

Trace Elementary Science Fair 2024 Handbook



Welcome to the Trace Elementary Science Fair!

Congratulations! You have decided to participate in the Science Fair! On the pages that follow, you will find details about the types of projects that can be done, where to research, and how the project will be judged (if you choose this option). But first, an overview of the next few weeks:

1. Start thinking about and planning your project!
2. Registered participants will be given a tri-fold standing board (36" x 48") to display their project. Boards will be available for pick up in B10 from **March 20th- March 22nd** after school.
3. **April 16th:** Science Fair Projects need to be delivered to the Multi-Purpose Room 8-8:30am or after school. Look for the table/position marked on your poster label. The projects will be displayed through the day on Thursday and Friday. Trace students will visit the fair during the school day under teacher supervision. *Do not leave fragile or valuable items with your project. Bring them only to the evening of April 17th.*
4. **April 17th** Pick up project at the end of the school day.

First, the Rules!

1. Students can enter only one project in the science fair.
2. Groups of up to 3 students may work on a project together.
3. Students can get advice and help from adults, but the student should be doing the actual work on the project.
4. All projects must be displayed on the display board provided by the PTO.
5. Items that are expensive, fragile or irreplaceable should **not** be displayed with your project (take a picture instead!).
6. The following may NOT be used in your project: illegal substances; explosives, open flames; dangerous chemicals; any other safety hazard, whether part of your experiment or the experiment itself
7. Sorry, NO VOLCANOES!

And now on to the fun stuff!

Wait, you think science is not fun?

Honestly, *seriously*, this is probably because you haven't seen a part of science that interests YOU. This is your chance to change all that!

Does someone in your family drink decaf coffee? Ever thought about how they get the caffeine out? Chemistry!

Do you watch the weather report on the news? How do they predict the weather? Physics!

Do you know someone with cancer who was made better for a while or cured with medicine? It takes biology to discover the medicine (and then biologists, chemists, and engineers to make the medicine).

Ever thought about the dust on your floor? Do you know what is in a dust ball? Dirt, lint, *bugs*? Biologists can figure it out!

Liking science starts with being curious about the world around you. Finding out more by investigation and experimentation requires creativity just like your art class. Go ahead...give it a try!

Choosing a project- For our science fair we'll have 5 types of projects:

- Collections
- Demonstrations
- Models
- Experiments
- Invention

Collections	<ul style="list-style-type: none"> ● Collections of rocks, seashells, leaves or other items from nature. ● They should be labeled with the name of the item, where it was found/came from, etc. ● Think about how you can be creative in this project – group the items by color, shape, or use a map to show where they came from. ● Explain on your board why you chose this collection ● These must be primarily attached to the board (a few on the table is ok) – if this is not possible, please use pictures.
Demonstrations	<ul style="list-style-type: none"> ● Re-testing an experiment that has already been done by someone else ● Demonstration of a particular scientific principle or fact, such as the law of gravity, the law of motion, magnetism, etc.
Models	<ul style="list-style-type: none"> ● A model involves building a model (of an apparatus or of something found in nature) in order to illustrate a scientific concept or principle. ● Model of an apparatus. Students should be able to explain the importance and use in detail. ● Examples: build and show the function of a radio, a greenhouse, Hovercraft, sun dial, solar panel, pinhole camera, super coiling or a wind vane ● Model of nature. Students should be able to explain the importance and function in detail. ● Examples: Make a model of the eye, of the ocean floor, of a cross-section of skin, earth/sun eclipse. Each should show the cross-section, cut-away, etc. as needed to show all of the important parts.
Experiments	<ul style="list-style-type: none"> ● In this project you use the scientific method to propose and test a hypothesis. Design an experiment to investigate a question, record and report the results, and draw conclusions based upon the results. ● Examples <ul style="list-style-type: none"> ○ What is the influence of salt on the properties of water? ○ What type of light bulb lasts the longest? What is the best value? ○ Will chilling an onion before cutting it keep you from crying? ○ Are night insects attracted to lamps because of heat or light? ○ What type of plastic wrap best prevents evaporation? ○ Does the shape of an ice cube affect how fast it melts?
Inventions	<p>In this project you should find a problem and design/create something new and original to solve the problem. Keep a journal – record your ideas and the steps you take to solve the problem. Even if you do not succeed in creating an invention to solve the problem, you can still present the information from your journal on your board. If the invention is successful, present that as well.</p>

Where to go for project ideas?

