ITQ ARTS AND SCIENCE INTEGRATION
GRADE 4
THEATRE AND EARTH SCIENCE

Rocking Statue! Identifying Rocks and Minerals
Earth Science: Solid Earth, Investigation 1 – 3
Lesson #1

CONTENT STANDARDS

Theatre Grade 4

5.2 Use improvisation and dramatization to explore concepts in other content area.

5.3 Exhibit team identity and commitment to purpose when participating in theatrical experiences.

Earth Science Grade 4

ES4b Students know how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica and hornblende) and ore minerals by using a table of diagnostic properties.

ESSENTIAL QUESTIONS *(Questions students might ask about the topic)*

- What is improvisation?
- What are the different types of rocks and minerals?
- How are rocks and minerals different?
- How did the improvisation help you to understand how we select rocks and minerals to make statues?

OBJECTIVES & STUDENT OUTCOMES *(Students will be able to…)*

- improvise a short scene with a partner.
- describe rock-forming minerals and ore minerals.
- build upon another student's idea or improvisational offer.

ASSESSMENT (*Various strategies to evaluate effectiveness of instruction and student learning)*

- **Feedback for Teacher**
  - Scene Observation
  - Video of Classwork
  - Audio Tape
- **Feedback for Student**
  - Student/Teacher responses
  - Video of Classwork
  - Audio Tape

WORDS TO KNOW

Theatre Grade 4

- **Actor:** A person, male or female, who performs a role in a play or an entertainment.
- **Audience:** People who watch, listen and respond to live theatre.
- **Improvisation:** A spontaneous style of theatre in which scenes are made up on the spot.
- **Prop (properties):** items carried on stage by an actor; small items on the set used by the actors.

Earth Science Grade 4

- **Calcite:** A mineral that contains carbon and oxygen.
- **Feldspar:** A common rock-forming mineral in Earth's crust.
- **Granite:** An igneous rock that forms underground.
- **Hematite:** An ore mineral containing the metal iron.

- **Limestone:** A sedimentary rock made mostly of calcite.
- **Marble:** A metamorphic rock formed when limestone is subjected to heat and pressure.
- **Mineral:** An ingredient in a rock.
- **Properties**: A characteristic that describes an object, such as size, shape, and texture.
- **Quartz:** A common metamorphic rock.
- **Rock:** A solid earth material usually made of two or more minerals.
- **Sandstone:** A sedimentary rock made of sand particles cemented together.
- **Geologist**: A scientist who studies Earth, its materials, and its history.

MATERIALS

- Reference set of rocks and minerals. (included in *FOSS Kit California Edition Grade 4, "*Solid Earth")
- Blank Rock/Minerals Characteristics Table (included)
- Various objects to be used as **props**.[empty water bottle, dry-erase eraser, etc.]
- 4 sets of 4 sheets of different colors of paper, cut in fourths.
- *FOSSweb California Grade 4, "Solid Earth" Geology Lab, Rock Database:* http://www.fossweb.com/ca/modules3-6/SolidEarth/activities/geologylab/rockdb/rocksand_db_rock.htm
- Science notebooks (1/student)

RESOURCES

- VAPA Core Learnings: http://www.sandi.net/20451072011451565 3/site/default.asp
- VAPA Grade 4 Theatre Lessons: http://tinyurl.com/theatrelessons
- *FOSS Kit California Edition Grade 4,* "Solid Earth," Investigations 1 – 4
- *FOSSweb California Grade 4, "Solid Earth" Geology Lab, Rock Database:* http://www.fossweb.com/ca/modules3-6/SolidEarth/activities/geologylab/rockdb/rocksand_db_rock.htm
- Online improvisation lesson videos: http://www.ehow.com/video_4949233_improv-yes-lets.html
- The benefits of improv in addressing multiple intelligences web article. http://www.improvwarrior.com/benefits.html
- *Theatre Games for the Classroom*, Viola Spolin (available on Google Books at http://tinyurl.com/spolinbook)
- *Unscripted Learning, Using Improv Activites Across the K – 8 Curriculum,* Carrie Lobman and Matthew Lundquist
- *Structuring Drama Work, A Handbook of Available Forms in Theatre and Drama,* Jonothan Neelands and Tony Goode
- *An Usborne Introduction Acting and Theatre,* C. Evans and L. Smith
- Video Camera
- Audio Recorder

