Aggregate Activities!

Lesson Overview: We will explore the connections between mining aggregate materials and their uses and properties through hands on activities. We will identify specific properties of different rock particles and classify them into certain categories. We will also discuss the importance of mining earth materials, as well as how their properties aid in the use of each of these natural resources.

Sources Consulted:


Learning Objectives:

At the end of this lesson, students will be able to...

1. Define the following terms by the use of creating a picture dictionary: aggregate, mining, earth materials.
2. Name 1 property of each of the following natural resources: clay, gravel, sand, rocks using four senses.
3. Name 1 use for each of the following natural resources: clay, gravel, sand, rocks.

State Benchmarks Addressed: National Heritage Academies Grade 1 Science (See website link below):


- Earth & Space Science
  o classify rock particles as boulders, cobble, pebbles, gravel, sand, silt
  o explain uses for different natural resources based upon their properties
- Introduction to Science
  o make observations related to the 5 sense about nonliving things.

Materials Needed:

- Book: Learning About Mining Sand, Gravel and Stone
• Worksheet A (class set) see below
• Worksheet B (class set) see below
• Worksheet C (class set) see below
• Worksheet D (class set) see below
• The following earth materials (enough for 6 groups total of each material)
  - gravel
  - clay
  - sand
  - rocks

New Vocabulary:

  - aggregate: mixture of gravel, rock, and stone.
  - mining: the process of removing materials from the earth.
  - natural resource: Something, such as a forest, a mineral deposit, or fresh water, that is found in nature and is necessary or useful to humans.

Focus Questions:

• After reading the book Learning About Mining Sand, Gravel, and Stone, what do we think the word aggregate means?
• Who has ever heard of the word mining before? Who could show me what you think mining looks like?
• What do we know about mining?
• What do we want to know about earth mining?

Classroom/Field Activities:

Procedure:

1. As a class the teacher will lead a KWL (what students know, want to know, and have learned about a topic). The letters KWL should be written on the board (shown below). The first step will be to find out what students know about mining. Ask the students if they have ever heard of the word mining, if a student has, have that student show what mining may look like if a person is doing it.
2. Move on to the ‘W’ part of the KWL, this is what the students want to know about mining. Be sure to prompt the question of what types of things can be mined.
3. Show video clip of Snow White and the Seven Dwarfs [http://www.youtube.com/watch?v=1qG2A9ENST4&feature=fvwrel]. Tell students they will see one way that mining can take place; this is the way people used to mine. In more recent times, different machines are used. Be sure to listen for these types in the next book.
4. At this time, the teacher will read the book Learning About Mining Sand, Gravel and Stone. Worksheet B (Using Resources) should be handed out to each student before reading.
During the reading, the class will fill out the worksheet together on the Elmo, as well as individually. In the book, it states what each of the materials can be used for. This should be recorded. Throughout reading the book the teacher should stop and recap the information for the students. The word aggregate comes up in the book; this should be discussed as well. Students will most likely know what gravel, sand and stone is, it should be discussed that together it makes aggregates. The other types of mining in the book should be discussed as well, for example: crushers, and conveyors (the teacher should remind the students that those are the types of machines that we use now).

5. Once the book is finished students should brainstorm all of the materials that were mentioned in the book. Once gravel, rocks, clay, and sand is brought up, the teacher can stop. If needed students can look back in the book.

6. Review for the students that so far, they have discussed what mining is and what types of things can be mined and how.

7. Next, students should be broken up into 6 groups. At each group table (six total), there should be 4 small bowls. In the four different bowls, there should be gravel, sand, clay, and rocks. Add 5th bowl of aggregate. Students will each get a turn to feel each of the materials. REMIND STUDENTS THAT THESE MATERIALS DO NOT GO IN THEIR MOUTHS. After students have felt each of the materials, they should be given Worksheet C to fill out 1 property of each of the materials. Encourage students to use different words for each material, get creative. Encourage students to use ONLY 4 of their 5 senses… STUDENTS SHOULD NOT USE TASTE.

8. Once students have completed Worksheet C, as individuals they should complete the ‘L’ of the KWL. What the students have learned about earth materials, mining, and what they are used for, Worksheet D.

Assessment:

1. Worksheet A (picture dictionary) will be used to test the students ‘ability to define the important words covered. The picture dictionary will help the teacher to know if the students grasped the idea of the terms, if they are able to represent those using pictures.

2. The KWL is also a great assessment of the students’ knowledge. This can be used in just about every lesson and is extremely helpful to get a quick idea as to where each student is at. This will give you an overall idea on what the student was able to retain, and what should be reviewed. (Worksheet D)
<table>
<thead>
<tr>
<th>Word</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate</td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td></td>
</tr>
<tr>
<td>Earth Materials (example: rocks, clay, gravel)</td>
<td></td>
</tr>
</tbody>
</table>
Using Resources

List one thing that this resource can be made into.

Gravel

Sand

Clay

Rocks
Property of Resources

List one property of each of the following natural resources.

Gravel________________________________________________________

Sand__________________________________________________________

Clay___________________________________________________________

Rocks_________________________________________________________
| K | W | L |
(What have you learned?)

What are two different types of mining?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Pick an earth material. Write about one property it has and also one thing that it is used for.

Earth Material__________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________