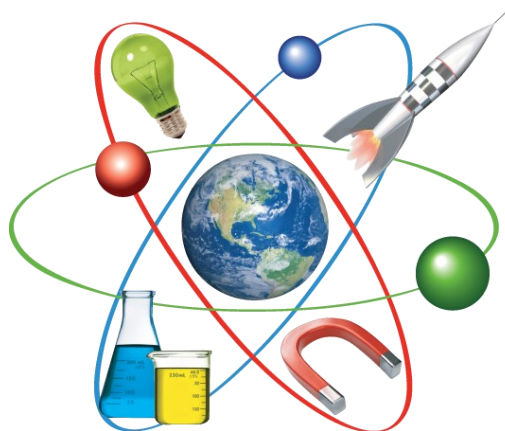


2024 Winfield Elementary School Science Fair Handbook

Tuesday, March 26, 2024



*The Winfield Science Fair is made possible by funding
provided by the Winfield Elementary School PTO*



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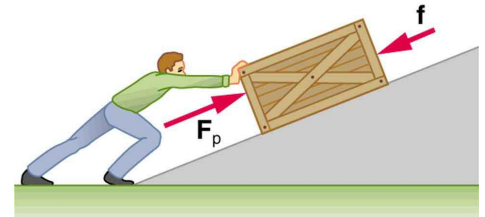
What is Science?

Science is the study of how everything in our world works. Science helps us to understand how complex and simple things work in our everyday lives. Why does water boil and freeze? Why do plants turn green in the summer and leaves drop in the fall? Why is the sky blue? How does a rainbow form? These questions can all be answered with science.



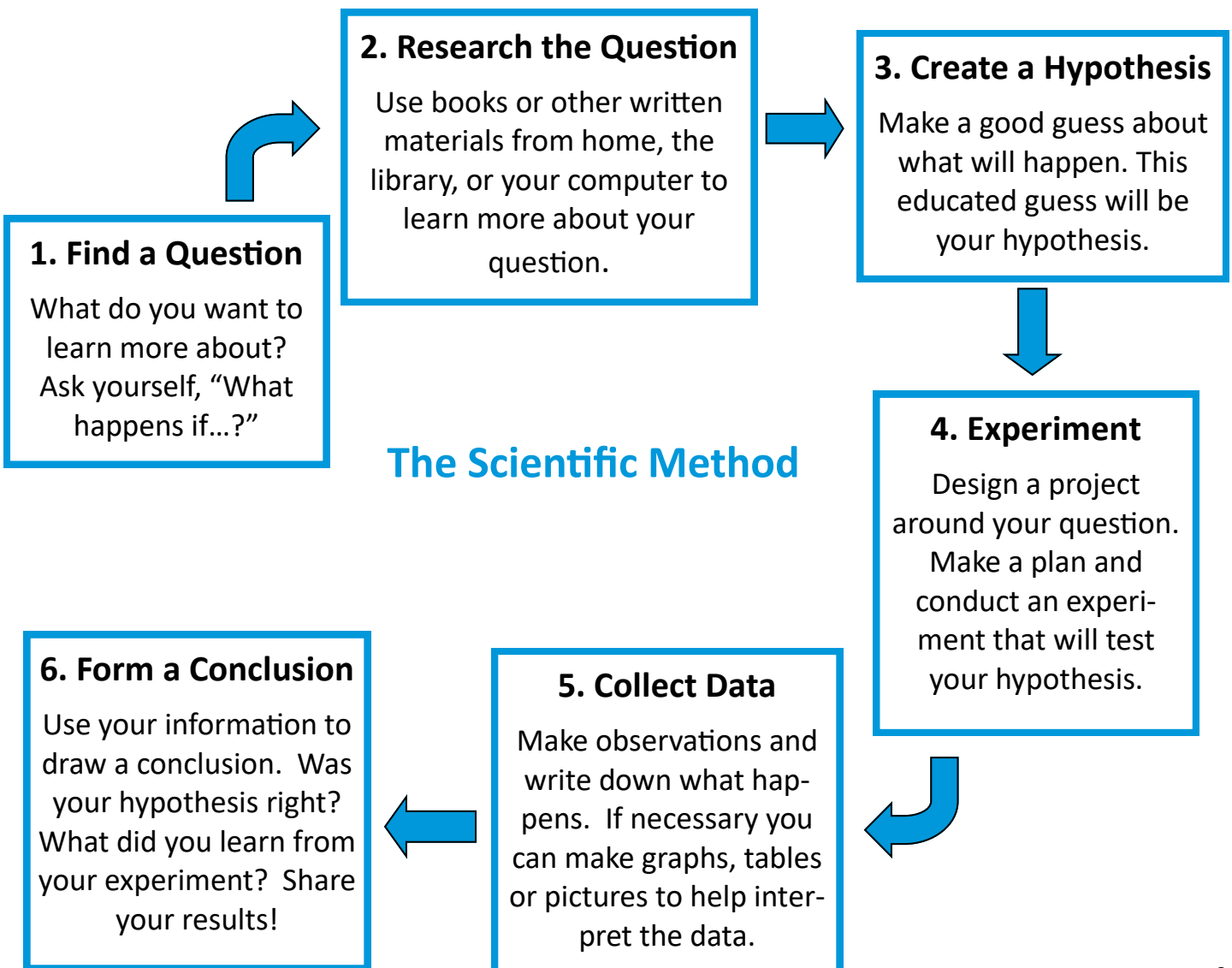
What is Engineering?

