

**Lesson Materials**  
**Journey of the Sand Lesson Plan**  
**Project 3**

**Target Group:** My students are 11-12 grade students taking an elective geology class. This lesson is a part of a larger unit that is located towards the end of the course. The students have basic geology knowledge and will be applying and deepening that knowledge through the lesson project.

Teacher – Lisa Chacon

# Journey of the Sand

Overview: Using your knowledge about sand, plate tectonics, and our own local geological history, you will compare and contrast our local sand to other sands around the world.

## Step-by-Step Directions:

1. You will be assigned a geographic region to study. You should use the Science of Sand Website <http://www.scienceofsand2.info/> to explore sands from the geographic region assigned to you. **Select one sand sample you find interesting from your assigned region.**
  - Regions Include: East Coast U.S., West Coast U.S., Gulf of Mexico in the U.S., Near the Great Lakes in the U.S., Hawaii, Canada, South America, Australia – New Zealand – or Oceania, Central America, Asia, Northern Europe, Southern Europe, Africa, Caribbean.
2. **Analyze your selected sand sample.**
  - Describe the color.
    - Do you recognize any rock or mineral types among the sediments?
  - Describe the roundness.
  - Describe the sorting.
  - What weathering agents do you think impacted your sand?
3. You will be expected to **research the following geological components** of your region.
  - How was your region formed tectonically?
    - Result of convergence, divergence, volcanic hot spot, etc.?
  - What types of rocks make up most of the area? You may focus on the location of your sand; i.e., If your region is the East Coast and your sand is from Myrtle Beach, South Carolina, you only need to describe the rocks in South Carolina near or influencing the Myrtle Beach area. You do not need to describe the entire East Coast.
    - Sedimentary? Igneous? Metamorphic?
    - Explain the history behind each rock formation you identify in your area.
    - Which rocks may be the parent rock to your sand sample and how do you think the sediments were transported to your sand's exact location?
  - Research the geological history online. Be sure to use reliable sources. Most State and National Geological Surveys are a great place to start.
4. The sand sample you selected should reflect the geologic history of the area. **Connect details about your sand to the geologic history of the area.** Use evidence from both your historical research and your sand observations to support your claim.
5. Compile your scientific ideas and observations into a **research paper.**

In our last lesson, we explored the geologic history of Missouri and connected it to the sand sample we collected from Deer Creek behind our school. Using your notes from our last lesson, **compare and contrast the Missouri sand sample to the sand sample you selected** for your research paper. Your comparison/contrast summary should be included as a paragraph in your research paper.

You should also prepare a brief presentation about your sand to share with the class.

**What you need to turn in:**

- Research Paper containing the above components.
  - Size 12 font
  - 3-5 pages
  - Double-spaced
  - Bibliography – MLA Format
- Presentation
  - Slideshow, document, prezzi, or some other presentation tool.
  - Include picture of sand and sand location
  - Include Sand description
  - Describe brief summary of the geological history of the area. (No slide necessary for this point.)

**Marzano’s Self-Assessment Rubric**  
(Utilized by Mrs. Chacon for all projects)

<b>4</b>	In addition to the performance score of 3.0, the student demonstrates in-depth inferences and applications that extend beyond what was taught. <b>“Beyond Proficient”</b>
<b>3</b>	There are no major errors or omission regarding any of the information and/or processes (simple or complex) that were explicitly taught. This level is <b>mastery. “Proficient”</b>
<b>2</b>	There are no major errors or omissions regarding the simpler details and processes, but there are major errors or omissions regarding the more complex ideas and processes. <b>“Almost Proficient”</b>
<b>1</b>	With help, the student demonstrates a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes. <b>“Developing”</b>

**Journey of the Sand Rubric**

<b>Components</b>	<b>Scale (1-4)</b>	<b>Teacher Comments</b>
Paper: Formatting Details		
Bibliography		
Presentation Content		
Sand Description Content		
Weathering and Transport Content		
Tectonic History Content		
Rock Formation Content		
Scientific Claim Connecting Sand to Geological History		
Sufficient Evidence to Support Claim		
Comparison/Contrast to MO Sand		
Paper: Accuracy		

## **Class Presentation Notes**

Directions: While listening to your peers share their knowledge about sands from around the world, look for two sands similar to the one you select and two sands very different than yours. You will only take notes on the four samples you identify meeting the criteria.

You will also need to identify which sand among the presentations is the **MOST** similar to our Deer Creek sand sample.

### Similar Sand Sample 1 – Location:

- Sand Description
  - Color:
  - Roundness:
  - Sorting:
  
- Was the geological history similar to your sand's geological history? If yes, how?

### Similar Sand Sample 2 – Location:

- Sand Description
  - Color:
  - Roundness:
  - Sorting:
  
- Was the geological history similar to your sand's geological history? If yes, how?

### Different Sand Sample 1 – Location:

- Sand Description
  - Color:
  - Roundness:
  - Sorting:
  
- Was the geological history similar or different when compared to your sand's geological history? Explain.

### Different Sand Sample 2 – Location:

- Sand Description
  - Color:
  - Roundness:
  - Sorting:
  
- Was the geological history similar or different when compared to your sand's geological history? Explain.

Which sand sample was the most similar to our Missouri sample from Deer Creek? \_\_\_\_\_