Park Forest-Chicago Heights School District 163

Science Fair Handbook
7th – 8th Grade

Revised July 2022

Science Fair Handbook Table of Contents

Staff Responsibilities

7^{th} – 8^{th} Grade Science Fair

- What is the Scientific Method?
- Steps of the Scientific Method
- Science Fair Rules
- Displaying a Science Fair Project
- Science Fair Procedures
- Application
- Rubric/Judging Form
- Digital Rubric/Judging Form
- Written Report Guidelines/Requirements 5^{th} – 8^{th} Grade
- Sample Written Report
- Samples of Written Report

Staff Responsibilities

Principals:

- Set dates for Science Fair 7th-8th grade (January 26, 2023)
- Set date for Science Fair Parent Night
- Create school science team to review and approve applications
- Announce student names at awards ceremony
- Determine how to set up science fair boards for entire school for viewing
- Create a structured plan for all students to view science fair boards without causing damage to boards
- Provide student supervision during Science Fair
- Create a plan for Science Fair set ups & communicate plan to custodial & lunch staff

Building Secretaries:

- Photocopy and distribute Science Fair packets to each classroom
- Receive and store Science Fair boards for their school
- Distribute Science Fair boards to classroom teachers for Science Fair

Teachers:

- Teach scientific method, experimental design, proper scientific ethics and process
- Conduct grade level experiment
- Conduct class session on correctly completing the Science Fair application
- Provide class time for students to complete the application and assist students as needed
- Create Science Fair timeline for students
- Review Science Fair timeline with students
- Identify projects to be selected for final judging
- Prepare students for oral project presentations
- Coordinate and manage science fair
- Coordinate and manage science fair parent nights provided by school science team
- Review questionable applications
- Print out rubric with student name for each science fair board
- Print out certificates for each student
- Assign BEST project to go to School Board meeting
- Attend school board meeting with student displaying BEST projects
- Prepare Regional Science Fair student representatives for IJAS requirements (Illinois Junior Academy of Science
- Submit project titles and student names for IJAS
- Provide IJAS with names of monitors and judges
- Register Michelle Obama School of Technology and the Arts by December 1
- Announce IJAS winners at Michelle Obama School of Technology and the Arts

School Activities and Events Coordinator

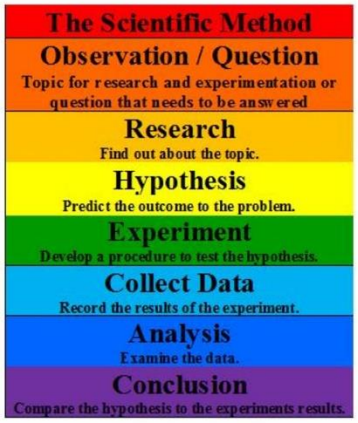
- Assist in coordinating all Science Fair dates with technology department and maintenance
- Coordinate set-up for parent nights and science fairs with school science team for each school's Science Fair
- Invite all Science Fair and Science Exposition judges for each school's Science Fair
- Coordinate snacks for Science Fair judges
- Send thank you letters to judges
- Coordinate delivery of BEST projects student awards to School Board meeting
- Coordinate all Science Fair dates with principals
- Order and distribute all ribbons, medals, certificates, and trophies
- Give order information to Instructional Services office

Students

- Bring the parent signed Science Fair timeline, discussed in class, back to their Science teacher
- Choose a topic (3 preferably so that the teacher can pick one that best suits the student while meeting the criteria of a good Science Fair topic)
- Complete the Science Fair application and turn in to their Science teacher
- Decide whether to create a traditional Science Fair board or a digital presentation
- Let their Science teacher know whether to order a Science Fair board for their presentation
- Meet with their Science teacher and ask any questions pertaining to their project
- Purchase any material needed for conducting their Science project
- Conduct a teacher approved Science experiment
- Record and display data based on their Science experiment according to the rubric gone over in class
- Complete the traditional Science Fair board or digital presentation
- Complete a written report on their Science project using the rubric gone over in class
- Prepare notecards, and practice, for their oral portion of their Science project
- Practice presenting their Science project according to the rubric gone over in class
- Present their Science project to peers and teacher in Science class
- Attend and present at the district Science Fair if they meet the requirements to attend
- Attend and present at the regional Science Fair if they meet the requirements to attend
- Attend and present at the state Science Fair if they meet the requirements to attend

7th – 8th Grade Science Fair

What is the Scientific Method?



What are VARIABLES?

INDEPENDENT VARIABLE – THE ONE THING YOU PURPOSELY CHANGE IN YOUR EXPERIMENT

CONTROLLED VARIABLE – EVERYTHING IN THE EXPERIMENT REMAINS THE SAME, SUCH AS THE SOIL, TYPE, THE SIZE OF THE POT, THE AMOUNT OF WATER, ETC.

