Grade Eight Unit Plan

Science in Action Water

Introduction

This unit plan has been designed to give students a broader understanding of water, where it comes from and where it goes. Beginning with an overview of the amount of water available for use by humans, the unit then moves on to experiment with the properties of adhesion and cohesion. The water cycle, including drinking water resources and the movement of water molecules through the cycle, is looked at in detail. The unit culminates with students building individual models to demonstrate the water cycle.

How to use this Unit Plan

The Unit Plan was developed assuming **three 40 minute Science blocks per week.**

A 6-week implementation, broken down into 11 lesson plans, is outlined in the following Unit Plan Chart . Teaching suggestions are given in the "Tips" section . The Dragonfly Symbol indicates that the lesson has a component of physical activity. The Assessment column indicates that an Assessment Tool and Rubric is available and can be found on the Teacher CD.

Resources used to develop unit plan:

Leap Into Action! Simple Steps to Environmental Action – this resource will assist you and your students in choosing, planning and implementing action learning in your classroom.
Project WET – this activity guide contains 91 activities focused on the theme of water and water stewardship.

Wild BC provides numerous publications and workshops for educators. Over 20 activity guides developed to increase environmental literacy are available. Contact Wild BC at 250 356 7111 or 1 800 387 9853 or visit our website at www.hctf.ca/wild.htm to view or order these publications.

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Lesson at a Glance	Summary	B.C. Min. of Education Learning Outcomes	Linked Activities	Assessment	Teaching Tips / Notes
Week 1 **Lesson 1** *A Drop in the Bucket* Project WET p. 239 One 40-min block Any Season Indoor	**Goal:** understanding the amount of fresh usable water. **How:** by estimating and calculating the percent of available fresh water on Earth, students understand that this resource is limited and must be conserved.	**Earth and Space Science** *Water Systems on Earth* • Explain the significance of salinity and temperature in the world's oceans	*Wet Vacation* Project WET p. 206	✓	• Culminate this first lesson with a discussion of why it is important that humans use water responsibly • An online diagram that illustrates the percentage breakdown of earth's water can be found at http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hyd/bdgt.rxml
Week 1/2 **Lesson 2** *Piece it Together* Project WET p. 174 Three 40-min blocks Any Season Indoor	**Goal:** understanding factors that affect human population distribution. **How:** students analyze and plot global temperature and precipitation distributions to determine climate patterns and how they influence human lifestyles.	**Earth and Space Science** *Water Systems on Earth* • Explain the significance of salinity and temperature in the world's oceans • Describe how water and ice shape the landscape • Describe factors that affect productivity and species distribution in aquatic environments	*Water Crossings* Project WET p. 421	✓	
Week 2 **Lesson 3** *The Long Haul* Project WET p. 260 One 40-min block Any Season Outdoor	**Goal:** appreciating water scarcity and abundance. **How:** students work in teams to compete in a water hauling game.	**Earth and Space Science** *Water Systems on Earth* • Describe factors that affect productivity and species distribution in aquatic environments	*Water Concentration* Project WET p. 421	✓	

