**The Water Cycle**

This lesson is designed for students in 6th grade, as well as any students working on understanding the water cycle and its implications for Earth. In this lesson, students will read an article and take notes on the water cycle, combining this new information with what they already know. Students will then use a graphic organizer to help them detail what happens to water in each stage, its state (liquid, gas, or solid), and how it relates to the previous and/or next stage in the water cycle. Finally, students will collaborate with a small group of their peers to create a series of movements that represent the flow of water through the water cycle itself. Students will enjoy moving their bodies and having fun with their peers while deepening their understanding of the water cycle.

**Standards:**

**Next Generation Science Standards:**

* **Middle School**
  + **MS-ESS2-4** – Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity.

**Common Core State Standards:**

* **6th Grade**
  + **CCSS.ELA-Literacy.W.6.10** – Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
  + **CCSS.ELA-Literacy.RST.6-8.2** – Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
  + **CCSS.ELA-Literacy.RST.6-8.10** ­– By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

**Objectives:**

* Students will be able to develop a model to describe how water cycles through Earth’s systems and around its atmosphere.
* Students will be able to describe the roles of gravity and the sun in the water cycle.

**Lesson Duration:** approximately 60-95 minutes

**Materials:**

* The Building Blocks of Geography series, specifically Oceans, Fresh Waters, and Atmosphere and Weather
* Water Cycle Article (simplified and/or detailed version, 1 per student)
* Water Cycle Media (either displayed for the whole class or 1 per student)
* Teacher Note-Taking Guide
* 3-Part Cycle Graphic Organizer (1 per student)
* Movements and Rationale Organizer (1 per team of students)
* Optional: Exit Ticket (1 per student)
* Pencils
* Highlighters

**Requisite Prior Knowledge:**

* Prior to engaging in this lesson, students should have a general understanding of the water cycle. They should know that water cycles in, on, and around Earth in the form of rain, snow, clouds, lakes, rivers, and oceans. Consider re-reading the Oceans, Fresh Waters, and/or Atmosphere and Weather texts prior to this lesson to strengthen students’ understanding of the water cycle and its effects on Earth.

**Assessments:**

* Students’ articles and notes
* Teams’ Movements and Rationale Organizer
* Optional: Exit Ticket

**Vocabulary:**

* Evaporation – the act or process of changing a liquid or a solid into vapor
* Condensation – the act or process of changing a gas or vapor into a liquid by cooling
* Groundwater – water held beneath Earth’s surface, especially water that flows or seeps downward and saturates the soil
* Precipitation – the act of depositing moisture in the form of rain, snow, sleet, ice, or hail
* Runoff – something that runs off, such as rain that flows off the land in streams
* Transpiration – the action or process of passing or sending off moisture in the form of vapor or liquid through a membrane or surface
* Watershed – the region drained by a body of water
* Water (or hydrologic) Cycle – a cycle in nature whereby water evaporates from oceans, lakes, and other bodies of water, forms clouds that move over land areas, and is returned to those bodies of water in the form of rain and snow, the runoff from rain and snow, or as groundwater

**Differentiation Considerations:**

* This lesson includes two versions of the Water Cycle Article, one detailed and one simplified. Read through both articles before determining which you want to use with your students. We recommend using the same article with your entire class, as you are guiding students through the reading, note-taking, and meaning making process but consider pulling a small group to read the other version of the article as needed. For example, you can use the simplified version with students who need more support or the detailed version for students who need more challenge.
* Create students’ teams prior to starting this lesson. Consider making groups of about 4-6 students. Be strategic with your grouping. It can be helpful to ensure each group contains a range of learning abilities as well as a student who can be a strong leader.
* Depending on the needs of your students, consider splitting this lesson into two, shorter lessons. If splitting the lesson, see the Direct Instruction portion for the first part and the Application Activity and Closure portions for the second part of the lesson.

**Lesson and Instruction:**

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| **Lesson Components and Time Guidelines** | **Teacher Actions** |
| **Introduction/Hook**  Approximately 5-10 minutes | Pique students’ interest by asking them what happens to the water after it rains. Some students may share partially correct answers such as explaining that rainfall ends up in rivers or in sewer drains, but encourage them to elaborate by asking, “then where does it travel?” For example, discuss how water can travel to the ocean, but it does not stay there indefinitely, rather it may someday evaporate. While discussing, hint at the idea that no water will ever be truly lost or added to the water cycle. |
| **Direct Instruction and Modeling**  Approximately 20-35 minutes | Pass out a copy of the Water Cycle Article and Water Cycle Media. If possible, project these for students to see as well. Use this article as a shared reading opportunity.  Read through each paragraph, pausing after each to think aloud, highlight important concepts in the text, and add any notes to the margins. See the Teacher Note-Taking Guide for note-taking ideas and strategies. As you continue reading, use the Gradual Release of Responsibility framework to involve students in the meaning-making and note-taking processes.  After reading the article and taking notes in the margins, provide students a copy of the 3-Part Cycle Graphic Organizer. Have students label each of the three circles: evaporation, condensation, and precipitation. Provide students 5-10 minutes to independently use the information they gathered from the article to complete their graphic organizer. Students should strive to describe what happens to water in each stage, its state (liquid, gas, or solid), and how it relates to the previous and/or next stage in the water cycle.  Once students have independently added information to their 3-Part Cycle Graphic organizer, return to the whole group setting to share responses and ideas. If possible, project a copy of a blank graphic organizer and scribe students’ ideas as they share. Encourage other students to add any missing or beneficial information to their graphic organizers, too. While adding information, discuss the role of the sun and gravity during each stage. |
| **Application Activity**  Approximately 30-40 minutes | Transition to the next portion of the lesson plan and explain that students will be working in small groups (3-5 students, depending on the size of your class and your students’ ability to work productively in these settings) to create a series of movements related to the water cycle. Students must provide a rationale for why the movements they chose represent each aspect of the water cycle.  Split students into pre-determined teams and provide each team a copy of the Movement Notes and Rationale sheet to guide them through this portion of the lesson. As students collaborate to create and practice their movements, circulate the classroom to provide support. Encourage students’ creativity while also guiding them to root their movements in the concepts related to their water cycle.  Provide students with timely warnings such as 10 or 5 minutes remaining. Encourage them to practice their entire sequence multiple times through before time is up so they are comfortable performing it in front of their peers.  Transition back to the whole group setting, bringing up teams one at a time to perform their water cycle movements for the class. Depending on your time restrictions, have students read their rationales aloud to the class. |
| **Closure**  Approximately 5-10 minutes | Optional: Provide each student with a copy of the exit ticket to complete independently. The exit ticket will ask students to briefly list and describe each component of the water cycle and describe how water can travel along different paths within it.  Close the lesson by reviewing the three main stages of the water cycle: evaporation where water vapor rises into the atmosphere, condensation where water vapor begins to condense around particles to form clouds, and precipitation where fully saturated clouds return water to Earth via rain or snow. Explain to students they also discussed the role of the sun in evaporation and the role of gravity in precipitation and runoff. Students should leave this lesson with the knowledge that understanding the water cycle helps us better understand the role water plays in our world. |

**Next Steps and Reflection:**

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| What went well? |  |
| What changes might be beneficial? |  |
| Reteaching needs |  |
| Extension needs |  |