



BRENTWOOD SCIENCE FAIR



2023 - 2024 Science Fair Info for Families

January 18 - 19, 2024

General Information

- Our Science Fair uses the rules, guidelines, and judging criteria from the Greater Austin Regional Science and Engineering Fair. Pay close attention to what items are **NOT** allowed.
- Projects will be limited to a table space of 15" x 48" maximum.
- No plug-in electricity will be available.
- Use a tri-fold science fair project board, not poster paper (doesn't stand up).
- Group projects are OK (max 3 people).
- All entries will need to include the Elementary Project Research Plan (attached at end of this document).
- The Greater Austin Regional Science and Engineering Fair will be in late February and is open only to 3rd, 4th, and 5th graders (**eligible participants will be notified**).
- www.austinscience.org has all the official rules & details for the Greater Austin Regional Science and Engineering Fair
- www.sciencebuddies.org is a good resource for ideas!

Key Dates

Tuesday December 19, 2023

- Return registration form to your teacher or complete the online form if you plan to submit a project
 - *This is critical so that we can ensure enough space for all projects!*

Winter Break - mid-January

- Work on projects!
- Make sure your project complies with guidelines/criteria/rules provided.

Friday January 12, 2024

- **Final registration deadline (online or paper)**
 - If you show up with a project but haven't registered we can't guarantee there will be space.

Thursday January 18, 2024

- Bring projects to school - make sure to include the Elementary Project Research Plan
- Family viewing in Maker Space from 3:00 – 6:00 pm, enter at the front entrance.

Friday January 19, 2024

- Project judging - no viewing nor visitors allowed.
- Participants will be pulled from class to present their project to the judges and answer questions - **IT IS IMPORTANT TO BE AT SCHOOL THIS DAY!**
- Participants will be notified of awards.
- **Projects go home at dismissal (families please make arrangements if needed). Any projects left after the end of the school day on Friday Jan. 19 will be discarded.**

Science Fair Project Information and Rules

Types of Projects Allowed

- **Experiments** - a student asks an experimental question, forms and tests a hypothesis, and makes conclusions. Example: I tested batteries to see which brand lasts the longest in a flashlight.
- **Engineering Designs** - a student sees a need and then designs and creates a product to fill that need. Example: I tried to design a stronger bridge and here is how I did it and I learned this....
- **Exhibits** - a student has an item or items that they ask a question about or study in order to answer a question. Examples: Here is a toy windmill I bought and this is how it works. My question was "How does a windmill work?". Then by doing research and playing with it I learned this....Or This is my rock collection, this is how I organized it and why, this is what I learned about rocks..... (***Exhibits are discouraged in older grades.***)

Disqualified Projects

No Elementary Division student project can involve:

- Firearms, explosives, or discharge air pressure canister devices (i.e. potato guns)
- **Growing bacteria or mold of any type**
- Causing pain, suffering, sickness, or death of an animal
- Breaking Local/State/Federal Law
- Production of ANY amount of consumable alcohol
- Any activity or substance that presents a danger to the student, other people, or the environment, including hazardous chemicals or radioactive materials

Project Board Guidelines

All student project boards must follow the guidelines listed to be allowed to display in the fair.

Display Board

- Project display should be on sturdy tri-fold board available at local craft and office supply stores. Written material, drawings and pictures should be securely attached to the display board with glue or tape. **Do not use staples.** They will poke out the back of the board.
- Projects will be displayed on tables in our Maker Space. **Size of display area may not exceed the following measurements: 15" deep, 48" wide, and 72" high.** Due to space limitations, displays that exceed these measurements cannot be accepted.
- Electricity for your display will not be available but you can use household batteries with your project.

Allowed Items

- Photographs, drawings, stuffed animals/artificial plants, or imitation (play) food should be used to depict the prohibited or discouraged items.
- Students should take photographs of project steps as a visual explanation of their effort. Students must ask permission before photographing other individuals for the display board.
- **Be sure to properly credit/list all sources of information, graphics, and photographers on the display board (“Photograph taken by . . .”).** This includes images from websites.
 - Students may use a computer and printer for written parts of the project.
 - Fonts should be at least 16 pt.
 - If the project board contains photographs with people other than the student, the student must have photo releases available upon request.

