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Source: http://www.scienceteacherprogram.org/genscience/Choi04.html

Objectives

- Students will be able to explain that science is dynamic and that new discoveries are constantly shaping our understanding of the world.

AAAS Standards

Science

- Grades 6 – 8, The Scientific World View: Scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Vocabulary

- Inquiry
- Investigation
- Data

Materials

- Class set of shapes in a bag minus "X" squares.
- Separate bag with "X" squares.

Background

The purpose of this activity is to get the students to think about the nature of science, and also, to show the importance of being an active participant in the learning process. Students have been given the definition of science in the past, but students should realize that science is dynamic, it is hands-on, and it changes as our knowledge of the world increases.

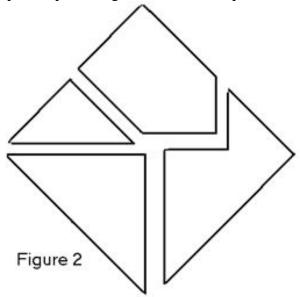
Content

Predict: (Engagement and assessing prior knowledge)

- What is science?
- What do scientists do?
- How do scientists know what they know?
- OR don't start with a question, just hand the students the bags and let them begin experimenting with them on their own.

Method: (Body of the lesson)

Hand out all the pieces except the small square marked X. Each piece represents current scientific data. Once the students are given the pieces, no further instruction is given, most students will begin to arrange the pieces on their own. In a short amount of time, the students will put the pieces together to make a square as seen below in figure 2.



Once all the students have arranged the pieces to produce figure 2, hand out the small square marked X to each student and explain that a new scientific discovery has been made. Students must somehow incorporate this new information to their puzzle.

Encourage students to work individually at first, and then, to work in groups if the frustration level rises. There may be some degree of "cheating" and peeking at other student's progress. If one student gets the correct arrangement, have that student cover up the answer.

Once all or most of the students have arranged the pieces correctly, I ask them to brainstorm and share how this activity is similar to "doing" science. Some similarities include, but are not excluded to:

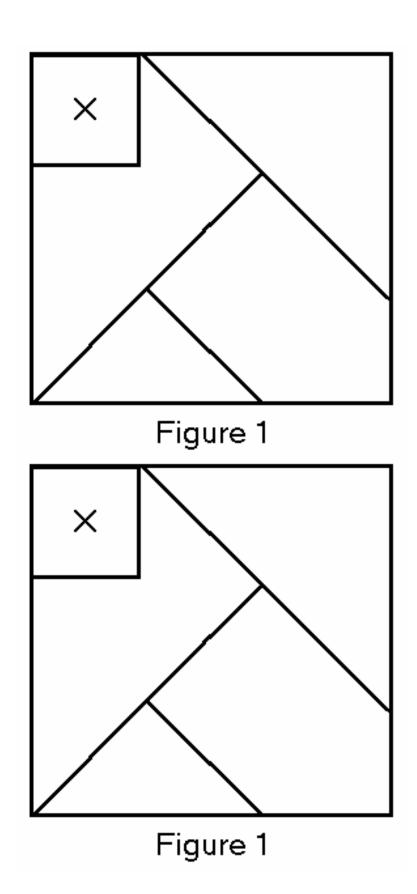
- 1) Assume that the pieces fit together. Nature is a puzzle that we have not yet solved.
- 2) Trial and error is an essential ingredient to science.
- 3) New information may require the old theory to be modified or discarded;
- 4) Our current information may be incomplete and therefore, our theories incorrect
- 5) Sometimes, we get lucky and find the right answer.
- 6) Collaboration may be helpful.
- 7) Once we arrive at the answer, it makes perfect, elegant sense.

Method Notebook Ideas:

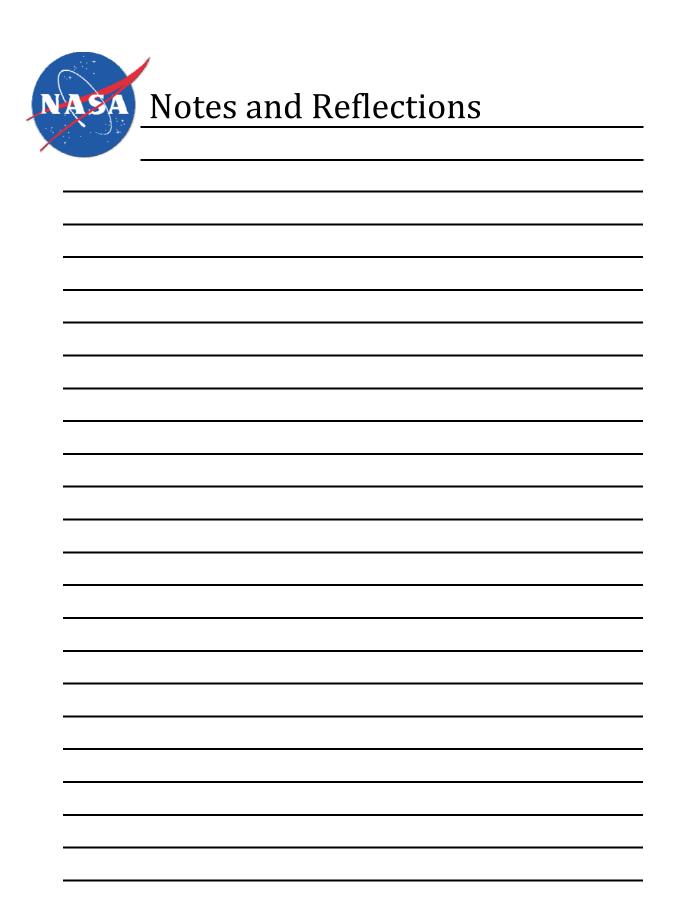
- Have students draw the completed puzzle with and without the "X" square.
- Generate a definition of science, individually or as a class, then illustrate it.

Live-It: (Assessment questions)

- (Comprehension) In your own words, what is science?
- (Application) Give an example from your own life where you got new information and had to change a decision.
- (Analysis) Compare science to art.



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