You probably have a good idea already if you have been looking around you with a curious mind. (How does that work? Why does that happen?) But if you need some help to get started, here are some places to go:

1. Trace Elementary Library
2. San Jose Public Library
3. The following websites:
 - www.sciencefair-projects.org
 - www.all-science-fair-projects.com
 - www.super-science-fair-projects.co
 - www.billnye.com
 - www.sciencebuddies.org/science-fair-projects/project_ideas.shtml
 - www.exploratorium.edu/science_explorer/index.html
 - www.sciencemadesimple.com/science.html
 - www.buzzle.com/articles/elementary-science-fair-projects.html
 - www.newtonsapple.tv
 - www.reekoscience.com
 - www.homeworkspot.com/sciencefair
 - www.sciencefair-project-idea.com

The next step

Talk to your family or your teacher about your project idea. Brainstorm with them about ways to make the project unique (just your own). The judges love this!

You are on your way!

Have lots of fun and we will see YOU at the Science Fair!

Before we finish **if you'd like to be judged**, take a look at the attached pages to see what the judges will be looking for in your project

Appendix- If you choose to be judged, check out the criteria judges will score.

Judging Criteria –EXPERIMENT, DEMONSTRATION or INVENTION

Project Elements	Description of Criteria	Possible Score
Testable Question	Asks a specific, measurable, cause & effect question or clear purpose of project given.	0-5
Prediction	Predicts a reasonable outcome as a result of a specific change OR clearly explains how device will operate.	0-5
Procedure	Describes process. High score would indicate that the project can be repeated after reading.	0-5
Background	Describes why this project was selected and describes the research done. Shows evidence student understands project. Explains why project is important. Includes a bibliography with at least 3 sources.	0-5
Trials/Samples	At least 3 trials or samples are shown OR 3 observations are made.	0-5
Constant Conditions	Identify independent variable, dependent variable and constant conditions.	0-10
Data and identification	<ul style="list-style-type: none"> • Uses photos/charts/graphs /illustrations to show data. • All data is labeled. • High score will show steps in the process throughout experiment, observation or invention. <p><i>(Note to student: Items that are valuable or valued by the student are not to be displayed – use photos/illustrations instead)</i></p>	0-15
Conclusion & Reflection	Reflects what the student has learned. Were there any surprises? What would you do differently or to continue the project?	0-10
Creativity/Innovation	Student demonstrates an innovative and/or creative way of approaching their project.	0-10
Knowledge & Understanding	Student demonstrates an understanding of the subject matter and is able to speak knowledgably about the project including "Next steps" or "What if?"	0-30
Total Possible Score		0-100

Judging Criteria - MODEL or COLLECTION

Project Elements	Description of Criteria	Possible Score
Title & Description	Asks a specific, measurable, cause & effect question or clear purpose of project given.	0-5
Procedure	Describes process for collection or making the model. High score would indicate that the project can be repeated after reading.	0-15
Background	Describes why this project was selected and describes the research done. Shows evidence student understands project. Explains why project is important. Includes a bibliography with at least 3 sources.	0-10
Data and identification	<ul style="list-style-type: none"> • Uses photos/charts/graphs /illustrations to show data. • All data is labeled. • High score will show steps in the process of collection or construction (model) as well as presentation of final collection/construction. • High score indicates that the student has written the process, observations, and data during collection or model making. • Collection: High score also indicates that student has collected over 8 samples. <p><i>(Note to student: Items that are valuable or valued by the student are not to be displayed – use photos/illustrations instead)</i></p>	0-15
Conclusion & Reflection	Reflects what the student has learned. Were there any surprises? What would you do differently or to continue the project?	0-15
Creativity/Innovation	Student demonstrates an innovative and/or creative way of approaching their project.	0-10

Knowledge & Understanding	Student demonstrates an understanding of the subject matter and is able to speak knowledgeably about the project including "Next steps" or "What if?"	0-30
	Total Possible Score	0-100