PARENT LETTER

Dear Parent,

Your child is beginning a unit created at the Battle Creek Area Mathematics and Science Center. This unit was designed to promote science and engineering literacy and integrate reading and writing skills into high-interest science content. During the next eight weeks, your child will be actively involved with the *Waves: Light and Sound* unit. This unit is geared for first-grade students and focuses on the big ideas of obtaining information to determine how light is necessary for sight, that light interacts differently with different materials, and that sound is caused by vibrations.

1. Obtain information through investigations and discussions to discover that vibrating materials can make sound and sound can make materials vibrate.
2. Obtain information through investigations, models, and discussions to discover that light must be present in order to view objects.
3. Plan and conduct investigations using translucent, transparent, opaque, and reflective materials to determine the effect of light striking various materials.
4. Plan and design a method for communicating over a distance using light or sound.

First-grade students are also encouraged to think and act like scientists and engineers and begin to develop observation and communication skills in science.

1. Make purposeful observation of objects in dark and light.
2. Generate questions based on their observations.
3. Plan and conduct simple investigations into how different material interacts with light.
4. Manipulate simple tools that aid observation and data collection.
5. Construct simple charts from data and observations of how different materials interact with light.
6. Make purposeful observations of how sounds are produced and produce different sounds using a variety of materials.
7. Identify the source of vibrations that are producing sounds.
8. Design, build, and present an instrument that makes sounds.
9. Work in teams to design a communication system using light and/or sound to signal different community emergency personnel.

In this unit the activities are geared to build on the inherent knowledge and experience that young students have already acquired and use their knowledge in a wider range of tasks. Students will be given the opportunity to examine, measure, reflect upon, describe, and discuss how light is necessary for sight and how sounds are produced. Suggestions for activities to do at home are included with this letter. These activities will reinforce the concepts taught during this unit instruction.

May you enjoy quality time with your child while discussing the concepts involved with the *Waves: Light and Sound* unit. Let us know if we may be of assistance.

The Outreach Staff

Battle Creek Area Mathematics and Science Center

(269) 213-3904 or (269) 213-3905

Activities To Do At Home

1. Play light tag with your child using small mirrors and flashlights. Someone is tagged when he/she is touched with light reflected from the mirror.
2. Explore shadows with your child by using objects such as hand puppets, kitchen tools, and toys. You can make a good shadow using a strong flashlight shining against a light-colored wall or a hanging sheet.
3. Help your child find and identify translucent objects (such as wax paper or very thin material), transparent materials (such as clear glass or plastic wrap), and opaque materials (such as wood, dark paper, or foil). Use a flashlight to see if and how light can pass through these materials.
4. Have your child describe the pupil and iris of one of his/her eyes. Go in a darkened room with your child. After a few minutes turn on the lights and watch each other's pupils adjust to the light.
5. Go on a walk in the moonlight with your child. Keep track of the number of different shadows you observe. Determine the objects and the light sources that are making the shadows.
6. Take a sound hike with your child. Go to various locations (in the city, in the country, by a lake, at a fair, at a shopping center) to listen to the variety of sounds. Make a list of sounds and categorize them according to their properties: pitch (the highness or lowness of a sound), volume (loud or soft), and type (human-made or natural).
7. Make simple instruments using common household items. Drums can be made from oatmeal boxes; shakers can be made by filling a dry bottle or film canister with such items as paper clips, pasta, rice, marbles, or coins and then shaking the container to hear the sounds; stringed instruments can be made by stretching rubber bands of varying thickness across baking pans; and bottle pipes can be made by filling narrow-necked glass bottles with different amounts of water and then blowing gently across the top of each bottle.
8. Make string telephones and carry on a conversation with your child. Attach cans or plastic cups to the ends of a long piece of string by putting a hole in the can or cup and tying the string to a paper clip, which will anchor the string to the inside of the cup. Experiment by using different lengths of string and various techniques on how taut the string has to be for the sound to travel through the string. Take turns talking into the cup/can and listening to what is being said. Help your child realize that the sound stops if the string is loose and cannot vibrate.
9. Go to the library and check out books to read related to light and sound. Example titles:

Sound Waves by Ian F. Mahaney

What is Sound (Sounds All Around Us) by Charlotte Guillain

Sound: Loud, Soft, High and Low by Natalie Rosinsky

Light: Shadows, Mirrors, and Rainbows by Natalie Rosinsky

All About Light by Lisa Trumbauer

Light is All Around Us by Wendy Pfeffer

What Makes a Shadow? by Clyde Bulla