Lesson: Rocks and Soil, Part 1

Reference to English Interconnections Lesson Rocks and Soil, Pg. 55

Science Standard 2:
Objective 1:
Indicator 1:

Content Objective(s):	**Language Objective(s):**
1. Students will gather evidence about the uses of rocks.	1. Students can name rock, sand, metal, glass, pencil (lead), and chalk. 2. Students can ask if something is made of rock. 3. Students can say that something is the same or not the same.
Essential Questions: How can we investigate the natural world at school?	**Academic Vocabulary:** Rock, sand, metal, glass, pencil (lead), chalk 岩石, 沙, 金属，玻璃, 铅笔, 粉笔
Materials: -A bag of miscellaneous items that are made from rocks (i.e., stones, bricks, coins, jewelry, silverware, glass etc.) -"Find Rocks" worksheet	**Language References and Word Wall:** Rock, sand, metal, glass, pencil (lead), chalk 岩石, 沙, 金属，玻璃, 铅笔(铅), 镁粉 **Sentence/phrase frames:** Is this made out of rock? This is/is not made of rock? (是，不是) What kind of rock is it? Same/not the same (一样， 不一样)

Lesson: Experiment	**Instructional time: About 45 Minutes**

Opening: (10 minutes)

- Tell the students that today you will talk about rocks and that many things are made of rock.
- Show the students some rocks and write the work "Rocks" on the board. Tell the students that rocks are everywhere and are used to make many things.
- Teach students the "Rocks" chant (below). It would be most helpful to have some pictures ready to use with the chant. Have students hold up each picture and repeat the words to the chant after you. （Simplify the chant if necessary)

Rocks are everywhere I go 石头，石头围绕着我。
They're always close to me. 石头始终在左右，
Rocks are in a mountain brook, 石头在山涧里，
And rocks are in the sea. 石头沉在海洋里。
Rocks along a country road, 石头在乡间的路上。
And in the desert sand. 石头也在沙漠里。
Rocks are found in city streets, 石头在城市的街道上。
And all across the land. 到处都ㄎㄧ石头。
Small rocks, giant rocks, 小石头、 大石头、
Special rocks so rare 还有很多稀有的石头。
All around our great big earth ㄚㄟ地球上
Rocks are everywhere! 到处都ㄎㄧ石头！

Introduction to New Material (Direct Instruction): (10-15 minutes)

- Use objects, pictures, TPR 动作, and oral drill 口头练习 (yes/no, either/or, and WH questions) to teach rock, sand, metal, glass, pencil, chalk.
- Show students the bag of items made from rock that you have collected (Examples: stones, bricks 砖头, coins 硬币, jewelry 宝石, silverware 银器, glass, chalk, pencil etc.)
- Invite students to remove one item at a time from the bag and discuss together as a class how each thing is made from rock. (e.g., sand is very small rocks, glass is molten 熔化 rock/sand, metal is made from a rock called ore 矿石, the inside of

a lead pencil is made from a soft rock [石墨], chalk is a type of soft rock [石灰岩] that is pressed 压 together. Go into as much detail as appropriate 越详细越好. (It is not important that the children learn terms such as "graphite" and "limestone" etc.) Describe each rock as you show it to the students.

Guided Practice: (15 minutes)
Demonstrate how to use the "Find Rocks" 找到石头 worksheet. Make sure that there are many objects in the room made from rocks that students can find.

Use the modeling cycle:

Teacher Does: Using the worksheet, find something in the classroom made of rock and draw it in the chart.
Teacher Does with Student: The teacher and a student partner together to find an item in the room. The teacher asks, "Is this a rock?" The student should answer. If the item is made from rock, the teacher asks, "What kind of rock is it?" If possible, the student says the name of the item (e.g. chalk, pencil, glass, metal, etc.). Both the teacher and the student draw the item on the worksheet. Next switch roles with the student asking the question.
Two Students Do: Two students find an object and one asks, "Is this made from rock?" The other student answers, yes or no. If the item is a rock, the first student asks, "What kind of rock is it?" The second student identifies the rock and the two students draw the object on the worksheet. Next have the students switch roles.
All Students Practice: All students partner together to find, identify and draw objects made from rocks. One student asks the questions and the answers. Then have the students switch rolls.

