



### **3 - 5 Earth Science**

### **Southern Nevada Regional Professional Development Program**

#### **SCIENTIFIC INQUIRY (3- 5 Nature of Science)**

#### **Claims and Evidence**

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#### **Teacher Information**

The National Science Education Standards state that one of the fundamental abilities and concepts that underlies the Science as Inquiry standard is “Use data to construct a reasonable explanation.” They go further to say “this aspect of the standard emphasizes the students’ thinking as they use data to formulate explanations. Even at the earliest grade levels, students should learn what constitutes evidence and judge the merits or strength of the data and information that will be used to make explanations.” Ideally we want to see our students moving beyond typical classroom interactions in order to understand the ways in which their claims differ and to evaluate one another’s claims, in light of the evidence. This approach of creating a need and supporting students as they attend to and critically evaluate one another’s claims and evidence appears to be a promising strategy for fostering scientific argumentation.

#### **Materials**

- Varying science materials needed for small group investigations, depending upon the content
- Student science notebooks with data and records of their own investigations
- Bulletin board paper
- Markers
- Digital camera

## Procedures

1. Have students work in small groups to design and conduct their own investigations, pursuing a question they were wondering about.
2. Have students use their notebooks as a place to record observations, drawings, and data, including digital pictures of their investigations.
3. Have students create a poster to share with their peers in a “Making Meaning” conference. The poster will have four main sections:
  - Original question
  - Materials and procedures
  - Claims and Evidence
  - New questions
4. The Claims and Evidence section is a place for students to connect their ideas (conclusions) about their investigations with evidence they observed in the materials. Have them write their own “I think...because...” statements based on their observations and data. They could write statements like, “I think adding a slope to the stream table makes the water go faster because the delta formed much faster” or “I think that sugar and water forms a solution because you couldn’t see any particles in the water with a hand lens after adding the sugar.”
5. Have students share their posters with the class. Have the other members of the class ask clarifying questions and make suggestions of each other’s work.
6. Give students a chance to make changes on their posters based on the feedback they received in the “Making Meaning” conference.

## Nevada State Science Standard

**N5A3** – Students know how to draw **conclusions** from scientific **evidence**. E/S

# Claims and Evidence Maze of Channels

question: What would happen if we made a maze for water to through?

Procedure: First we wet the earth material. Then we made a zig zag lines. We put the ruler on the earth material to see if the measurement was right. We put tape on the ruler and taped it on the sides of the stream table. We got a person to time and when he said go we poured the water.

Claims and Evidence: I think that the water didn't go through one of the channels because it was smaller than the other. I think that it went through the channel because it was deep.

New questions: What would happen if we let the earth material dry? Would there still be the maze after it dries?

New questions: Would the water go thru the maze better if we let the maze dry? If we made the channel deeper would the water stay in?