INTRODUCTION

These Teaching Tips will help you prepare for and use this interactive lesson in your classroom.

About This Lesson
This lesson uses entertaining video segments and interactive components to define and describes the water cycle and watersheds, and also features information on both the importance of watershed management, and strategies on how best to take care of local watersheds.

Designed as the "Explain" feature of the 5E Blended Lesson **Watershed Wisdom** (also featured on PBS Learning Media), this Interactive Lesson directly hits elementary school North Carolina Essential Standards science objectives (see standards alignments below) related to the water cycle and to environmental science. That said, this lesson can be used as a standalone, and can function as an individual personalized lesson for students—as homework, or in class, and of course might be ideal for homeschool students—or it can be shared with large groups via Google Classroom (see the icon on PBS Learning Media).

If you do choose to use this interactive lesson as part of the blended 5E lesson **Watershed Wisdom**, this lesson offers students information that will help them brainstorm ideas to help the young students shown in the **River Avengers** animation keep their river from becoming overly polluted. The **Rivers Avengers** animation is part of the **Watershed Wisdom** Engage activity, and it has its own link on PBS Learning Media as well.

This specific **Ways of Watersheds** interactive lesson begins with a short engagement video, to remind students of the importance of water in their daily life. A list of key glossary terms—the first of two animated glossaries-- follows, featuring both word definitions, and short video demonstrations that show the terms in action.

This first glossary introduces students to the water cycle—the first concept taught in this lesson—by defining its four phases and asking students (at the bottom of the page) a series of short questions, which they can type directly into the lesson (the computer saves their work for your perusal). On the next page, students will watch a short animation that (once again) defines the Water Cycle—defining each of the phases and describing the role each plays.

Following another short animated glossary—this one defining the terms related to watersheds, watershed dangers, and watershed management—two short animations provide information about, and crucial context to, the importance of and strategies for maintaining healthy watershed ecosystems.

The lesson also includes three formative online assessments—one following each animation, and at the end of the lesson, an activity that allows students to use the facts they have learned to complete the drag-and-drop summative assessment chart. Once again, classes using **Ways of Watershed** as part of the Explain activity for **Watershed Wisdom** can now return to the 5E Lesson.

Standards
This Interactive Lesson aligns to the following state and national science standards:

1) Next Generation Science Standards

- **5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

    - DCI ESS3.C: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individual and communities are doing things to help protect Earth's resources and environments.

2) North Carolina Essential Standards

- **4.L.1**. Understand the effects of environmental changes, adaptations and behavior that enable animals (including humans) to survive in changing habitats.

    - **4.L.1.3** Explain how humans can adapt their behavior to live in changing habitats (e.g. recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion)

- **5.P.2** Understand the interactions of matter and energy and the changes that occur.

    - **5.P.2.1** Explain how the sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff).

The full blended lesson Watershed Wisdom aligns to the science standards listed above, as well as to the following North Carolina Essential Standards:

SOCIAL STUDIES

North Carolina Essential Standards

- *4.G.1* Understand how human, environmental and technological factors affect the growth and development of North Carolina.

  - *4.G.1.2* Explain the impact that human activity has on the availability of natural resources in North Carolina.

- *5.G.1* Understand how human activity has and continues to shape the United States.

  - *5.G.1.2* Explain the positive and negative effects of human activity on the physical events of the United States, past and present.

ENGLISH LANGUAGE ARTS

Common Core

- *CCSS.ELA-Literacy.W.4.1* Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

  - *CCS.ELA-Literacy.W.4.1.A* Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.

- *CCSS.ELA-Literacy.W.5.1* Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

  - *CCSS.ELA-Literacy.W.5.1.A* Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.

VISUAL ARTS

North Carolina Essential Standards

- ***4.V.1*** Use the language of visual arts to communicate effectively.

    - ***4.V.1.2*** Apply personal choices while creating art.

- ***5.V.3*** Create art using a variety o tools, media, and processes, safely and appropriately.

    - ***5.V.3.2*** Use appropriate media for the creation of original art.