Engineering is a form of applied science that uses practical knowledge in order to invent, design, build, research and improve structures, machines, tools, etc. How does a dam work? Why does a rock sink in water and gigantic ships float? How can a pulley make heavy loads seem lighter? When you roll a ball, why does it eventually stop? These are questions that can be answered and demonstrated through engineering.



How do I get started creating a science or engineering project? What is the Scientific Method?

Follow these simple steps to create your project:



What topics or subjects can I use for my project?

Your child's project should be based on something that is interesting to them. You want them to be eager to learn more and enjoy the project, not think of it as a task that they have to complete. Your child's project can be about almost anything, but most projects will fall into one of the following categories:

~ **Life Sciences** - The science that understands living things, such as animals, plants, and the human body.

Example: Does the manner that you store a banana determine the rate at which it ripens and decomposes?

Materials needed: 1 bunch of bananas, 1 brown paper bag, 1 clear ziplock bag

~ **Physical and Applied Sciences** - These sciences explore how things work. Learn more about structures, chemistry, electricity, magnetism, sound & light. Projects in this category may also use engineering, mathematics, or computer science to address a question.

Example: How much weight can you add to a boat before it sinks?

Materials needed: 1 small shallow plastic cup, bath tub or sink full of water, several quarters (used as weights), small kitchen scale.

~ **Earth and Space Sciences** - The science behind things on our Earth or in space. Learn about weather, geology, space, etc.

Example: Do different types of dirt (soil) effect how fast rain water will infiltrate into the ground?

Materials needed: 3 medium size plastic containers or buckets, 3 different types of soil material (clay, sand, gravel/rocks), 3 full pitchers of water.

The Research Process

Now that you have a topic, apply the scientific method and begin researching. Follow these simple steps:

1. Determine your question and do some research to develop a hypothesis.

What is your question? Develop a hypothesis (or educated guess) about what you think the answer to the question will be. Example question: Does a banana decompose faster outside of a bag on the counter or inside of a closed brown paper bag? Your hypothesis could then be: A banana decomposes faster in a brown paper bag than being left outside of a bag. This may not be the correct answer, but you have made an educated guess based on your background research.

2. Design an Experiment

Some projects are easier to conduct than others. Science projects can take hours, days, weeks, or months depending on how you design it. It doesn't matter how long the project takes, what matters is that you develop a good hypothesis, you test that hypothesis and you learn something from the project. **An incorrect hypothesis is still a great result.** It isn't about your hypothesis being right, it is about what you learn in the process. Many discoveries have been made from scientists having incorrect hypotheses.

3. Collect data, organize the data, and make graphs, tables, or pictures to help interpret the data.

Take notes throughout your experiment and have a parent or friend give you assistance collecting data if needed. Take pictures if you want to show on your display what you did during the experiment. Once the experiment is completed, organize your data and put it in a format that can help you and others interpret the results. Remember, you know what you did during the experiment, but your friends, teachers, and the visiting scientists have no idea what you did. Using visual aides can help to convey what you learned. Using your graphs, tables, or pictures taken during the experiment can help make your poster easy to understand and visually appealing.

4. What was learned? Draw your conclusions about your project and determine if there are further questions that you would like to explore.

After looking at all of the data and notes from your experiment, make a conclusion about the project. Was your hypothesis correct or incorrect? Do you understand what happened? Are there other questions that would help you with your understanding? Make sure that you tell your audience if there are other things you could do to learn more!

General Rules and Guidelines for The Science Fair

~ All students participating in the 2024 Winfield Elementary School Science Fair must be registered by by March 15, 2024. After this deadline, you will need to contact Jessi Baicar at jessi.baicar@gmail.com to receive permission to participate. Adequate planning time is needed for this event so late registrants will be accepted based on the availability of space and if enough materials have been purchased.

