

Science/Engineering Fair Guide

**Engineering . . .
Engage in Science Education**

**Bartlett City Schools
Elementary Science/Engineering Fair
2015**



**Bartlett City Elementary (K-8)
Science/Engineering Fair**

Grades K-8

Engineering . . . Engage in Science Education 2015

SCHEDULE OF EVENTS

| Day | Date | Time | Task |
|-----------|-------------------|------------------------|---|
| Tuesday | February 24, 2015 | 11:30 a.m. – 5:00 p.m. | Project Set Up* W202 BHS |
| Wednesday | February 25, 2015 | 8:00 a.m. – 12:00 p.m. | Judging (Closed To The Public) |
| Thursday | February 26, 2015 | 5:00 p.m. – 7:00 p.m. | Science Student Showcase Winners (Open To The Public at Bartlett City Hall) |
| Friday | February 27, 2015 | 2:00 p.m. – 5:00 p.m. | Project final pick up day W202 BHS |

**PROJECTS NOT PICKED UP WILL BE DISPOSED OF BY
March 2, 2015**

Deadline for school registration February 13, 2015

Bartlett City Schools Contact:

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Phone: 202-0855

FAX 202-0854

*W202 is located in Bartlett High School. Enter the lobby of the Bartlett Central Office. Check in with the receptionist to receive room directions.

Introduction

Science Fairs can be exciting and magnificent affairs. They provide wonderful opportunities for children to examine and explore a host of scientific questions and a wealth of science topics.

Most students are enthusiastic and excited about pursuing a science fair project: yet, it is not unusual for that exhilaration to wane as the actual science fair approaches. In the end, parents are frequently “recruited” to complete the designated project.

The following guidelines are designed to provide ideas, strategies and techniques, which will make a planned science fair a pleasant and enjoyable part of the class and school program. You are encouraged to modify and alter these ideas in conjunction with the resources and time available. Above all, the success of your science fair will be largely dependent upon partnerships you establish with your students.

What is a Science Fair Project?

Science fair projects consist of three essential components: the display unit, the exhibit materials and the written report. Together, these elements present a complete and thorough examination of an area of interest, a collection of new knowledge, or the results of a self-initiated experiment.

Display Backdrop

The display unit (also known as the backboard) is critical to the presentation. It is what people see first and establishes the work of the students’ efforts. As a kind of “advertisement” for the project, it must be well constructed and designed for maximum visual effect. Usually, it stands on the table behind the other exhibit materials. Display boards should **not exceed 3 feet x 4 feet (36" x 48")**.

Be sure to label on the back of the display, a student or class name with contact information. If it is an individual submission, please make sure that parent contact is listed.

Exhibit Materials

The materials, items, devices and samples shown in front of the backdrop unit can be an exciting part of any science project. These materials should reflect the items used throughout the student’s investigation. They should provide a firsthand look at the scope of the project. Any lap top computers, I-pads, electronics, or the like are ***NOT*** allowed as part of the set up but can be used to conduct initial experiments.

Written Report

The written report is a compilation of everything the student did to investigate the selected topic. It contains all the information the student collected or learned during the weeks leading up to the actual fair. Whether the student decides to do an experiment, assemble a collection of objects, demonstrate a scientific principle, conduct some research into a specific area of science, or show a particularly interesting piece of scientific apparatus, it will be necessary to record observations and information in written form. The written report provides observers with vital data on the scope of a project as well as the student’s understanding of the topic.

Any written report for a science fair project should include the following:

- Title Page
- Table of Contents
- Statement of Purpose
- Hypothesis (for the scientific investigation)
- Research
- Materials
- Procedure
- Observations and Results
- Conclusion
- Bibliography
- Acknowledgements



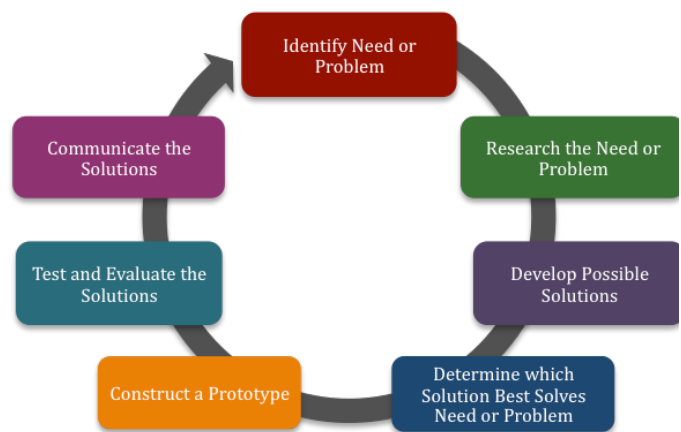
Helping Students Select a Topic

Choosing an appropriate area of investigation is often the most difficult part of the entire science fair process. Typically, the sheer number of potential topics overwhelms students. It is important, however, that the student make the final choice of a science fair topic. These are some questions you may wish to ask students when assisting them in making appropriate choices. Links are provided in the on-line suggested Science Fair resources section in this packet.

Engineering Design Process

The Engineering Design Process is a series of steps that are implemented by engineers to lead them as they solve problems and develop new products and/or systems.

Through the Engineering Design Process, engineers dive into the development of a design that may include drawing, and making analytical decision, on which forms of resources and technology to utilize within the experiment. Engineers will create and test many prototypes, making improvements until the product design is good enough to meet their needs.



