Science

Science 3.6, 6.9

Software Application, Presentation, Independent Work

The Water Cycle
This lesson uses presentation software, video, and Internet resources to help students describe the parts of the water cycle.

3rd Grade

C/T 5.2, 5.3, 5.4

Understanding Self-expressive

The Water Cycle: What Goes Up, Must Come Down
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Curriculum Area	Science
Subject Area	Earth Science/Water Cycle
Grade Level	3rd grade and 6th grade
Learning Objectives	• The student will be able to describe the parts of the water cycle. • The student will conduct research using various resources in order to create a presentation about the water cycle.
Correlation to the SOL	Science 3.6, 6.9 C/T 5.2, 5.3, 5.4
Video/Technology Hardware/Software Needed	**For class:** Multimedia computer Computer Projector System Presentation software (such as *HyperStudio* or *KidPix)* TV/Monitor and VCR **For each student:** Multimedia computer with Internet connection Presentation software (such as *HyperStudio* or *KidPix)* **Other:** Selected video, CD-ROMs, and Web sites from Technology Resources for the Water Cycle
Materials Required	**For each student:** 6-9 large index cards Brad or rubber band A copy of HyperStudio Basics A copy of HyperStudio Project on the Water Cycle A copy of Evaluation Checklist for the Water Cycle Project
Procedures/Activities	1. Give students 6-9 index cards to collect information for a *HyperStudio* project on the water cycle. Have students follow the directions on the student handout HyperStudio Project on the Water Cycle. Ask students to label each card with the following: Title, Main Page, Evaporation, Condensation, Precipitation, Run Off, Transpiration (optional), Ground Water (optional), and Bibliography (optional). Attach with rubber band or brad.

	2. Facilitate student gathering of information on the water cycle. Select one or more source from each of the resource categories on the Technology Resources for the Water Cycle, including instructional video, CD-ROMs, and Web resources. 3. Given all sources are available, the following is suggested as a minimum: • CD-ROM *Science Court*: *Water Cycle* OR the Internet site *Water: A Never-Ending Story*. Both are used for student investigation activities in similar formats. • Instructional Video: *Bill Nye The Science Guy: Water Cycle* • CD-ROM *The Water Planet* OR Internet *site The Many Adventures of Drippy the Raindrop*. Both explain the water cycle in story format. This offers integration of reading and content. 4. Post all Web resources on a Web Resource/WebQuest page for students to conduct independent research at school and/or at home. 5. As students investigate the resources, they should take notes on the front of each note card and make accompanying illustrations on the back. Further independence can be encouraged by having students access, during school time or for homework, the Web Resource page on the Water Cycle created in step 4. 6. Students culminate the unit of study by creating a *HyperStudio* (or other presentation software) multimedia project based on the completed index cards. Prior to lab time, discuss the handouts, HyperStudio Basics and Evaluation Checklist for the Water Cycle Project, with the students. 7. Before each day's time in the lab, demonstrate on the computer in the classroom how and what is to be accomplished for the day. This way, the most is made of the computer lab time. 8. Follow with extensions suggested in Technology Resources for the Water Cycle.
Content Assessment	Give a quiz on the elements of the water cycle.
Technology Integration Assessment	Use the attached Evaluation Checklist.
Extensions	See the attachment Technology Resources for the Water Cycle for suggested technology to extend this lesson in the subject areas of weather, water conservation, pollution, and ocean life. **Science:** Have a weatherperson come to the class and talk about how the water cycle affects the weather. **Language Arts:** The students can write the further adventures of Drippy (see http://www.kimballmedia.com/drippy/) and tell what Drippy says to them while they are brushing their teeth at night. **Math:** Students can measure water into a pan, boil the water for a teacher-determined amount of time and then measure what is left over after the water cools. They can also compare this to a closed system (pan with lid).

Technology Resources for the Water Cycle

Instructional Videos

Bill Nye The Science Guy, Program 147: Water Cycle (30 min, grades 3-8)
Discusses the 4 parts of the water cycle with the usual Bill Nye style.

The Magic School Bus Wet All Over (Program 20) (ITV, 30 min, grades K-4)
The Magic School Bus travels through the water cycle.

The Outside Story With Slim Goodbody (ITV, 15 min, grades 3-5)
Good for an extension lesson. Explains the need to conserve fresh water.

Take a Look, Program 18: Rain (ITV,10 min, grades 2-4)
Explains each part of the water cycle. Also explains how the water cycle is important to all living things.

3-2-1 Classroom Contact, Program 12: The Water Cycle: Go With the Flow (ITV, 15 min., grades 4-6)
Discusses the water cycle. Also useful as an extension lesson on how pollution of water/air affects plants and animals.

CD ROMs

Eyewitness Encyclopedia of Nature 2.0 (Dorling Kindersley)
Find Water Cycle in the Ecology Book under Natural Cycles for an illustration or click on Climate to find information on rain, hail and snow for the precipitation cards. Also click on climate for an extension on weather.

