



Elementary Science and Engineering Student Support Guide

October 2025



SCIENCE • TECHNOLOGY • ENGINEERING • MATHEMATICS



October 2, 2025

Dear Parents and Guardians,

A major goal of the South Carolina Science Academic Standards and Performance Expectations is to provide students with authentic and relevant learning experiences where they actively engage in science and engineering practices and apply concepts to deepen their understanding of Earth, Life, Physical Sciences, and Engineering/Technology.

This year, your child will have an opportunity to participate in Burnside's Science/STEM Fair by completing a science or engineering project based on their topic of interest. The goal is for your learner to work through the investigation process like a scientist or engineer. Students in grades 3-5 will complete an individual project at home. Teachers will do a weekly check-in with students to ensure they are actively working on projects. Students will be allowed to type and print science fair material at school. We will send science fair display boards home to display their work. **Science projects are due on January 8, 2026.**

Your support will be needed, and there are many things you can do to help your child with a science or engineering project.

Parent Tips for Science Fair Projects

1. Encourage your child. Although this is your child's project, there is no substitute for your support.
2. Listen to and praise your child. Let your child know you are interested in their ideas.
3. Help your child follow the schedule the teacher has provided.
4. Provide a space at home where your child can work.
5. Help your child take all necessary safety precautions.
6. Contact your child's teacher if you have any questions about the project.
7. Realize that the real prize of a science fair project is the development of your child's skills, not the blue ribbon presented by a science fair judge.

Parents, please note that all science fair projects will be graded. Please make sure your child chooses a project he/she will be able to complete at home. When researching projects, have your child review the materials list to ensure they can get the items.

Please sign this page and return it to your child's teacher by October 8th.

Parent Signature: _____ Date: _____

Student Signature: _____ Date: _____

What makes a good science or engineering project?

- You're interested in the topic—it's something that you like to think about.
- You can conduct an investigation to answer the question or create a product to solve a problem.
- You have a variable that can be observed and measured using qualitative or quantitative data.
- You can do it with a little help from parents, teachers, and friends.
- It doesn't harm, hurt, or scare people or animals
- You learn and it makes you think of "I WONDER" questions, even when the project is completed.

How do you choose a topic and create a question to investigate?

A great science project ALWAYS starts with a "**TESTABLE QUESTION.**" A great engineering project ALWAYS starts with trying to find a "**SOLUTION TO A PROBLEM.**"

- Students should make a list of 5 high-interest topics.
- Using the list, students should write an "**I WONDER**" question related to each topic that they might want to explore.

Remember, not all topics can be explored through an investigation. For example, it might be very interesting to learn about Mars, but it would be very difficult to create a question about Mars that could be investigated with an experiment.

Planning a Scientific Investigation

The **Scientific Method** is used as a guide to conducting a fair test or investigation. The Scientific Method can be found in many formats, but here are the important steps:

- Be sure the question is "**TESTABLE.**" The question should be something that can be tested by measuring a change in a variable.
- **RESEARCH** to discover what scientists and engineers already know about the question. Be sure to use a variety of books and internet sources. Be sure that online sources are good quality sources and have students record notes.

- State a **HYPOTHESIS**. State what you think the outcome of the investigation will be, using an “if, then” statement. For example, “If pumpkin seeds are planted in clay, sand, and potting soil, then the pumpkin seeds will grow taller in potting soil.”
- Identify **VARIABLES**, the factors that can change or be changed in an experiment.
 - The **independent (manipulated) variable** is the variable changed by the investigator.
 - The **dependent (responding) variable** is the variable that is measured, counted, or observed by the investigator.
 - **Controlled variables** are those conditions that are kept the same.

For example, in the pumpkin seed experiment, the different types of soil used by the scientist would be the independent variable. The dependent variable would be the height in centimeters that the plants grew. For all plants, the scientist would be sure to plant pumpkin seeds in the same sized containers, use the same amount of soil in each container, water each container with the same amount of water, and be sure each plant received the same amount of sunlight. These are controlled variables.

- **MATERIALS LIST** make a detailed list of the appropriate tools, instruments, and materials needed to conduct the investigation.
- Write detailed **PROCEDURES**. Someone should be able to follow these “directions” and repeat the experiment exactly how the scientist completed it.
 - The procedures should indicate how the variable is being manipulated, how to measure the response, and when and how the data will be recorded.
 - Record data using metric units.
 - The procedure should include at least 3 trials.
- Carrying out the **INVESTIGATION and COLLECTING DATA**. Projects need at least 3 trials. Be sure to follow the written procedure.
 - Use a **logbook** to take detailed notes. A logbook is a dated record of all work done on the science project. Include detailed notes, labeled drawings, pictures, and qualitative and quantitative data.
 - **ORGANIZE DATA** in a table. An example is pictured below.

