THE SCIENCE OF FRINGE

EXPLORING: NON-VERBAL COMMUNICATION

A SCIENCE OLYMPIAD THEMED LESSON PLAN

SEASON 2 - EPISODE 16: PETER

Overview:

Students will learn about the challenges of effectively communicating scientific principles and concepts, especially via non-verbal methods.

Grade Level: 9–12

Episode Summary:

Walter flashes back to 1985 while explaining Peter's otherworldly origins to Olivia. He invents a special window to peer into the neighboring world, which while similar in many ways, has much more advanced developments in science and technology. When the alternate-universe Walter makes an error in his search for a cure to the disease afflicting Peter, Walter decides to take matters into his own hands.

Related Science Olympiad Event:

Picture This - Teams draw representations of a set of scientific terms or concepts and guess the term being drawn.

Learning Objectives:

Students will understand the following:

- Everyone has a different mental model of scientific concepts, based upon their knowledge of them.
- Effective communication is best done with active participation from all parties involved.
- Visual depictions of scientific topics can be paired with written descriptions in order to increase clarity.

Episode Scenes of Relevance:

- Walter showing the Generals the digital cell phone he created in order to better explain his technology to look into the other world.
- Walter and Carla peering through the window watching the alternate Walter at work in his lab and documenting his progress with symbols on a whiteboard.
- Walter deducing the scientific process for finding a cure by peering through the window and watching the alternate Walter and Observer in the lab.
- View the above scenes: http://www.fox.com/fringe/fringe-science

Online Resources:

- Fringe "Peter" full episode: http://www.fox.com/watch/fringe
- Science Olympiad Picture This event: http://soinc.org/picture_this_c
- Science Dictionary: http://www.sciencedictionary.org/
- Science Pictionary: http://www.csun.edu/science/ref/games/pictionary/pictionary.html
- iSketch: http://www.isketch.net/i2.html

Procedures:

1. Tell your students that they are going to explore the challenges of effectively communicating scientific principles concepts via graphics and drawings.
2. Have your students find examples of scientific illustrations and pictures in textbooks and other resources and cuss what elements are used to convey the scientific messages.
3. Divide your class into groups. Have each group complete the following activity:
    a. Materials: notecards with scientific terms written them, colored markers or pencils, drawing paper
    b. One group member will be the starting sketcher and selects a notecard. No other members of the group see the term written on the notecard.
    c. The sketcher draws pictures and visual clues on the paper related to the scientific term. The sketcher may use letters, numbers, verbal communication or visual clues using their hands or bodies.
    d. The other group members verbally guess what the term is until they are correct.
    e. The sketcher role rotates to another group member, and the process repeats for a set amount of time.
4. Lead the class in a discussion comparing example sketches from the different groups. Tie their drawings back the examples from textbooks and other resources discussed in step 2. Example discussion topics:
    a. Effectiveness of multi-color drawings versus one color drawings
    b. Illustrations of processes versus objects
    c. The use of non-scientific terms and concepts to help communicate the scientific terms and concepts

Additional Discussion Suggestions:

- How does the representation of scientific principles and concepts in relevant new stories impact the general public's understanding of them?
- Show a picture of the Voyager 1 spacecraft golden record cover or Pioneer spacecraft plaque and discuss the mean ing of the various drawings on it.
- What impact will technologies such as electronic textbooks that allow for advanced interactive multimedia have on scientific communication and education?
- How can the students apply these concepts in future homework and projects to more effectively communicate?

Extension to Other Subjects:

History: Compare drawings and illustrations from historical textbooks to current ones with regards to the advancement of knowledge about science and technology.

Art: View and discuss examples of different artistic techniques and mediums with regards to their effectiveness in communicating complicated scientific concepts.

Language Arts: Create captions for some of the drawings produced by the class that effectively describe how they relate to the scientific term being illustrated.

National Science Standards Alignment:

H.A.1 Abilities necessary to do scientific inquiry
e. Recognize and analyze alternative explanations and models.
f. Communicate and defend a scientific argument.