Science Court: Water Cycle (Tom Snyder Productions, grades 4-6)
This module, designed to take 2-3 class periods, incorporates team learning, hands on experiments, and problem solving. The CD ROM based activities are designed for the one computer classroom.

3-D Atlas (Electronic Arts)
Good for an extension on conservation. Select *Contents*, then *Stories*, then *Water Use* for a short video commentary on the earth's misuse and shortage of fresh water.

The Water Planet (science for kids, ages 5-9)
This interactive story follows a water molecule through the water cycle. Includes animated explanations of all parts of the water cycle. Video clips of underwater habitats would also be helpful for an extension on ocean life and habitats. Good for the one computer classroom. Offers up to 6 hours of exploration, but can be featured in small segments. If emphasizing just the major components of the water cycle, can be done in 30 minutes.

Web Sites

FunkandWagnalls.com
http://www.funkandwagnalls.com/
Search the site for water cycle and select the Media Gallery choice to view a concise animated explanation of the parts of the water cycle.

How the Hydrological Cycle Works
http://www.fwee.org/hlogic.html
Illustrated explanation of the Water Cycle.

The Many Adventures of Drippy the Raindrop
http://www.kimballmedia.com/drippy/
A 27 page storybook about Drippy, a raindrop, who goes on an adventure from the ocean to the mountains inland, and back again. He has a great adventure, and learns all about the water cycle in the process.

Ms. Frizzle Meets the Weather Dude
http://www.scholastic.com/magicschoolbus/games/teacher/storm/weatherdude.htm
Ms. Frizzle interviews a meteorologist and talks about the water cycle. Includes an experiment.

Ranger Rick's Kid Zone Cool Tours: Everyone Needs Water
http://www.nwf.org/kids/cool/water1.html
Starts with an explanation of why we need water, how the water cycle works and a water cycle experiment, followed by water puzzles and how to protect and conserve water. Could be broken up to support the objectives of this lesson as well as an extension lesson on water conservation.

Water: A Never-Ending Story
http://www-k12.atmos.washington.edu/k12/pilot/water_cycle/index.html
Comprehensive Water Cycle module including teacher resources and student experiments with discussion questions.

The Water Cycle Activity and lesson from the National Wildlife Federation
http://www.nwf.org/wildlifeweek/2000/h2oactvty.html
Best for a teacher resource and experiment idea.

The Water Cycle
http://www.nwf.org/wildlifeweek/games/watercyc_swf.html
An animated short story (5-10 minutes) which follows a water molecule through the water cycle. Needs Flash/Shockwave.

The Water Cycle -Terrariums (at teachnet.com)
http://www.teachnet.com/lesson/science/terrariums043099.html
Explains the how-to and why a terrarium can be used to illustrate the water cycle. Good for teacher resource or independent student project.

Water Science for Schools
http://ga.water.usgs.gov/edu/index.html
A glossary, illustration, and feature article, *Follow a Drip Through the Water Cycle*.

WVPT Young Environmentalist Contest
http://www.pbs.org/wvpt/YE.htm
Enter a water related student project to the contest posted at this site. Deadline for submissions is December of each year. Prizes for students, teacher, and school awarded.

HyperStudio Basics

1. **Setting up the stack:**
   - At the **Student** Menu, click on **HyperStudio**.
   - Click on **New Stack**. Click **Yes**, then **Yes**.
   - Click on the window bar and pull it to the right.
   - Click on **Tools** and drag down and to the left of the window.
   - Click on the **Colors** and drag down and to the left under the tools.

2. **Inserting a graphic object:**
   - Under **Objects** select **Add a Graphic Object...**
   - Click on **Desktop**, your disk icon, then the name of the graphic. Click on **OK.**
   - With the **Lasso** or **Square Selector Tool**, crop the picture. Click on **OK**.
   - Click in the middle of the picture and drag to place it.
   - Click outside of the picture. Select the frame color, if desired and click on the up arrow to select a width. Click on **OK.**

   To edit the graphic later:
   - Click on the **Pointer Tool** and click once in the middle of the graphic to drag it to a new place.
   - Click on the **Pointer Tool** and double click on the graphic for more options. Click on **OK** when done.

3. **Creating a frame:**
   - Click on the **Rounded Rectangle Tool**, the **Rectangle Tool**, or the **Oval Tool**.
   - Click in a corner and drag diagonal to the other corner.
   - Click on the **Paint Bucket**. Click on a color or pattern. Click in the outside or inside of the border to fill with color.
   - Note! Patterns cannot be changed later on, solid colors can.

4. **Adding text:**
   - Under **Objects**, go to **Add a Text Object**, then on **OK**.
   - Click on the inside of the dotted box and drag it to where text is needed.
   - Shape the box by clicking on the dotted lines and dragging.
   - Click outside the box.
   - Choose a **Text** and **Background** color.
   - For labels, titles, and short text click off **Draw scroll bar**.
   - Click on **Style...** Choose the text, style, and size. (24, 36, or 48 is good for labels and titles, 18 for paragraphs.)
   - Next to **Align:** click and select **Center** for titles or labels, **Left** for paragraphs.
   - Click on **OK** and then on **OK** again.
   - Click on the **T(text)Tool** and click inside the box.
   - Type the text.

