Scientific Method: 4.P.1A.3

• **Characters:** Uncle Jeff, Cousin Benny, Mario (minor character)

• **Genre:** Humor

• **Words to Make Sure You Use:** variables, question, fair test, manipulated variable, responding variable, record, prediction, hypothesis

• **Plot:**
  - Uncle Jeff has had many jobs throughout his life—he was a ventriloquist, race car driver, cook, and even a zookeeper.
  - Once summer he thinks that it would be a good idea to buy an ice cream truck to make more money.
  - Uncle Jeff buys an ice cream truck from downtown Charleston, and the salesman told him that it was “fully stocked” and ready to go.
    - He plays the ice cream truck music as he gets closer to home (*sing ice cream truck tune*) and Benny comes out with a dollar already in his hand
    - Uncle Jeff says, “Boy you better give me back my dollar!”
    - Benny takes a tour of the inside of the truck and finds out that there’s no ice cream!
    - They both go inside and think about what they can do
    - Benny suggests, “Hey…what about a snow cone truck?” And Uncle Jeff thinks that it is a good idea.
    - Uncle Jeff says that they can use a combination of Kool-Aid, Simple Syrup, and Water
    - Uncle Jeff doesn’t take the time to measure the ingredients, and instead just mixes together an unknown amount of Kool-Aid, Simple Syrup, and Water
    - Benny comments that he doesn’t believe that it is a good idea, but Uncle Jeff assures his son that he “knows what he is doing”.
    - The next day, Uncle Jeff starts up the ice cream truck, and starts up the music again (*sing ice cream truck tune*)
Uncle Jeff sets out to sell snow cones, his first customer is a kid that Benny goes to school with named Mario.

Uncle Jeff makes a snow cone for Mario and Mario doesn’t like it! He throws it down and runs away, alerting all the other kids around him that, “It’s nasty! It’s nasty! It’s too bitter! Don’t buy it! It’s a trick!”

Uncle Jeff is so embarrassed that he goes home and thinks about how he can make better snow cone.

He asks Benny to help him.

“Well,” Benny said, “We must first identify the problem. We must also ask two questions—Why don’t the kids like your snow cones? And what can we do to make the snow cones better?”

Uncle Jeff replies, “The kid said something about it being too bitter, so I predict that, if we fixed the recipe, the kids would like it better!”

Benny replied, “Okay, so I noticed that when you made it yesterday, that you used 2 cans of simple syrup and 1 gallon of water. Let’s keep those measurements or variables the same and just change the amount of Kool-Aid. This way, it will be a fair test, because we will only be changing one variable, or the amount of Kool-Aid.

Benny continued, “So, because we are changing the amount of Kool-Aid, then that is the variable that we’re changing. It’s the manipulated variable.”

Uncle Jeff then says, “I’m going to guess (or hypothesize) that if we use 3 packets of Kool-Aid, 2 cans of simple syrup, and a gallon of water, that kids will like it better!”

Uncle Jeff thought that was a good idea and replied, “All right, let’s test this mixture on the kids tomorrow, and then come back home and talk about it!”

“Sure! But let’s make sure we record how the kids react to the new mixture as well! This will be the responding variable.” Benny suggested.

“Good Idea.” said Uncle Jeff. Then we can write down how the kids react tomorrow! We’ll see if Mario runs off and yells, ‘That’s nasty!’ again!”

Uncle Jeff also says that they need to
So, the next day, they set out to serve the snow cones, and he saw Mario again.

Mario was skeptical to try the snow cone again, but my Uncle Jeff gave him one for free (because of what happened yesterday)

Mario loved it, and of course, told the other kids

The snow cone truck was a success!

When Uncle Jeff and Benny got back home, they talked about how the kids reacted

They concluded that the kids responded better to the mixture that they made last night. They continued to use that same recipe.

“So, we identified the problem, asked questions about our problem, we gathered our materials (kool-aid, syrup, water), we recorded how the kids reacted to the new syrup, and we recorded their reactions. And because we did this process, we now know that the syrup that we used today worked the best!”

Uncle Jeff never got another job after that, and you can still get some of his famous snow cones right here in Charleston!
ACTIVITY - Scientific Method

4.P.1A.3 Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect **qualitative and quantitative** data, and (4) record and represent data in an appropriate form.

Essential to Know:

It is essential for students to know the characteristics of a simple scientific investigation that represent a fair test.

- A fair test is one in which only one factor is changed or tested in the experiment so that it can be determined whether or not that factor affected the results.
- Variables are factors that can affect the results of an experiment. Before an investigation begins, the variables that could affect the results must be identified. Then it should be determined which one variable to change or test and which conditions should be kept the same in the experiment.
  - A manipulated variable is the one factor that is changed or tested by the person doing the investigation.
  - A responding variable is the result of, or response to, the changing of the manipulated variable.

In a simple scientific investigation the following steps should be included:

- **Identify a testable question** (tests one variable) that can be investigated
- **Do some simple research** about the topic
- **State a prediction** that answers the question based on your research
- **Design an experiment** to test the prediction
  - List the materials needed to conduct the experiment
  - List the steps to be followed to set up a fair test
- **Record and organize data** (observations) in tables, graphs, or charts
- **Study the data** in the tables, graphs, or charts to figure out what the data means
- **Explain the results** (response to the manipulated variable)
- **Compare the results** to your prediction

Activity:

**Shaved Ice Experiment**

**ID a testable question** – What is the best combination of ingredients for shaved ice that tastes good and is presentable, based on color?
Research – shaved ice is made up of a mixture of ice, simple syrup and flavors. Simple syrup is a 2:1 ratio of sugar to water. Flavors can be anything the maker desires.

Variables: simple syrup, flavor, taste, look

Manipulated variable is flavor

Responding variable is taste and look > need to make these quantifiable so assign them values from 1-5

Prediction as to what will happen each time

Record Data and assess results

Supplies:

Ice
Ice shaving machine
Simple syrup (pre-made)
Kool-aid
Measuring cups
Measuring spoons
Containers to mix
Containers for final testing
Straws
Data Collection sheets
Assessment:

Provide the students with a variety of materials and a question. Ask them to design an experiment, using the steps they just learned about

**Design your Own Experiment**

**Question:**

Does the color on an M&M come off more in different types of liquid? What do you think is going to happen – what is your prediction?

**Variables:**

Constant:

Manipulated:

Experiment: