

Secondary Science Fair Guide

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Science Fair Categories

- Behavioral and Social Science
- Biochemistry
- Botany
- Chemistry
- Computers
- Earth and Planetary Science
- Engineering
- Environmental Sciences
- Mathematics
- Medicine and Health
- Microbiology
- Physics and Astronomy
- Zoology

Equipped with his five senses, man explores the universe around him and calls the adventure Science. ~Edwin Powell Hubble, The Nature of Science, 1954

FPCHS Science Fair-December 3, 2009

Why Have Science Fair?

- Promote student interest in science
- Introduce students to organized research
- Recognize outstanding science talent.

What Is A Science Fair Project

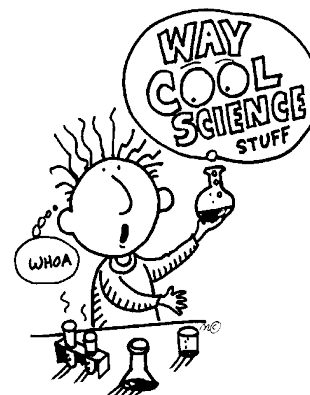
A science fair project is an experiment that collects data using the scientific method.

What Must Be Completed For The Science Fair Project

- **Required forms** signed by teacher, parent, and student **BEFORE** student performs experiment.
- **Project Data Book**-student documents notes and observations from the idea phase to completion in a composition journal.
- **Display Board**-create a **PowerPoint Presentation** that exhibits scientific method in a neat, organized order for class presentation. Students who enter the FPCHS Science Fair will use printouts from the presentation on their display board. Using PowerPoint is better for the environment and more interesting to the audience during class presentations.
- **Abstract**-summary (250 words or less) completed at the end of the project on the Abstract form.

Who Can Participate?

All students can participate-ask your science teacher for details.



When Is the Project Due?

Your teacher will provide the date when the project is due in class. Usually projects are presented in class and the best projects advance to the school science fair.

What Are The Required Forms?

- Four forms are required for every project: 1, 1A, Research Plan, and 1B.
- Forms can be completed and printed at <http://www.societyforscience.org/isef/document/>
- Forms should be typed or printed neatly in ink.
- Forms must be completed, signed, and **dated** by student, parent, & teacher **BEFORE experimentation begins**.
- Some projects require additional forms: microorganisms, tissue, humans, vertebrate animals, DNA, and chemicals. These projects require IRB or SRC committee approval. The Adult Checklist or "The Form Wizard" at <http://www.sciserv.org/isef/students/wizard/index.asp> can help you determine the forms you need. Hint: These projects require more effort and time.

Steps To Prepare A Science Fair Project

August

- Begin Journal
- Pick your topic idea
- Research topics
- Plan Your Experiment

September

- Complete Required Forms
- Obtain Adult Sponsor approval
- Obtain Committee Approval if necessary
- **Begin experiment if approval forms signed and dated**
- Be sure to document using journal, camera, or video.

October

- Continue experimentation and documentation.

November

- Complete experimentation & documentation.
- Analyze results. Create data table & graphs.
- Draw conclusions
- Write application
- Prepare PowerPoint Presentation.
- Review research notes in journal for class presentation
- Practice class presentation
- Organize forms to resubmit to teacher (continue next page)

1. Pick Your Topic Idea-this can be the most challenging step.

- Select a topic that can be answered, proven, or support only by an experiment. Must have documented observations or data.
- Consider science categories that interest you, the difficulty to get approval from teacher or committee, available resources, and originality of the project idea.
- Suggestions: research current science news articles in newspapers, magazines (Discovery, Popular Science, Astronomy, etc), and internet websites such as Daily Science, MSNB, or research universities. View past winners at state & international science fair.
- State the topic in the form of a **problem or purpose (include independent & dependent variable)**.
- Ask teacher for preliminary approval before you begin research.

2. Research Topics That Relate To The Project

- The purpose is the learn background knowledge so you are knowledgeable about your topic and familiar with related experiments others have performed.
- Don't plagiarize and give credit to others by citing references in MLA or APA format (helpful website: <http://citationmachine.net/>). You will need at least 5 citations for required forms. Some projects have specific requirements.

3. Plan Your Experiment

- Write clear problem/purpose, hypothesis (use if, then statement), and detailed procedures that are replicable.
- Procedures-include metrics, safety rules, repeated trials (10x) or large test groups (at least 10 per group), only 1 independent variable, describe how to measure/observe, control group for comparison, and any requirements on the Research Plan form.
- Procedures should be clear so they can be repeated and results verified by others. Replication and verification is important part of the scientific method.

4. Complete Required Forms (Protocol Forms)-type or print in ink neatly.

- Visit www.sciserv.org and complete the following forms:
 - Form 1-Checklist for Adult Sponsor
 - Form 1A-Student Checklist
 - Research Plan-follow the instructions carefully and type on a Word document. Include heading (Form Name, Project Title, & Student Name). Use info from "Plan Your Experiment" and references from "Research Topics".
 - Form 1B-Approval Form

5. Get parent signature and date.

6. Consult with Your Adult Sponsor and Get Approval Signatures w/date.

- Adult Sponsor is usually your teacher.
- After consultation, you may be required to complete additional forms and get committee approval. See Checklist for Adult Sponsor.
- Teacher will give you instructions for IRB or SRC Committee Approval.

7. Conduct Your Experiment & Record Documentation in Project Data Book.

8. Analyze Your Results

- Write a results paragraph and summarize the data. Identify patterns.
- Include qualitative and quantitative observations in the paragraph.
- Are there other explanations you did not consider or observe?
- Create a data table and include averages/total. Suggestion: use a spreadsheet like Excel.
- Graphs are helpful and can be created from data tables.
- Include photographs and other helpful documentation.

9. Draw Conclusions

- Answer problem and discuss if hypothesis was supported.
- Explain why you obtained different results than predicted. Infer why an observation occurred.
- Discuss if enough data was collected and if more experimentation is required.
- Discuss and identify sources of error.
- Discuss what you would do to improve the experiment & do differently.

10. Application

- Discuss how this project results could be used in the real world.

11. Create PowerPoint Presentation

- PowerPoint can be found at <https://portal.flaglerschools.com/> You can access/save school files from the portal also. OpenOffice (free software) can also be downloaded. If using OpenOffice, save final copy as a ppt or pdf so we can open files at school. Save final copy on a flashdrive. Files may be too large to email.
- Display steps of scientific method in order and include data table, graphs, & photographs. Make sure presentation is easy to view for audience.
- Print a copy of the presentation as a handout with 6 slides per page for teacher.

12. Review research, project, and forms for class presentation.

Entering in FPCHS Science Fair

1. Sign up through your teacher.

2. Complete Abstract Form <http://www.floridassef.net/Studentforms.htm> and put on lower left corner of Display Board.

3. Create Display Board using PowerPoint Presentation

- Before printing, plan layout. You may need to adjust slides so all parts of the scientific method are displayed. Multiple slides for the same step can be put together.
- Use the same size and type of font. Make sure slides are readable.
- Print in color or in black ink and use colored construction paper behind printouts. Limit to 2-3 colors.

December (cont.)

- Class Presentations
- If quality project, enter FPCHS Science Fair.
- Complete Abstract Form.
- Create Display Board from PowerPoint.
- Set up display at Science Fair
- Review project & research
- Present project to judges at Science Fair
- Qualifiers advance to Flagler County Science Fair.

January

- County qualifiers compete at Tomoka District Fair in Volusia County.




Judging Criteria


Originality/Creative	30pts.
Scientific Thought	30 pts.
Thoroughness	15 pts.
Skill	15 pts.
Clarity	10 pts.


THE EFFECTS OF GENUS TERMITES ON RESINOUS SURFACES


DATA

PICTURES


Days 1-4


Days 5-8


Days 9-12


Days 13-15

INFORMATION

Termites
There are no solitary termites. A colony may number from 100 to more than one million individuals. A single colony consists of a diverse.....

RESULTS

The boards were observed each evening at 6 p.m. over a period of 15 days. On Day 1, thirty-five (35) termites were visible on the pine board.
On Day 2.....
After a period of fifteen (15) days,

CONCLUSION

Since the most resistant wood to termite destruction is, it is clear that termites prefer pine, due to the high content of cellulose found in a softwood.
Redwood, on the other hand

APPLICATION

The Southern Standard Building Code identifies redwood for its strength, durability, and resistance to adverse weather conditions; however.....

PURPOSE

The purpose of this project is to determine what effect *Genus termes* has on three select resinous surfaces....

HYPOTHESIS

It is expected that the oak surface....

EXPERIMENT

1. Cut three (3) boards of oak pine and redwood, two (2) inches by six (6) inches each.
2. Collect.....

ABSTRACT

PLACE A COPY OF THE SSEF ABSTRACT FORM HERE.

FLOOR MODEL PROJECTS MUST DISPLAY ABSTRACT AT EYE-LEVEL.

30 inches

48 inches

30 inches

30 inches

48 inches

30 inches