Day	Height (cm)		
	Clay	Sand	Potting Soil
1	0cm	0cm	0cm
5	1cm	.5cm	2cm
10	2 cm	2cm	4cm
15	4cm	2cm	6cm

- **ANALYZE DATA**. Look for patterns and trends. Calculating the average (mean) may be helpful.
 - Choose a bar or line graph to represent your data.
 - Place the independent variable on the horizontal (X) axis.
 - Place the dependent variable on the vertical (Y) axis.
 - A **bar graph** is a good choice when counting or comparing two or more groups.

- A **line graph** is a good choice when showing change over time
- **CONCLUSION** is a paragraph that begins with a statement describing if the data supported or did not support the hypothesis. It should include the following:
 - Summary of results, including any averages, patterns, or trends. Did anything stand out about the results?
 - Is there anything that would be done differently?
 - What was learned from the project?
 - How would you like to continue research on this topic or question?
 - Make real-world connections or applications.

Creating a Display

Use the example below to organize the display board.

PROBLEM Question? HYPOTHESIS Prediction MATERIALS Specific List	CREATIVE TITLE DATA Title of Chart <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> Average Title of Graph Picture Caption Picture Caption																										PROCEDURE 1. 2. Step by Step 3. 4. 5. 6. 7. CONCLUSION Answer Were you right? Possible errors Application



- Communicating results is important! Use your logbook to sketch out a plan for your display board.
 - If possible, use a computer to type and print information. Otherwise, use your best handwriting, and be sure it is large enough to be easily read.
 - Use glue sticks to mount your paper to the display.
 - Be sure all photos and drawings are done by you.
 - No photos of yourself should be displayed on the project board.
 - Your name should be written on the back of the display board.
 - Be CREATIVE!

Judging Information

A science fair is an exhibition of student work, but it is also a friendly competition. Your projects will be judged on the criteria listed below.

- **Scientific Thought**
 - Is the problem or question clearly stated?
 - Is there a procedural plan for obtaining the solution?
 - Are variables clearly recognized and defined?
 - Is there adequate data to support the conclusions?
 - Does the scientist understand the project's connection to related research?
- **Creative Ability**
 - Does the project show creative ability and originality in the questions asked?
- **Thoroughness**
 - Was the purpose carried out to completion?
 - How complete are the project notes?
 - How much time did the scientist(s) spend on the project?

Project Rubric

Criteria	Rating Scale				
Scientific Thought/Engineering Goals/Question Is the problem/question stated clearly or does the project have a clear question that is well written and testable?	1	2	3	4	5
Materials Are all materials listed with the amounts and metric units where applicable?	1	2	3	4	5
Test Design Is the plan to validate or confirm the hypothesis provided?	1	2	3	4	5
Variables and Controls Are variables identified correctly and labeled as independent/manipulated or dependent/responding?	1	2	3	4	5
Data Collection Are graphs used correctly (labels, titles, etc.,) and appropriately interpreted?	1	2	3	4	5

Results/Conclusions Are the results thoughtful, and were conclusions identified based on data?	1	2	3	4	5
Visual Display Does the project have quality construction (visuals, organization, spelling, grammar, and clarity of ideas)?	1	2	3	4	5
Repeated Trials Were at least 3 trials used and an average taken for the final data set (when collecting quantitative data)?	1	2	3	4	5
Creative Ability Does the project show creative ability & originality?	1	2	3	4	5
Thoroughness Does the project carry out its purpose to completion?	1	2	3	4	5
Scientist Interview Is the scientist able to explain the objective/purpose of the project? Can the scientist explain the process of completing the project and what was learned? Can the scientist explain how the project can be pursued in greater depth?	5		15		25
Total Score: _____ / 75					

Scientific Investigation

Graphic Organizer

Make a list of 5 topics that you find interesting.	Write a question or problem statement from each topic that you might want to explore.
<i>Example: Gardening</i>	<i>Example: How does the type of soil affect plant growth?</i>
1.	
2.	
3.	
4.	
5.	

Research

What do scientists already know about your topic?

