

St. Paul's Preparatory Academy

Science Fair Parent/Student Packet

Dear Parents,

As you know, science, technology, and engineering are basic skills expected by employers. As Twenty-First Century citizens, our students will also have to make some of the toughest decisions of any generation based on their understanding of emerging science and technology.

Science fairs involve students in science and engineering practices, requiring them to apply those skills to a topic of interest. Doing science is key to understanding science.

St. Paul's is holding our Science Fair Week from March 6 through March 10, and all students in grades 4 to 8 are required to participate. Over an 8-week period, your child will design, test, analyze, and present a project that uses scientific methods to solve a problem. The sky's the limit!

Please note that the bulk of the work will be done at home. Students will be given project guidelines and timelines at school, and teachers will check in periodically. However, much of the work will be self-directed. Parents are encouraged to offer emotional support and reminders but to allow children to do the projects by themselves.

Don't hesitate to email your child's teacher or me with any questions. My email address is grockwell@stpaulsprep.com. Thank you very much in advance for your support!

Sincerely,

Mrs. Gayla Rockwell

Science Project Overview

Four Parts of the Science Fair Project

1. The Experiment (Scientific Method Approach)
2. The Logbook
3. The Display/Project Board
4. The Oral Presentation

1. The Experiment

A project is experimental if it meets the following criteria:

- A hypothesis is posed. (a statement, not a question)
- A student experiment is conducted using the scientific method.
- Data/records are collected and analyzed. (the experiment results in data that can be measured)
- The solution to a problem is sought.

Steps in the Scientific Method

1. Select a topic – The topic should be interesting and original, allow for completion by the due date, not be too expensive, and have measurable data.
2. Research and planning – The research should help the student plan the experiment and develop the hypothesis statement. Based on the research, the hypothesis is an educated guess about the answer to the investigative question (title). Don't forget – professionals are also a good resource.
3. Experiment – Plan the experiment. What materials will you need, and what steps will you take in testing your hypothesis? Record these steps in your logbook. Test the hypothesis at least three times. There should only be ONE variable in the experiment. The more times you repeat the experiment, the more reliable your results will be. Be sure to collect data for all trials. You can take photos to document your work as you go.
4. Observe, record, and analyze data – Write down the steps that were followed and the data results in the logbook. Organize data from the research and experiment, looking for patterns.
5. Draw a conclusion – Determine if the experimental results support or disprove the hypothesis.
6. Display – Although it is tempting for students to use all computer graphics – or for younger students to have parents develop computer graphics, the best display boards are not always the “prettiest” boards. Guide the students as they prepare and layout the requirements on the display board.
7. Oral Presentation – Each student will give an oral presentation describing how they did their experiment, what they learned, what they would do differently, etc. to the teachers. Students should be comfortable explaining their project to the teachers. Teachers may also ask questions to clarify the student's understanding of the project.

2. The Logbook

Everything you do on your project is recorded in your logbook! That includes the history and record of the progression of the project. (begin the day of the assignment, end on the day turned in).

- A diary of the science project – every time you work on your project, record it in the logbook.
- When experimentation begins, include the procedure in detail and write it out step-by-step.
- Include drawings and labels.
- Explain how all variables are controlled. (Teachers can help with this.)

Include the following:

- Title Page – This includes the title of the project, the name of the student researcher, and the name of the student's school.
- Second Page (and those following) – Question being investigated; list of materials and method for conducting the experiment (plan); please include notations of safety precautions.
- St. Paul's Project Approval Form and any additional forms. (to be determined by the teacher)
- Subsequent pages – Record experimental procedures and actual data, writing it down as you go (not scribbled on scraps of paper and entered later; dated pages).

The Logbook should always be with you while you are working on your experiment.

Think About This

An experiment can support or not support the hypothesis. Thomas Edison failed more times than he succeeded in his lifetime but is still considered one of the greatest inventors of all time. The important thing is that the student uses the data to analyze what happened and conclude why it happened.

3. The Display/Project Board

The display may not exceed 48' wide by 30" deep by 72" high from the tabletop. Science display boards may be purchased from local stores such as Michael's, Mardel's, Walmart, or Staples, to name a few. ***Do not write the student's name on the front of the project board.**

Title – You may use the Question Format.

***Display on the project board and in the logbook. (example: Which Brand of Paper Towel Will Hold the Most Water?)**

Biblical Application/Illustration – Each project must include a Scripture/ Biblical illustration.

*** Display on the project board and in the logbook.**

Abstract – Brief summary description of what was done.

***Display on the project board and in the logbook.**

Project Information - (including problem, hypothesis, variables, and control)
Teachers can help with the variables and control.

Experimental Design – You may include a drawing or diagram of the project.
Results – This is a description of the data; data tables and graphs may be used.

***Use on the project board and in the logbook.**

Conclusion – State whether the hypothesis is correct; if the hypothesis is not correct, state possible needed changes. State what could be done to broaden the scope of the problem.

***Use on the project board and in the logbook.**

Logbook – You must include the required approval forms as directed by the teacher.