Steps of the Scientific Method

1. **Purpose** –
    a. What problem do I want to solve? You should investigate ONE problem only.
    b. What question do I want to answer? The question is usually the title of the project.
2. **Hypothesis** –
    a. What do I predict will happen during my experiment?
3. **Procedure**
    a. How will I test my hypothesis?
    b. Will the test be safe and follow the rules?
    c. What materials will I need for my experiment?
    d. What kind of data do I need to collect?
    e. What will I change on purpose (independent variable)?
    f. What will change as a result of my experiment (dependent variable)?
    g. What factors will I control?
4. **Results/Data** –
    a. What happened in the experiment?
    b. Do I see any trends or patterns?
    c. Are my charts and graphs clear, accurate, and neat?
5. **Conclusions –**
    a. What did I learn?
    b. Did I prove or disprove my hypothesis?

Science Fair Rules

1. The following MUST be neatly displayed on the front of your board: Title of project, student's name, school, teacher and grade.
2. No hazardous chemicals, open flames, burners.
3. Cultures of mold and bacteria MUST be thoroughly sealed.
4. Safety precautions when displaying electrical or mechanical equipment MUST be followed at all times.
5. You MUST complete an application to participate in the Science Fair. Upon approval of your application, the Science Fair Team will provide a free display board to you – then you may begin your project.
6. You MUST use 3 different resources (i.e.: books, magazines, Internet).
7. NO HUMAN OR ANIMAL EXPERIMENTS ALLOWED.
8. You MUST repeat your experiment 2 more times!
9. You MUST display and explain your controlled and independent variables on your board.
10. You WILL present your science project to a judge if you are chosen by the Science Committee.

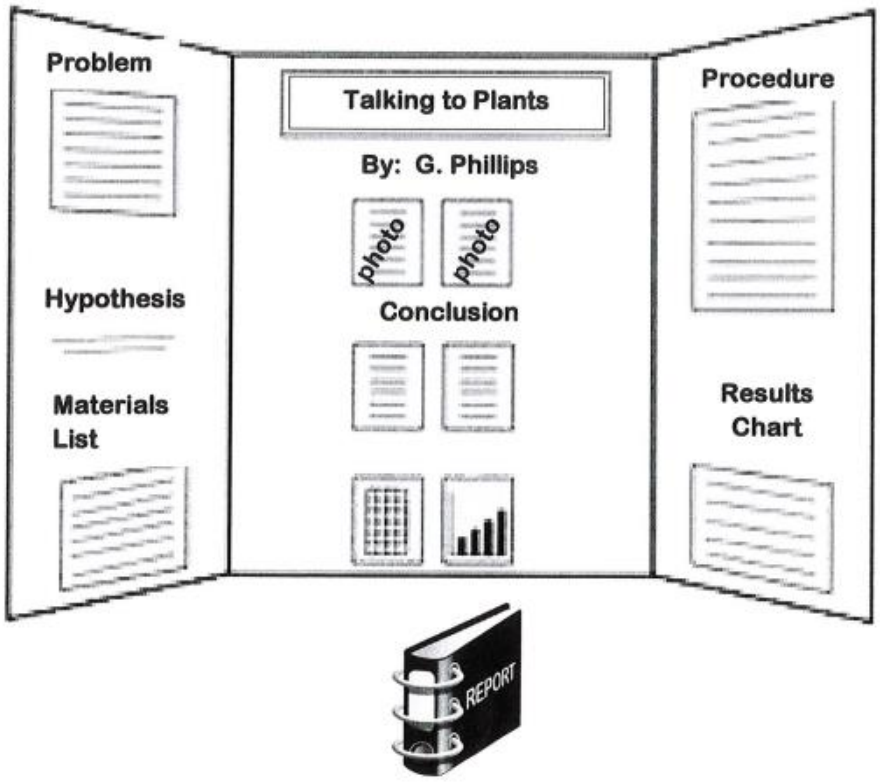
Displaying Your Science Fair Project (Board)

- No visible tape – use double-sided tape or glue stick
- No pencil allowed – type your pages if possible
- Draw a rough sketch of your board FIRST
- Does your conclusion state if it proves or disproves your hypothesis?
- Paper attachments MUST be NEATLY attached
- SPELLING ERRORS ARE UNACCEPTABLE!
- SPELL CHECK your work before attaching it to the board
- Lettering should be neat and easy to read
- Use brightly colored paper behind your headings
- Use photos, drawings, tables and graphs when possible
- Do not write directly on board
- YOU MUST include on the board your title, purpose, hypothesis, materials, procedure, results, conclusion, and research
- YOU MUST practice and memorize your presentation if you are chosen to present to a science judge

The Completed Project

When complete, the science fair project should be neat and thorough. It should be displayed in an organized way so that judges can find needed information quickly and easily.

