

# FMS Science Fair Sponsors Meeting

September 9, 2013



# Step 1:

- Choose a topic
  - Topics come from student observations, interests or current world events.
  - Science fair idea websites
    - My personal favorite:  
<http://www.sciencebuddies.org>
- Review reliable published material relating to the topic

## Step 2:

- Acquire a logbook
- Write a Literature Review to gain more background information
  - Review reliable published material relating to the topic
  - Compile a working bibliography

## Step 3:

- Develop a testable research question
  - Answerable through experimentation
  - Should be written as a question
  - Can be answered with a “yes” or “no.”

## Step 4:

- Construct a hypothesis
  - The hypothesis is the “tentative” answer to the research question.
  - Must be testable. In other words, can the hypothesis be disproved?
  - Materials and subjects needed to test the hypothesis are readily available and/or obtainable.
  - Often stated in the “If...then...” form." If...then..." is followed by “because...” indicating rationale.

## Step 5:

- Planning the Study: Method
  - Subjects
    - Are they the correct ones to use? Are they the best ones to use?
    - Can you find them? Can you get them here?
    - Do you have enough money to get them?
    - Can you keep them safe? Can you keep them alive and healthy? Do you need a qualified scientist's supervision?
    - How many will you need in order to have a large enough sample size?

## Step 6:

- Materials & Supplies
  - Can you find them? Can you get them?
  - Do you have enough money to get them?
  - Are they safe to use at school, home or do you need to work with them in a laboratory setting?



# Step 7:

- Procedures
  - Step-by-step directions up to the “Results” section of the study.
  - Must be written detailed enough that someone else could repeat the study, and have the same results.
  - Be sure to state all safety precautions and equipment used. (Masks, gloves, goggles, etc.)
  - Use only one independent variable to test against the control variable.

## Step 8:

- Write a proposed research plan for approval.
- Complete the ISEF Rules Wizard to know ALL the approval forms needed to start experimentation.
- [Interactive ISEF Forms](#)
- Fill in all the forms.
- Be sure all appropriate signatures (parent, sponsor, qualified scientist, nurse, etc.) and dates are acquired prior to experimentation.

# Protocol Forms and Rules

- Abbreviated Elementary Form (Newly revised)
- Protocol Forms for Secondary (6-12)
  - ISEF Wizard  
<http://apps.societyforscience.org/isef/students/wizard/index.asp>
  - Start with the research plan
  - Forms every project must have
    - »1,1A,1B

# What is a SRC anyway?

- Scientific Review Committee

<http://www.societyforscience.org/isef/document/>

(Must be prior to experimentation)

**2) To be completed by the Fair SRC**  
(Required for projects requiring prior SRC/IRB APPROVAL. Sign 2a or 2b as appropriate.)

<p><b>a) Required for projects that need prior SRC/IRB approval BEFORE experimentation</b> (humans, vertebrates or potentially hazardous biological agents)</p> <p>The SRC/IRB has carefully studied this project's <b>Research Plan</b> and all the required forms are included. My signature indicates approval of the <b>Research Plan</b> before the student begins experimentation.</p> <p>_____ SRC/IRB Chair's Printed Name</p> <p>Signature _____ Date of Approval (Must be prior to experimentation.)</p>	<p><b>OR</b></p> <p><b>b) Required for research conducted at all Regulated Research Institutions with no prior fair SRC/IRB approval.</b></p> <p>This project was conducted at a regulated research institution (<b>not home or high school, etc.</b>), was reviewed and approved by the proper institutional board before experimentation and complies with the ISEF Rules. <b>Attach (1C) and required institutional approvals (e.g. IACUC, IRB)</b></p> <p>_____ SRC Chair's Printed Name</p> <p>Signature _____ Date of Approval</p>
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**3) Final ISEF Affiliated Fair SRC Approval (Required for ALL Projects)**

<b>SRC Approval After Experimentation and Shortly Before Competition at Regional/State/National Fair</b> I certify that this project adheres to the approved <b>Research Plan</b> and complies with all ISEF Rules.		
_____ Regional SRC Chair's Printed Name	_____ Signature	_____ Date of Approval
_____ State/National SRC Chair's Printed Name (where applicable)	_____ Signature	_____ Date of Approval

# Human Subjects Help and Approval

- Beth Philips – SJRMC

Ms. Phillips likes to review human subject research plans prior to experimentation.

She is a great resource for all those behavioral science projects our kids love so much.

Have your students email her at:

[bphilips@sjrhc.net](mailto:bphilips@sjrhc.net)

Beth Philips

IRB Administrator

505 402 6825

## Step 9:

- Conduct the experiment
  - Record detailed notes, measurements, observations and data into the logbook.
  - Use appropriate data tables and charts to record all measurements.

## Step 10:

- Analyze the data using graphs
  - Was the hypothesis supported?
  - Could errors in experimentation have caused these results?
  - What new questions are surfacing as a result of this experiment?
  - What is a possible “next step” in this investigation?
  - How can this research apply to the real world?

# Preparing the Project for Presentation



# Research Report Booklet

- Using the notes in the logbook, develop a complete research report booklet.
  - Title Page
  - Table of Contents
  - Introduction
  - Materials & Procedures
  - Results
  - Discussion of Results
  - Conclusion
  - Bibliography
  - Acknowledgements
  - Appendices

# Abstract

- No more than 250 words
- Purpose & Hypothesis
- Procedures
- Results
- Conclusion
- Applications

# Display Board

- Eye catching
- Reads like a newspaper
  - Title
  - Purpose
  - Hypothesis
  - Materials
  - Procedures
  - Photos with Captions
  - Tables & Graphs
  - Conclusion
  - Future Experimentation

# Presenting for Judges

- Inspiration (idea's origin)
- Theories
- Procedures
- Results
- Conclusion
- Impact on society (“so-what factor”)

# Paper Competition

- **New Mexico Academy of Science Junior Academy of Science (6-12)**
- Sponsored by Erin Gockel
  - [egockel@fms.k12.nm.us](mailto:egockel@fms.k12.nm.us)
- <http://www.nmas.org/junior.html>
- Students who participate, usually do well at State SF.

# Sponsor's Responsibilities

- Coordinate School SF
  - Give out certificates or ribbons
  - School is allotted a small budget through activity funds
  - 2 Judges for interviews
  - Ratio for judges to projects: 1:5
  - Solicit spouses, friends, retired relatives and other “kid friendly” folks.
  - Winners and strong projects invited to District SF. (1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> Place)
  - District Excel Spreadsheet on CD

Questions?

Feel free to ask any question on the conference! We are all here to help!

Good Luck!