Testing the Water: Designing a Water Reuse Process

Tips for Interactivity highlight free digital resources that educators and youth can access to compliment the work completed in the Engineering Journal. These resources offer opportunities to use technology to support youth as they collect data on their designs and processes, communicate about their engineering work, and visualize scientific concepts. Use the tips below to build on these learning goals and leverage resources to further engage in planetary science!

Access to the Internet and a digital tool, such as a phone, iPad, and/or computer, are required. Suggestions for when to use the tip during the teaching of the unit are highlighted in red.

ALL ACTIVITIES

Photo and Video Documentation

Have youth use a digital notebooking tool or their smartphone to record data that they can share during the Engineering Showcase (**A6**). Youth can:

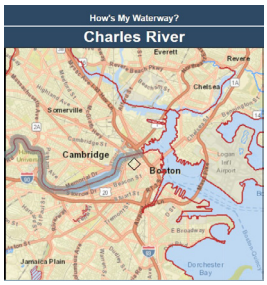
- Take a short video of how their materials performed during the *Investigate* step. (**A1, A2, A3**)
- Take photos to keep track of different versions of designs. Consider drawing on top of these to plan improvements! (**A4, A5**)
- Take a video of their technology as they are in the *Create* step. (**A4**)
- Document the testing of their technology with photo and slow-motion video. Youth can annotate photos to show what worked, what did not work, and what they will change after each test. (**A5**)

ACTIVITIES 1–5

Water Quality Data Portals

mWater Data Portal: https://www.mwater.co/portal.html

How's my Waterway (EPA): https://watersgeo.epa.gov/mywaterway/

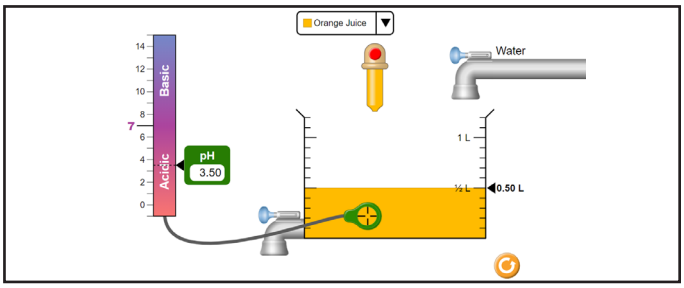


Encourage youth to become citizen scientists by identifying and tracking healthy water sources in your community using these free web-based data portals.

ACTIVITY 1

pH Scale Interactive (PHET)

https://phet.colorado.edu/sims/html/ph-scale/latest/ph-scale_en.html



This web-based interactive enables students to test various liquids, like hand soap or human spit, to determine whether each is acidic, basic, or neutral. Youth can also use this interactive to explore the concept of dilution to help predict how the solution's volume or adding water affects the pH of the liquid.

ACTIVITY 3

Plumber Game - Aquavias (Android, Apple)

This free mobile app is a puzzle game in which the player's task is to prevent drought in a city. Youth can deepen their understanding of other water flow systems by building aqueducts connecting reservoirs to buildings around the model city, giving residents critical access to water.

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ACTIVITY 3

Where's My Water? (Android, Apple)

In this mobile app, youth must guide the flow of water through a varied landscape to ensure clean water gets to a broken shower. Have youth play this puzzle game to increase their understanding of how water flows and to explore the topic of water as a limited resource.