The example below is a completed project set up for viewing by judges and others at the science fair. Most important, enjoy the science fair!



Displaying Your Science Fair Project (Digitally)

If a digital presentation was chosen, the following might clarify what the expectations are (don't forget to include pictures of your project throughout):

1st slide – Title slide (name, project title, period, teacher)

2nd slide – Problem or Purpose (starting with "To determine…")

3rd slide – 5 **brief** statements (in bullet point) that explains what was researched (from research paper) entitled Background Information

4th slide – Hypothesis (stated in an "If…., then…" statement)

5th slide – Materials (list each material used and the quantity of each)

6th slide – Procedure (a step by step list of instructions of what was to be done)

7th slide – Results (a colorful graph or chart that depicts the outcome visually)

8th slide – Conclusion (refer back to the hypothesis – was it correct or incorrect?)

"In conclusion, my hypothesis was correct/incorrect." Explain what happened and why you think it did.

Science Fair Procedures

1. Read the Science Fair information packet with your parents or guardian.
2. Choose a topic. You may select a topic that is not on the suggested list. Begin to get information about your topic from the public library and other resources, such as the school library or the Internet (with parental consent).
3. Complete the Science Fair application and turn in to your teacher by the due date.
4. Once your application is approved by your teacher, you may begin your Science Fair project.
5. Make notes as you complete each step of your project.
6. Take photographs, make diagrams, and/or collect pictures or illustrations for your display.
7. Draw a rough sketch of what your display board will look like.
8. 4th grade written reports are optional; however, an outstanding category cannot be achieved without a written report! Write your rough draft.
9. 5th through 8th grade written reports are mandatory! Write your rough draft.
10. Finalize your Science Fair project. Complete your display board. Have adults proofread your project for errors. Correct the errors!
11. Practice giving your presentation to family members or in front of a mirror.
12. Write your final copy of your written report and have your project judged.
13. Bring your display board, materials and written report to school. Dress professionally for the judging!
14. Explain your project to the judges. Memorize your speech. (Minimal note cards allowed).

Science Fair Application
For Scientific Method Experiments

All participants must fill out an application. Once your project is approved, you will receive a science display board.

Applications are due by: _____

Name: _____Grade: ____

Teacher: _____

A. Question: What do you want to find out by doing your experiment? It cannot be answered by yes or no!

B. Hypothesis: What do you predict will happen? (If...then, because statement)

C. Purpose: Rewrite your question. (Begin with: The purpose of my project is to find out…)

D. Materials:

1. 6.
2. 7.
3. 8.
4. 9.
5. 10.

My Independent Variable: The one thing that you change on purpose in your experiment is:

My Controlled Variables: The things in your experiment that you keep the same are:

E. Research: List your sources...include Book titles, Websites, Magazines or Journals. (You need at least three).

F. Procedure: Write a detailed explanation of the steps you will take to complete your experiment.
Hint: (It's like writing down a cake recipe so that others can follow it step by step to get the same results).

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

Your final step will begin with: (Last, I will repeat my experiment 2 more times).

_____Approved _____Please make noted changes

Comments:

School District 163 Science Fair Judging Form
Project Number_____ Student Name _____ Grade _____
Teachers Name _____
Project Title _____

_____Oral Presentation (5 points)

- ☐ The student can give the presentation from memory using note cards for minimal help.
- ☐ The student demonstrates understanding of the topic.
- ☐ The talk is well organized and relates to the topic.
- ☐ The student provides answers in complete sentences.
- ☐ The student makes good eye contact and is easy to understand.

_____Written (5 points)

- ☐ There is a purpose and hypothesis.
- ☐ The Review of Literature is clear, organized and grammatically correct.
- ☐ The paper includes: materials, procedure, results, conclusion, and research.
- ☐ Graphs and tables are included to support the data.
- ☐ Include at least 3 references.

_____ Project Board (5 points)

- ☐ The display demonstrates organization.
- ☐ The display is colorful, eye-catching, and easy to read and is not in pencil.
- ☐ The display is neat, grammatically correct and grade appropriate.
- ☐ The display includes the steps of the scientific method: Purpose, Hypothesis, Procedure,
- ☐ Results, Conclusion and Research. (Does your conclusion state if it proves or disproves your hypothesis)?
- ☐ The independent and controlled variables are stated on the board.

_____ Experimentation (4 points)

- ☐ The experiment shows originality.
- ☐ The project demonstrates the use of the scientific method: Purpose, Hypothesis,
- ☐ Procedure, Results and Conclusion. (Does the conclusion state if it proves or disproves the planed hypothesis)?
- ☐ The experiment is well planned and thought out.
- ☐ There is only one independent variable.

