

Rigorous Curriculum Design

Unit Planning Organizer

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| Subject(s) | Science |
| Grade/Course | 8th grade |
| Unit of Study | Understanding Hydrosphere |
| Pacing | 10 days |

Priority Essential Standards

8.E.1 Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.

“UNWRAPPED” Priority Standards

Water is one of the most common substances on Earth. Water is circulated on Earth by the water cycle. The availability of water varies with local geography. Humans use water as a resource. Students should understand the local river basin and where water for human use comes from. Oceans are an integral part of the hydrosphere and a resource for humans. The health of water systems is determined by the balance between physical, chemical, and biological variables. Students learn they are stewards of the hydrosphere.

“Unwrapped” Skills (students need to be able to do)

Students should be able to explain the structure of the hydrosphere. Be able to explain the properties of water that make it such a unique substance. They should be able to label a distribution of water in the world graph. Students will be able to explain where water for human use comes from and specifically where their personal water comes from.

Essential Questions

- What makes water such a special substance?
- How does water circulate through Earth’s crust, oceans, and atmosphere?
- What energy source allows water to circulate through the Earth?
- How much of Earth’s freshwater is available for human consumption and where is it located
- What are the local river basins and where do we get water supplies locally?

| Unit Assessments |
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| Pre-Assessment |
| Create short, ungraded “checks for student understanding” for the educator to administer throughout the unit of study that are directly aligned to the post-assessment questions (selected-, short-, extended-response, and/or performance-based) and that coincide with learning progressions —the “building block chunks” of instruction. |
| Post-Assessment |
| Some examples of unit assessments could be diagramming the water cycle, graphing the distribution of water in the world, building a model of water showing polarity, using graphic organizers to differentiate between cohesion and adhesion, graphic organizer of all unique properties of water, making a brochure “selling” water based on its unique properties, doing a study of specific places in the world where water is scarce and comparing it to the area in which the student lives (many countries in Africa have information listed on the UN site for Water and Food Security). |

| Engaging Learning Experiences | |
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| Learning Activities Using Text or Program | Authentic Performance Tasks |
| <p>Referring to selected texts from a variety of sources listed in the Instructional Resources and Materials—Physical and Technology-Based section, identify <i>specific learning activities</i> to use while teaching students the “unwrapped” Priority Standards concepts and skills, supporting standards, interdisciplinary connections, unit vocabulary terms, and extension/enrichment activities.</p> <ol style="list-style-type: none"> 1. Teach vocabulary that is essential and may be new: adhesion, buoyancy, capillary action, cohesion, polar molecule, and surface tension. Each group will complete a Frayer Organizer for one of the words. Teacher may choose to a different vocabulary model. 2. Teacher will want to make a word wall with new vocabulary to leave up throughout the unit. 3. Watch “Water’s Molecular Structure” on Discovery Ed. If you do not have access to Discovery Ed. or if you prefer the following power point gives the properties of water very succinctly. http://www.biologyjunction.com/waterproperties.ppt 4. Students can take notes on the ppt. or video in their notebooks 5. Student should do some investigations with the properties of water. Examples: http://www.lhs.logan.k12.ut.us/~asemadeni/waterLab.htm | <p>Gallery Walk</p> <p>Students can construct models of water molecules.</p> <p>Notebook sharing</p> <p>Lab notes/sheets</p> <p>Students can build models of river basins or draw diagrams/maps</p> |

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| <p>6. Review water cycle and have students diagram in their notebooks. Good review is http://www.nebo.edu/misc/learning_resources/ppt/k-5/waercycle3.ppt</p> <p>7. A good demonstration to illustrate water distribution is http://ecosystems.psu.edu/youth/sftrc/lesson-plans/water/6-8/everywhere (If you want a graphic or background information http://ga.water.usgs.gov/edu/earthwherewater.html)</p> <p>8. Last teacher will want to use the following site to look specifically at North Carolina River Basins. At the bottom of the page you will see the interactive map. Students can locate their location and identify the river basin where they live. The teacher may also want to order the NC River Basin booklet or individual maps for use in the classroom. http://www.ee.enr.state.nc.us/riverbasins.html</p> | |
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| Unit Vocabulary Terms |
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| <p>“Unwrapped” Priority Standards Concepts</p> <p>Some of these vocabulary terms are review. You will need to assess which terms are new to your students.</p> <p>Adhesion Buoyancy Capillary action Cohesion Polar molecule Surface tension Artesian well Buoyant force Condensation Dissolved oxygen Divide (river basin) Ground water Impermeable Permeable Polarity Reservoir Saturated zone Specific heat Solute Solvent Transpiration Tributary Water table Wetland</p> |