**BACKWARDS DESIGN SIOP: Volcanoes**

**Name of Student:** Meghan McGurgan

**Lesson objective:**

Students will be able to identify the 3 classifications of rock as sedimentary, metamorphic, and igneous.

Students will be able to label the rock cycle, with the correct 3 classifications of rock and transformations, using a graphic organizer.

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| IDENTIFY BIG IDEAS AND ESSENTIAL QUESTIONS(Connect lesson objective with big ideas and essential questions on National Framework/Next Generation Standards. Remember that not all of them will apply – pick the ones that fit the best!) |
| 5-ESS2-1: Earth’s major systems are **the geosphere (solid and molten rock, soil, and sediments),** the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth’s surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. WIDA standards:

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| **Grade Level Cluster:** Grade 3-5 |
| **Framework:** Summative |
| **ELP Standard:** 4 - Language of Science |
| **Language Domain:** WRITING |
| **Example Topic** | Rock cycle |
| **Level 1 - Entering** | Copy names of rock classifications from labeled diagrams or pictures (e.g., sedimentary, igneous) |
| **Level 2 - Beginning** | Describe features of rock classifications from labeled diagrams |
| **Level 3 - Developing** | Compare/contrast the rock classifications from diagrams or graphs or animations (e.g., color, texture, location in the earth) |
| **Level 4 - Expanding** | Discuss relationships between rock classifications and transformations from diagrams or graphs |
| **Level 5 - Bridging** | Evaluate potential usefulness of rock classifications (e.g., building materials, industrial uses, jewelry) |

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These standards connect with the lesson objectives through the geosphere section. The geosphere encompasses the rock cycle and how rocks transform from one type of rock to another. When the kids learn about the rock cycle, they will learn the 3 classifications of rock are sedimentary, metamorphic, and igneous. They will also learn that sedimentary rock turns to metaphoric through heat and pressure, metamorphic turns to molten magma through melting, and metamorphic turns into igneous when cooled.  |

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| DETERMINE ACCEPTABLE EVIDENCE(What is the knowledge / skills that students need to exhibit to prove they have mastered the concepts stated in the “big idea” and “essential questions”. Look at the National Framework and Illinois Standard and see what the expectations by grade level are. Again, not all of them will apply – pick the ones that fit the best. These are the skills that need to be targeted in the assessments. Assessments should be designed in this stage of backwards planning) |
| Students will have to be able to fill out a graphic organizer with the 3 classifications of rock: sedimentary, metamorphic, and igneous. Then they will need to write the correct transformations as to how each type of rock turns into the next. If the students are able to correctly label and describe the different classifications and transformations, I will know they have a firm understanding of the rock cycle process. In addition, I should be able to ask each student to tell me how a certain rock transforms into another type and they should be able to verbally tell me the answer. If they can explain how the transformations work, I will know they understand the processes.  |

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| LEARNING EXPERIENCES AND ACTIVITIES(These are the activities that take place during the instructional delivery of the lesson. They should target the goals identified in the prior stages of the backwards design –they should answer the big / essential questions and should provide the student the opportunity to develop the knowledge and skills they will be assessed on) |
| Students will complete the online WBI lesson for the rock cycle. They will explore the different websites and go through the animations that demonstrate the transformation processes. One example of an animation is provided below: (<http://www.classzone.com/books/earth_science/terc/content/investigations/es0602/es0602page02.cfm>). After exploring the different sites and watching the different animations, the students will demonstrate their understanding by filling out a graphic organizer on the rock cycle. They will have to identify and label the 3 classifications of rock and their transformations. Accommodations:ELL and bilingual students may struggle with the academic terminology used when describing the classifications. For this reason, I will provide pictures on their graphic organizers. There will be pictures of the different types of rocks as well as images for their transformations. The pictures will help the students make connections between the academic vocabulary and the pictures so they have a better understanding of what the words mean. In addition, I could provide some websites with the same content in Spanish so the students can see key vocabulary terms in both English and their native language. This will help the ELL and bilingual students see how the word is written in English and help them to remember what the English vocab term is. Differentiation:This activity is a tiered assignment of sorts because it allows the students to start at whichever level they are at. For those ELL students who are new to English, they may get most of their information from the Spanish sites while those more fluent in English might try to use some of the English sites. In addition, the information is presented in a way to cater to multiple learning styles. Students can learn through reading and exploring the sites or through the more hands- on step-by-step animation. The pictures and animation could also help the more visual learners. Each student is also challenged at their own level- for example I may ask varying questions to the students depending on their ability level. I may ask the fluent or higher level kids to verbally explain the rock cycle transformations while I may ask a lower level student or and ELL student to name the 3 types of rocks (in English if possible). This way they are learning the same information, but being challenged at their level.  |