

# STEM—Science, Technology, Engineering, Math

1. **Think of Science as “Discovery”** Scientists ask questions, predict, compare data, test ideas, measure and record information, create models and communicate their findings. As Leaders: Suggest problems for 4-H members to solve and resist feeling like you have to give them an answer. Let them discover answers on their own.
2. **Think of Engineering as “Imaginative Design”** Engineers think creatively and create designs that are useful. As Leaders: Challenge 4-H members to engineer something that improves a tool they use in their 4-H project, such as “the perfect rabbit cage” or a poster describing a new invention. Use their creativity.
3. **Think of Technology as a “Tool”** Tools can be used to improve efficiency which helps accomplish a specific task. As Leaders: Have your 4-H members create a list of tools they need to be successful in their project. Are there some tools they do not have access to? Are there tools they think they could engineer?
4. **Make time to question everyday occurrences.** As Leaders: Schedule time during your 4-H meetings to discuss how Science, Engineering, and Technology are related to what 4-H members are learning. Ask them to describe “how things work.” (Where does electricity come from? How does it get from one place to another? Where does their tap water come from? What is a watershed? How does their TV project an image on the screen?) Many answers to everyday occurrences are readily available on the internet.
5. **Remember that kids are naturally inquisitive and like puzzles.** As Leaders: Ask questions related to your 4-H project and challenge the 4-H members to think of creative answers. (What is in the food you feed your animals? How does a sewing machine work? How does a digital camera work?) Challenge the 4-H members to discover how to access resources at their library, the internet and ask experts for answers to their questions.
6. **Engage 4-H members in experiments.** As Leaders: Do simple experiments such as filling a few small plastic containers with cream and asking kids to predict what will happen if you shake the container. Check and record progress every two minutes. Keep the 4-H’ers busy and let them try out their ideas. Let 4-H members have fun...kids often forget what we say but remember what they DID!
7. **Visit places in your community that relate to Science, Engineering and Technology.** As Leaders: Ask local scientists or engineers to give a guest presentation to your group. Schedule a visit to a fish hatchery, the hospital, or a business that manufactures something. Tell them in advance about the S.E.T. focus and have them include this in their presentation.
8. **Share stories of using Science, Engineering and Technology in your life.** As Leaders: Remind 4-H members that science, engineering and technology surround us every day in many ways. Encourage 4-H members to write and submit a story for the 4-H newsletter, local newspaper, radio or other public access outlet.
9. **Contact the Extension office to ask questions and get answers from the University.** As Leaders: Remember that 4-H is connected to the entire University System. Utilize the Extension office to help you find research-based answers to project-related questions. Questions can only be answered if they are asked.
10. **Ask 4-H members to share their ideas.** As Leaders: Make sure to take the time to ask 4-H members what ideas they have for S.E.T. related projects. What puzzle would they like to solve? Help them design an experiment, make predictions, measure and record their findings and summarize what they have learned.

**Adapted from University of Wisconsin 4-H- Top 10 Ways to Integrate SET into 4-H Projects**

There are lots of resources available with ideas you can use in your club meetings to share STEM with your club members.

**Indiana 4-H Stem** is geared for 4-H Club Leaders:

<https://extension.purdue.edu/4h/Pages/volunteerResources.aspx>

**Science Mom** has ideas and YouTube videos that can help you with activities and ideas:

<https://jennyballif.com/>

**Science for Kids** free activities and ideas

<http://www.scienceforkidsclub.com/>

**Polymer—Science Mom Slime** (I like some ooze to my slime, so this is my favorite ratio of water, glue, and crosslinking activator. You can experiment and come up with your own favorite recipe!)

4 oz white school glue

2 oz water

1/2 Tbsp baking soda

1 Tbsp contact lens solution

Food coloring (optional)

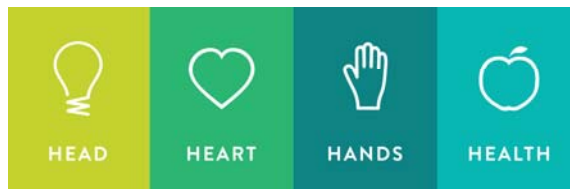
Mix the glue and water and baking soda together. Add food coloring (if using) and mix again. Then add the contact solution and knead it together.

Science Mom shares the science behind what is happening with the slime. I would suggest you review either her printed material or her YouTube video on slime.

**Non-Newtonian Fluid—Science Mom Oobleck**

Directions: Add 1/2 cup water to 1 cup cornstarch. Slowly and carefully mix together.

Do you notice how the mixture behaves like a liquid when you stir slowly, and like a solid (cracking apart) when you stir with more force? If necessary, you can add just a few spoons more of water to get the right consistency.



Credits: **Science Mom** <https://jennyballif.com/>

**University of Wisconsin Extension**

**Purdue University, Purdue Extension 4-H**

