

Orange County Science & Engineering Fair



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# Academy 101

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## Session 1



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## "Choosing a Topic"



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**Welcome!**

**First Timers**

**6 Classes**

**Basics**

**Resources**

**ocsef.org**

# EXPECTATIONS

✓ Start a notebook

✓ Participation

✓ Keep up

✓ Make it Fun!!!!



## Think like a Scientist/Engineer

- ✓ Look around you!!!
- ✓ What interests you???
- ✓ What numbers can you collect???
- ✓ How will you measure it???
- ✓ How long will it take???
- ✓ What materials do you need???

# Keep it Simple!

**Ideas are Everywhere!**

**You are all natural scientists  
and engineers!**

**Babies touch and bite and throw  
and listen and watch!**

**You observe and wonder and  
question and see patterns!**




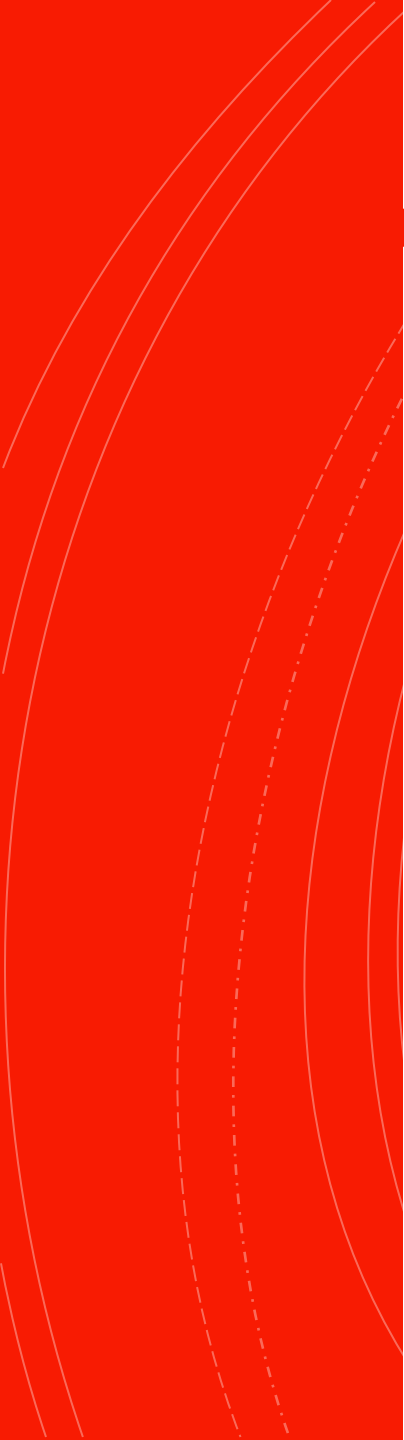
Bradley Elementary School second grader Kristopher Bayog talks about his invention at his home in Watsonville. (Kevin Painchaud / Lookout Santa Cruz)

**Meet the Watsonville 8-year-old behind 'D' shoes, an award-winning invention for people facing dementia**





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- IDEAS!!**
- How does **water purity** affect **surface tension**?
  - When is the **best time** to **plant soy beans**?
  - Which **material** is the **best insulator**?
  - How does **arch curvature** affect **load carrying strength**?
  - How do **different foundations** **stand up to earthquakes**?
  - What **sugars** **do yeast use**?
  - Does changing the **temperature of water** affect the **buoyancy of an egg**?
  - Does changing the **wingtip direction** affect an **airplane's flight**?
  - Does changing the **height of a ramp** affect **how far a car will travel**?
  - Does changing the **size of a paper airplane** affect **how far it flies**?
  - How does the **type of light** affect **how quickly a plant will grow**?
  - Does **surface temperature** of a glass affect **fingerprints**?
  - Do **artificial sugars** **attract ants**?
  - What is the effect of **pH** on the **lifespan of tadpoles**?

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- Do **fertilizers** affect the **health of earthworms**?
  - Does the **type of wire insulation** affect the **strength of electromagnets**?
  - What effect does **temperature** have on **strength of different types of magnets**?
  - On which **surface** can a **snail** move the fastest-dirt, cement, or grass?
  - What is the effect of **light** on **rate of seed of germination**?
  - Do **mint leaves** **repel ants, worms, or isopods**?
  - Does the **direction seeds are planted** affect **plant growth**?
  - Is there an effect on **evaporation rates** when **forming crystals from sugar and sugar substitutes**?
  - Does the **length of the wire** affect the **power of the circuit**?
  - What **materials** provide the **best insulation**?
  - Which **electromagnet design** is the **strongest**?
  - Through what **material** does **sound travel the best**?
  - What is the effect of a **magnetic field** on **plant growth**?

**MORE  
IDEAS!!**

NOW!

Circle your  
top 4  
ideas!!!



The background features a series of concentric circles in light gray, some solid and some dashed, creating a ripple effect. A large, vibrant red oval is positioned in the center-right of the frame. A thick, dark gray curved line sweeps from the left side, partially overlapping the red oval.

## Session 2 Experimental Design

We will cover how to  
set up your experiment !!

What you will need  
for our next session

1. In your notebook, write out a list of at least 3 questions you may want to use as project ideas.

2. If you can, for each question try and identify what you will measure and how, and what materials you may need to run your experiment.

**Good Luck!!!**  
**See you next week!**



QUESTIONS?