Books	Websites

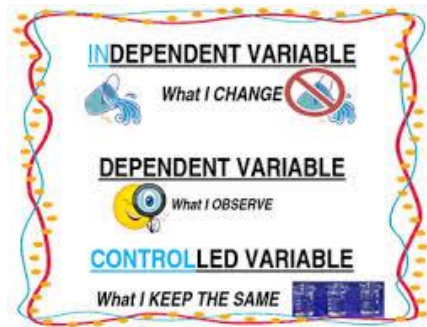
Research Notes:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Formulating a Hypothesis

Example: **If** pumpkin seeds are planted in clay, sand and potting soil, **then** the pumpkin seeds will grow taller in potting soil.

If _____,
then _____
_____.



Identify Variables

Independent (manipulated/changed)	Dependent (responding)	Controlled (Stays the same)

Tools/Instrument and Materials List

[illegible]

Procedures

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Step 6:

Step 7:

Step 8:

Step 9:

Step 10:

***Your project may have fewer or more steps.**

****Do at least 3 trials!**

Now it's time to **carry out your investigation!**

- Use your logbook to take detailed notes. Your logbook is a dated record of all work done on the science project. Include notes, labeled drawings, pictures, and qualitative and quantitative data.
- You will organize and analyze your data, write a conclusion, and sketch out your display board in your logbook.

Tri-Fold Board Components

Scientific Method Process

Title

Purpose

Testable Question

Hypothesis

Materials

Procedures

Variables

Data

Repeated Trials

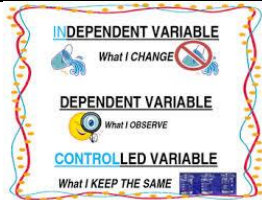
Results/Conclusion

Abstract (4th and 5th Grade)

Purpose	Title	Data Table
Question		
	Procedure	Graph
Hypothesis		
	Variables	Conclusion
Materials		Abstract*

Science Fair Timeline

Make sure you choose a project for which you can get the materials at home. If you do not have access to a printer at home, your teacher will give you time to type the information at school.

Timeline	Science Fair Component Due Each Week	Additional Information	Date Completed
October 1 st -9 th	Identify a Topic - Title of Project - Purpose - Testable Questions		
October 13 th -17 th	Research the topic to develop a hypothesis. - Hypothesis - Material List		
October 20 th -31 st	List Variables - Independent - Dependent - Controlled List Procedures		
November 3 rd - 21 st	Conduct your investigation at home. Do at least 3 trials! - Data - Conclusions <i>(Don't forget to take pictures of the steps and put your data in graph form. Do not include yourself in the pictures and do not put your name on the front of the board)</i>	You have two weeks to catch up on missing components.	
	Abstract (4 th & 5 th Grades Only)	An abstract is a brief, written description of your project that explains your project's purpose, procedures, data, and conclusions.	
Please organize all printed material on your Science Fair board at home. We will send Science Fair boards home for you to use. Do not put your name on the front of the science board; there is a name tag attached in this packet. Place the name tag on the back of the board. Please remember, projects are due on January 9th.			

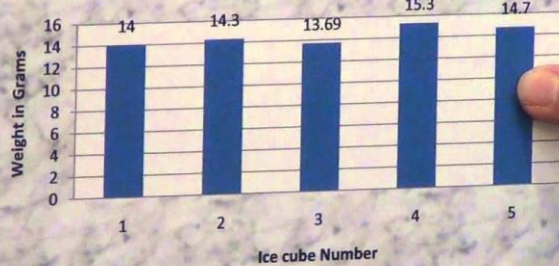
Examples of Science Fair Data

Sample Data Chart

Elmer's White School Glue

sample	Flow Distance, cm				Average Distance, cm
	test 1	test 2	test 3	test 4	
#1					
#2					
#3					
#4					

How Much Ice Melted on Marble
in 30 Minutes



Results

Magnet Temperature	Number of Paper Clips Picked Up			
	Trial 1	Trial 2	Trial 3	Average
Cold	32	28	31	30.3
Room Temperature	17	19	12	16.0
Hot	8	5	9	7.3

List of Websites:

<https://sciencefaircentral.com/>

<https://www.sciencebuddies.org/>

<https://www.teacherstryscience.org/kids-experiments>

[Science Fair - Annie Burnside Elementary](#)

Please cut the name tag out and place it on the back of your science project.

Name:

Teacher:

Grade:

Title of Project: