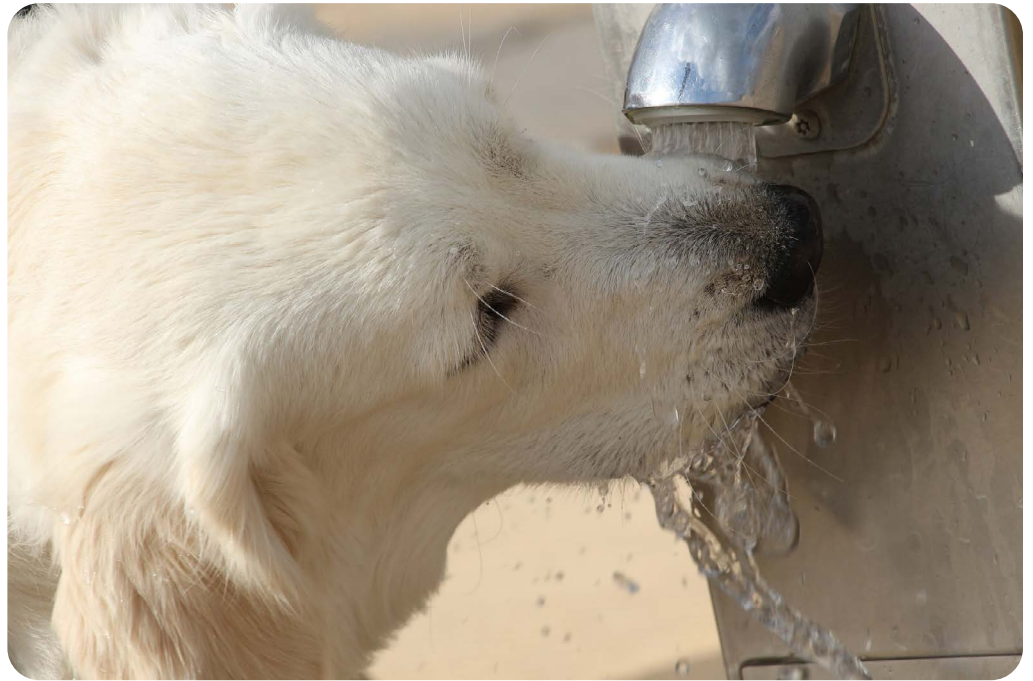


ITEEA's Elementary STEM Council's Annual Global Design Challenge for Elementary STEM Students Deadline: December 15, 2023

Fifth Global Design Challenge for Elementary STEM Students

In 2008, the U.S. National Academy of Engineering (NAE) identified 14 Grand Challenges for Engineering in the 21st Century. The Grand Challenges were designed to cause students and educators to think about solutions to the big challenges affecting all of our lives. It's now time for elementary-aged students to get in on the action and show the world that they can solve big STEM design problems as well. The Elementary STEM Council is sponsoring the Global Design Challenge for Elementary STEM (GDC) to provide students with a chance to solve a real problem, and show the world that everyone can help find solutions to these global challenges.



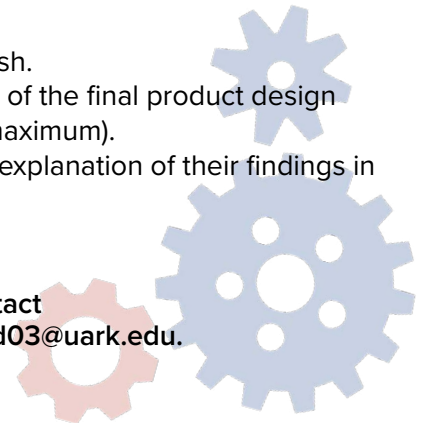
Challenge: I am going out of town and no one is available to care for my dog. I need some type of device to consistently dispense water. Can you work as a small group to create a device that can help automatically dispense water? This device should be simple to use, easy to fill, and keep the water bowl consistently full for three days.

To the teacher:

1. Use the design loop while students are designing their product from start to finish.
2. Take many pictures and videos throughout their design process. Create a video of the final product design choice with the students and share their product and their findings (3 minutes maximum).
3. Have the students present their product with a defense of their product and an explanation of their findings in a formal pitch to an audience, an authentic audience would be ideal.
4. Submit the results to esc@iteea.org.

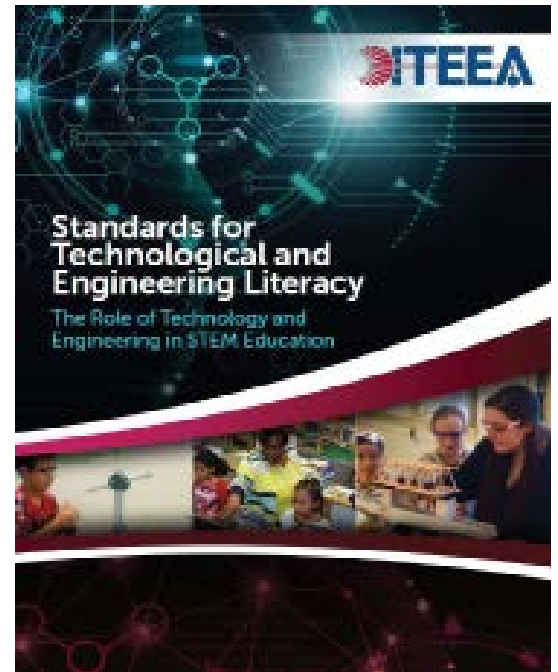
For questions about the Global Design Challenge contact
Jessica Nyden at jenyden@uark.edu or Michael Daugherty at mkd03@uark.edu.

Deadline: December 15, 2023



Standards:

- STEL 1B: Explain the tools and techniques that people use to help them do things.
- STEL 1H: Design solutions by safely using tools, materials, and skills.
- STEL 1J Develop innovative products and systems that solve problems and extend capabilities based on collective needs and wants.
- STEL 1R: Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.
- STEL 1C: Recognize that creating can be done by anyone. Using technology and engineering tools and techniques, anyone can design or improve things to enhance their lives. Creation of new knowledge, approaches, and inventions can occur through either individual or collaborative efforts. Even young children can view themselves as creators.
- NGSS 3-5-ETS1-1: Define a simple design problem reflecting a need or a want.



Big Ideas:

- Modern devices can assist in making tasks more manageable when one is unable to complete the task themselves.
- Consistency ensures reliability and replication.
- Consider simplicity when designing a device.

Limitations:

1. Create a device that can automatically and consistently dispense water for three consecutive days.
2. The product should be easy to use and fill with water.
3. The product should be simple
 - a. Use low-cost or free materials to develop your prototype
4. This product needs a unique design unlike any thing else on the market.
 - a. Develop a product, not a method—many methods are available online.
5. Test the product in your own classroom and determine its effectiveness.
6. Make sure that the product does not require a common language—could be used anywhere.
7. Test your product with classmates and document how well it works.