Assigning and Monitoring Lessons

To make the most effective use of ILs, you will want to assign them to your students through PBS LM. (You will need Internet access and multiple digital devices.)

Once the lessons are assigned, you can monitor whether students have begun or completed and submitted the lessons, and you can also view the work they have saved in their lessons. Note that teachers—and their students—must be logged in to be able to use, assign, and monitor lessons.

You will follow these steps (those related to student accounts and class rosters only need to be done once for the year):

- Set up your own PBS LM account (which you probably have already done) and log into the service.
- Set up accounts for your students (or have them create their own accounts if they are aged 13+).
- Create classes and invite your students to log in and join your classes.
- You may assign ILs to the entire class, to small groups, or to individual students. Students will be able to see a list of which lessons they have been assigned.
- Check back to monitor students' progress and view their work.

You will find detailed instructions on how to set up and manage accounts, class rosters, and assignments in the [Help](#) section of PBS LM.

Interactive Tools

Students are assisted in their inquiry by a variety of tools. The information they save or submit in most of these tools, including their notes, is automatically collected in their "My Work" record, which you can access when you have assigned a lesson to a student. This lesson makes use of the following tools:

Take Notes
Throughout the lesson, this tool records students' notes in response to onscreen prompts. Students may be asked to respond to a question, list information, analyze a primary

source (including photographs or visual images), or react to the videos. In some cases, there is a free-text field for entering notes, and in others, there is a table or chart with blank cells for students to complete.

Review It! (Quizzes)
Students can answer multiple-choice or true/false questions and get feedback.

Match It!
Students can complete cloze-style exercises to review vocabulary.

Students can drag text or images into place on a graphic organizer image.

COMPLETING THE LESSONS

Before the Lesson
Use these tips to help you become familiar with the lessons and adapt them, as necessary, for the needs of your students.

- Go through each page, including all the interactive tools, so that you can experience ahead of time what students will be doing. As you go through each page, jot down your own expectations for students' responses.

- After you have reviewed the lesson, decide whether you will need to provide additional background information for students so that they can better understand the context of the lesson.

- Review common note-taking techniques with students. As you may have already discussed in class, notes can be words, phrases, or sentences and should represent what students think are the most important aspects of what they see and hear.

- Determine if students will be working individually, in pairs, or in groups, or if you will be presenting all or parts of the lesson to the whole class at once.

- Decide whether you want to expand the lesson to include class discussion, debate, or other whole-group activities. If so, determine where students should pause their independent work so that everyone is at the same place for the discussion or activity.

- Page 2 of the lesson defines and demonstrates terms and words relevant to the content. However, for general vocabulary, especially for words mentioned in the lesson but not defined on Page 2, you may want to offer definitions not offered during the course of the lesson that might be pertinent to the topic. For example, we have not offered a formal definition for "vibrations," in either the Sound Waves or the Mechanical Waves interactive lesson. If there are other words you think could use an animated definition, -- or in fact have other suggestions and/or

corrections (we'll take compliments too—very useful for funding reports) please email them to us at science@unctv.org.

- Explain to students the timeline for completing the lesson. Mention the different types of activities they will encounter and let them know how you expect them to submit their work. You may want to provide an outline of this information on a chart, chalkboard, or whiteboard, or as a handout. The interactive lesson, together with the 5E lesson, should take from 6 to 8 classes to complete.

- Remind students that they can watch the video and animation segments as many times as they choose. Transcripts have been provided for reference as well.

During the Lesson
In most cases, students are expected to work through the lesson on their own or in pairs, except for classes that may require teacher facilitation throughout (such as for younger students). Even when students are working on their own, teachers should be available to keep the lesson on track, organize groupings, facilitate discussion, answer questions, and ensure that students meet all learning goals. It may be useful to review students' notes midway through the lesson to make sure they have understood the materials thus far. Be sure that they are taking adequate notes so that they can complete the final assignment. If students show interest in a particular element of the lesson, you may pause the lesson for a class discussion.