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LESSON PLAN

WHAT IS SCIENCE?

GRADES K-2

SUMMARY

Students learn how to conduct an experiment to determine the fastest way to dissolve Kool-Aid in water.
Duration: 45 minutes.



2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

Science & Engineering Practices

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1)

Analyzing and Interpreting Data

Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording and sharing observations. Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2)

Connections to Classroom Activity

- Students will conduct an investigation to see how temperature and amount of water affect the rate that Kool-Aid powder dissolves in water.
- Students will collect data by timing how long it takes to dissolve Kool-Aid in different amounts of water and also in different temperatures of water.

Disciplinary Core Ideas	Connections to Classroom Activity
<p>Different properties are suited to different purposes. (2- PS1-2),(2-PS1-3)</p>	<ul style="list-style-type: none"> • Students will investigate how temperature and amount of water affect the rate that Kool-Aid dissolves in water.
Crosscutting Concepts	Connections to Classroom Activity
<p>Cause and Effect Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)</p>	<ul style="list-style-type: none"> • Students will discover that an increased temperature will affect the rate that Kool-Aid dissolves in water. They will also learn that more water also helps the Kool-Aid dissolve more quickly.



ENGAGE

Begin the lesson by taking a big drink of your favorite beverage and exaggeratedly say, “Ahhhh, so refreshing!” Ask students if they have a favorite beverage that they like to drink on a hot day. Allow students to share out loud, and hopefully someone will say Kool-Aid or lemonade. Follow up by asking, “Have you ever made Kool-Aid or lemonade from a powder?” This will lead into the exploration of the lesson.



EXPLORE

Tell students that today they will be trying to find out how to dissolve Kool-Aid powder in water the fastest. Ask students for ideas on what might make the Kool-Aid dissolve fast. After having students share ideas, tell them that they will be testing how the temperature of the water and the amount of water affects how fast it will dissolve. In order to conduct a fair test, they can only change one thing at a time. This means they will do two experiments.

Experiment One: Temperature of Water

- 2 Cups, each with 1 tsp of Kool-Aid
- ½ Cup of warm water
- ½ Cup of cold water

Experiment Two: Amount of Water

- 2 Cups, each with 1 tsp of Kool-Aid
- ½ Cup of cold water
- ¼ Cup of cold water

Point out that in each experiment they are *only changing one thing and keeping everything else the same*. This is the most critical part of the lesson.

MATERIALS

- Kool-Aid powder (Any sugary drink mix with color will do)
- Plastic cup
- Plastic spoon
- Measuring cup
- Water (cold and warm)
- Timer (Students could also count instead of using a timer)
- Glass of your favorite drink

DIY Activity

- Small box of raisins
- Bottle of clear soda
- Cup of water
- 2 Tall glasses or plastic cups

Have students record predictions in a science notebook or on a piece of paper.

Students will start the timer as they begin to stir with a plastic spoon. They will know that the Kool-Aid has dissolved because they won't feel or hear the grittiness of the granules on the bottom of the cup and it will be visible, too. Once they have the time for one condition (hot vs. cold or less vs. more water), they can do the next one. Be sure students stir it the same way each time (same speed and method) to keep everything the same and to only change one thing at a time. Record results in a science notebook or on a piece of paper.



EXPLAIN

Allow student groups to share their findings from the experiment. They should conclude that the Kool-Aid dissolves faster in warm water. They also should conclude that the Kool-Aid dissolves faster in more water. The mechanisms for a solid dissolving in a liquid is above grade level and does not need to be covered.



WATCH THE GENERATION GENIUS WHAT IS SCIENCE VIDEO AS A GROUP

Facilitate a discussion using the discussion questions before and after the video.



ELABORATE

Discuss that the students just conducted an experiment in the same way that real scientists conduct experiments. Scientists are careful to only change *one thing at a time*, so that they can determine the exact thing that is causing a change. Scientists make careful observations with their five senses and keep detailed notes when they conduct experiments. They can then refer to their notes as they test different things. Scientists often do the same experiment a few times so they can be sure of the results.



EVALUATE

Students can turn in their science notebooks or papers. Students can also play the online Kahoot! quiz game located below the video which provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz or the exit ticket questions. All these resources are located below the video in the Assessment section.



EXTENSION

Older or more advanced students might be ready for some sophisticated vocabulary. For example, when writing predictions, use the word *hypothesis*. This activity can be expanded to test other variables such as dissolving in different liquids like apple juice. Experiments can also be repeated with the results averaged to produce more accurate data.