



TEACHER TIPS
DESIGNING WATER
FILTERS
LESSON 2- WHO ARE
ENVIRONMENTAL ENGINEERS?

- o Two of the “Teacher Tips” (in the sidebars of the Teacher Manual) in this lesson proved to be very meaningful for the students.
 - One page 58: demonstrate contaminated water by actually showing the students a bottle of water that has natural and artificial contaminants inside. Discuss which is which.
 - Use two different colored markers on the mural pieces to help student visually distinguish between natural and artificial contaminants. This tip helps your ELL students and it gives students a nice visual representation on their mural panels.



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LESSON 3.1 – EXPLORING FILTER
MATERIALS

- The teacher guide indicates 60 minutes for this lesson. To allow students to be able to complete the testing and reflect on their experience, allow more time, even in two sessions.
- The reflection and discussion of what they did is very important to help them in the next steps of the Engineering Design Process.



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LESSON 3.2 – EXPLORING FILTER
MATERIALS

- Demonstrate a pour to model the process and clean-up for your students.
- Review the procedure so everyone is clear on their role. Consider putting procedure or role directions on doc cam or whiteboard.
- Have a filter holder set-up at the beginning of the lesson to show students, along with actual size and/or amounts of filter materials they will use in this lesson.
- Use sample bags with smaller pieces of the materials to prompt discussion of the properties of the materials, so students can look at them closely and feel them.



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LESSON 4.1 – DESIGNING A WATER
FILTER

- Remind students remember the Filter Holder is \$1.00 on the “Materials Price Chart” and that they have to build that into the final price of their designs. Many students forget and have to re-configure their designs at the end.
- Worksheet 4.6 ‘Designing a Water Filter – Plan!’ was the student “ticket” to getting his/her materials needed for building the final designs. It encouraged every student to complete his/her design and helps students keep track of what materials’ they would need during the materials collection portion of lesson 4.2



TEACHER TIPS DESIGNING WATER FILTERS

LESSON 4.2 – DESIGNING A WATER
FILTER

- In the PLAN step, students struggle with drawing the filter holder. Suggesting they draw a big U for holder helps them focus on the filter materials and sequencing.
- Use “Mystery Water” dilutions 1 – 5 separately for color and particles.
- Consider how students will time their filter tests.
 - For Lesson 3, do “group pours” and for Lesson 4 have each group time their own tests.
- Timing options:
 - Classroom clock – can everyone see?
 - Stopwatches
 - Clock on doc camera