

The Movement of Water

Grades: 3 - 4

Time Allotments:

Teacher preparation: 20 minutes
Lesson/activity: 30 minutes
Closure/assessment: 15 minutes

Content Objectives: After performing this activity students will be able to:

- 1) Identify features in the water cycle where water can be found;
- 2) Describe how water moves as it changes form;
- 3) Describe how water physically moves through or on other surfaces; and
- 4) Describe ways that people alter or effect the natural movement of water.

Process Objectives: Students will:

- 1) Respond to questions from teacher;
- 2) Participate in group discussion and perform a task; and
- 3) Label water cycle components and water movements on a worksheet.

Curricular Areas and Corresponding Core Curriculum Content Standards:

Consumer/Family/Life Skills **9.2** (G4) A1, 2 & 4

Social Studies: **6.6** (G4) C1
6.5 (G4) A4

Science: **5.10** (G4) B1
5.8 (G4) 2
5.6 (G4) A3
5.4 (G4) A1
5.1 (G4) A4

Language Arts Literacy: **3.5** (G4) A2-3
3.4 (G4) B3 & 6
3.3 (G3) B2, C1 & 3 (G4) B4 & 5
3.1 (G3) E3 & F5 (G4) A3

Vocabulary:

Bedrock	Infiltration	Runoff
Cloud	Lake	Soil/Sand
Condensation	Land	Stream
Estuary	Ocean	Transpiration
Evaporation	Precipitation	Water Table
Groundwater	River	Well

Materials Needed:

- Tablet of flipchart paper – one sheet of paper per group of students
- Pencils with eraser – one pencil per group of students

- Scissors – two pairs per group of students
- Glue – one bottle or stick per group of students
- Copies of worksheet with terms – one copy per group of students
- Scotch or masking tape – two long pieces of tape per group of students
- Copies of “The Movement of Water” worksheet – one copy per student
- Large poster or mural paper or chalkboard
- Crayons and markers or chalk

Anticipatory Set:

- Ask students to identify and describe examples of when they have seen water move or water change form. (Examples include rain and snow, freezing water into ice, making steam, waves at a shoreline, water coming from a pipe or faucet, etc.).
- Explain that diagrams of the water cycle often depict water movement in a circular pattern. Ask them: “Does water movement in the natural environment seem to occur in a circular pattern? If it doesn’t, describe how you think it takes place.” Document their responses on the chalkboard or on flipchart paper and encourage them to draw diagrams as a means of communicating their ideas. Explain that the purpose of this activity is to further investigate how water moves in the natural world.

Guided and Independent Practice:

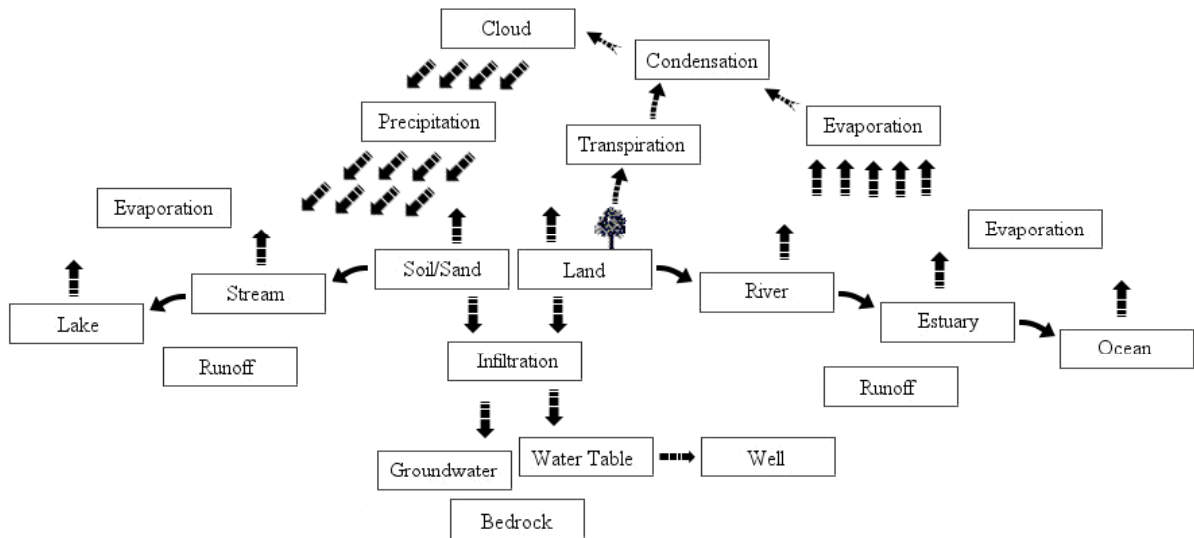
- Write the terms below on the chalkboard. Ask students their meanings and clarify the definitions of any terms they are not familiar with.

