Title: Rock Cycle Activity

Description: Students will follow a rock as it travels through the rock cycle. They will model the movement of earth materials by rolling a die to see where they will go next.

Materials:
- 1 set of Rock Cycle Dice (11) printed on cardstock, cut and assembled for the class
- Placards or signs for each die station (marked with the name of the die and clearly visible from around the room)
- Samples of igneous, metamorphic and sedimentary rocks to place at the appropriate stations with hand lenses
- One handouts per participant of the Rock Cycle Diagram

Time Needed: 50 minutes

Background Knowledge: Students should be familiar with characteristics and formation of sedimentary, metamorphic and igneous rocks.

Procedures:
1. Place the dice, placards and samples around the room in a widely spaced circle. The placards should all be visible to someone standing inside the circle. The order of the dice and placards is irrelevant.
2. Instruct the participants that they will be starting at the station of their choice. They should do their best to spread out around the room. If a station is too crowded at the beginning, they should choose to begin at a different station.
3. Roll the die at the station and move to the station indicated by the die. READ THE DIE CAREFULLY, some of the stations are similarly named.
4. Each time you visit a station, make a tally mark in the box for that station. Each mark represents approximately 200,000 years in the life of a rock.
5. As you travel from one station to another, draw an arrow from the station you left to the station you are going to. These arrows represent the transformations that can occur to rock during the rock cycle.
6. If you stay put, make a tally mark and draw an arrow that loops back on itself.
7. After an appropriate amount of time, enough time for most of the participants to have visited each of the stations, stop the activity and discuss the results.

Scoring Guide
1. Student participates and records data..........................4
2. Student correctly answers analysis questions...............4 (#1 and #2, students probably will get “stuck” in a place because rocks go through stages at different rates and chance occurrences will determine outcome as well. #3 answers will vary #4 this model is more dynamic and accurate than the static flow charts found in books #5 heat from Earths interior drives the rock cycle
3. Students writes thoughtful and thorough conclusion.......4
Introduction: Rock particles travel through Earth's crust in the “Rock Cycle”. It is called a cycle because a rock particle can travel through it over and over again in a circular way or sometimes not. In this activity you will model the movement of a rock particle through time.

Materials: lab stations, rocks, dice

Procedures:
1. Notice the dice, signs and samples around the room.
2. You will be starting at the station of your choice. Spread out around the room. If a station is too crowded at the beginning, choose to begin at a different station.
3. Roll the die at the station and move to the station indicated by the die. READ THE DIE CAREFULLY, some of the stations are similarly named.
4. Each time you visit a station, make a tally mark in the box (see below) for that station. Each mark represents approximately 200,000 years in the life of a rock.
5. As you travel from one station to another, draw an arrow from the station you left to the station you are going to. These arrows represent the transformations that can occur to rock during the rock cycle.
6. If you stay put, make a tally mark and draw an arrow that loops back on itself.
7. You will have about 20 minutes to complete your travels.

Analysis:
1. Did you get “stuck” in the rock cycle? Where?

2. Why might rock get “stuck” there?

3. Did others in the class get stuck in the same place?

4. How does this model of the rock cycle differ from one pictured in your textbook?

5. What forces move rock through the rock cycle?

Conclusion:
HIGH TEMPERATURE & PRESSURE

Stay Put!

Go to Metamorphic Rocks

Stay Put!

Go to Metamorphic Rocks

Stay Put!
TO THE SURFACE

Go to Weathering & Erosion

TO THE SURFACE

Stay Put!

TO THE SURFACE

Go to Weathering & Erosion

TO THE SURFACE

Go to Weathering & Erosion

TO THE SURFACE

Stay Put!
METAMORPHIC ROCKS

Go to Melting

METAMORPHIC ROCKS

Go to High Temperature & Pressure

Go To The Surface

METAMORPHIC ROCKS

Go to Melting

Go To The Surface

METAMORPHIC ROCKS

Go to High Temperature & Pressure
MELTING Go to Magma
MELTING Stay Put!
MELTING Go to Magma
MELTING Go to Magma
MELTING Go to Magma
MELTING Stay Put!
MAGMA

Go to Cooling & Hardening

Stay Put!

MAGMA

Stay Put!

MAGMA

Go to Cooling & Hardening

Stay Put!

MAGMA

Stay Put!
WEATHERING & EROSION

Go to Sediments

WEATHERING & EROSION

Go to Sediments

WEATHERING & EROSION

Stay Put!

WEATHERING & EROSION

Stay Put!
Melting
Cooling and Hardening
Metamorphic Rocks
Sedimentary Rocks
High Temperature and Pressure Rocks
Magma

Magma
Compaction and Cementation
To the Surface

To the Surface
Weathering and Erosion

Weathering

and Erosion