

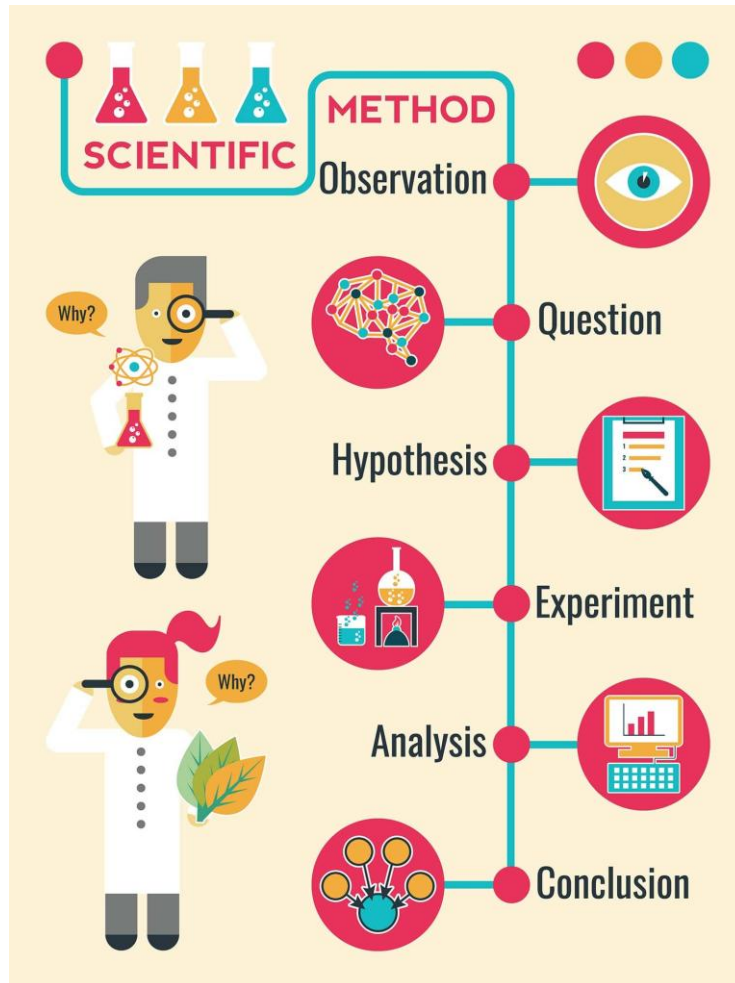
Navigating the Science & Engineering Fair

Demonstrations VS Experiments

Demonstration: action or process of showing or explaining evidence for how something works.

Experiment: procedure for testing key components/variables then drawing conclusions based on the tests.

Experiments should include the steps of the scientific method: an organized way to investigate and learn.



When entering a science & engineering fair, demonstrations are appealing. If a demonstration is appealing, try to turn it into an experiment. If you are just following directions to see what happens, you have a demonstration; if you are changing variables and comparing the results...you have an experiment.

Examples of demonstrations and experiments:

DEMONSTRATION	EXPERIMENT
Volcano	Change amount of ingredients like the baking soda and compare results
Tornado in bottle	Change the types of liquid or size of bottles and compare
Mentos in diet coke	Change amount of mentos or type of soda and compare

