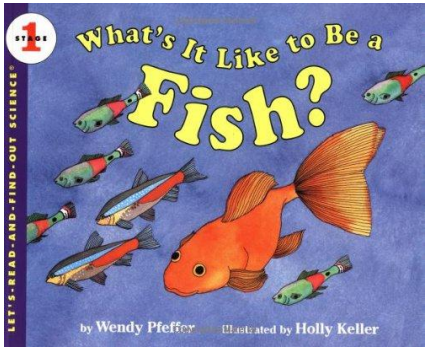

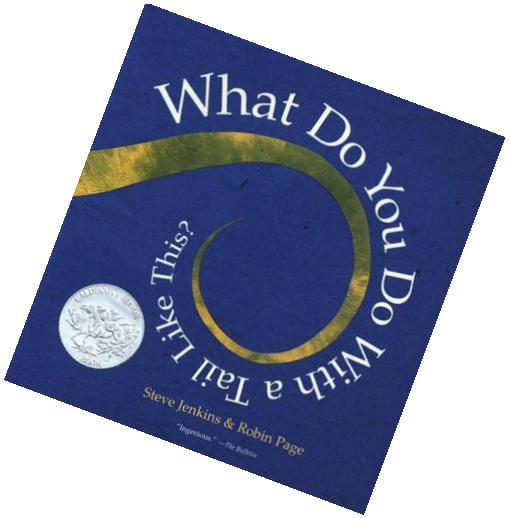

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Group Supplies:

One foot of plastic wrap,
One foot of aluminum foil,
Various tape
Various sizes of cups
Cell phone template
Plastic Easter eggs