

Lesson on Observing and Classifying Rocks

Grade level: 8th grade science lesson

Key Idea Observing and Classifying rock types

Goal of lesson: to provide experiences for students to expand their observing and classifying skills to the Earth's rocks

Prerequisites: Observing using all senses and classifying using two variables at the same time

Lesson Part I. Exploration:

Objectives:

1. Students will observe and record observations of rocks and identify different observed rock properties with unfamiliar rocks.

Materials: Put in a large plastic bag the day before by science student helpers --- a set of 20 different rock types, tray, and classification sheet for each group. A plastic knife and magnifying glass for each student.

Procedure: Have students bring in 10 rocks each from their neighborhood to mix in a box for a varied rock sample. Group the students in 3's.

- A. The key questions are asked first holding up sample rocks: "Which rocks belong together? Why? Make and record observations for each of your rocks. Use all senses but taste". Each group receives a tray, classification sheet divided into six boxes into which the rocks will be grouped, and approximately ten rocks. Each student will get a magnifying glass, plastic knife. Choose a person from each group to get the materials and to distribute them family style.
- B. The students are asked to handle their rocks, make observations about them and share those observations with their partners. Observations will be made by all group members *rotating* around the group.
- C. Following each observation, the group member will put the rock in one of the six boxes. Not all boxes need to have a rock in them. When all rocks have to be classified. Ask each student to provide a label to identify why they put them in the box (with the other rocks).

Evaluation:

Record each student's active participation in describing and identifying properties of their rocks and in placing them on the classification sheet with labels.

Lesson Part II. Invention:

Objectives:

2. The students will describe the term rock property and provide two examples.
3. The students will regroup rocks based on their observed properties.

Materials: paper, pencils, crayons or colored markers for each student and a set of three different rock types for each group. A set of 5-10 larger rocks demonstrating the basic rock properties.

Procedure:

- A. The student groups will discuss and share their findings with the class.

- B. The teacher will help students identify rock properties using *their chosen* labels. Examples might include weight, size of rock, texture, color, type of fracture, density, and size of crystals.
- C. The teacher will ask the students to reclassify their rocks on the basis of one rock property described above they did not use originally. Write this new grouping on a sheet of paper, providing the new rock property. Repeat this activity one or two times until students feel confident in making reclassification based on new properties. The teacher will assist and challenge students in other classification attempts.
- D. The teacher will introduce and demonstrate, using larger rock samples, the geological concepts of texture, color, size of rock, type of fracture, crystal grain size, density, etc. Ask students to write the term and draw an example of each property.
- E. Provide a closure describing identifying rock properties by demonstrating a variety of possible rock groupings.

Evaluation:

Record each student's participation in reclassifying their rocks in at least one new way and writing and/or drawing representations of each property term used.

Lesson Part III. Expansion:

Objectives:

- 4. Students will apply their rock properties and classification system to unfamiliar rocks.

Materials: 3x5 inch cards, pencils for each student and a set of three different (from earlier activities) rock types for each group.

Procedure:

- A. The teacher will give three additional rocks to each student group.
- B. The teacher will then ask: "What are the properties and how would you put the rock into your classification system?"
- C. The students will write their responses on a 3x5 card and ask another group to check their work.
- D. The students are then given a homework assignment to find a "different" rock around their house when they get home and bring it in, and classify it the next day. *Note: an alternative activity would be to take the students on a five minute field trip around the school building to find a rock. They should classify the rock using two rock properties when they return to the classroom.*
- E. To summarize the lesson describe and demonstrate to the students their original ideas of grouping rocks and the new alternative ways they practiced using a variety of rocks.

Evaluation:

At stations around the room ask the students to classify 3 rocks using 2 rock properties experienced in the lesson. This could be done on a quiz or chapter test later in the week.

** Next Lesson Goal - to provide an experiential basis for naming and identifying differences in rock types - igneous, sedimentary, and metamorphic.

Steps in Lesson Planning Using the Learning Cycle

The learning cycle sequence is not a blueprint for teaching, but a set of decision points that all teachers must address in the planning process if they are to adequately help students learn important objectives. Recognizing these decision points assists teachers in deciding to act in keeping with what is known about how learning takes place.

Exploration

Focus students attention on experiences related to the new idea or skill to be taught, start students thinking with a “key” question,
Bring out and make public what the students now know, their prior knowledge, and
Relate previous learning to new learning

Invention

Discuss the results of the Exploration activity to provide connections
Provide an explanation of the new idea or skill
Provide clear examples or model the new idea or skill
Provide a closure for the new idea or skill

Expansion

Provide practice activities or the new idea or skill
Provide activities in which the new idea or skill is applied in new contexts
Provide a summary of the important ideas, skills, and events in the lesson

Learning Cycle Lesson Plan Format

*The learning cycle **lesson plan** should contain the following sections.*

Name and background information

Lesson Information

Key Idea

Goal

Prerequisite skills and concepts

Self evaluation

Lesson Activities:

1. Exploration Phase

Objectives

Materials

Introduction to Lesson

Procedure: Student Activities Which:

Focus Student Attention

Bring out What Students Know

Relate Previous Learning to New Learning

Evaluation

2. Invention Phase

Objectives/Materials

Procedure: Teacher/Students Activities Which

Provide Explanations

Provide Examples

Provide Closure

Evaluation

3. Expansion Phase

Objectives/Materials

Procedure: Students Activities Which:

Involve Practice

Provide Application and Transfer

Lesson Summary

Evaluation