

## The Research Log Book

The Log Book is a day to day record of all activities you did on your research project. It tells what was done, where it was done, and when it was done. It is PROOF of what you did!

Your Log Book should:

- be a **composition book** (do not use spiral or loose leaf paper)
- have your name, school name, and teacher name on front cover
- be **handwritten in ink**, not pencil
- **have every entry dated**, include place, time, and exactly what you did
- include your reach of topic from the internet or library
- give a **brief summary of the literature** you reviewed
- include your **problem statement** (stated as a question)
- **state your hypotheses** (measurable predictions)
- include a **description of all equipment** you used (include sizes, materials, cost, etc.)
- have specific **instructions for making solutions and/or media**, if applicable
- include all of your **raw data**
- **include additional observations** during experimentation that are not part of your raw data (such as temperature, pressure, anything unusual that happened)
- include in your data **accurate METRIC measurements**. Give masses in grams, volumes in milliliters, and linear measurements in centimeters or meters.
- have all **statistical analyses** (include equations used and show calculations)
- have a **list of all contacts** (scientists, engineers, etc.) with phone numbers, FAX, e-mail, etc.
- have **every entry (day) on a new page** with the date and time at the top of the page and the place where work was done
- include any **specific precautions for chemicals** used that require special care (you find this out from the SDS sheet on each chemical)
- include **disposal** (autoclaving) of cultures of microorganisms

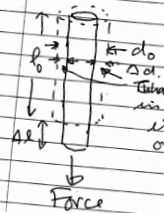


As a general rule, if in doubt include it in the Log Book. **It is better to have too much data than not enough, so keep LOTS of notes.**

Sample Logs

October 30, 1987 -  
 why are hot air rises then  
 mountains cold?

October 31, 1987 -  
 I did some research  
 about the question I asked  
 yesterday. When warm air  
 rises, the pressure of the  
 air decreases and then the  
 air expands. As the  
 air expands it cools off.  
 That is why the peak of  
 mountains are cold even  
 in hot air rises.

← DATE → PAGE NO → ①  
 January 19, 1999  
 The measurement of Poisson's Ratio  
 Background  
 What is Poisson's Ratio?  
 Poisson's Ratio,  $\nu = -\epsilon_r / \epsilon_a$   
 change in diameter / axial strain  
 $\epsilon_r = \Delta d / d_0$  or lateral strain  
 $\epsilon_a = \Delta l / l_0$  axial strain  
 Initial diameter, change in length, initial length  
 $\epsilon_r$  and  $\epsilon_a$  will have opposite signs  
 ... sign in definition of  $\nu$   
 The basic principle in this lab is to  
 apply force, measure change in length,  
 measure change in diameter  
 → compute axial and lateral strain by dividing  
 change in length by original  
 length and change in diameter by  
 original diameter  
 PRINCIPLE  


12/17/2010  
 Temperature Reading in  
 Compost Bin  
 12/20/2010 - First reading after starting  
 75°F (humidity 55%)  
 12/21/2010 - Temp 70.8°F Humidity 55%  
 Mixed compost with food off-  
 12/22/2010 - Temp 75°F Humidity 58%  
 because had started but some food  
 left still visible  
 1/4/2011 - Temp 44°F Humidity 58%  
 Did not mix Added more kitchen scraps  
 1/3/2011 - Temp 70°F Humidity 57%  
 Mixed Added scraps  
 Visual change: now clearly decomposing  
 Some change in packaging and contents  
 but not yet

JANUARY 10, 2008  
 PROBLEM! I went to check on  
 THE PLANTS AND DISCOVERED THAT MY  
 CAT HAD SCRATCHED THE POTS OF SOIL  
 AND ATE 4 OF THE 12 PLANTS.  
 I HAVE TO REPLANT EVERYTHING.  
 I NEED TO PROTECT THE PLANTS  
 FROM THE CAT. MAYBE I CAN USE  
 SCREEN AROUND THE POTS.  
 JANUARY 11, 2008  
 REPLANTED 12 NEWLY PLANTED  
 CONTAINERS. CREATED A SCREEN A  
 THE PLANTS TO KEEP CAT OUT.

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 31

5/20/99 2:20pm clear, almost cloud free day  
 light levels monitored

Test	1	2	3	4	5	6
75% ①	1	2	3	4	5	6
80% ②	1	2	3	4	5	6
75% ③	1	2	3	4	5	6

3/19 FRI H2O POTS  
 Green tags W0420-1 ✓  
 3/20 SAT  
 Green tags W0420-1  
 3/22/99 Mon: Plants have really taken  
 Peter off ~9:30 - Mon  
 Fertilized all plants w/ Peters 20-20-20  
 200 ml/pot - seeds up  
 100 ml/pot - unmanure pots  
 removed #04 RO-01-1 Insect food  
 4/3/99 lights still off @ 7:30 am, fridge  
 checks ok yesterday = power outage  
 3/24/99 removed #54 RO-04-3 ✓