Independent Practice: (10 minutes)
Use the modeling cycle (teacher demonstrates, student/s demonstrates, whole class does together):
Have students explain to at least 4 different partners the pictures on their worksheet. Partners should say if they have the same picture or a different picture on their worksheets (一样， 不一样). Encourage the students to describe their pictures if possible.

Closing: (5 minutes)

- Ask some of the students to come to the front of the class and show their pictures and tell about the objects made of rock.
- Review with the students: "Today we have talked about rocks. Who can tell me some of the rocks we have talked about?"
- Tell the students to go home and find three things that are made from rock.

Assessment:

- When students are completing the "Find Rocks" worksheet, observe whether the students can accurately say whether or not the items are made of rock and what the items are (rock, glass, metal, chalk, etc.).
- Check the worksheets to make sure that only objects made of rock are included.

找石头

姓名: _____

Lesson: Rocks and Soil, Part 2

Reference to English Interconnections Lesson Rocks and Soil, Pg. 55

Science Standard 2:
Objective 1:
Indicator 3:

Content Objective(s):	**Language Objective(s):**
1. Observe, compare, describe and sort components of soil by size, texture, and color.	1. Students can orally describe the characteristics of soil to a partner.
Essential Questions: How can we investigate the natural world at school?	**Academic Vocabulary:** Rocks, soil, sticky, loose, wet, dry 石头,土壤,粘,松,湿,干
Materials: -"Looking at Soil" by Judith Rosenbaum or any book about soil -Different soil samples (e.g. sand, clay, humus). -Newspaper -Magnifying glasses	**Word Wall** Rocks, soil, sticky/loose, wet/dry, color (brown, green, gray etc.), leaves, grass, twigs, insects, big, small 石头,土壤,粘 / 松,湿 / 干,颜色（棕色,绿色,灰色等等）,叶子,草,小树枝,昆虫,大,小 **Sentence/phrase frames** What do you see? 你看到什么？ What is the soil like? 土壤像什么？ If possible, put "Soil" pictures up on the wall or a table.

Lesson: Experiment — **Instructional time: About 45 minutes**

Opening (Warm Up/Review): (10 minutes)

- Review the chant and vocabulary from the day before.
- Ask the students what things they saw at home that are made of rock. Have each student tell their partner then ask students to share with the class.

Language Building: (10 minutes)

- If Possible get the book, "Looking at Soil" by Judith Rosenbaum or any other book about soil in your school library. This is an English book but you can show the pictures and talk in simple Chinese. Ask the students yes/no, either/or, and WH questions.
- Tell the students that today they will be soil scientists 地质学家. "Soil is made from very small rocks and other things. There are different kinds of soil." Write the word "Soil" on the board.

Experiment and Record: (15 minutes)

Teacher Preparation:

*—Collect different kinds of samples of soil from your yard or a garden center. Try to find **humus** 烂泥巴 (pronounced HUE-muss; the top layer of soil 土壤上层 that has bits of leaves, twigs etc.) **sand** (small grains of rocks), **clay** 粘土 (small particles that stick together), and **mud** 泥浆 (wet dirt).*

—Line tables with newspaper, or do activity outside.

—Put different soil types (sand, humus, clay, and mud) on 4-5 tables. Put the samples 样品 in the "Soil" paper in one of the 4 different circles.

Use the modeling cycle:

Divide the students into groups, and, if possible, give them magnifying glasses. 放大镜 Give each member of the group a "Soil" paper with four circles on it (similar to the one on the table that has the soil samples in it.) Have each group of students look closely at the soil samples on the table and draw/color a picture of the soil type in each circle on their "Soil" paper.