Items Discouraged

- **Items for demonstrations are discouraged.** This is not a demonstration fair. Judges want to hear what the student has learned. Photographs of the project will suffice.
- Expensive, breakable, or fragile items

Items Not Allowed:

- **No organisms; living, dead, or preserved** (no plants or animals)
- **No water or chemicals, crystals, liquids**
- No human/animal parts or body fluids (for example, blood, urine)
- **No human or animal food**
- No poisons, drugs, controlled or hazardous substances
- No sharp items (for example: syringes, needles, pipettes, knives, tacks, nails)
- No pressurized tanks or containers
- **No glass** or glass objects unless part of a commercial product (eg: a computer screen)
- No batteries with open top cells (so that battery acid can be seen)
- **No dirt, soil, gravel, rocks, sand, waste products**, etc.
- No project, device, activity, or substance deemed hazardous to student health or safety
- No photographs or pictures of animals or people in surgical techniques, dissections, or necropsies

HOW TO DO AN ELEMENTARY SCIENCE FAIR PROJECT: A Step by Step Guide

PURCHASE NOTEBOOK (optional) > PRO-TIP > Judges LOVE to see a notebook with projects

It is a good idea to use a notebook as a journal or log book to write down everything you do before, during, and after your project. You can date every entry and note what you did and how much time you spent on each item. Don't forget to take pictures or create drawings throughout the process. Begin writing in your journal when you start brainstorming ideas and continue adding entries until after the Regional Fair concludes.

STEP 1 - BRAINSTORMING GENERAL IDEAS

- What are your interests or likes? Sports, dance, computers, animals, food, gross stuff, building things... etc.
- What kind of science interests you?
 - Plants (Botany)
 - Animals (Zoology)
 - Human Body (Anatomy)
 - Electricity, Gravity, Force, Light (Physical Science)
 - Chemicals, Acids/Bases (Chemistry)
 - Memory, Illusions, Training (Psychology)
 - Volcanoes, Rocks, Weather (Earth Science)
 - Product Testing (Consumer Science)
 - Surveys (Statistics)
- Based on your interests, what things could you test, change on purpose, or measure or observe?
- Look at project idea books and web sites to see if something sparks your interest and fits with your abilities.
- Check the list of projects that are not allowed to make sure you don't choose any of those types of projects.

STEP 2 - CHOOSE VARIABLES TO INVESTIGATE

- What part of the experiment will you change (Independent Variable)? For example, you could change the type of soil you are growing your plants in.
- What change will you measure or observe (Dependent Variable)? For example, you could measure the height of the plants (growth rate) or the number of leaves.
- What part of the experiment will you keep the same (Controlled Variables)? For example, you could use the same plants, amount of water, and sunlight when growing your plants.
- This will go in the "Variables" section on your project board.

STEP 3 - WRITE EXPERIMENTAL QUESTION/PROBLEM

- What question will the experiment answer? This should include what will be changed (Independent Variable) and what will be measured (Dependent Variable). For example, how will changing the type of soil affect the growth rate of a plant?
- This will be the “ Problem/Testable Question” on your project board.

STEP 4 - BACKGROUND INFORMATION

- What additional information will help you determine the possible answer to your question?
- Begin background research by taking notes from books, websites or articles that talk about your subject. These will be your “References.” You must have at least 3 sources. You will know you have completed your research when you can discuss your topic in your own words for about 5 minutes.
- Make sure you have explained all important words that are part of your project. For example, if you are using a special tool to take your measurements, make sure you explain what it is and how it works.
- Once research is completed, begin organizing all the information into paragraphs. This will be the “Background Information” section on your project board.

STEP 5 - WRITE YOUR HYPOTHESIS

- If you are doing an experiment, formulate a “ Hypothesis.” A hypothesis is a guess at what you think will happen when you test your experiment.
- Use the format: “ If (this is changed), then (this will happen), because (reason)”. For example, “If the space between soil particles is made smaller by adding humus, then the plants will grow taller because less space between particles will hold water in the soil long enough for the roots to absorb it.”
- If you are doing an engineering project, this will be your design goal.