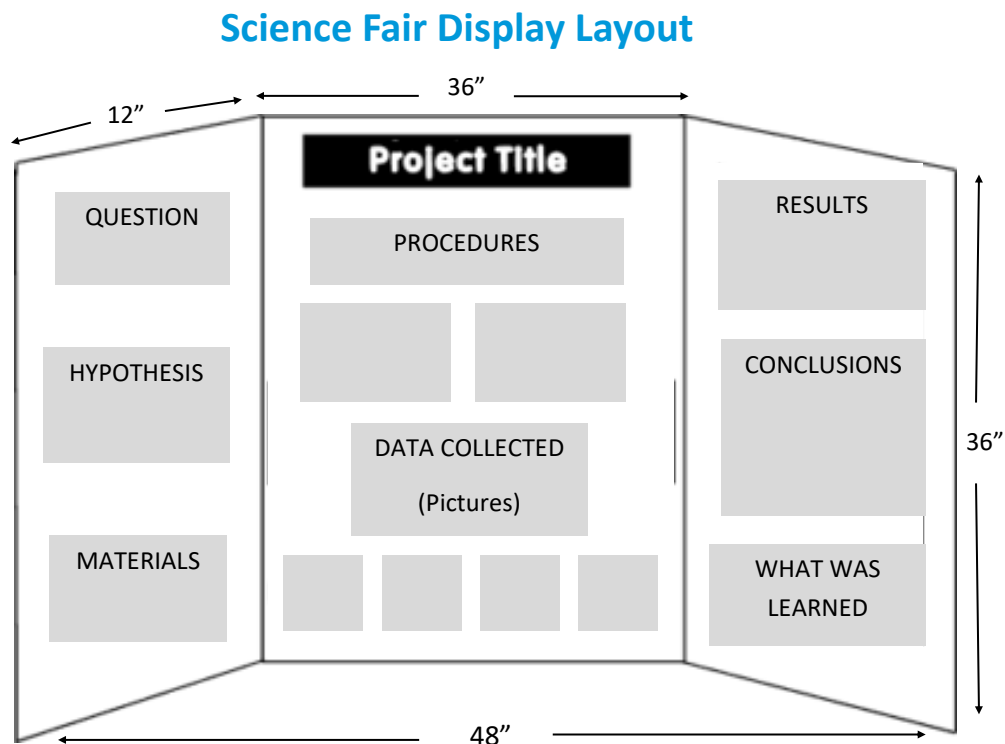
~ The project should be conducted by the child with only a little guidance from parents. It can be obvious when parents help too much. Use the scientific method format outline on page 2 to assist your child and allow them to do the project. Siblings may help each other with projects and the projects will be displayed with the grade level of the oldest child.

~Students will be permitted to work with one partner on a project this year. This is not a requirement, but some students may be more comfortable or have more fun conducting their project with one other student from the school or their sibling. All joint projects will be displayed with the grade level of the oldest child.

~For everyone's safety, it is not permitted to design any experiments that use hazardous substances, produce violent reactions, involve firearms/explosives, or break any laws. All projects should be done with adult supervision at all times! Please always wear protective gear - safety goggles, gloves, aprons, etc.

~ Due to time and space constraints, the only materials that can be brought to the Science Fair are items that can be displayed in front of their poster. No experiments can be conducted during the event and **we will NOT have electricity available for your project!**

~ Student participants must use a standard tri-fold poster (see example display below). Please keep your poster display to no larger than 36 x 48" for a tri-fold poster. An example of the poster display layout is below. Your layout may vary from the example below, but it should have all of the components of the Scientific Method. **Make sure the student's name and grade is listed on the back of the display.** Display boards can be purchased at Walmart, Target, Michaels, Dollar Stores, or any other store that sells craft supplies. Colors may vary.



Instructions for the Science Fair & Important Dates/Times:

Poster Drop-off - Monday, March 25 2024 from 6:30 to 8:00 PM .

***Tip - if your child wants to practice what they will say about their project, you can take a picture of the project on your phone so that they can see it leading up to the event.*

On the Day of the Science Fair - Tuesday, March 26, 5:30pm-7:30pm

Tentative Schedule:

5:30 pm - 6:00 pm- Doors open to students and their families. Everyone must check-in at the door.

6:00 - 6:05 pm - Opening Remarks will be made in the cafeteria.

6:05 - 6:30 pm - Scientists will visit posters of students in grades K-2.

6:30 - 6:55 pm - Scientists will visit posters of students in grades 3-5.

7:00 - 7:15 pm - Closing remarks and door prizes awarded .

- All Science Fair participants should arrive between 5:30 and 5:45 PM to register at the door and get to their poster with any other materials they may have to support their project. At the registration table, each student will receive a table number and they will be assigned a time slot when they can discuss their project with the visiting scientists. During the time that they do not have to be at their poster, students are encouraged to participate in other activities and observe other student projects. All students must be at their poster for discussion and questioning during their assigned time. Students in grades K-2 will be visited by scientists between 6:05 and 6:30 PM. Students in grades 3-5 will be visited by scientists between 6:30 and 6:55. At the conclusion of the event, students and their families are encouraged to remain to hear closing comments and to hear about door prizes. Those that are not present to collect their door prizes will forfeit their prize and another name will be drawn.
- Visiting scientists will be circulating the fair with a set of questions to ask each student based on their age group. Very general questions will be asked of students in grades K-2 and more specific questions will be asked of students in grades 3-5. Each student should be visited by at least two visiting scientists and given their Science Fair medal. Rubrics used by the visiting scientists will be emailed to participating families at least two weeks prior to the event. Viewing these before the event can help to make your student feel more comfortable and prepared for the questions they will receive.
- Students must clean up their poster area at the end of the event and all posters will go home with students after the Science Fair concludes.

Have fun and see you at the Science Fair!

If you have any questions, please contact:

Jessi Baicar, jessi.baicar@gmail.com or

Elizabeth Blocher, blocher.elizabeth@gmail.com