3-5 Physical Science
3-5 Nature of Science
Southern Nevada Regional Professional Development Program

Magnification

INTRODUCTION

Objects are made up of small particles that are often too difficult to see with the naked eye. Tools such as hand lenses and microscopes can help students to better see parts of an object.

WHERE'S THE SCIENCE?

Objects are made up of small parts that cannot be seen with the naked eye. Tools such as hand lenses and microscopes allow individuals to see these parts by magnifying them. Through this activity, students are introduced to the idea that objects are made up of smaller parts, or cells. This concept and the vocabulary that accompanies it are not fully developed until later though. The main focus of this lesson is that magnification helps us to see things that are not visible to the naked eye.

MATERIALS

- Salt
- Sugar
- Hand lenses
- Microscopes
- Science Notebooks
- Pencils
- Colored Pencils
- Book, such as *Close, Closer, Closest* by Shelley Rotner and Richard Olivo

PROCEDURES

1. Read aloud the book *Close, Closer, Closest.*
2. Instruct the students to select an object from the classroom, examine it, and draw a picture of it using their eyes.
3. Introduce the **hand lens**. Model how to use the tool. Have students look at a portion of the same object with the hand lens and draw a picture of what they see through the hand lens.
4. Have students discuss with a partner: What did you notice with the hand lens that you did not notice with your eye? What new details did you see?
5. Introduce the **microscope**. Model how to use the tool. Have students look at a portion of the same object with the microscope and draw a picture of what they see through the microscope lens.
6. Have students discuss this drawing with a partner: What did you notice with the microscope that you did not notice with the hand lens? What new details did you see?
7. Call the students to the carpet area and discuss their observations. Pose a new challenge for students. Give students a mixture of salt and sugar and ask them to determine the best tool to use to separate the mixture, the hand lens or the microscope.
8. After the investigation is completed, once again call the students to the carpet area, with their science notebooks, to discuss their rational for the best tool to use. Record the students' new thoughts and ideas on the chart paper and post in a visible place in the classroom.

Additional Resources

Rotner, Shelley. *Close, Closer, Closest*. New York: Atheneum, 1997.
http://www.molecularexpressions.com/primer/java/scienceopticsu/microscopy/simplemagnification/index.html
Informational site on magnification.
http://www.cellsalive.com/howbig.htm
Interactive site showing objects at many different levels of magnification.

Vocabulary

Hand lens: a convex lens used to produce an enlarged image of an object.

Magnification: the process of enlarging the size of something, as an optical image.

Microscope: an instrument for viewing objects that are too small to be seen by the naked eye.

Nevada State Science Standards

P5A6 Students know materials are composed of parts that are too small to be seen without magnification. E/S

N5A1 Students know scientific progress is made by conducting careful investigations, recording data, and communicating the results in an accurate method. E/S

N5B3 Students know the benefits of working with a team and sharing findings. E/L

Lesson adapted from:

Clark County School District K-5 Science and Technology Handbook, © 2003

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