# Nichole Matzke and

Jennifer Glabach

GEO 201-20

# **The Rock Cycle**

**Grade Level**: 6th grade

**GLCE**:

E.SE.06.41- Compare and contrast the formation of rock types (igneous, metamorphic, and sedimentary) and demonstrate the similarities and differences using the rock cycle model.

(E.SE.M.4: Rock formation- Rocks and rock formations bear evidence of the minerals, materials, temperature/pressure conditions, and forces that created them).

**Process standards:**

S.IP.06.11- Generate scientific questions based on observations, investigations, and research concerning rock samples.

S.IP.06.12- Design and conduct scientific investigations to understand rock formation.

S.IP.06.13- Use tools and equipment (models, thermometers) appropriate to scientific investigations of the rock cycle.

**Materials:**

**Vocabulary:**

**Common misconceptions:**

We expect that some common misconceptions that the students will have prior to teaching our lesson are that rocks stay in one place and do not move, all rocks are the same, and that rocks do not have a purpose.

**Prior knowledge:**

We will get an understanding of what the students already know prior to teaching this lesson by giving them a fill in the blank worksheet on how rocks are formed (worksheet is attached). This should be able to give us a little understanding on what the students have or have not already learned about rocks.

**What students will learn:**

Students will learn the three different types of rocks (sedimentary, igneous, and metamorphic) and the process in which they form and change (through the rock cycle).

**Trade book:**

**Engage**:

 I intend to capture the students’ interests by playing a rock cycle rap youtube video and share with them an age appropriate book based on the rock cycle. I will also engage the students by providing for them a fun and exciting game based on the rock cycle. This will hopefully create a desire to learn more about the different types of rocks.

## **Explore**:

 The students are going to explore for themselves how the rock cycle works through an engaging, hands-on activity. I will guide this activity orally with the whole class. I will start by giving each student a piece of bubble gum (and explain how it represents a sedimentary rock). Once I have them chew the piece of gum I will ask them to think scientifically about what they are doing to the piece of gum (questions to ask: is it cold inside your mouth? Are you applying heat? What is happening when your teeth come down on the gum? Are you applying pressure? Is the gum being changed?). I will then have them take the gum out of their mouth and pour some Nerds onto the gum and squeeze and fold them into the gum. I will hold up the gum and explain how it represents an igneous rock. I will then have the students chew the piece of gum and ask what they think they are doing to the gum (hopefully getting a response of applying heat and pressure). Explain how pressure is crushing the candy (crystals) and have them pull the gum out and say how this now represents a metamorphic rock. I will then explain to the students that they have just modeled the rock cycle and put up a big laminated diagram of the rock cycle for students to further explore.

### **Explain**:

 I will explain the difference between the three types of rocks by the way that they are formed and then explain the purpose/meaning behind the rock cycle and how it works using the big laminated diagram of the rock cycle that I put up for the students to explore after the gum and candy activity.

1. Sedimentary Rock: Sedimentary rocks are formed from rocks and soil that have been pressed together and cemented together (pressure).
2. Igneous Rock: Igneous rocks are formed from melted minerals that have cooled and hardened.
3. Metamorphic Rock: Metamorphic rocks are formed by intense heat and pressure and chemical reactions.
4. Rock Cycle: The rock cycle is a process of natural changes that cause one type of rock to become another type of rock.

I will be sure that the content is well understood when the students can define these characteristics of each rock type to me, other students, and on paper and when they can explain the rock cycle and how it works.

### **Elaborate**:

 This lesson will connect to other curricular areas such as reading and writing (R.CM.06.01, R.CM.06.02, R.CM.06.04, W.PR.06.02). The real world connections with the rock cycle are that rock formation can provide us with glimpses into the way our world was formed. It can also provide us with information more locally on how our area was shaped. I will have students explore and identify many examples of different rock types to help show this.

### **Evaluate**:

 Students will demonstrate their new knowledge and skills through formative and summative assessments. After I have the students explore and identify many examples of different rock types within their small groups, I can give a formative assessment by having them classify the rock types together to check their understandings so far. I will also give each student a fill-in-the-blank worksheet of the rock cycle for them to complete. I will give a summative assessment by giving students real rock samples for them to identify on their own. The product of this lesson will be an enriching field trip to a rock quarry where the students will create their own rock collection (if this is not possible then I will just take them outside on mini-trips to explore the different types of rocks outside).

**Differentiation of lesson for students of various disabilities:**

**Sources:**