

Keeping Your Research Notebook RTT – Fall, 2004

The research notebook is a vital part of your research. The notebook is the proof that you completed the research yourself and keeps you organized.

A research notebook has many different names, such as logbook, experiment book, laboratory notebook, or research journal. Whatever it is called, it follows the same general format. This format may seem silly or overboard, but there is a good reason for each guideline. The notebook that you keep may be used to prove the validity of your research. Suppose your work results in a patent. Another researcher makes the discovery at about the same time and files for a patent. Your situation is eventually resolved in court. Your notebook can be subpoenaed by the court for evidence. A well-kept notebook of your work could result in you or your company being awarded the patent and all of the associated royalties. A poorly kept notebook will result in loss of the case, and possibly a mandatory career change. The purpose of this unit is to show you how to create and keep a notebook that will stand on its own.

There are a few rules that you should follow. By no means is this list complete, and your instructor will probably add to the list.

Types of Acceptable Notebooks

1. All notebooks **MUST** have glued or sewn-in pages. This keeps the notebook neat looking, and also it proves that no pages were added or removed.
2. Pages should not be perforated. Avoid the risk of tearing pages out of the notebook. Perforated pages are more easily torn and the notebook becomes “ratty” looking more quickly.
3. “Composition Books” are acceptable. Use the inexpensive type you can find at discount department stores. Your notebook should run no more than about \$1.50 at the most. You might be able to find “quadrille” pages at some office supply stores. The graphical pages seem to make it easier to enter information.
4. **NO** computer logs are allowed. There are several problems with using computer logs. First, there is no proof that the file was created at the time you claim. Second, we have had several hard-disk crashes recently that have resulted in complete loss of data. It isn't worth the risk.
5. **NO** spiral notebooks are allowed. These notebooks can have pages removed without leaving a trace. This goes back to the integrity issue.
6. **NO** loose-leaf pages as a notebook. Pages can be added and deleted too easily.

7. You should keep a 3 ring notebook to hold your consent forms, research articles, old versions of your papers, etc.

Writing in Your Notebook

1. Use only dark-blue or black ink permanent pens.
2. Do not use a pencil or erasable ink. It's the same story. You want there to be no doubt about when and what was written in your notes.
3. Do not use "whiteout". Besides hiding information, you may find that you actually were doing the measurement or calculation correctly. If you can see the "old" work, you won't have to take the time to repeat it.
4. Draw a single line through a mistake. Write the correction next to the mistake. Try to make it as neat as possible.
5. The point is to not obliterate anything in your notebook.
6. You need to number each page in the upper right corner. Go ahead and number all of the pages in the book. This will save you time later.
7. Write only on the front of each page. This may seem wasteful, but you can use the extra space on the left side for "scratch" work. Include notes to yourself or unexpected results or observations in your notes. A small observation today may save you time or even make for a great discovery in the future.
8. Print out graphs and tables. Glue or tape these into your notebook. A glue stick works well, as does clear plastic tape. Be sure to cut the insert neatly. The edges of the insert should be at least one cm from the edge of the page to reduce the chances of the graph tearing out of your notebook.
9. Print out e-mails and include them into your notebook. Most will not be long and should not take up much space. You might consider printing out an extra copy to go into your 3 ring binder for safe-keeping. If the e-mail is too long to tape or glue without folding cut the email into smaller pieces and paste those into the notebook. Having folded materials in the notebook just makes a mess down the road.
10. Most people organize their notebooks by date. That makes reading the notebook and recognizing a sequence of events easier. Start the entry by writing the full date in the notebook. For example, you would see at the top of the page, centered "August 18, 2004". Writing out the date makes finding specific entries easier for you.

11. A very important research technique is to enter ALL information directly into your notebook. Having scraps of paper floating around your lab or room is asking for headaches. It is much easier to just keep it all in one place. This is a functional document. It doesn't have to be perfect. You can make notes to yourself. Just make it easy to find information quickly.
12. Include all sources of information in the day's entry. You might have just the name of the source, and perhaps the relevant pages from the source listed in this part of your notebook. You will have a full bibliography at the end of your notebook to include all of the information about the source.
13. Do not procrastinate when entering data into your notebook. Use your notebook. It is not a sacred book, never to be touched. Keep it up to date. Your advisor will ask to see it on a regular basis, and you should keep it current. Advisors reserve the right to see your notebook at ANY time, not just the days for FIRM to make sure it is current.
14. It is very important to respect the privacy of your test subjects if you are conducting human research. Never put personal information, such as names or addresses in your notebook. Set up a code and record your identities on the consent forms that you keep in the binder. Your notebooks will be available for viewing by the judges and public during the Science Fair. You do not want to face an embarrassing situation (lawsuit) by publicizing information about test subjects.
15. Complete the day's work by drawing a single horizontal line across the page in your notebook after the last of your entry. Initial and date your entry. For example you might write "S.T. 8/18/2004". This shows the end of work for that day.
16. It is permissible to start a new entry just below the previous entry on a single page. Just write the date as was described earlier.

Parts of Your Research Notebook

1. Cover of Notebook
 - a. Your Name
 - b. Project Name
 - c. School (ASMSA) and Year of Project
2. Table of Contents
 - a. It is often a good idea to leave 5 pages clear for this purpose. You can start entering the daily entries on the 6th page.
 - b. List the individual entries by page in your notebook. You should enter the individual dates in the Table. Make this neat! The readers will see these pages first upon opening your notebook.

3. Daily Data Entries
 - a. Be sure to follow the same format consistently throughout the entire notebook. You might even have a practice page at the beginning to remind you of the format. Being consistent gives a greater sense of neatness and organization.
 - b. Put everything you do into your notebook. This is your project.
4. Bibliography
 - a. Leave at least 5 pages free at the end of the notebook as space for a bibliography.
 - b. To save time later when you write your paper enter the sources in MLA format. You will then have all of the information that you will need to cite in your paper. Remember that you must cite ALL sources. Failure to do so will result in severe penalties.

Final Thoughts About Your Research Notebooks

1. Keep your notebook accurate and current. Keep on top of your research. Falsifying your research is a very serious offense. There have been students who left ASMSA without graduating who were found to have cheated and falsified their data. If a person is caught cheating this way the penalties are very clear. The student receives at zero for all work associated with the project. That includes a failing grade for FIRM and possibly an F for SEC or JEC. The risk is not worth the price. Work with your advisor if things are not going well in your research.
2. Neatness is the key to a less stressful research experience. Use your notebook, but keep it neat looking.
3. The truth of the matter is that you will probably have more than one notebook. You will have a lot of information to include and that takes up space. You might even consider picking up two identical notebooks so they will look alike. Also, it is very important that ONLY research items are in this notebook. Save your History and Calculus notes for another notebook.
4. Finally, remember this notebook IS your project. If something happens to the notebook, you will have lost very valuable information that may cause your project to be a failure. The research project is required to graduate. Guard your notebook carefully. It cannot be replaced.
5. Your research notebook is not a diary. Personal details about your life have no place in a laboratory notebook. Include only information about your research and/or experimentation in this notebook.

6. Keep your notebook neat and tidy-looking. Doodling or making irrelevant sketches is not acceptable for your notebook.

These are just some thoughts about keeping your notebooks. Be sure to consult with your advisor about the details that he/she might wish for you. Your advisor is the best source of information about how to conduct your research.

Good luck and remember to have fun!