

Rock Cycle and Transformations

Overview: The student will investigate and then show understanding of how the Earth's surface is constantly changing while focusing on the key concept of the rock cycle and how the transformations occur between the rocks. Because the goal requires the student to know about how the Earth's surface is changing, some of the information within this unit also focuses on 5S-ESS6a. There is overlap in the content.

Procedure:

1. Teacher will provide instruction regarding this ASOL using the *Rock Cycle Study Guide* (supplied for this unit) and *Rock Cycle & Rock Types - Reference* (provided).
2. In order to investigate about the rock cycle and how the Earth's surface is constantly changing, the student will use the iPad with the following apps and record facts s/he learned with the *Rock Cycle & Types Investigation* (provided)-
 - Common Rocks Reference (free)
 - i. <https://itunes.apple.com/us/app/common-rocks-reference/id301217333?mt=8>
 - Earth Viewer (free)
 - i. <http://www.hhmi.org/biointeractive/earthviewer>
 - Rock Cycle: The interactive story (free)
 - i. <https://itunes.apple.com/us/app/the-rock-cycle/id471106554?mt=8>

**Depending on school system, there are rock kits for the science teachers to check out. This would be a great place to allow the student to access another form of investigation.

3. The student will read and highlight information in ONE of the *Reading A to Z* books provided depending on the student's reading ability:
 - *Rocks* (Level C - PrePrimer/Primer)
 - *Rock Hunting* (Level G - 1st grade)
 - *GEMS* (Level S - 3rd grade)
4. The student will complete the *Activities - Rocks - Types & Cycle* to show that they are ready to fully demonstrate the content of this ASOL for the next part of the assessment.
5. The student will have the opportunity to demonstrate knowledge of the stem of the ASOL by being able to choosing two or more of the following:
 - *Foldable - Rocks - Types in the Cycle*
 - *Foldable - Rocks - Types of Rocks*
 - *Quiz - Rocks - Types and Cycle*
6. The student will then complete *Vocabulary Quiz*.

ASOL Covered:

5S-ESS6: The student will investigate and understand how Earth's surface is constantly changing. Key concepts include:

- a) identification of rock types.
- b) the rock cycle and how transformations including between rocks occur.

5S-SI 2: The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

- a) Items such as rocks, minerals, and organisms are identified using various classification keys.

HSS-EMP 2: The student will investigate and understand the rock cycle as it relates to the origin and transformation of rock types and how to identify common rock types based on mineral composition and textures. Key concepts include

- a) Igneous rocks.
- b) Sedimentary rocks.
- c) Metamorphic rocks.

HSS-COT 1: The student will investigate and understand that many aspects of the history and evolution of Earth and life can be inferred by studying rocks and fossils. Key concepts include

- a) Traces and remains of ancient, often extinct, life are preserved by various means in many sedimentary rocks.
- d) Rocks and fossils from many different geologic periods and epochs are found in Virginia.

Materials Needed: *Investigation - Rocks - Types and Cycles activity sheet*, iPad with apps (Common Rocks Reference (free), Earth Viewer (free), Rock Cycle: The Interactive Story (free)), *Study Guide, Rock Cycle and Rock Types – Reference, Rocks (Level C - PrePrimer/Primer), Rock Hunting (Level G - 1st grade), GEMS (Level S - 3rd grade), Foldable - Rocks - Types in the Cycle, Foldable - Rocks - Types of Rocks, Quiz - Rocks - Types and Cycle, Vocabulary Quiz*, pencil, highlighter, rock kit - if option is provided, scissors, glue

Instructional Setting: The instruction setting could be in a resource setting, general education setting, or self-contained classroom. This scientific investigation ASOL is in line with the SOL 5.7 therefore is an appropriate activity for any 5th grade student.

Community Connections and/or Peer Interaction: With the 5S-ESS6a ASOL being a 5.7 SOL, this could be an opportunity to include students in the general education setting or to provide specialized instruction in a small group setting. *If this ASOL is being used as an assessment for the VAAP portfolio, the student will need to complete the activity independently. -An in school science presentation could be arranged for a shared experience with general education and special education allowing for partners to participate in hands on activities. -Trip to a local park, playground or water property to look for a variety of rocks to compare with rocks found at student homes or on the school property.