***Include with the display but NOT on the project board.**

Equipment, samples, or other items from the experiment may be included – do NOT include dangerous items such as glass, chemicals, etc.

Photographs and/or Diagrams – You may include photographs on the display board and/or logbook to demonstrate the experimental process. Origins must be credited if not part of the student's experimental process. Photographs of human subjects (other than students) must be accompanied by a consent form (received from the teacher).

4. The Oral Presentation

Each student will have several minutes to present his/her project to the teacher/class. Teachers are interested in knowing if the student is knowledgeable about the topic. Can the student explain the project in knowledgeable/scientific terms and explain background information? Can the student accurately interpret the results of the experiment? Has a Biblical application/illustration been integrated into the presentation? Remember to practice out loud, at home, several times.

Website Resources

The following list of websites does not imply St. Paul's endorsement of the organizations or materials on the websites. Please be sure to select items that will meet the criteria presented in this packet. The project must be experimental.

www.scienceproject.com

www.sciencebuddies.org

Science Project Timeline

- January 6– Begin to research ideas and choose your project.
- January 7 - Get a logbook and begin to record daily **everything** you do in detail for your project. (You may add photos if you like.)
- January 12 – **The Science Project Approval Form is due.** Turn in the signed Science Project Approval Form to your teacher: receive any additional forms from your teacher that you may need. (Teachers will help students determine if any additional forms are necessary.)
- January 17 - Gather materials and plan the steps for your experiment.
- January 18 – Determine what the variables and control are. (Teachers will help with this if necessary.)
- January 19 – Begin your experiment – Decide which scripture/Biblical illustration you will use.
- January 19–February 27 – Work on the experiment, recording all work and observations in your logbook.
- January 27 – **Biblical Illustration Form due.**
- February 28 -March 1 – Draw your conclusion, collect data, and make charts and/or graphs.
- March 2 – **Abstract is due.**
- March 3-4 - Assemble the display board. (See attached checklist to ensure your board is complete.)
- March 3-4 – Prepare your Oral Presentation. (See the attached checklist.)
- March 4-5 – Pack up your board, logbook, and materials to bring to school on Monday, March 6.
- March 6– **Bring your Science Project to school;** be prepared to give your Oral Presentation in class. (Teachers will give the students instructions on where to put their projects.)
- March 9 – Assemble your project in the display area. (Teachers will give students instructions on the display area.)
- March 10 – Take your project home.

The final judging will take place on Thursday, March 9.

Boards will be on display March 9-10.

The Display Board Checklist

- Board dimensions – The display area may not exceed 48” wide by 30” deep by 72” high from the tabletop; science display boards should be purchased from local stores such as Michael’s, Mardel’s, Walmart, or Staples, to name a few.
- Title – A question format is recommended; make it short yet descriptive, conveying specific information about your project.
- Biblical Application/Illustration – Each project must include a Scripture/Biblical illustration to be displayed on the board and written in the logbook.
- Abstract – Brief summary description of what was done. ***Use on the project board and in the logbook.**
- Project Information – State the problem and hypothesis separately. (The hypothesis is your prediction of what you believe will happen.); identify the variables and control.
- Results – Include tables and graphs of the data. ***Use on the project board and in the logbook.**
- Conclusion – State whether the hypothesis was correct; if not, state the needed changes; state what could be done to broaden the scope of the problem. ***Use on the project board and in the logbook.**
- Logbook – Include required approval forms as directed by the teacher. ***Include with the display and NOT on the project board.**
- Equipment, samples, or other items from the experiment may be included – do NOT include prohibited items such as glass, chemicals, etc.
- Photographs and/or Diagrams – Include on display board and/or Logbook to demonstrate the experimental process; resources must be credited if not part of the student’s experimental process; photographs of human subjects (other than the student) must be accompanied by a consent form. (received from the teacher.)

St. Paul's Preparatory Science Fair Approval Form

Due Thursday, January 12

Student Name _____

Brief Research Plan (this form must be included in the Logbook)

Question being addressed

Hypothesis

Description of materials being used

Parent/Guardian

I have reviewed the Science Project plan and approve of my child has chosen project.

Parent/Guardian Signature

Date

Teacher

I have reviewed the student's Science project plan and approve of the student's chosen project.

Teacher Signature

Date

Scripture/Biblical Illustration Form

Due Friday, January 27

The Bible Verse

How It Relates to My Project

Student Name _____ Date _____

Abstract

Due Thursday, March 2

Please write a brief summary description of what was done.
The abstract is included on the display board and in the logbook.

Student Name _____ Date _____

Oral Presentation Checklist

The oral presentation will be given in class, and students will have the display board to use as they discuss the following:

- State the Title of your project.
- State your Hypothesis.
- Explain how you used the materials to experiment. Include variables and controls.
- Explain the results of the experiment.
- State the Conclusion – Was the hypothesis correct or incorrect?
- Explain the scripture and Biblical application.
- Explain what you learned by doing the experiment.
- Answer any questions the teacher may ask.

It is important that students practice the Oral Presentation at home with parents.