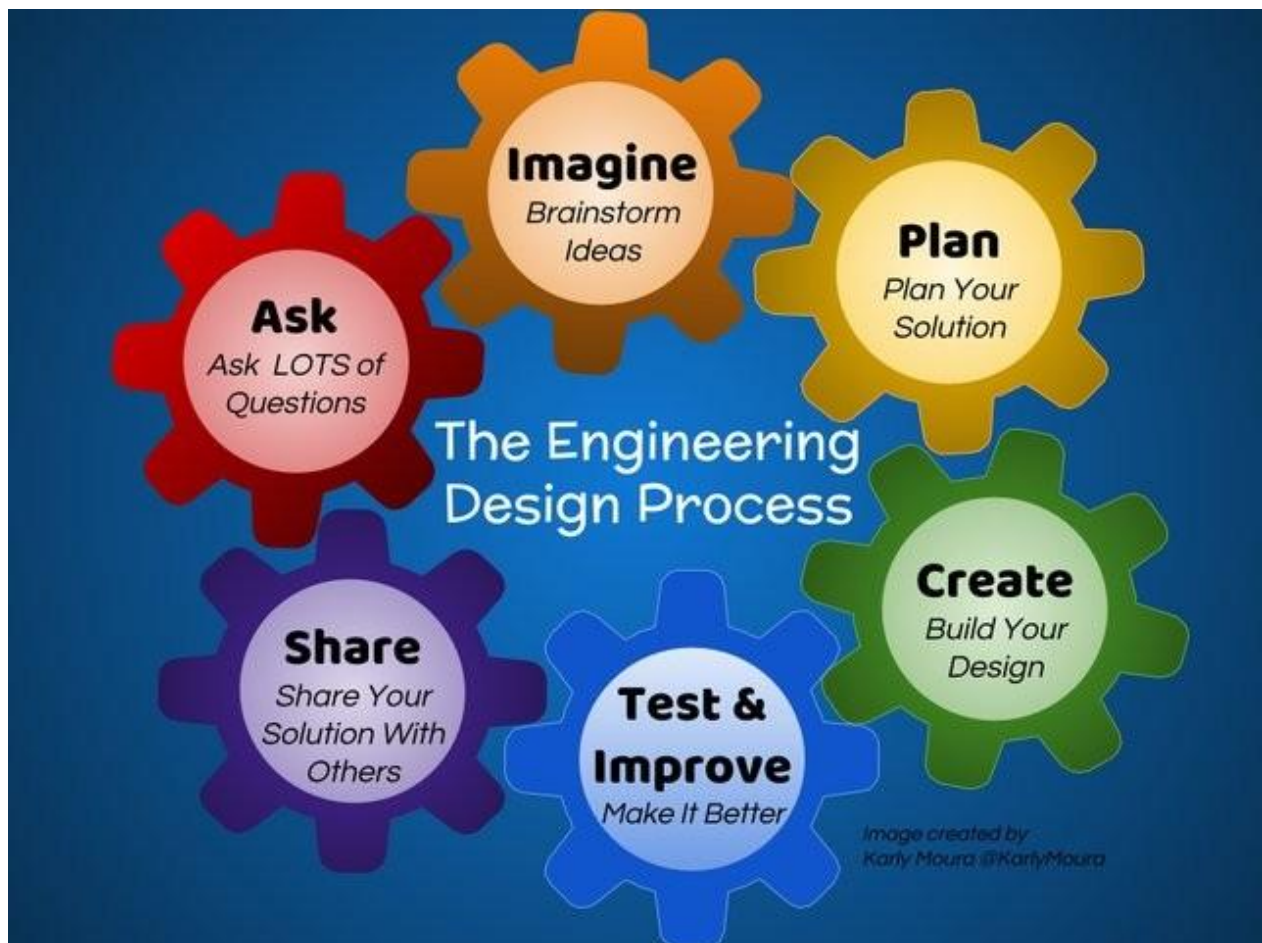
What are Variables?

Variables are the key components to a science fair project, some are changed and some are constant.

- **Independent variable:** Factor that is changed by the scientist. In the volcano experiment, this would be the amount of baking soda added for the reaction.
- **Dependent variable:** Factor that is measured to see if it is affected by the independent variable. A variable that depends on another variable [independent variable(s)]. This would be a measurement of the amount of “fizz”, or the height of the “explosion” based on the amount of baking soda added to the reaction.
- **Controlled conditions:** Factors in the experiment that are kept constant. In the volcano experiment, this would include the amount of vinegar, the height and material of the volcano...anything that stays the same for each trial of the experiment.

What is an Engineering Project?

You can enter the science and engineering fair with an engineering project. Instead of testing something, you design something. The engineering design process outlines the steps that are typically followed. When presenting, it is important to describe the process you followed. Using an engineering journal/notebook is helpful and encouraged.

