

WSSEF ~ Logbook or Scientific Journal Documentation Guidelines

Your project's documentation should include two things: 1) a **Bound Logbook or Scientific Journal** - one for each student on the team, and 2) a **3-ring Project Notebook** - one notebook per project. These documents will include and communicate everything about your project from beginning to end. Your project will be challenging presenting problems and challenges that you will overcome with creativity, perseverance and teamwork. Science and Engineering projects are not easy and will include changes in design and direction as you overcome the challenges. Be sure you include evidence in your project documentation of everything that you do to complete your projects. Show all the research you do, the engineering and experimental design work you do, the problems you encounter and solve, the design and experimental changes you make, and the perseverance you demonstrate to develop great engineering designs and develop strong scientific conclusions.

In the Bound Logbook

What is referred to as a Bound Logbook is like your "diary" during the whole project. Record everything that happens there. Everything! The logbook should be similar to the bound "composition notebook" used by many students in their classes. Science and engineering versions of these bound notebooks are available with **grid** pages rather than lined page versions often used in English classes. Each member of the team should maintain their own logbook. Your logbook will include all your *handwritten* work, including things like your daily activities, brainstorming and design sketches, project ideas, experimental design alternatives, notes on conversations with mentors/advisors, raw data, data analysis and calculations, early conclusions, prototype or experiment redesigns, additional retest data collected, renewed conclusions, final conclusions, and recommendations for future work. Record everything that happens ... ideas, changes in direction, things that turn out to be mistakes ... everything!

Note: Some projects lend itself to compiling the logbook electronically. Written logbooks are preferred but not required at WSSEF. However, you should try to test your electronic version as you would a handwritten version. It should include daily notes about discoveries, conversations, brainstorming and scanned sketches.

In the 3-Ring Project Notebook

The 3-ring project notebook will include all the project's *computer printed* documents: your ISEF paperwork, all relevant research articles, computer printouts such as CAD drawings or computer analyses, software programs, relevant emails, your final research/engineering report ... all relevant documentation that is computer printed and 3-hole punched. At a minimum, there would be one 3-ring notebook per project.

What the Judges Want to See

Judges want to see thorough documentation of the project from start to finish. They want to see all the work that you do as you follow the Scientific Method or the Engineering Design process. Remember ... in most cases the first design or experiment that you do may not be successful, and you will need to make changes and improvements along the way. Judges *want to see these changes* ... the updated final designs, all the data collected during testing - even if early data is unsatisfactory or inconclusive. All projects encounter challenges. Include evidence of all of this in what you show to judges! They want to see it.

What the Judges Don't Want to See

Judges do not want to see perfect, unblemished logbooks and 3-ring notebooks that imply a problem-free project with no changes, challenges, failures or redesigns along the way. This virtually never happens. Please do not try to imply that's what happened by presenting "perfect" logbooks and notebooks with no record of challenges along the way. Please *do not recreate* your documentation after completion of your project so it will "look good". Judges do not want that... they want to see authenticity, problems, creativity, changes that occurred during your project.

Judges also do not want to see *incomplete* documentation that leaves out any portion of a project's development. Show early versions of your ideas... experimental designs, prototype designs, early and evolving versions of your software coding, mathematics done once and then over again to make corrections... anything that you do over the course of completing your project. Including these things will clearly show that **you** were the real and original author, creator and designer of your project.

Science or Engineering Project?

Your project will be either an engineering or science project, and that will determine the process you use to complete it. Here are examples of process outlines for Engineering and Science projects:

Science Project:

Observation
Form Question
Form Hypothesis
Research
Design the experiment
Conduct experiment, collect data
Analyze data
Form Conclusions

Engineering Project:

Problem defined / Design goal identified
Brainstorming ideas
Research
Define constraints and performance criteria
Develop final design
Build prototype
Testing and collected data
Analyze data
Redesign/Retest
Form Conclusions

The Research or Engineering Final Report (included in the 3-Ring Notebook)

Final reports for science fairs need to include the entire project written out from start to finish. A Science Research Report should include a title page, statement of purpose, hypothesis, materials and procedures, results and conclusions, discussion, and credits and bibliography. If applicable, graphs, tables, or charts should be included with the results portion of your report. An Engineering Final Report should include a title page, abstract, introduction, design intent, final design drawings, materials and testing methods, performance criteria, performance data/results, conclusions, acknowledgements, and bibliography. Relevant graphs, tables and charts would be included too.

Finally: The Presentation Board

When your project is complete, you can create a presentation board that **is** "perfect" and looks great! The Presentation Board is where an unblemished, complete summary of your project can serve you well. The guidelines for your presentation board are available from a variety of sources, including the WSSEF and ISEF websites.