Functional Activity/Routine: Some skills that are incorporated into this activity/routine:

1. Student is working on skills that promote independence while investigating.
2. Student will be working on skills that involve cutting and pasting information into a foldable as done in many general education classes.
3. Using the iPad (technology) in an educational way to find information.
4. Taking notes from information they are reading in order to share that information.

Strategies to Collect Evidence:

- Ways that the student will investigate and understand how Earth's surface is constantly changing
 - Use Investigation - *Rocks - Types and Cycles activity sheets* with the iPad with apps (Common Rocks Reference, Earth Viewer, Rock Cycle: The Interactive Story) to investigate and write down new information learned.
 - Student will read and learn new information and highlight facts s/he has learned using the *Reading A to Z Books - Rocks, Rock Hunting, or GEMS*
- Ways the student can demonstrate the rock cycle and how transformations, including between rocks occur, by demonstrating what s/he has learned through the power of choice between -
 - *Foldable - Rocks - Types in the Cycle*
 - *Foldable - Rocks - Types of Rocks*
 - *Quiz - Rocks - Types and Cycle*
 - *Vocabulary Quiz.*

Specific Options for Differentiating this Activity:

- Provide significant supports and modifications:
 - Allowing for choices to be made and the instructor gluing materials into the foldables for the student
 - Teacher manipulates the iPad with the apps and student is given a way to stop the investigation to show that s/he has learned something new. The instructor takes an internal image of that and does a write up to show that the student expressed that that was a new fact learned.
 - Program voice output device or other student communication system with information needed to answer questions, comment and participate in classroom activities.
 - Create a choice board with pictures of rocks and other needed materials to allow all students to have a voice in the activities.

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1. One fact about Earth you found -

1



2. One fact you learned about the Earth's surface -

1



3. One fact you learned about the rock cycle -

1



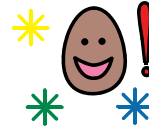
4. One fact you learned about how the Earth changes -

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5. One fact you learned about magma -

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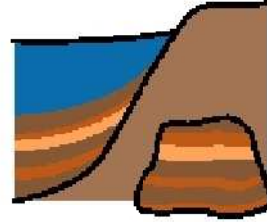
6. One fact you learned and thought was awesome -

Study Guide for Science 5.7 a & b

Types of Rocks Rock Cycle



Important Vocabulary



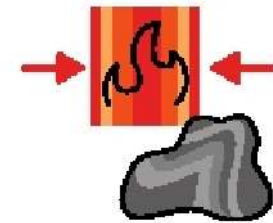
sedimentary rock



igneous rock



Rock Cycle



metamorphic rock



lava



pressure

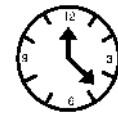


The Earth is ancient or very old.



It is over 4 billion years old.