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Week 2 **Lesson 4** *Molecules in Motion* Project WET p.47 One 40-min block Any Season Outdoor or Indoor	**Goal:** understanding kinetic molecular theory. **How:** this activity brings water molecules up to size by physically involving students in simulating molecular movement in each of water's physical states (solid, liquid, gas).	**Physical Science** *Fluids and dynamics* • Describe the relationship between solids, liquids and gases, using the kinetic molecular theory	*Water Match* Project WET p. 50	✓	• When you are having students move to simulate water molecules, cue their movements by using music. For slow movement play quiet music and have it get louder the faster you wish them to move. For added fun, use music popular with the students.
Week 3 **Lesson 5** *H2Olympics* Project WET p. One 40-min block, ongoing monitoring Any Season Indoor	**Goal:** understanding adhesion and cohesion. **How:** students compete in a Water Olympics to investigate two properties of water, adhesion and cohesion.	**Processes of Science** • Perform experiments using the scientific method • Use models to explain how systems operate **Physical Science** *Fluids and Dynamics* • Describe the relationship between solids and liquids • Determine the density of various substances	*Hangin' Together* Project WET p. 35	✓	• Results are recorded on the score sheet (see p. 32) • Have each student draw a picture of water moving along yarn or of a water drop and identify where adhesion and cohesion occur
Week 3 **Lesson 6** *Is There Water on Zork?* Project WET p. 43 Two 40-min blocks Any Season Indoor	**Goal:** distinguishing water from other clear liquids. **How:** students describe the unique characteristics of water and design investigations to distinguish water from other clear liquids.	**Physical Science** *Fluids and Dynamics* • Describe the relationship between solids and liquids • Determine the density of various substances	*Adventures in Density* Project WET p. 25	✓	

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Week 4 **Lesson 7** *The Incredible Journey* Project WET p.161 Two 40-min blocks Any Season Outdoor or Indoor	**Goal:** understanding the movement of water through the water cycle. **How:** with the roll of the die, students simulate the movement of water within the water cycle.	**Life Science** Cells and Systems • Demonstrate knowledge of the characteristics of living things **Earth and Space Science** *Water Systems on Earth* • Explain the significance of salinity and temperature in the world's oceans • Describe how water and ice shape the landscape	*Old Water* Project WET p. 171	✓	
Week 4/5 **Lesson 8** *Thirsty Plants* Project WET p. 116 Two 40-min blocks Fall/Spring Outdoor and Indoor	**Goal:** understanding the importance of plants in the water cycle. **How:** through demonstration and field studies, students learn about transpiration and the significant role plants play in the water cycle.	**Life Science** Cells and Systems • Demonstrate knowledge of the characteristics of living things **Earth and Space Science** *Water Systems on Earth* • Describe factors that affect productivity and species distribution	*The Life Box* Project WET p. 76	✓	
Week 5 **Lesson 9** *Life in the Fast Lane* Project WET p. 79 One 40-min block plus ongoing observation Fall/Spring Outdoor	**Goal:** recognizing the importance of aquatic environments. **How:** through a scavenger hunt and investigations of a temporary wetlands in their neighbourhood, students learn the benefits of and challenges to organisms living in temporary wetlands.	**Earth and Space Science** *Water Systems on Earth* • Describe factors that affect productivity and species distribution	*Great Water Journeys* Project WET p. 246	✓	

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Week 5/6 **Lesson 10** *Get the Ground Water Picture* Project WET p.136 Three 40-min blocks Any Season Indoor	**Goal:** understanding where drinking water comes from. **How:** students "get the ground water picture" and learn about basic ground water principles as they create their own geological cross section or earth window.	**Processes of Science** • Represent and interpret information in graphic form • Use models to describe how systems operate **Earth and Space Science** *Water Systems on Earth* • Describe how water and ice shape the landscape	*Reaching Your Limits* Project WET p. 344	✓	
Week 6/7 **Lesson 11** *Water Model* Project WET p. 201 Three 40-min blocks ongoing observation Any Season Outdoor or Indoor	**Goal:** understanding condensation and evaporation in the water cycle. **How:** students construct models of the water cycle to illustrate its major components and processes and adapt their models to show how they think water would cycle in various ecosystems.	**Processes of Science** • Use models to explain how systems operate **Earth and Space Science** *Water Systems on Earth* • Describe how water and ice shape the landscape	*Energetic Water* Project WET p. 242	✓	• This is an excellent activity to culminate the unit with. Students construct their own models and explain how they work to the class. • Once students have presented their model have them fill out the rubric before you do.

Lesson at a Glance	Summary	B.C. Min. of Education Learning Outcomes	Linked Activities	Assessment	Teaching Tips / Notes
Week 8				✓	

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