

Method to the Madness Demonstration

While covering a range of science content areas, this demonstration focuses on the scientific method and the importance of using good observation when conducting experiments.

Demonstration Highlights include:

Good Observation

Your students will be amazed by two demonstrations that utilize water to make it appear to defy gravity and disappear from inside a cup! Can it be real? Use your observational skills to find out!

Making a Hypothesis

Using knowledge that you have about different gases, can we make a hypothesis to determine what gas is contained inside our balloons? We promise that this demonstration will have explosive results!

Exploring Variables

Good science means that you can only change one variable at a time when conducting an experiment. See what happens when one variable is changed during this reactive demonstration!

Using Prior Knowledge

Science is all about building knowledge over time. Given what you know about things that are cold (ice cubes, Toledo in the winter, etc.) what hypotheses can we make about how materials will behave when we drop the temperature to -320°F with liquid nitrogen.

Science Makes Work Easier

Having knowledge about how the world works can help to make many tasks easier. Check out a great example with our Bernoulli Bags!

Measure Exactly, Please

In chemistry, it is very important that you measure precisely when doing an experiment. Check out the messy and soapy results of the Imagination Station's chemistry experiment.

Content Standards Alignment **Ohio Content Standards Alignment**

Grades K-2

Scientific Inquiry: A, B, C

Scientific Ways of Knowing: A

Grades 3-5

Physical Sciences: B, D
Science and Technology: B
Scientific Inquiry: A, B
Scientific Ways of Knowing: B

Grades 6-8
Science and Technology: A
Scientific Inquiry: A
Scientific Ways of Knowing: A, C

Grades 9-10
Scientific Ways of Knowing: A, B

Michigan Curriculum Framework Alignment

Strand I. Constructing New Scientific Knowledge
Standard 1.1, 1.2

Strand II. Reflecting on Scientific Knowledge
Standard II.1, III.3

Post- Activity

All Eyes on Your Partner

Scientists are problem solvers and observers. Have students test their powers of observation with this fun activity.

1. Have each student select a partner. Have each team of students observe their partner for 15 seconds.
2. Have the students stand back to back and change one thing about their appearance. They can move the rim of their cap from front to back, roll up a sleeve or take off an earring.
3. Have the teams face each other again. Did they notice what changed about their partners appearance?
4. Repeat steps 1-3 several times.
5. What did students find to be important when making observations? Was this task easier or more difficult than they expected? Why? Was it easier to identify changes the longer you looked at your partner?

Fact vs. Inference

Students often struggle with the difference between observation and inference. This quick activity will help them understand the distinction between the two.

1. Have your class look out a window or stare at a picture for 30 seconds.

2. On a sheet of paper, have your students create two columns. One titled 'Fact' and the other 'Inference'.
3. Explain to students that good factual statements start with "I Know..." while good inferences start with the phrase "I Think...".
4. Have the students list 5 facts and 5 inferences about what they observed.
5. As a class, have students share their responses. Reinforce that facts are things that we can determine using our senses. An inference is something we believe to be true based on the facts that we have observed.
For example: Since Shelly is wearing all blue, Shelly must like the color blue. It is a fact that Shelly is wearing blue (I **know** this because I can observe it with my eyes), but I am inferring that she likes the color (I **think** that she must like blue to wear so much!)