

# The 5 E's: A Model for Designing Lessons for Inquiry Planner<sup>1</sup>

## Logistics Information:

- a. Environmental Education Learning Cycle Example
- b. A synthesis of *Project Learning Tree*
- c. Iowa Core Essential Concepts  
Earth and Space: Understand and apply knowledge of properties and uses of earth materials.
- d. Developed April 16, 2010

**Background Information** (What do observers need to know about our learners, classroom and school?): Schools will vary

## Materials Required:

Water Score Card for each student (*Project Learning Tree*, p.193)  
Envelopes  
Cut out strips of stations (*Project Learning Tree*, p.192)  
Writing materials

## Time Period:

One or two 45 minute sessions.

**Name of the Unit:** Water Wonders (*Project Learning Tree*, p. 188)

- I. Plan of the Unit
  - a. Goal of the unit: Students will describe a variety of ways and reasons that water is important to people and wildlife.
  - b. How this unit related to the curriculum:

Previous Grade/Course	Current Grade/Course	Next Grade/Course
3 <sup>rd</sup> Grade (Life Science)/ Buoyancy	4 <sup>th</sup> Grade (Life Science)/Water Quality	5 <sup>th</sup> Grade (Life Science)/Environments, Water Planet

- c. Lesson Plan: Phases in a 5E Learning Cycle (in no particular order) are Engage, Explore, Explain, Elaborate, and Evaluate. There may be multiple experiences in each phase.

<sup>1</sup> Adapted from *Teacher to Teacher: Reshaping Instruction Through Lesson Study* (NCREL, 2002)

Phases of the lesson: learning activities and key questions (and time allocation)	Student activities/ anticipated student reactions or responses	Teacher’s response to student reactions/ Things to remember	Evidence of Student Understanding
<p><b>ENGAGE:</b> Stage a make believe discussion with a water molecule, asking questions of where he/she has been, and how old he/she is.</p> <p>Interact with the students as a make believe water drop.</p> <p>Create and sing a song that introduces the concepts of the water cycle.</p> <p><b>EXPLORE:</b> Students will play “Go to the Head of the Cloud” game.</p> <p><b>EXPLAIN:</b> Students discuss what they learned about water from their adventure.</p>	<p>Students ask questions as to where water travels and is it the same water.</p> <p>Students relate these questions to parts of the water cycle: evaporation, precipitation, condensation, collection.</p> <p>Students will use their scorecards to record their trip as a water molecule.</p> <p>Students will use their scorecard to generate discussion points:</p> <ul style="list-style-type: none"> <li>• Why didn’t every molecule visit every station?</li> <li>• Why did some molecules get “stuck” at one location?</li> </ul>	<p>Teacher answers questions by encouraging more questions: when water leaves your house, where does it go? Then where does it go? Then where? Be sure the students have a basic understanding of the concept of a cycle.</p> <p>If students are having difficulty, relate to the life cycle. Be aware of the misconception that water travels in a circle.</p> <p>Teacher will monitor to make sure students are accurately recording their trip. Teacher will keep a timer (2 minutes approx.) and signal when it is time for students to cycle to their next destination. Teacher should clearly indicate location of stations.</p> <p>Teacher asks probing questions to encourage further thought:</p> <ul style="list-style-type: none"> <li>• Where is most of the water in the water cycle found?</li> <li>• What stations were visited most or least?</li> <li>• What stations were directly</li> </ul>	<p>Students are engaged and asking questions.</p> <p>Student notebook should contain a general understanding of the water cycle components.</p> <p>Students are actively engaged.</p> <p>Students are responding to inquiries and asking questions.</p>

Phases of the lesson: learning activities and key questions (and time allocation)	Student activities/ anticipated student reactions or responses	connected? Teacher's response to student reactions/ Things to remember	Evidence of Student Understanding
<p><b>ELABORATE:</b> Students will use their scorecard as an outline to write a story from the perspective of a water molecule.</p> <p><b>EVALUATE:</b> Students will be able to use their knowledge of the water cycle to explain how a water molecule moves.</p> <p>Students create a water cycle bracelet with beads that represent the parts of the water cycle, and then use it as a visual to explain to other students.</p>	<p>Students may have difficulty explaining their journey or may have difficulty with the concept of writing in 1<sup>st</sup> person as a water molecule</p> <p>Students will be more confident in this assessment as the bead colors provide clues as they complete the assessment.</p> <p>Yellow (sun) Light blue (evaporation) Dark blue (precipitation) White (condensation)</p>	<p>Teacher will model a simple scenario. (see <a href="http://www.plt.org">www.plt.org</a> and click on curriculum for a sample story).</p> <p>Teachers may need to scaffold for lower achieving students by providing word cards for those students.</p>	<p>Student will use proper water vocabulary in their story.</p> <p>Students complete the bracelet and correctly explain each element in the water cycle.</p>

### EXTENSIONS

- Create a comic strip of the water journey.
- Students design a water park that incorporates various uses of water.
- Write an interview with a water molecule.
- Visit local Water Works site or Sewage Treatment Plant.

### ADDITIONAL RESOURCES

- A Drop Around the World* by Barbara Shaw McKinney and Michael S. Maydak
- Bill Nye Water Cycle video
- Incredible Journey* (Project WET)
- Magic School Bus: Wet All Over, Catches a Wave videos
- [www.epa.gov/safewater/kids/flash/flash\\_watercycle.html](http://www.epa.gov/safewater/kids/flash/flash_watercycle.html)