   To edit the text later:
   - Click on the **T** tool and click in the middle of the graphic. Delete or insert text.
   - Click on the **Pointer Tool** and double click on the text for options. Click on **OK** when done.

5. **Drawing objects:**
   - Use the **Paint Tools** to draw directly on the page, as in Kid Pix or Super Print.
   - Double clicking on paint tools usually brings up options.
   - Remember, if you type text directly on the page, it cannot be edited, only erased.

   To move drawn objects:
   - Click on the **Square or Circular Selector Tool** or the **Lasso Tool**.

- Click and drag diagonally from corner to corner to select.
- Click in the middle of the object and drag to place it.

6. Starting a new card:
- Under **Edit** select **New Card**.

7. To clear everything except the text and graphic objects:
- Under **Edit** select **Erase Background.**

8. Adding buttons: Note! Add buttons only when two or more cards are done.
- Under **Options** click on **Add a Button...**
- Decide on either a word button or an icon button.

For word buttons:
- Type a button name like: **NEXT, MAIN** or **BACK.**
- Choose a name (text) color and background color.
- Choose a button shape option.

For icon buttons:
- Click on **Icons...** and select an icon. Click on **OK.**
- Try choosing the invisible box option as well with icons.

- Click on **OK**.
- Position the pointer inside the button. Click and drag the button to the bottom or top right or left, depending on if it is a back button or a forward button.
- Click outside the button.
- Click **Another Card**.
- Click on an **arrow** until the linking card is showing. Click on **OK**.
- Pick a **Transition option** and a **Speed** Click on **Try it** to preview the choice.
- Click on **OK** and then on **Done.**
- Click on the **Hand Tool** and then on the button to test.

To edit a button already made:
- Click on the **Pointer Tool**.
- To move the button, click once on the button and then click and drag to a new place.
- Double click on the button for other editing changes.
- Make any necessary changes to the options showing.
- Click on **Actions**. Click on **Another Card**, even if it is already selected.
- Click on the **Arrows** if necessary to change the linking card.
- Change any transition options necessary.
- Click on **OK** and then on **Done.**
- Click on the **Hand Tool** and then on the **button** activate.

HyperStudio Project on the Water Cycle
Student Guide

1. Gather Information

Write down information on index cards as we study the water cycle. You may work on this outside of class. Web links will be posted on our class' home page. You may use books as well. Create cards for

- Title: title of project, author's name
- Main Page: illustration of the water cycle, each part labeled
- Evaporation: title, text and illustration(s)
- Condensation: title, text and illustration(s)
- Precipitation: title, text, and illustration(s)
- Run Off: title, text, and illustration(s)
- Ground Water: title, text, and illustration(s) (optional)
- Transpiration: title, text, and illustration(s) (optional)
- Bibliography: title, text (optional)

When taking notes, draw the illustrations on the blank sides of the index cards. Write the text on the lined side of the index cards.

2. Build the HyperStudio stack:

Day 1: Create a title page:

- Draw a frame.
- Add a text box for the title.
- Add a text box for the author.
- Add a button to go to another card.

Create the main page:

- Use the tools to draw a picture of the water cycle. Clip art can be imported from Kid Pix or the Internet for parts (i.e.: a sun), but not the whole picture.
- Add a text object. Type, "The Water Cycle" without a scroll bar.

Day 2: Create supporting pages:

- Add buttons for each of the parts of the water cycle to the main illustration. The label for the button should be the name of the part of the water cycle. Each button should go to "another card"
- Add a button in the bottom right corner to go to "another card" for the bibliography.

Day 3 and 4: Create the cards for the parts of the water cycle. For each:

- Add a text object without a scroll. Type the name of the part of the water cycle.
- Add a second text object that scrolls and type the information collected.
- Using the tools or by importing graphics, add illustrations.
- Frames may be added.

- Add a button in the bottom left corner to go back to the illustration of the water cycle.

Bibliography:

- Add a text object without a scroll. Type the name of the part of the water cycle.
- Add a second text object that scrolls and type the bibliography.
- Add a button in the bottom left corner to go back to the title page.

Evaluation Checklist for HyperStudio Water Cycle Project

Title Page:
___Frames
___Two Text Boxes
___Title and Name

Picture:
___Attractive Picture (5 pts.)
___4 parts of the water cycle labeled
___Each label is an active button

Support pages
Evaporation:
___Title
___Text shows knowledge (5 pts)
___Complete sentences
___Picture
___Frame
___Button back

Condensation:
___Title
___Text shows knowledge(5 pts)
___Complete sentences
___Picture
___Frame
___Button back

Precipitation:
___Title
___Text shows knowledge (5 pts)
___Complete sentences
___Picture
___Frame
___Button back

Runoff:
___Title
___Text shows knowledge (5 pts)
___Complete sentences
___Picture
___Frame
___Button back

Transpiration: (Extra Credit)
___Title
___Text shows knowledge
___Complete sentences
___Picture
___Frame
___Button back

Total /50