STEP 6 - WRITE YOUR EXPERIMENTAL PLAN

- Make a list of “Materials” needed to conduct your experiment. Include specific amounts with units of measurement.
- Write up your “Procedure,” or the steps that you will follow when doing your project. Be detailed so that someone reading your project board could do your project, using just your instructions.
- Make sure to include the safety precautions you will follow at the beginning of the procedure.
- If you are doing an experiment, remember that an experiment must consist of at least 2 groups. One group is the “Control” and the other is the “Variable.” Both groups are identical, except for one specific element. The “Variable” is the specific element that is different; it is the very thing that you are trying to test. (An example experiment might be to test a stain remover to see if it removes stains any better than washing with no stain

remover. The stained garments, your wash technique, and drying technique would be exactly the same for both groups, with one exception. In the Variable group, you would use a stain remover. In the Control Group, you would not use a stain remover.)

- Use a timeline to plan how long it will take you to complete your project and create a project board. If you will need live subjects (people, plants, or animals), be sure to allow enough time. (Remember, plants take a while to grow.)

STEP 7 - EXPERIMENT, BUILD, TEST, AND ANALYZE

- Do your experiment and don't forget to take photos throughout the process.
- Record "Results" which tells what happened. Remember that a good project will have Results that you can clearly see or measure. If you can, use photos, a chart, and a graph to clearly show Results on your project board.
- After you complete your Results, form a "Conclusion" paragraph which answers the question in the "Problem/Testable Question" and talks about what happened in your experiment. State whether or not the results supported your hypothesis. It is okay if they didn't. Be sure to include ways to improve your project in the future.

STEP 8 - CREATE YOUR PROJECT BOARD

- Use the written sections you created as well as photos of your project to make your project board. You can also use the project board template to help you with planning the board.
- Your project display should be on a sturdy tri-fold board available at local craft and office supply stores. Written material, drawings and pictures should be securely attached to the display board with glue or tape. Do not use staples. They will poke out the back of the board.
- Projects will be displayed on tables that are 36 inches high. Size of display area may not exceed the following measurements: 15" deep, 48" wide, and 72" high. Due to space limitations, displays that exceed these measurements cannot be accepted.
 - Electricity for your display will not be available but you can use household batteries with your project..
 - Pay close attention to the layout of the project board. The order of information should make sense and be visually interesting. Be sure to include all the required elements.
 - Add a creative "Title".
 - Be sure to list the person who took the photos on the board and/or any websites where you got your graphics or photos under "Photo and Display Credits".
 - Make sure your project board does not have any items not allowed in the exhibit hall (refer to Display Safety Rules).
 - Be sure you understand and are able to talk about what you've learned from your project. Practice presenting your project to an adult.

Science Project Title

Problem / Testable Question

What do you want to find out?

The testable question includes the property or characteristic (variable) that is changed and what effect is observed or measured.

If you need help, there is an example project on the last slide.

Background Information

What do websites, articles, and books say about your topic?

Create a summary of your research.

Hypothesis

Based on your background research, what results do you expect from your testing? This should be your best educated guess based on your research.

Variables

What variable was changed in your experiment? (Independent Variable)

The one variable you purposely changed and tested

What variable was measured in your experiment? (Dependent Variable)

The one variable you measured or observed

Materials

Quantity (detailed list) Materials (be specific)

Amount	Item
Amount	Item
Amount	Item
Amount	Item
Amount	Item
Amount	Item

Procedure

1. Write out all steps followed to prepare and run testing
2. Number each step in the order completed.

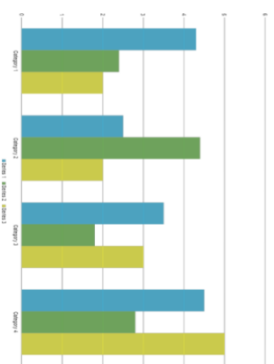
Photos



Chart

Type of Soil	Average Height at 1 Week (cm)	Average Height at 2 Weeks (cm)	Average Height at 3 Weeks (cm)	Average Height at 4 Weeks (cm)
Sand	1	2	3	4
Gravel	.5	1	2	3
Topsoil	1	2	3	5

Graph



Conclusion

Answer the project question and use evidence to support your claim or answer.

Explain how evidence did or did not support the hypothesis.

Tell how these findings apply to things in the "real world".

References

Cite at least 3 sources for your background information on your project. These could be websites, articles, people interviewed, books, etc. or specific websites. Include title, author, publisher, and/or date retrieved from the web.

