

## Lección 3/Pagina de Recursos #2

### Centros de aprendizaje

Durante los centros de aprendizaje, los estudiantes estarán ocupados en actividades:

1. En este centro, los estudiantes tendrán que escribir en una hoja blanca una lista de 5 verduras y frutas que son comunes en su cultura. Dividirán estas hojas con varias columnas para poder apuntar cualquier información adquirida de sus productos.
2. Los estudiantes tendrán que buscar en el Internet en la página de [www.cfait.org](http://www.cfait.org), en la biblioteca, en la enciclopedia, o en un libro para saber los beneficios que tiene sus frutas y verduras. En casa o en la misma página de Internet encontraran la nutrición de cada uno de sus productos. Llenaran la lista original con su información y apuntes de donde consiguieron la información.
3. La maestra tendrá una sección del salón donde los estudiantes escogerán una cartulina tamaño grande y con un lápiz construirán una grafica que represente los productos de su cultura.
4. Al terminar el bosquejo con lápiz, tomaran diferentes plumones de diferentes colores y decoraran su grafica.
5. Escribirán una carta donde ellos personificaran una de sus frutas o verduras y trataran de convencer al público a comerlos. Tendrán que usar su información de nutrición, y su experiencia con esa fruta o verdura (5 sentidos- gusto, tacto, vista, oído, olfato).

Al final, pegarían el trabajo en la pared (bulletin board) para que los estudiantes lean acerca de todas los productos que son comunes en las diferentes culturas e incluso hogares.

**Lesson Objectives:** At the end of this lesson, students will be able to

- a) construct and demonstrate an effective water filter using common materials
- b) define the function of a filter
- c) design a low-cost water filtration system for use in a community

**Standard:** Earth Sciences 3.0 Water on Earth moves between the oceans and land through processes of evaporation and condensation.

3.d Students know the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and its availability can be extended by recycling and decreasing the use of water.

| Time   | Lesson Content   | Materials   | References                 |
|--------|--|---|----------------------------|
| 10 Min | <p><b>I. Introduction</b> [Connection to Prior Lesson]</p> <ul style="list-style-type: none"> <li>• Show students water distribution chart on overhead.</li> <li>• What are implications for our responsibilities as users of that water?</li> <li>• Give three examples of pollutants that could enter the water cycle</li> </ul>   | <ul style="list-style-type: none"> <li>• Journal entry</li> </ul> <p><b>Teacher:</b> Overhead-H<sub>2</sub>O Distribution Chart</p>   | References                 |
| 15 Min | <p><b>II. Development and Application</b> [Mini Lecture, Create a Need to Know, Cooperative Groups, Building Models]</p> <p><b>A.</b> Much of freshwater shown in chart is recycled by cities using expensive filtering systems that clean the water so you can use it and drink it.</p> <p><b>B.</b> What would you do if you lived in a place that did not have these resources?</p> <ul style="list-style-type: none"> <li>• Do you think you could use dirt and rocks to make your water cleaner?</li> </ul> <p><b>C.</b> Groups of four, ethnically, gender, ability mixed, use materials on tables to construct filters that would make water cleaner if it passed through it.</p> <p><b>D.</b> Students choose the two models that worked the best to present to the class.</p> | <p><b>Students:</b> clear plastic cups (6-8/group), dark topsoil, light subsoil, sand, gravel, food coloring, milk, vegetable oil, lots of water, pencils, small wide trays, 1 clipboard per group, eye droppers.</p> | Resource Page 3.1d         |
| 5 Min  |  |   | Resource Page 3.1a<br>3.1b |
| 40 Min | <p><b>III. Closure</b> [Journal Entry]</p> <ul style="list-style-type: none"> <li>• What is the name for what you created?</li> <li>• How does a filter work?</li> <li>• Would the filters that you created be able to filter out germs and bacteria? Why or why not?</li> </ul>   | <p><b>Students:</b> Science Journal</p>   | Resource Page 3.1c         |
| 10 Min |  |   |                            |

Notes for the Teacher: Please read this page carefully – it is essential for successful implementation of lesson!

## A

### Student Grouping

In mixed collaborative groups, all students must be assigned a specific responsibility. All students are responsible for input, suggesting filter set-up, and deciding which four filters the group should test.

**Group Member**    **#1)** Put materials into cup  
                                 **#2)** Record the type and arrangement of layers and amount  
                                 of each  
                                 (eg bottom:1/3 gravel, middle:1/3 sand, top:1/3 topsoil –  
                                 give it a number or  
                                 letter)  
                                 **#3)** Add “pollutants” to water and pour water through the  
                                 filter  
                                 **#4)** Record results in an organized manner  
                                 (eg **Cup A:**    “**pollutant**”: milk;    **results:** water was  
clearer

## B

### Things to Think About Before Beginning

- Have all materials set up beforehand!
- Make sure you have plenty of water on hand, and have extra empty buckets between tables for students to dispose of water after observing results.
- Students use pencils to poke holes in the bottom of filters.
- Make sure students use the same number of drops of “pollution” (milk, oil, food coloring) in each water sample, so that their experiments are consistent.

## C

### Resources

*Journal Prompt:* What if your family moved to a small town next week, and when you arrive, you discover there are very few resources. There are no factories in the town, no big stores, and no water treatment plants. The town's water source is a river that looks muddy, but your family needs water to use in the house. What would you do to make the water cleaner? Be specific! What materials would you need? Who would help you? Where would you build the

filter? Why? As a final note, talk about how your water-use habits would change.

For further exploration, students can use this website maintained by the U.S. Geological Survey:  
<http://ga.water.usgs.gov/edu/>

Example of Water Distribution Chart available on the USGS website – copy and use as transparency for “Introduction” to lesson.

| Category                  | Sub-category                        | Percentage |
|---------------------------|-------------------------------------|------------|
| Lakes                     | Rivers: Less than 4/10%             | < 1%       |
|                           | Other                               | 1%         |
|                           | Lakes                               | 61%        |
| Atmosphere, Soil moisture | Ground water                        | 22%        |
|                           | Ice caps, glaciers, and inland seas | 77%        |