Discussion and Report: (10 minutes)

Bring the groups together and ask them the following questions about what they observed?

- What do you see in the soil? (small rocks, leaves, twigs, grass, insects etc.)

- Are they big or small?

- What color is the soil?
- What is the soil like?
  -Is it sticky or loose?
  -Is it wet or dry?

Closing: (2 minutes)

- Have each group show their picture to another group. Each student in the group should find a partner and explain what they drew. Post the pictures on the word wall under the title "Soil" or "What is soil like?"
- Tell the students you will do another experiment with soil the next day.

Optional Extension:

Worms and Soil:

1. Create a worm observation jar for the class (a jumbo size plastic jar that used to hold licorice欧亚甘草, jelly beans软心豆粒糖, cheese ball puff 奶酪泡芙球 or pretzels椒盐饼 like at a warehouse store is perfect). 2. Fill the jar with alternating layers of good soil and thin layers of sand. Spray each layer with water to make sure it is moist but not soggy(太潮湿).
3. Get some earthworms蚯蚓 from your yard (or from a bait饵 supply place) and place the worms in the jar. Add some leaves and grass.
4. Cover the jar with a cloth to make it dark for the worm. Place in a spot that is not too hot or cold.
5. Check the jar to see what the worms have been up to. You may be able to see the worm along the side of the jar. Have students observe how the worm moves and what happens to the neat and tidy layers of soil. Explain to students that worms are very helpful in the garden to mix up the soil. Let the worms go after a few days.

