

Log Book Set-Up Scientific Inquiry Investigation

The logbook of a scientist is the diary of the investigation they are working on. Everything that is done or observed is recorded in the logbook. This can give the investigator valuable information as they go through the experiment and try to analysis data. The logbook is a working document and not the final report. There may be mistakes, and spills. That is fine, it shows the judges it is your original work. A logbook should show use and not necessarily be a pretty document. It is often beneficial to pick up your logbook and refer to different sections as you present to the judges.

Rules for using a logbook:

1. A standard composition book is recommended for use. Do not use an online logbook, as of now these are not recognized by the Science and Engineering Fair of Houston.
2. Always write in ink. Black ink is preferred. Draw one line through errors. If it is a whole page just fold it over. Diagrams can be colored with map colors.
3. Blank data tables can be printed and used. You should fill in the data with ink.
4. Photographs can be placed in the logbook.
5. Write on one side of the page only. The page on the other side can be used for calculations.
6. Always use metric measurements.
7. Do not have your name, teachers name or school where it can be seen.
8. The best presentation of your logbook will be to tab each section for easy reference.
9. Any paperwork for the IRB or SRC should not go in the logbook. This should be kept in a separate binder. MSDS sheets should also go in a separate folder or binder.

Setting up the logbook:

1. The first page will be the **title page**. Your name should not appear here. The starting and stopping dates of your project should be under the title. Skip a page.
2. **Table of Contents**. This should start on page 3 in your logbook. You should allow several pages for it. After the Table of Contents pages you should start numbering your pages. The numbers will go in the top right-hand corner. The numbers should be odd numbers. Do not worry about numbering the back of the pages.
3. **Introduction or rationale**. This is where you put the why and real-world connections of this investigation. This can later be used to help write the Rationale in Scientisteer. Allow several pages. If you have extra blank pages that do not get used it is okay. It is better to have extra pages than running out of room.
4. The **research question or problem and hypothesis** should be next. Check with your teacher to see if they want these on separate pages or together on one. In both of these the independent and dependent variables should be clear.
5. **Research** on the project will be next. Check with the teacher to see if they want cards and have them taped in here or if they want the research done in the logbook.
6. **Scientific Inquiry Investigation Design Diagram**. This is something that you may or may not have for your investigation. Ask your teacher if they want it in the logbook.

7. **Materials list.** List all materials you plan on using. Allow at least 2 pages in case you have a lengthy list or if you need to make notes on where to purchase them.
8. **Safety Precautions.** You should list all safety precautions required for this project. Consult the Science and Engineering Fair of Houston for the rules. After you read the rules you will know what safety procedures you will need to follow and what specific SRC forms you may need. If MSDS sheets are needed list the chemical that you will need in the research. If the project has no safety concerns then make a statement noting this is the case. This shows the judges that you considered safety and could find no issue at this time.
9. **Procedure.** Leave at least 6 pages for your procedure. If you know your project may have a long procedure, then add more pages. This should be handwritten, not printed from the computer. The steps should be numbered. Make sure each step is very clear including precise measurements and units used for that measurement.
10. **Daily Log.** This is where you write observations that are qualitative in nature and any thoughts you may have about the progress of your investigation. Leave at least 5-6 pages here.
11. **Data.** Your data tables will go in this section. You will record any quantitative observations you make here. You may have several depending on the nature of your project. You may want to put your graphs here as well. Make sure you leave several pages blank.
12. **Data Analysis.** This section is where you analyze statically your data. This may include the mean, median, mode, frequency, range and any other statistics you may use. This is where you make inferences about what the data is or is not telling you.
13. **Conclusion.** This is where you pull your investigation together. Your teacher may have specific guidelines they want you to follow. You will use the inference you made from your data analysis to explain your results. Your conclusion should include things such as:
 - Patterns in data
 - Identify if one treatment seemed to have a bigger or smaller affect
 - Determine if id one trial influenced the mean
 - Highlight if there are any differences in data between the different days.
 - Think about what final statements can be made about the investigation.
14. **Miscellaneous.** It is good to have this section so that any information you may have that does not fit in the other sections can be discussed which might include photos receipts, as well as personal reflections on the project.