Bedrock	Infiltration	Runoff
Cloud	Lake	Soil/Sand
Condensation	Land	Stream
Estuary	Ocean	Transpiration
Evaporation	Precipitation	Water Table
Groundwater	River	Well

- Using this list, ask students to identify the four terms that depict how water moves as it changes form (condensation, evaporation, transpiration and precipitation). Next, have them identify the two terms that depict how water physically moves through or on other surfaces (infiltration and runoff). Finally, have them identify the twelve types of places where water is typically found (bedrock, cloud, estuary, groundwater, lake, land, ocean, river, soil/sand, stream, water table and well).
- Divide the class into small groups and have them sit on the floor in circles or around large tables. Give each group scissors, one worksheet with terms, one pencil (with eraser), glue and one piece of flipchart paper. Ask members of each group to cut up the terms and make one stack of paper “cards”.
- Have them separate the stack of water term cards into three piles – “places where water is found” (twelve cards), “water changes form and moves” (four cards) and “water physically moves” (two cards).
- Explain that each group must create a diagram on their paper that shows how water can move, either physically or by changing form, between the nine places where water can be found. Each card can be used only once and they should try and use all

of the cards. Extra water movement cards are provided on the worksheet in case they are needed. Encourage group members to work together to discuss the placement of each card – the pencil can be used to draw light lines or arrows (that can be erased!) by connecting cards together.

- When the task is completed groups should use their glue to adhere the cards to paper and a final set of pencil lines should be drawn to provide final connections. One example of a correct diagram is shown below – there are many ways to accomplish this task. Ask a representative from each group to explain their diagram to the class.



Closure:

- Revisit the students' original ideas about how water moves and if its movements are in a circular pattern – have them discuss if and how their ideas have changed.
- Have students identify ways that people alter and/or effect the natural movement of water. Examples could include dams, reservoirs, sewers and stormwater pipes, irrigation, lawn sprinkling and swimming pools. Removal of water from lakes, rivers and groundwater supplies for drinking water should also be discussed, as well as how peoples' used water is returned to the water cycle through wastewater treatment facilities and septic systems.
- Give each student one copy of the "The Movement of Water" worksheet and a pencil. Have them fill in the blank lines on the worksheet with the appropriate terms. The correct answers are as follows:

- | | |
|------------------|------------------|
| 1) Evaporation | 9) Well |
| 2) Condensation | 10) Water Table |
| 3) Cloud | 11) Ground Water |
| 4) Precipitation | 12) Stream |
| 5) Transpiration | 13) River |
| 6) Runoff | 14) Estuary |
| 7) Lake | 15) Ocean |
| 8) Infiltration | |

Assessment:

- Responses on the worksheet;
- Participation in group activity and discussion; and
- Responses to questions from the teacher.

Extensions:

- This activity can be performed with the entire class. To do so, write the eighteen terms in large letters on pieces of colored paper or cardboard (one per student). Create one sign for the “sun.” If extra cards are needed, duplicate card numbers 1, 3, 4, 6, 7, 12, 13 and 14 (see “Assessment”). Create a large, cleared area, have the group stand in a circle shoulder to shoulder, and give each student one sign and a piece of tape. Have them tape the terms to their chests so that everyone in the circle can read the terms. To begin, give a large ball of yarn or string to the student who represents the sun. Explain that the sun is shining and heating water that is exposed in many places within this water cycle. Ask “What happens when water is heated?” (It evaporates.) Have the sun hold the end of the ball of yarn/string and have the student pass the ball to a student with the term “Evaporation.” Have this student hook the string around a finger and then pull the length gently taught between both students. Ask the group, “Where can water evaporate from?” At this point correct answers are numerous and there are many correct ways to complete this “Web of Water Movement” activity. The activity is completed when every student has at least one connection to the group with the ball of yarn/string.
- Have students discuss and/or research then compare the presence and movement of water in various ecosystems and geographic regions, such as forests, wetlands, mountain ridges, estuaries, fields, deserts, etc.

Source:

- *Beneath the Shell...A Teacher's Guide to Nonpoint Source Pollution and Its Potential Impact on New Jersey Shellfish*. New Jersey Department of Environmental Protection. First Printing 1991; Revised 1993; Reprinted annually from 1997 – 2002 and 2004; adapted from “The Movement of Water”(pgs. 17 - 19).

“The Movement of Water” Worksheet

Bedrock	Infiltration	Runoff
Cloud	Lake	Soil/Sand
Condensation	Land	Stream
Estuary	Ocean	Transpiration
Evaporation	Precipitation	Water Table
Groundwater	River	Well
Evaporation	Precipitation	Infiltration
Evaporation	Runoff	Transpiration

