**Activity 7**

**The Carbon Cycle Interactive Game**

**Grade Level:** 5-8

**Time:** 40 minutes

**Learning Intention**: We are learning what causes an overabundance of carbon dioxide in the atmosphere.

**Objectives:**

* Students understand that carbon cycles naturally through living and non-living parts of the Earth system in a complex and non-linear way.
* Students understand that burning fossil fuels adds carbon to the cycle.
* Students understand the impact of additional carbon dioxide on global warming.

**Overview:**

**The Carbon Cycle Interactive Game** In this interactive game, students assume the identify of carbon atoms that are released into the atmosphere when fossil fuels are burned. It is important to review with students that all carbon, even the carbon that is sequestered deep underground in limestone rocks, coal, and fossil fuels, is part of the carbon cycle. These reservoirs, often known as deep carbon sinks, remove carbon from circulation through other parts of the carbon cycle for such long amounts of time that they are sometimes considered an extension of the carbon cycle called the "slow carbon cycle". For simplicity, the deep carbon sinks have been omitted from this interactive, however they are a very important part of the long-term cycle. While it may only take your students 10-20 minutes to complete their journey as a carbon atom through this interactive game, it can take actual carbon atoms millions of years to make it to all the reservoirs in the carbon cycle.

**Materials Needed:**

* [The Carbon Cycle Game](http://www.windows2universe.org/earth/climate/carbon_cycle.html) (online interactive activity)  
  [www.windows2universe.org/earth/climate/carbon\_cycle.html](http://www.windows2universe.org/earth/climate/carbon_cycle.html)
* Computer lab with Internet access for students to play game
* Flash player installed on computers

**Success Criteria:** We will know we are successful when we can write a paragraph that describes our trip through the carbon cycle.

**Activity:**

1. Pass out the student work sheet or have students copy it into their notebook.
2. Have students read the *Windows to the Universe* page entitled The Carbon Cycle. <http://www.windows2universe.org/earth/Water/co2_cycle.html> or you can read it as a class.
3. Introduction: Ask students to (based on the reading) list the places where carbon is found on Earth. As a class, brainstorm why carbon is important and why carbon is sometimes hazardous.
4. Tell students that for this online interactive game, they are all playing the role of carbon atoms. They will travel through the carbon cycle. If you are going to have students do one or more of the assessment items listed below, tell students to take notes about where they traveled during the game.

**Closure**: Review success criteria and post-game discussion questions:

* + How many stops *can* you make on your trip?
  + Will your journey ever end?
  + Was everyone’s journey the same? Why not?
  + What would happen if we burned more fossil fuels?

**Carbon Cycle Interactive Game**

**List at least 5 places that carbon is stored on Earth.**

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**Wrap-Up Questions**

1. **How many stops are possible on this trip?**

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1. **Will your journey ever end?**

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1. **Was everyone’s journey the same? Why or why not?**

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1. **What would happen if we burned more fossil fuels?**

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1. **Write a paragraph about your trip through the carbon cycle. Include information about where you went and how you got there.**

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