

HOW TO KEEP A LAB NOTEBOOK

Real scientists always keep records of their work. Writing things down is a powerful way to reinforce learning. It helps a student clarify science concepts learned while doing hands-on experiments. Writing also helps a student organize information and share it with others.

Keep it simple. Use a spiral-bound notebook to keep everything in one place. Use the first couple of pages for a table of contents. Older students may want to add a conversion table for measurements. Make this journal an ongoing part of your science instruction. Always review and discuss your student's entries, asking him to explain his thoughts. If your student isn't writing yet, record the information for him. Young students can draw pictures or copy simple words.

Title: Name the experiment.

Hypothesis: Write a statement that tells what you want to prove. Asking questions can help you decide what you want to learn from the experiment. For example, do salt and fresh water have the same density? How might you determine that? Do the same objects float in both fresh water and salt water? If an object doesn't float in fresh water, will it float in salt water? Your hypothesis could be: Salt water and fresh water have different densities.

Description: Write down how you plan to test your hypothesis. For the density experiment, you can gather different objects, test them in both fresh and salt water, and compare the results.

Materials: Write a list of all the materials you will use for the experiment, including the amounts.

Methods: Write your steps in order as you do them. You can also draw pictures or diagrams to show how the experiment will work. When something in an experiment can change, or vary, it is called a variable. For instance, in the density experiment the amount of salt used for the salt water solution is a variable. You want to try to keep your methods consistent during each experiment. You can then redo the experiment by changing a variable. Would changing the amount of salt in the salt water change the results? Another variable you could change would be the water temperature. Does it make a difference if the water is cold or hot?

Data and Observations: Write down everything that happens during the experiment. You may want to use a simple table to record your data. For the salt water experiment, you can make a three-column table. In the left column, list the objects that you will use. Write Salt Water at the top of the second column and Fresh Water at the top of the third. As you test each object, write down if the object floats or sinks. You can use just letters, F for float and S for sink.

Conclusions: Write a short summary of your results. Did you answer your questions? Did you prove your hypothesis? Explain what you think happened and why. Make a graph or diagram to compare the results. For the density experiment, you could make a bar graph comparing the number of objects that floated in fresh and salt water. If your hypothesis was correct, the bar for salt water would be longer because some items floated in salt water that did not float in fresh water. A graph can help you to see patterns in the results. What can you conclude about the densities of fresh and salt water?

Write down new questions you have as a result of your experiment. What are some other experiments you can try? Be sure to include other ideas or questions you have. You could even have a page for questions or topics that your student wants to explore further. A lab notebook is a work in progress. The goal isn't just to finish an experiment, but instead to open the doors to further exploration. There is always something new to learn in science.