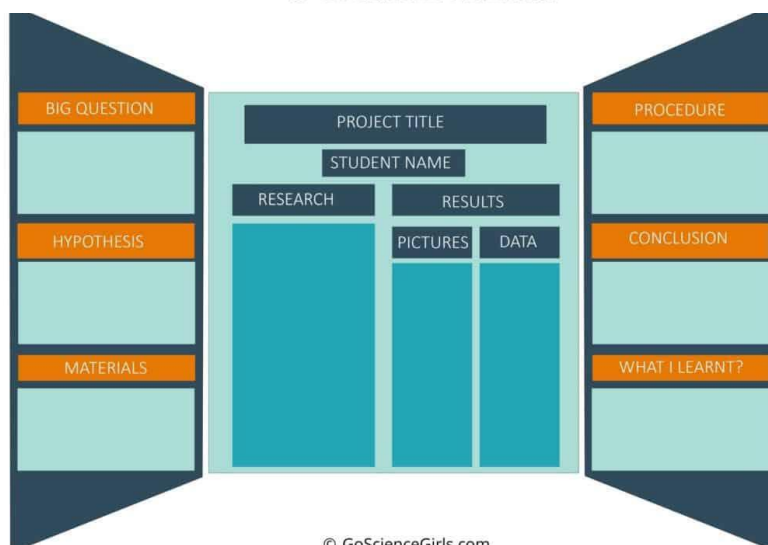
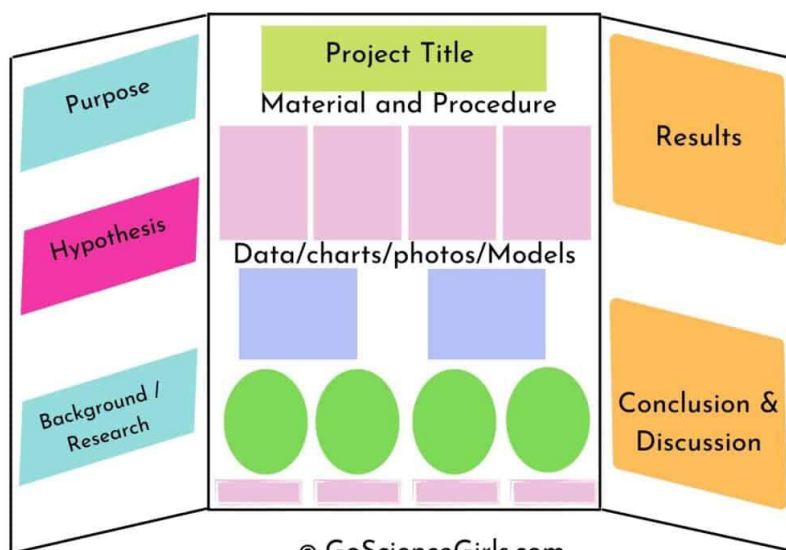


Do's & Don'ts for the Science & Engineering Fair

DO	DON'T
Choose original, unique, and interesting topics	Plagiarize
Develop a testable question	Choose a demonstration
Determine a testable hypothesis	Wait until the last minute
Complete appropriate paperwork	Begin experiment before assessing paperwork needed
Record details in a notebook	Choose experiments that are costly
Identify variables	Change the experiment because it does not work like you want it to
Repeat: conduct several trials	Forget to take pictures
Record data in a table/chart/graph	Forget to label everything
Think about how to improve your experiment/design	Forget to cite research
Use available software to analyze data	Rush the process
Make copies of abstract to hand to judges	Put human faces on board
Make a board that includes the scientific or engineering process that was used	Bring live animals, liquids, chemicals, foods, glass, sharp objects, fire, anything that can be considered unsafe

The Science Fair Board

There are many ways to design a board. Most use a trifold board, but some use a large, printed poster. Final scores are not based on what the board looks like but instead focus on how well the project can be described. Students should have full ownership of the board. Provided are a couple of generic examples. If a printed poster is used, participants must provide their own easel. It is not best practice to put the abstract on the board; however, students will not be discounted points if they do. The best practice is to make copies and provide the abstract to judges.



What to Expect During the Science & Engineering Fair

1. For Region V fairs hosted by the Bagley College of Engineering at Mississippi State University, tables are always provided. Chairs are provided when possible.
2. During set-up, participants are provided with time to get everything set out. A display and safety team will stop by to make sure there are not dangerous objects, food, or liquids placed on the table.
3. A welcome announcement is made before judging begins. When judging begins, only students are allowed on the competition floor. Guardians and chaperones must stay off the competition floor during judging time.
4. AT LEAST 2 judges will see each student. Some students may see more judges. There are category judges, best of fair judges, and special awards judges.
5. When judging is over, lunch time will be announced.
6. After lunch, the awards ceremony will take place.

Contact Information

The Region V Science & Engineering Fair is hosted by the Bagley College of Engineering at Mississippi State University. This region serves public, private and homeschoools in the following counties Attala, Choctaw, Clarke, Clay, Kemper, Lauderdale, Leake, Lowndes, Neshoba, Newton, Noxubee, Oktibbeha, Scott, Webster, and Winston. Feel free to reach out regarding any science and engineering fair questions, regardless of the county you reside in.

Website: <https://www.sciencefair.msstate.edu/>

Email : sciencefair.msstate@gmail.com

The MS State level Science & Engineering Fair (MSEF) website: <https://www.msefstate.com/>

Follow Us:

on Instagram: k12outreach_bcoe

on Facebook: K-12 Outreach Bagley College of Engineering

Check out the Bagley College of Engineering, K-12 Outreach Office and Events:

<https://www.bagley.msstate.edu/outreach/>