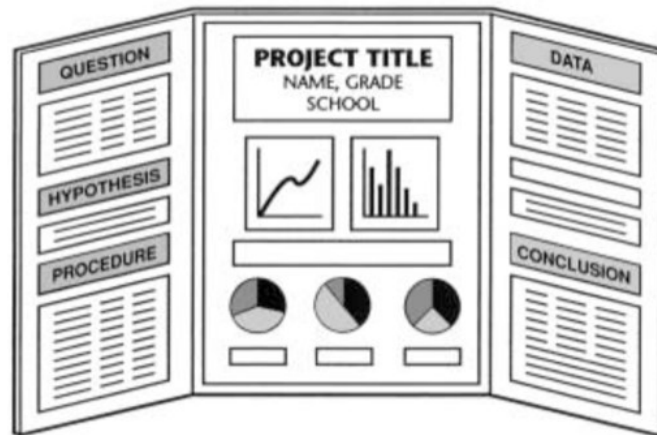
The Engineering Design Model

Experiment

These projects are to be true experiments, which means that the answer is not found in a book but by conducting scientific investigation.

- The following should be written and displayed on the exhibit:
 - Question
 - Hypothesis
 - Materials
 - Variables

- Procedure
 - Results (data display in table and/ or graph form)
 - Conclusion
- Data should be written in a log as you work and should be available at your display in the original form. Scientists do not recopy to make their work neat, they work neatly during the investigation. If there is a mistake, draw one line through it and proceed. Do not white out or “scribble out” the data.
 - Equipment used in the investigations may be included in the display.



Demonstration Materials and Log Books

- Diagram shows the specific parts that need to be included but they do not need to be in this specific order. Be creative but follow a logical order that the viewer can learn from.

Bartlett City Schools Science/Engineering Guidelines

School Submissions (Please winners to room W202 at Bartlett High School)

Schools are encouraged to select projects based on the rubric criteria included in this packet. Submissions by February 24th should occur as follows:

- Grades K - 3 1 class project submission per grade level (4 total per school)
- Grades 4- 5 1 individual, class, or group project submissions per grade level (2 total per school)
- Grades 6-8 1 individual, class, or group project submissions per grade level (3 total per school)

*Group projects (**Limited to ONLY 2 students per project**)

Presentation

- Display boards should **not exceed 3 feet x 4 feet (36" x 48")**.
- Any laptop computers, I-pads, electronics, or the like are ***NOT*** allowed as part of the set up but can be used to conduct initial experiments.
- Tables will be provided for set-up

On-Line Suggested Science Fair Resources

- Science Fair Ideas and Details D <http://www.sciencebuddies.org>
- Science Fair Ideas and Details D <http://school.discoveryeducation.com/sciencefaircentral/?pID=fair>
- Engineering Design Process - <http://www.sciencebuddies.org/engineering-design-process/engineering-design-process-steps.shtml#keyinfo>
- Engineering is Elementary D <http://www.eie.org/>
- 1000 Science Fair Projects > <http://www.1000sciencefairprojects.com/>
- Adventures of a Science Fair > <http://www.sciencefairadventure.com/>
- Super Science Fair Resources > <https://www.livebinders.com/play/play?id=47700>
- Science Fair For Kids > <http://www.sciencekids.co.nz/experiments.html>
- STEM Project Ideas > <http://www.livebinders.com/play/play?id=179785>
- Science Fair Board > <http://school.discoveryeducation.com/sciencefaircentral/widget.html>

Awards Categories

Award Division

Primary Division – Grades K-3. Certificate & trophy
Intermediate Division – Grades 4 -5. Certificate & trophy
Middle Division – Grades 6-8 Certificate & trophy

Grand Prize

The following awards will be given within each division

| | |
|--------------|----------------------|
| First Place | Trophy & Certificate |
| Second Place | Trophy & Certificate |
| Third Place | Trophy & Certificate |

Judging Criteria

PROJECT # _____

Bartlett City Schools Science Fair Judging Criteria

CREATIVE THOUGHT

- Original idea, question, thought and creativity
- Unique approach
- Ingenious use of materials, equipment

| | | |
|-----------|---------|---------|
| Excellent | Good | Fair |
| 25..... | 15..... | 10..... |

SCIENTIFIC THOUGHT

- Question clearly stated and defined
- Hypothesis clearly stated
- Comprehensive background on topic clearly presented
- Procedures for experiment clearly and comprehensively discussed, including all variables
- Analysis of results with sound conclusion presented
- Practical implications of results discussed
- Recommendations (new questions) for future research included

| | | |
|-----------|---------|---------|
| Excellent | Good | Fair |
| 25..... | 15..... | 10..... |

THOROUGHNESS AND ACCURACY

- Repeated trials conducted to ensure results are not due to chance
- Observational, math and/or design skills are accurate and detailed
- Overall, all aspects of study are exceptionally thorough

| | | |
|-----------|---------|---------|
| Excellent | Good | Fair |
| 25..... | 15..... | 10..... |

DISPLAY

- Project title and sub-titles clear and descriptive
- Well-organized w/correct grammar; logical flow of presentation
- Charts and graphs correctly and clearly labeled

| | | |
|-----------|---------|---------|
| Excellent | Good | Fair |
| 25..... | 15..... | 10..... |

TOTAL POINTS_____