

The 5 E's: A Model for Designing Lessons for Inquiry Planner¹

Logistics Information:

- a. Environmental Education Learning Cycle Example
- b. A synthesis of *Project WILD*
- c. Iowa Core Essential Concepts
Earth and Space: Understand and apply knowledge of the structure and processes of the earth system and the processes that change the earth and its surface.
- d. Developed April 16, 2010

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

Materials Required:

Writing Materials

Assortment of recyclable, nonrecyclable, and repurposeable materials.

Popcorn and Candy

Large container or bags for popcorn and candy

Time Period:

60 minute preparation time, Two activity times 50 minutes each.

Name of the Unit: *Renewable or Not?* (*Project Learning Tree*, p. 69-74)

- I. Plan of the Unit
 - a. Goal of the unit: Students will identify and define renewable and nonrenewable resources and explain the differences between them; Students will participate in simulations that demonstrate society's uses of renewable and nonrenewable resources to understand the factors that make a renewable resource sustainable.
 - b. How this unit related to the curriculum:

| Previous Grade/Course | Current Grade/Course | Next Grade/Course |
|---|---|--|
| 3 rd Grade (Earth Science)/Recycling | 4 th Grade (Earth Science) Ecology or Earth Week, follow up to Earth Materials | 5 th Grade (Earth 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.

| 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>ENGAGE: display a number of products such as ice cream boxes, cereal boxes, fabrics, pair of glasses, cans, styrofoam, plastic bags, lunch meat containers, popsicle sticks, ceramic mugs, etc. Choose items that are recyclable, nonrecyclable repurposeable, etc. Number or label these items.</p> <p>EXPLORE: Students complete a pre assessment quick write about what are natural resources, recyclable, renewable, and nonrenewable.</p> <p>Students sort items into the categories of renewable and non renewable resources. Students should use their sensory observations to determine which category each items fall into (Some students may bring attention to the Recycle symbol on items).</p> <p>Do Part B demonstration, <i>Project Learning Tree</i>, p.70.</p> | <p>Students decide in groups whether these items are recyclable.</p> <p>Students may need assistance in determining use of terms and categories.</p> <p>Students need to be able to find the Recycle symbol and recycle number categories.</p> <p>Some students will be disappointed that they received less (or none).</p> | <p>Teacher encourages students to discuss what makes something recyclable or renewable. Introduce terms such as natural resources, renewable and nonrenewable.</p> <p>Teacher uses this as a pre-assessment.</p> <p>Teachers may need to discuss different categories of recycling (recycle numbers).</p> <p>Teacher can pull one first generation student and one fourth generation student to discuss their experience with the popcorn.</p> | <p>Students discuss and understand terms such as natural resources, recyclable, renewable, and nonrenewable.</p> <p>Students are able to find and categorize recyclable materials.</p> |

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|---|---|---|---|
| EXPLAIN: Have a discussion of all the generations to determine what each generation could learn from the next. | Students will have different opinions on “fairness” of the activity. | Teacher need to use the terms renewable and non renewable resources to relate to this activity, i.e. how can first generation students act in a responsible way to assure the success of future generations? | Students will discuss how future generations depend on decisions made by this generation. |
| ELABORATE: Demonstration 3, <i>Global Candy Jar, Project Learning Tree</i> , p. 72 | Students may have difficulty deciding how to best share the resources with one another. | Teacher needs to ensure that the candy is not yet eaten. Discussion must take place. Teacher needs to ask probing questions, see <i>Project Learning Tree</i> , p. 72, section 6. Be aware that Division of Student and Resources Data Chart changes over time. Look for recent printing. | Students are engaged in good discussion about natural resources and sharing |
| EVALUATE: Post assessment of quick write. | Student uses terms natural resources, recyclable, renewable, and nonrenewable. | Teacher may be aware of social studies connection with word “generations”. | Look for proper use of terms. |

EXTENSIONS

- Students sort class trash bins to find which class is the “cleanest and most renewable.” Award can go to the Greenest Class.
- Natural Resource Ambassadors could write a persuasive paragraph to encourage classrooms to “Go Green.”
- Students could research natural resources and do presentations (see list on page 74, *Project Learning Tree* for ideas).
- Students could choose projects to make real world connections to save natural resources.
- Repurpose activity where a student finds recyclable materials to create artwork.
- Encourage students to spend a day where they use no nonrenewable resources.

Have classes organize a swap of items (book or toy swap) to encourage not buying new materials.
Plan a trip to a recycling center.
Organize a service project such as cleaning up litter.
Invite recycling center workers to visit your classroom.

ADDITIONAL RESOURCES

The Lorax by Dr. Seuss

Dr. Art's Guide to Planet Earth For Earthlings Ages 12 and Up by Art Sussman