_____ Knowledge Acquired (5 points)

- ☐ The student demonstrates that they have gained knowledge from the project.
- ☐ The student has used a minimum of 3 sources.
- ☐ The project demonstrates creativity and critical thinking.
- ☐ The conclusion is correct based on the student's results.
- ☐ The student can tell if their conclusion proved or disproved

_____ Total Points Judges Signature_____

___Outstanding: 24 pts.
___1st Place: 19-23 pts.
___2nd Place: 14-18 pts.
___3rd Place: 9-13pts.

School District 163 Digital Science Fair Judging Form

Project Number: _____ Student Name: _____
Teachers Name: _____Grade: _____
Project Title: _____

_____Oral Presentation (5 points)

- ☐ The student can give the presentation from memory using note cards for minimal help. (Does not read the PowerPoint slides verbatim.)
- ☐ The student demonstrates understanding of the topic.
- ☐ The talk is well organized and relates to the topic.
- ☐ The student provides answers in complete sentences.
- ☐ The student makes good eye contact and is easy to understand.

_____Written (5 points)

- ☐ There is a purpose and hypothesis.
- ☐ The Review of Literature is clear, organized and grammatically correct.
- ☐ The paper includes: materials, procedure, results, conclusion, and research.
- ☐ Graphs and tables are included to support the data.
- ☐ Include at least 3 references.

_____ Digital Presentation (5 points)

- ☐ The presentation demonstrates organization.
- ☐ The presentation is colorful, eye-catching, visually appealing and easy to read.
- ☐ The presentation has consistent formatting, is grammatically correct and grade appropriate.
- ☐ The presentation includes the steps of the scientific method: Purpose,
- ☐ Hypothesis, Procedure, Results, Conclusion and Research. (Does your conclusion state if it proves or disproves your hypothesis)?
- ☐ The independent and controlled variables are stated in the digital presentation.

_____ Experimentation (4 points)

- ☐ The experiment shows originality.
- ☐ The project demonstrates the use of the scientific method: Purpose, Hypothesis,
- ☐ Procedure, Results and Conclusion. (Does the conclusion state if it proves or disproves the planed hypothesis)?
- ☐ The experiment is well planned and thought out.
- ☐ There is only one independent variable

_____ Knowledge Acquired (5 points)

- ☐ The student demonstrates that they have gained knowledge from the project.
- ☐ The student has used a minimum of 3 sources.
- ☐ The project demonstrates creativity and critical thinking.
- ☐ The conclusion is correct based on the student's results.
- ☐ The student can tell if their conclusion proved or disproved their hypothesis.

_____ Total Points Judges Signature_____

___Outstanding: 24 pts.
___1st Place: 19-23 pts.
___2nd Place: 14-18 pts.
___3rd Place: 9-13 pts.

Written Report and Guidelines

Page 1: Title Page

Your project title, your name, your school name, your teacher's name and your grade.

Page 2: Table of Contents

List the parts of your report by page number.

Page 3: Acknowledgements

Give credit to family members and teacher who have helped you with this project.

Page 4: Introduction

The introduction is a brief summary of your project.

Page 5: Research

Summarize the information you learned about your topic. Cite sources within body of paragraph describing research.

Page 6: Purpose and Hypothesis

State your purpose and hypothesis in detail and include why you picked this project.

Page 7: Materials and Procedure

List your materials and state all steps in your experiment.

Page 8: Results/Data

Describe what happened or what you observed in your experiment. Show data in charts or graphs if appropriate.

Page 9: Conclusion

Describe what happened. Did you prove or disprove your hypothesis? What did you learn from this experiment? Do not be afraid to say that you made any mistakes along the way. Great discoveries can come from mistakes.

Page 10: Bibliography

Make a list of books, magazines, websites, etc. (no search engines i.e. Google, Bing, etc.) that you used to get information for your Science Fair Project.

**Important note: NOTHING should ever be printed off the Internet or copied out of a book, cut out and added to a Science Project. Students always need to read the information and rewrite it IN THEIR OWN WORDS!!!

Results and Graphing help:
http://nces.ed.gov/nceskids/createagraph/default.aspx

SAMPLE WRITTEN REPORT

To Determine…

Name

Michelle Obama School of Technology and the Arts

__ Grade

Science Fair 2022 - 2023

Teacher:

Table of Contents

Acknowledgements

I want to thank…

Review of Literature

Purpose

To determine

Hypothesis

If

Materials

Independent Variable:

Controls (Controlled Variables):

Procedure

First, I will

Results

Conclusion

In conclusion, my hypothesis was

Reference List