

Curriculum Information

Included in each staff notebook are curriculum pages for each Field Study activity. During the day students, divided up into four groups, rotate to four activities; the Field Leader covers the same material for each group. The subjects cover soil, forest hike, water cycle, games to demonstrate forest animal population, animal information stations, analysis of pond and stream water, observation of small stream dwellers, and discussion and activity regarding animals crossing roadways safely.

One activity per day is a challenge course element led by a certified instructor. Teens usually enjoy escorting groups to the site and helping keep track of rotation times. An additional course is led by Field Leaders. The activity before dinner, students are divided up into three groups for canoeing, campfire safety, or backpack essentials.

The curriculum includes presentation information, copies of corresponding student page, and instruction for the accompanying activity. Below is a sample dialog of the presentation for hydrology, specifically the water cycle in a watershed.

HYDROLOGY

Presentation

Focus – water moves through a watershed

“Welcome to hydrology! Who can tell me what ‘ology’ means?”

Yes, ‘the study of’ and what about ‘hydro’? Yes, it means ‘water’. Hydrology is the scientific study of water of the earth, its distribution, characteristics and effects. Today our hydrology study focuses on water as it moves through a watershed.”

Interactive discussion – Field Leader uses water cycle posters and students complete workbook page. “Please turn to page 13 in your student notebook. We will fill in the water cycle and watershed vocabulary words while we discuss how water moves through a watershed. Raise your hand if you would like to read the scripture at the bottom of the page, Job 36:27-28 (student reads). This describes the water cycle, the movement of water from the earth to sky and back to earth again. As we talk about water cycle within a watershed, we will use the words on the right of your page to fill in the diagram.”

Watershed

Definition – “A watershed is a land area. All the land on earth is made up of watersheds within watersheds. The boundaries are determined by its highest points or ridges called the divide. Find the two highest points on our diagram; write ‘divide’ on the line. From the divide, water, dissolved minerals, and soil drain to a body of water, such as a river, lake, or ocean. Watersheds are different depending on where they are. What do we find in different watersheds? (accept answers). The topography is the land formations such as mountains, hills, valleys, or flat land. We find plants, animals, different kinds of soil, and different climates. Watersheds will have different temperatures and amounts of rainfall.”

Characteristics – “Let us start with that rain cloud at the top right of your page. What do we call rain? Yes, precipitation; the liquid form of water. What is the solid form of water that falls to the earth? Yes, hail, snow, or sleet. Write precipitation on the line

under the cloud. That is the part of the cycle that gives water to the earth; how does it get back to the sky again? Yes, heat causes it to evaporate. What form of water does it become? Yes, a vapor.

Write evaporation under the cloud and sun. Find the trees on the mountainside. What is the word for evaporation from plants? Yes, write transpiration above the trees. What is it called when vapor cools down and becomes liquid again? Yes, write condensation between the clouds.”

Water Cycle – “Now, look at the river on your page. Rivers and streams in a watershed channel water. What direction does it flow? Yes, downhill. What force causes this? Yes, gravity. Locate the small streams at the top of the mountain. What are they called? Yes, write tributaries. As water runs quickly down the mountain in these tributaries, soil is eroded and carried along as suspended sediment. When the water slows down because of a flat or wide area, what happens to the sediment? Yes, it falls to the streambed. The shape of a streambed changes due to the swiftness of the water that causes the stream bank to erode. If you have a toy transformer that you change from one figure to another, what do you call the change? Yes, a morph. So, the study of how rivers change their shape is called what? Yes, morphology – the study of stream shape (show pictures of streams). Let us finish our page. What is the term for water flowing in a stream? Yes, surface run-off. Write it below tributaries. What about when two streams flow into one large one? Yes, confluence. There are plants along the river, called ---- Yes, riparian area. Now, look at the ground. What is the term for water soaking into the ground? Yes, infiltration. Another term used is percolation, which refers to how much water is saturated into the soil. We have one more ~~term~~ to finish our diagram. When water soaks into soil, it may be stopped and accumulate underground on a rock surface. Yes, it is called ground water.”

Human Use – “Now we have talked about the physical characteristics of a watershed, the topography, and the climate. These help determine the success and variety of plant and animal life. All of this is natural activity. An additional element affecting the watershed is human involvement. God created our beautiful watersheds for us to live in. God also asks us to respect His creation by acting responsibly. Everything we do affects the health of a watershed. Careful use and management of our watersheds keeps them healthy for us, for plants, for animals, and for the water that moves through it. Name some ways we use a watershed. (Accept answers and mention development of towns and cities, farms, timber, harvest, mining, and impoundments like dams and channels). Now, name some ways to manage a watershed, like water use restrictions (pollution controls, land use restriction such as planning and zoning limitations)”.

Students then have opportunity to construct model watersheds at the edge of the Yamhill River and discuss their findings. This is a favorite activity; students play in the sand while learning about one of the cycles God put in place to sustain the earth.