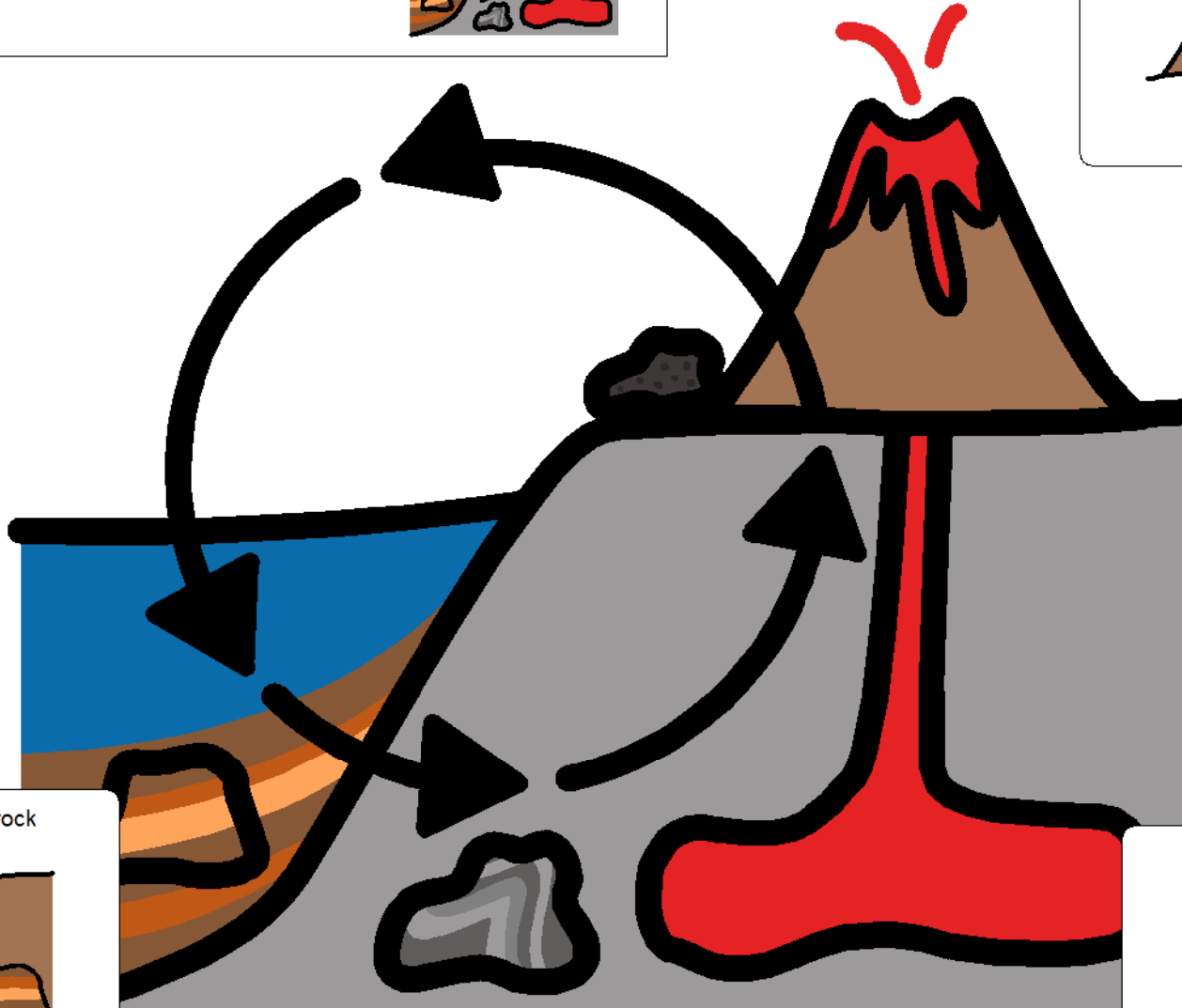


This is the rock cycle. Rocks change and move over time.

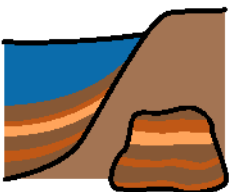
Rock cycle



igneous rock



sedimentary rock

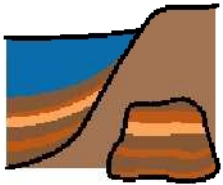


metamorphic rock

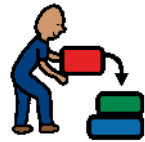




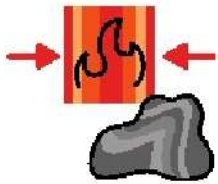
What happens in the Rock Cycle?



sedimentary rock



layers of sediment cemented together



metamorphic rock



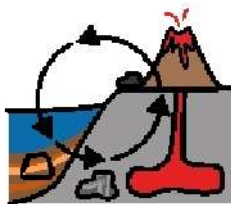
changed by heat and pressure



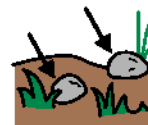
igneous rock



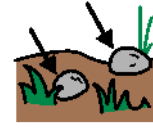
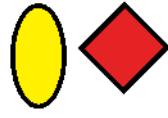
when lava and magma cools



Rock Cycle



process of rocks changing

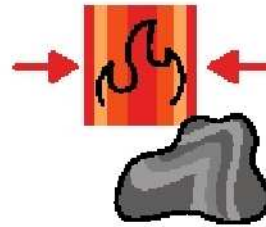
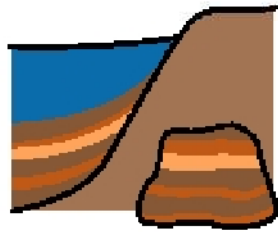


There are different kinds of rocks!

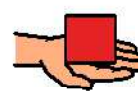
Sedimentary Rock

Metamorphic Rock

Igneous Rock



rocks that are glued



rocks that have



crystals



rocks that were



heated and changed



together