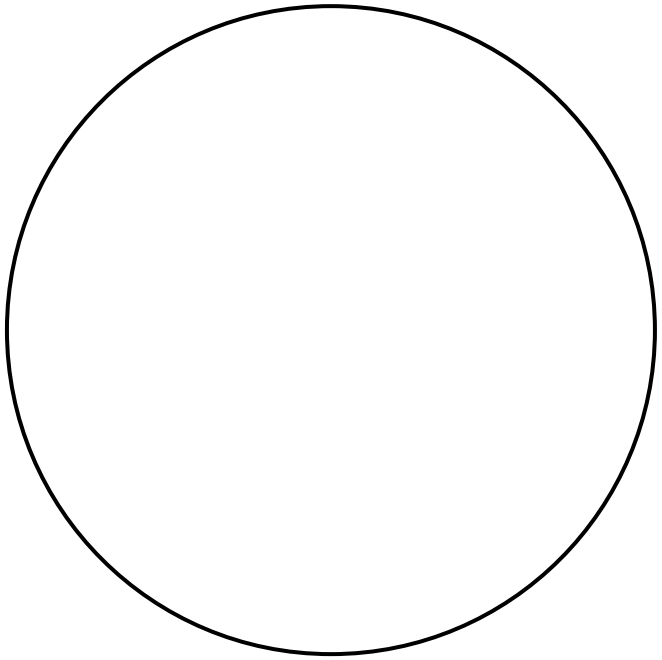
Worm Zoologist: 毛虫动物学家

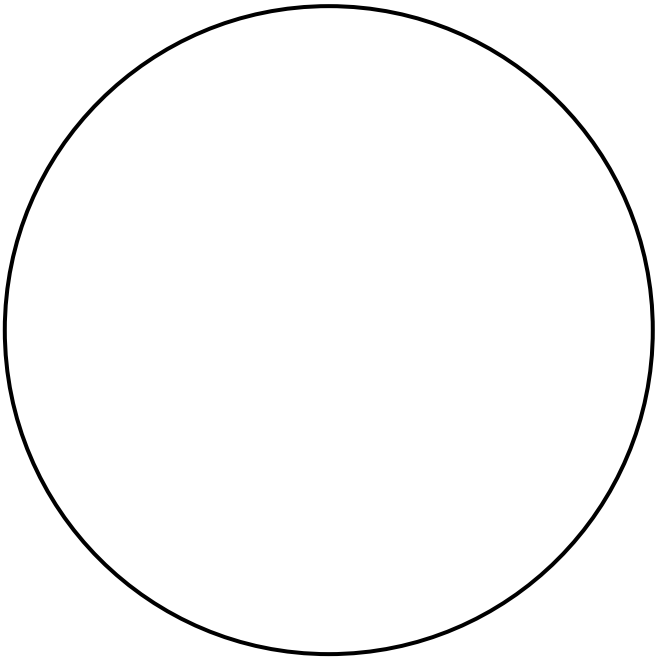
Place a live worm in a tray and let students observe how it moves (point out how it moves by squeezing压缩 and stretching伸展 its body). Look at the worm with a magnifying glass and see how it has small hairs/bristles 硬而短的毛to help the worm move through the soil.

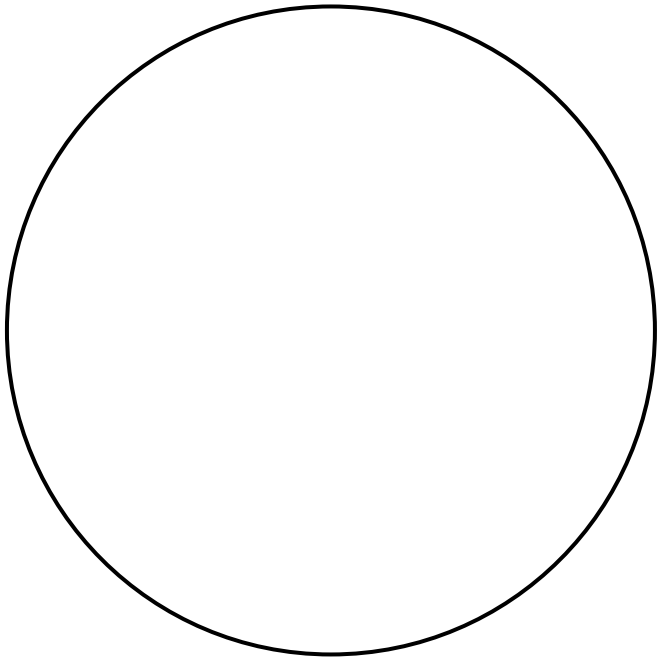
Assessment:

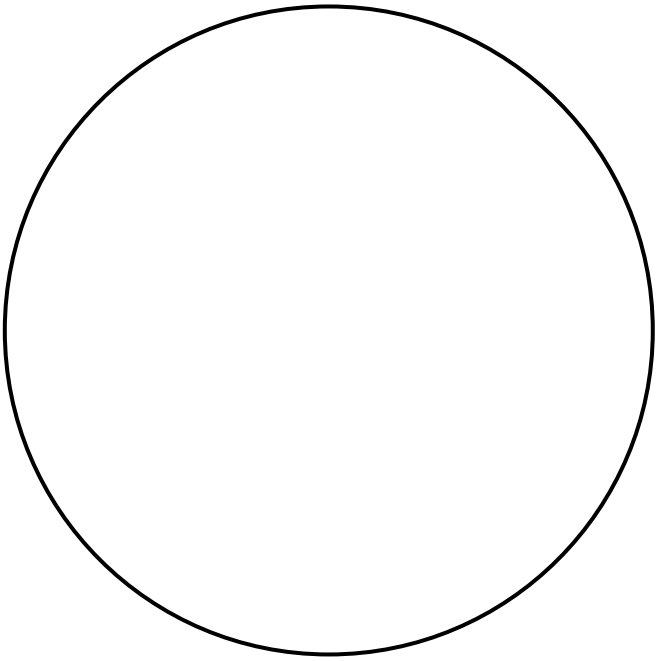
Observe how the students share their "Soil" pictures with other students. Can they describe the soil circles in an accurate and understandable way?