PREPARATION

- Review *FOSS Kit California Edition Grade 4,* "Solid Earth," Investigation 1 – 3.
- For this lesson to be truly effective, complete Investigation 1 – 3.
- Locate and review the reference set of **rocks** and **minerals** included in the *FOSS Kit*.
- Optional **actor's** warm-up for use any time a theatre lesson is being taught. It should be *very* short.
    - Review with students that **actors** have three tools/instruments to do their work: voice, body and imagination.
    - Each time an **actor** works they must "tune up" their instrument.
    - Arrange students in a circle, each one having personal space.
    - Lead students through a physical warm up isolating different parts of the body and stretching (e.g., rotate hands at wrist, roll shoulders backwards and forwards, rotate head at neck, gently swing hips from side to side, knee bends, rotate foot at ankle, lunges, stretching on tippy toes, hanging like a rag doll, slowly rolling up, shake each limb vigorously 8 times, then 4 times, then 2 times, then once)
    - Lead students through some basic pantomimes, such as, brushing their teeth, combing a dog, going to the beach, etc.
    - Lead students through a vocal warm up with yawning, humming up and down the scale, breath exercises (expelling air with force from the diaphragm), loud and soft voice, and tongue twisters. ("Round and round the rugged **rock**, the ragged rascal ran.")

WARM UP *(Engage students, access prior learning, review, hook or activity to focus the student for learning)*

(15 minutes)

- Tell students that today they are going to be **actor geologists**.
- *Say:*
    - *As **actors** we use many of the same skills that **geologist** use. Geologists use their powers of observation to report on the Earth, its materials and history. As **actors** we make observations of people on Earth and their history to create characters and tell stories.*
- Review: Explain that **actors** have three tools to do their work: voice, body and imagination. Every time an **actor** does his/her work they must warm up using their tools.
- With students, hum up and down the musical scale to demonstrate warming up the voice.
- Have students repeat the following tongue twister: "Round and round the rugged **rock**, the ragged rascal ran."
- With students perform three basic stretches to demonstrate warming up the body.
- Tell students that one way **actors** warm up their imagination is to play **improvisation** games. Introduce the vocabulary word **improvisation**.
- Introduce the story telling **improvisation**, "Yes, and." This game is the foundational principal of **improvisation**, accepting your acting partner's idea and building on it.
- Ask students what happens if you are going to **improvise** a scene and you start it by saying, "Oh my goodness, you are my long lost brother!" Your partner denies this and says, "No, I'm not." The scene comes grinding to a stop. We must always accept what our partner says or does and add to it.
- To facilitate this activity the teacher should model with students a sample improvised scene.
- Arrange students in a circle or allow them to stay at their desks but establish a pattern to follow for this exercise. Have students recall an experiment they did in class. [detecting calcite in Investigation 3 of the *FOSS* kit] Outline the sequence of events in the experiment on the board.
- The teacher will start the storytelling with an opening statement.
- *Say: The other day we did a science experiment.*
- The next person in the circle may say something like: *Yes, and it was an experiment about* _____. [finding calcite in rocks]
- The next person may say: *Yes, and to do the experiment we needed* _____. [four different kinds of rocks]

- Each person around the circle continues to add a statement about the experiment always beginning with "Yes, and." Students must really listen to others and add on to the story.
- Continue until all students have participated. Encourage the final few students to find an ending to the story.

