

WELCOME TO HYDROVILLE

Description

This activity introduces students to the water quality problem in Hydroville. Students create Hydroville Journals, participate in team-building activities, form consulting teams, and learn about careers involved in researching a water quality problem.

Student Outcomes

Students will:

- Organize a Hydroville Journal.
- Form teams that represent the consulting firm, Environmental Solutions, Inc.
- Practice teamwork skills.
- Watch a video to collect information about the water quality problem at Hydroville.
- Identify stakeholders and their concerns.
- Investigate careers in environmental health science.

Student Products

- *Teamwork Skills Analysis T-chart*
- *Reading for Understanding Questions*
- *Water Quality Video Notes and Hydroville Stakeholders*
- *Career Information Form*

Prerequisites

None



National Standards

Subject Area Standards Covered: *Geography, Health, Language Art, Science, Social Studies and Technology*. See Appendix D for the complete list of national education standards.



Teamwork Skill

Listen attentively to others.



Activity Timing

| Time Estimate | Three to Five 50-minute Class Periods |
|---------------|--|
| 30-60 min | Prep Time: photocopying; organizing materials |
| Day 1 | Hydroville Journal (see <i>Hydroville Journal</i> section) and Assess Students' Prior Knowledge of Water Quality |
| Homework | Background Reading and <i>Reading for Understanding Questions</i> |
| Day 2 | Teamwork Skill (see <i>Teamwork Skills</i> section) |
| Day 3 | Hydroville Water Quality Video and Stakeholders |
| Days 4 - 5 | Optional: Career Information (see <i>Career Information</i> section) |



Materials

- Optional: Hydroville signs and maps enlarged as posters (maps in BA 2)
- Flip charts or poster board
- Four different colored markers
- Hydroville Water Quality video
- TV and VCR or DVD player

Hydroville Journal (one per student)

- Three-ring binder
- Notebook paper
- Colored paper or cardstock (for dividers)

Teacher Information

Read the following sections in the Introduction at the front of the curriculum:

- *Hydroville Journal Skills* – Detailed lesson plans for preparing and grading the Hydroville Journal.
- *Teamwork Skills* – Detailed lesson plans to practice strategies to build teamwork skills throughout the curriculum.
- *Career Information Skills* – In each of the Hydroville Curricula, students take on roles of specific experts from different scientific fields that form the team that are brought in to solve the problem. This section helps them understand the training and work of the person whose role they take on the team. Although optional, it is strongly suggested that you have students research these careers in this section.

For more information on drinking water and water quality issues, see the Hydroville web site, water quality curriculum resource page at http://www.hydroville.org/links/wq_resources.aspx.



Terminology

| | |
|------------------------------|---------------------------------|
| Aquifer | Stakeholder |
| Environmental health science | Surface water |
| Evaporation | Transpiration |
| Groundwater | Water cycle or hydrologic cycle |
| Percolation | Water quality |
| Precipitation | Watershed |
| Public water system (PWS) | |



Tips from Teachers

For teachers using the curriculum for the first time, here are suggestions from teachers who have used the Hydroville Curricula:

- This curriculum stresses organization and teamwork. You need to model these skills if you want your students to be successful.
- Develop an organization system that works for you.
- Stay a step ahead of yourself in preparation, not the night before the activity. You can't wait until the last minute with this curriculum.
- Get the activities done in the time allotted even if it means cutting something out. It would be easy for this curriculum to expand to fill a semester.



Suggested Lesson Plan

Getting Started

1. Make a sign, “Welcome to Hydroville,” and post it in front of the classroom. Enlarge Hydroville maps and display as well.
2. To help students understand that they are going to be dealing with a current issue important to communities all over the world:
 - Collect articles about water quality issues in your community or state.
 - Create posters or a collage of newspaper headlines about water quality issues worldwide.
 - Post newspaper and magazine articles around the room. Ask students to bring in an article and write a one-paragraph summary for extra credit.
3. Make transparencies and photocopies. All photocopies and transparencies for each activity are listed on the *Pages to Photocopy* page at the end of the *Teacher* section.
4. Post *Student Expectations for Hydroville* (TM-1) and *Team Skills Emphasized in Hydroville Problems* (see *Teamwork Skills* section, TM-2). Refer to these often since they are important to the success of the student teams.

Day 1. Hydroville Journal and Assess Students’ Prior Knowledge of Water Quality

Doing the Activity

1. Hydroville Journal

- a. Have students prepare binders for their Hydroville Journal. Follow the detailed instructions for creating the journals in the *Hydroville Journal* section.
- b. Students should place the *Hydroville Journal – Table of Contents* in the front of the binder and used as an organization and grading tool.

2. Assessing Students’ Prior Knowledge about Water Quality

- a. Put up flip chart paper in four corners of the classroom with a different title on each: 1) Water and Your Health, 2) Drinking Water Quality, 3) Groundwater, and 4) Watersheds.
- b. Divide the class into four groups and send each group to a different corner of the room.
- c. Have each group choose a recorder for their team. Each team records in a different color.
- d. Explain to the students that they will get three minutes to brainstorm and list as many facts about each topic listed. Use a bell or whistle to have the students stop and move clockwise to the next chart.
- e. At the next chart, students cannot repeat any of the facts already listed, but must add new facts.
- f. After about 12 minutes, the students will end up back at their original corner. Have each team read the list to the class.

Wrap-up

1. Have a class discussion around the following topics:
 - a. How would this activity been different if you had to come up with the list of facts for each corner by yourself? Do some people know more than others on this topic? Complex problems often require teams of experts to work together and pool their knowledge to come up with a solution.
 - b. Did your team allow everyone to give input or were some people taking over in the group? Did leaders emerge? Think about whether you are a leader or follower.
 - c. Solving problems in a team requires each member to contribute their expertise and for all members to listen to and respect the contributions of each member.
 2. Acknowledge what the class already knows about water. Get them excited about increasing their level of knowledge by becoming experts and working in teams to solve a real-life water quality problem such as the ones illustrated in the headlines and articles around the room.
 3. **Homework:** Assign Background Reading: *Where Does Drinking Water Come From?* and Worksheet 1: *Reading for Understanding Questions*.
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Day 2. Teamwork Skill

Doing the Activity

1. Divide your class into teams of four to six students. These student teams represent the Environmental Solutions (ES) team brought in to solve the water quality problem in Hydroville.



Tips from Teachers:

- Carefully decide which students to assign to specific teams; it is critical for student success.
 - Teams of four have one student for each expert group and work well but are hampered by absences or student withdrawals. Most teachers prefer to assign one or two extra students to a team to fill in for students who are absent from the group at critical times.
 - More than six students per team is difficult to manage.
2. Follow the detailed description of the lesson plan in the *Teamwork Skills*. Teamwork worksheets are also found in this section.

Note: Teamwork skills are critical to your students' success. Don't shortchange time spent on developing and practicing those skills! Most students don't have the skills necessary for team success for a nine-week team relationship and must learn and practice these skills.
 3. Assign **Journal Prompt-1** (see *Teamwork Skills* section, TM-1). Students write their answers to the Journal Prompts on notebook paper in the first section of their Hydroville Journal. They should date and number all of the Journal Prompts.
 4. Have teams participate on one of the team-building challenges provided. Use one or all of the challenges as you work through the curriculum as time allows.
 5. Use the *Teamwork Skills Practice Guide* while observing teams doing one of the challenges. Share your observations with the class.