土壌









Lesson: Rocks and Soil, Part 3

Reference to English Interconnections Lesson Rocks and Soil, Pg. 55

Science Standard 2:
Objective 1:
Indicator 3:

Content Objective(s):	**Language Objective(s):**
2. Observe, compare, describe and sort components of soil by size, texture, and color.	1. Students can tell a partner what things floated and what things sank when water is added to soil samples. 2. Students can read *float, sink
Essential Questions: How can we investigate the natural world at school?	**Academic Vocabulary:** Jar, float, sink 罐子,浮起来,沉下去
Materials: -"Looking at Soil" by Judith Rosenbaum or any book about soil. -4-5 mayonnaise type jars (one for each group) -soil samples from last lesson -"Soil in a Jar" picture sheet -magnifying glasses (optional) Optional Extension: - Jumbo plastic jar or container - Live earthworms	**Word Wall** jar, float 再水的上面, sink 再水的下面, light, heavy **Sentence/phrase frames** "What do you see?" 你看到什么？ "What floated?" 什么浮起来 "What sank?" 什么沉下去

Lesson: Experiment	**Instructional time: About 45 minutes**

Opening (Warm Up/Review): (5 minutes)

- Review the book, "Looking at Soil"
- Review the pictures from the experiment up on the wall or table. Have various students come in front and describe what they drew.

Language Building: (10 minutes)

- Teach the oral words for "sink" and "float". Use objects or pictures to do this. (Perhaps bring in a transparent tub 透明的桶子 with water and demonstrate "float" and "sink." You may also want to teach the terms, "light" and "heavy" if the students don't know them.
- Show the students the characters for "float" and "sink" and have them practice writing them on slates. 小白板

Experiment and Record: (15-20 minutes)

Teacher Preparation:

—Using a large jar (mayonnaise type) put a handful of soil collected from the day before in the bottom (include humus, sand, some clay)。 There should be small pebbles 小石头, leaves, sand etc. in the soil). Repeat so that each group has a jar).

Use the modeling cycle:

- Call the students to the front of the class and show them the jar with the soil in it. Have the students describe to a partner what is in the jar.
- Ask the students to predict 预测 what will happen if you add water to the jar by telling a partner?
- Have partnerships share their predictions with the class.
- Pour 倒 water nearly to the top of the jar and screw on the lid 将盖子旋紧. Shake the jar so that the soil gets all mixed up.
- Tell the students to watch the jar for several minutes and observe what is floating and what is sinking.

(If the students are unfamiliar with these terms teach them using pictures, TPR 做动作 etc.)

- Divide the students into groups and give each group a jar with soil and water to watch. Tell the students to leave the jar on the table and not touch it, but observe what floats and what sinks. (The students may want to use magnifying glasses.)放大镜 Have the students talk to their group members about what they are observing.
- After 10 minutes, give each student a "Soil in a Jar" picture sheet and ask them to draw what they see.

Discussion and Report: (10 minutes)

- Bring the groups together and ask them what they observed?
- Place the words/characters, "float" and the "sink" on the board.
- Have different students come up and draw the different items that floated or sank under each word. If the students are ready you can write the words (twigs, grass, insects, small rocks etc.) in each category instead of drawing the pictures.
- Have the students describe to their partners what things sank and what things floated.
- Ask the students, "Why did some things float and other things sink?" Discuss that some things are light and other things are heavy.

Closing: (2 minutes)

- Have a few students come up and show their pictures and describe them to the group.
- Review with the students: "Today we poured water into the jar and the soil. After some time the light things (leaves, twigs etc.) floated and the heavier things (small rocks etc.) sank."
- Post the pictures on the word wall under the title "Soil" or "What is soil like?"

Assessment:

Observe how the students describe their "Soil in a Jar" pictures to a partner. Can they describe what floats and what sinks? Do they use color words, size words, light/heavy etc.?

罐子里的土壤