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## **Lesson Plan: Rocks, Sand and Weathering**

**Title:** Rocks/Sand

**Science Process Skills:** observation

**Materials Needed:** sand from different places (different beaches, rivers, different consistencies), digital microscopes, microscopes, Petri dishes (to put sand in), Simple Sand Key sheet, Sand on Stage worksheet

**Reference Sources:** <http://www.uhh.hawaii.edu/affiliates/prism/documents/WhatisSandLessonFour.pdf>,  
<http://microscope-microscope.org/applications/sand/microscopic-sand.htm> and  
<http://www.seaworld.org/just-for-teachers/classroom-activities/4-8/pdf/Sand%20Lab.pdf>

**Science Standard:** matter and energy

**Target Grade Level:** 2<sup>nd</sup> grade

**Description (5E Model):**

**Engage:** What do you know about sand? Show pictures from “Rocks and Minerals” by Jack Challoner. Explain Sand on Stage worksheet and pass out sand samples in Petri dishes.

**Explore:** Use digital microscope to take a picture of their sand sample  
Have students work on Sand on Stage worksheet

**Explain:** Using Simple Sand Key help identify sand grains and discuss the process of weathering

**Elaborate:** Let students use individual microscopes to compare different sand samples.

**Evaluate:** Have students write their observations about their sand and their comparison sand in their science journals and draw a picture of the sand or of certain sand crystals.

**Citation of children's book:** Challoner, Jack. (1999). *Rocks and Minerals*. Milwaukee, WI.

The second grade students were so excited to use the digital microscopes. The focus of their science unit was weathering and rocks. The students had sand samples from different geographical areas. They were to observe their sand samples and make an inference where their sand sample might have been collected. They had a sample from a Florida beach, a sample from a local quarry and a sample from a Lake Michigan beach. The digital microscopes provided fantastic details and the IPFW educator major was able to use the pictures on the computer to draw out ideas about weathering by pointing out the bits and pieces of shells and small parts of rocks. The second grade students were amazed. This was the last lesson of the semester for the IPFW education major and she had progressed in her confidence in using the digital microscopes. When she first used the digital microscopes with first graders and insects in August much of her teaching energies went to just managing the technology and the first grade students. In December after using the digital microscopes multiple times with students over the semester, she was very confident with the technology and spent more of her teaching time developing the science concept. It was wonderful to see her confidence grow in using the technology. She shared at the end of the semester, how much she hopes to have digital microscopes as resource when she begins teaching.

The pictures of the sand were displayed in the hallway as pieces of art. Some of the challenges to displaying the pictures as artwork was the school's printer was only black and white and of poor quality. The wonderful colors and details observed on the computer screen were not translated to the hard copy.

The second grade teachers observing the digital microscope technology being used in their classroom immediately show the potential of the technology. Since the software had been installed on the two computers in their classroom, they requested to use the microscopes for a couple of weeks. At the time of the sand lesson, these teachers had a special writing project they were working on with the second grade students. The students were to bring in an object that reminded them of a special memory. The students used the object to help them write two or three descriptive paragraphs. The teachers had their students use the digital microscopes to take pictures of their objects. The second grade teachers then had the pictures developed as photographs. The photographs were attached to the descriptive paragraphs and displayed as a bulletin board. The photographs and paragraphs were wonderful. Not only did the second grade teachers start using the digital microscopes after seeing them used with an IPFW science experience, but the first and fourth grade teachers as well have begun to request to use the digital microscopes for their classrooms.



Second Grade Bulletin Board





## Second Grade

Dept, Class, Grade Level	Student work/project	Intended use of equipment	Indiana grade level standard addressed
Grade 2	<ul style="list-style-type: none"> <li>• Compare and contrast properties of different types of sand and soil</li> <li>• Sand picture art exhibition</li> </ul>	<ul style="list-style-type: none"> <li>• IFPW students teach use and care of equipment and facilitate discussions during observations.</li> <li>• Second grade students study properties of rocks, sand, and soil using equipment</li> <li>• Students predict and draw conclusions about weathering of rocks</li> <li>• Photographs will be displayed in art exhibition throughout the school.</li> </ul>	<p>2.1.2 Use tools, such as thermometers, magnifiers, rulers, or balances, to gain more information about objects</p> <p>2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people.</p> <p>2.1.6 Use tools to investigate, observe, measure, design, and build things.</p> <p>2.3.3 Investigate by observing and then describing chunks of rocks and their many sizes and shapes, from boulders to grains of sand and even smaller.</p>