Referencing Guide -

Book:

Author; Book title; Publisher; publication date.

Online Encyclopedia

Author, when available; "Article Title"; Encyclopedia Name; Publisher Name; Publication Date when available; Date you found (accessed) article

Website Article

Author; "Article Title"; Home Page title; Date you visited the website.; Main part of website address.

Video

Name of video; Video creator(s); and date of publication or copyright

Source: "Elementary Ciation Guidelines," Freedom Trail Elementary School, September 10, 2017.
www.fvtvpschools.net.

Photo and Display Credits

Identify the person(s) who took your photos (including yourself).

Clearly credit the source of any images, diagrams, drawings not created directly by you that were used in your project including websites.



ELEMENTARY RESEARCH PLAN

Must be filled out and included with your project

Did you work with any of the following:

- Growing bacteria or mold of any type **Yes or No**
- Firearms, explosives or discharge air pressure canister devices (i.e. potato guns) **Yes or No**
- Causing pain, suffering, sickness or death of an animal **Yes or No**
- Breaking Local/State/Federal Law **Yes or No**
- Production of ANY amount of consumable alcohol **Yes or No**
- Any activity or substance that presents a danger to the student, other people or the environment, including hazardous chemicals or radioactive materials **Yes or No**

(If the answer is YES to any of the items above, you will not be allowed to participate.)

Student(s): _____

School: _____

Grade/Teacher: _____

Project Title: _____

Describe your experiment (*What were you trying to do, show, or find out*):

Describe how you did it (*materials and procedure*):

What were your results (*What did you find out?*)

Bibliography: Include at least three scientific sources (*Google, Wikipedia, Encyclopedia do not count*):

What risks were involved?

What safety measures did you take?

Where did you do your project?

Who supervised you?

Did you follow all the **GARSEF** Elementary Rules & Guidelines?

Yes or No



Elementary Judging Criteria

RIBBON AWARDED (mark only one box)		
	16 – 18 points	1st
	10 - 15 points	2nd
	5 - 9 points	3rd

Project # _____ Judge # _____ School: _____

Student: _____ Grade: _____

Remember to give **POSITIVE VERBAL FEEDBACK** to the student!

Judging Criteria				
Criteria	Basic	Average	Excellent	Score
Question <i>Indicates variables tested / changed and observed / measured effect</i>	<i>Minimal information about what was tested/researched and effects (outcome)</i> (1 point)	<i>Incomplete information about what was tested/researched and observed effects (outcome)</i> (2 points)	<i>Detailed information purpose of research, specific change, and how will determine effects (outcome)</i> (3 points)	
Independence <i>Evidence the student generated and performed processes of project</i>	<i>Displayed in academic/adult language, shows little understanding of topic</i> (1 point)	<i>Mostly student-generated, understands general topic</i> (2 points)	<i>Displayed in student language, understands connections / details</i> (3 points)	
Project Organization <i>Includes all details needed to replicate testing and/or design process</i>	<i>Minimal Information Lack of materials and steps of test/design procedures; cannot be replicated</i> (1 point)	<i>Incomplete Information quantities of materials and general details of procedures limit exact replication</i> (2 points)	<i>Detailed information quantities of materials and procedures support replication of project</i> (3 points)	
Presentation of Data <i>Critical sections are labeled and in logical order</i>	<i>No organized testing process, missing lists and needed sequence, no graphics used</i> (1 point)	<i>Steps of process shown using sequenced lists, labels, data in written and graphic forms</i> (2 points)	<i>Student created graphics indicating details of measured /observed outcomes</i> (3 points)	
Verbal Presentation <i>Communicates and presents verbally to a judge</i>	Student not Present (0 points)	Not all team members participated in interview or were able to answer questions (0 points)	<i>Student described and related achievements, answered judge's questions; if applicable: all team members participated in interview</i> (3 points)	
Conclusion / Lessons Learned <i>Answers the testable question or problem supported with relevant evidence.</i>	<i>General results difficult to relate to question and/or problem</i> (1 point)	<i>Results relate to question or problem without much evidence</i> (2 points)	<i>Student restated question or problem with supporting evidence and applied it to real world</i> (3 points)	
Total				