MODELING *(Presentation of new material, demonstration of the process, direct instruction)* (20 minutes)

- Explain to the students they will be creating a short **improvised** scene using various **props** (**properties**) and that they will endow each **prop** with characteristics of one of the rocks or minerals from their investigation 2 and 3 [Rocks: Basalt, **Limestone**, **Marble**, **Sandstone**. **Minerals**: **Quartz**, Fluorite, Gypsum, **Calcite**.]
- Using the rocks from the Foss kit, review with the students the descriptive characteristics of each of the four **rocks** and four **minerals**.
- Project the Rock/Minerals Characteristics Table
- Briefly review with the students the different characteristics used to describe rocks and minerals.
- Complete the chart based on student responses.
- Call on two students to come up front to help demonstrate how to improvise a scene.
- Option: Teacher and a selected student can model the improvised scene.
- Explain to the two students they will have four objects and they will have to use them as something completely different then what they actually are. [An empty water bottle can be basalt, a dry-erase eraser can be limestone, etc.]
- *Say:*
    - *As mentioned earlier, I told you that you all will be **actor geologists**. With a partner you will create a short **improvised** scene using **props**.* [Explain to students that **props** are items carried on stage by an actor or small items on the set used by the actors.] *Your group will be given some basic information to help you create your **improv**. Here is what you know:*
        - *You have been hired for an important job. A local art studio is planning to build a large statue which will be displayed somewhere in San Diego.*
        - *In order to make their statue they need specific rock material with a certain color, hardness, texture and luster to create their statue.*
        - *You and your fellow **actor geologist** are out in the field and need to find and identify the rock material the art studio most likely will need to make their statue.*
- Tell the students they need to use all four **props** and describe them endowing each **prop** with the characteristics of one of the rocks or minerals already described by the class before.
- Explain to the students once they have described the rock or mineral, in character, then they should agree upon during their improvisation which rock they believe they should bring back to the art studio to be used to create the statue.
- Place the **props** around the acting space to encourage movement.
- Designate an off stage space and instruct the student actors to enter from the off stage space when you signal them to begin.
- Remind the students their scene needs to have a beginning, middle and end with a resolution.
- Give the **actors** the signal to begin their **improvisation**.[Signal to begin can be "lights!" "Curtains!" or any other signal you may already have established to begin an activity.]
- At the end of the scene invite the audience to give the **actors** a round of applause.

GUIDED PRACTICE *(Application of knowledge, problem solving, corrective feedback)* (10 minutes)

- Explain to the students they will now have a chance to create their own **improvised** scene with a partner.
- Assemble students in pairs.
- Tell the students the objects they will be using as **props** are four different colored, crumpled

pieces of paper.

- Explain to the students they will be assigned three **rocks** or **minerals.** Explain that students will endow the characteristics of their assigned rocks/minerals to three of the **props.**
- Explain to both of the **actor geologists** that during the improvisation, they must agree on the identification of the fourth **rock** or **mineral** they find.
- Distribute to each group four crumpled pieces of paper of different colors and assign three **rocks** or **minerals** to three of the four props.
- Tell the student actors the fourth **prop** needs to be described and identified by the two **actor geologists** during their improvised scene.
- Remind the students their scene needs to have a beginning, middle and end with a resolution. Students also need to remember they are looking for a material that can be used by the art studio to create a statue.
- Explain to students you will be watching and listening for **actors** using vocabulary that clearly and accurately describes the **rock** and/or **mineral properties**.
- Give the students the signal to begin their scene.
- As the students are performing walk around to check for understanding.
- Side coach as needed
- When the scenes come to an end have the students give themselves a round of applause.

DEBRIEF & REFLECT *(Identify problems encountered, ask and answer questions, discuss solutions and learning that took place. Did students meet outcomes?)*
(5 minutes)

- Bring group back together and have them report out.
- *Ask:*
  - *What kinds of words did you use to describe the **rocks** and **minerals**?* [adjectives]
  - *Was it easy or difficult to guess the new **rock** and **mineral**?*
  - *Why was this **improvisation**?*
  - *What did you remember about the **rocks** and **minerals** from your previous lessons?*
- Have students respond to the following prompt in their science notebooks: How did the improvisation help you to understand how we select rocks and minerals to make statues?

EXTENSION *(Expectations created by the teacher that encourage students to participate in further research, make connections, and apply understanding and skills previously learned to personal experiences.)*

- Have students write a script with **rock** and **mineral** descriptions in it.
- Use “Yes, and…” with other curriculum areas and as a pre-writing exercise.

Rock/Mineral Characteristic Table					
ROCK or MINERAL	**COLOR**	**HARDNESS**	**LUSTER**	**CLEAVAGE**	**OTHER PROPERTIES**