

Brief Notes for the Science Journal

Before You Begin:

- Buy a *composition* notebook. This should be a bound notebook, NOT a spiral bound.
- On the first page, carefully **print** in large letters: your name, your class, the time it meets, and your instructor's name.
- On the second page write on the top: *Instructor's Comments*.
- On the top of the next four (4) pages write: *Table of Contents*.
- On the following page (after the Table of Contents) start numbering the pages: 1, 2, 3, etc.
- Reserve the last few pages of the notebook for an *Index* of the scientific terms (vocabulary words) we use throughout the semester. Go ahead and write *Index* on the top of these pages **now**. You can label space on the pages "A, B, C, etc.", or "A-C, D-F, etc." or draw some boxes like in the example at the end of this document. Throughout the semester, when you come across a new term, fill in the word in the index as well as the page number in your notes where it occurs. Don't forget the page numbers!

What Is A Science Journal?:

A science *journal* is a bit different from a science *notebook*, although they have many things in common. In your journal, just like in a notebook, you will record all the information you might expect is required in a more formal lab setting, hypothesis or predictions, procedures, data, results, etc.

However, a science journal also contains other items that would not appear in a more formal document. Your notes, ideas, hand-drawn diagrams, reflections on the activity, etc. The journal should provide a window into your thinking before, during, and after the lab or activity. It should contain any information that would be useful to you to refer to throughout the semester.

It should be a useful for you in reviewing material throughout the course.

You are not required to keep lecture notes in your science journal, but you will probably find that many ideas discussed during lecture will be useful to jot down, especially when you are designing your own investigations.

Things to Put in Your Journal:

Every activity or investigation conducted throughout the semester should be recorded in your journal. Everything you do to prepare for and conduct the activity, as well as anything you do to help you understand the topic of the activity, should be part of the record. Of course, not every activity will be identical, so some of your entries will have more sections than others.

The following lists are offered to help you get an idea of what, specifically, to include in your journal. The lists are not meant to be exhaustive. You may think of other things you wish to include. Please do so! Anything that would help you learn the material belongs in the journal.

Every entry should:

- have a title.
- have a date.

- have page numbers.
- be listed in the Table of Contents.
- include the names of anyone you worked with (lab partners).
- have relevant vocabulary words included in the Index.
- include your observations during the activity.
- include an explanation of the results of the activity.
- include an answer to the *Focus Question(s)* for the activity.
- include your reflections on the activity and how it influenced your thinking. (See the notes below on Reflective Writing.)

Most entries should also:

- have a hypothesis or prediction about what will happen, what the result may be.
- include well-labeled diagrams of the important parts of your experimental setup showing the key details.
- have a description of the procedure you used to conduct the activity / investigation.
- have a neat, organized table of your data.
- include a conclusion based on the data and results of the investigation.

Some entries may also include:

- questions to be answered, aside from the *Focus Questions*.
- questions you may have about the activity or topic.
- brainstorming notes or notes from discussion with your lab partner(s).
- lists of things you want to remember or things you need to do. (Materials lists, variables, things you want to try changing, etc.)
- pictures, handouts, or graphs. (Be sure to **securely** tape or glue these into your journal.)
- suggestions for improving the activity.
- additional thoughts, questions, ideas, followup experiments.

Reflective Writing:

Reflective writing, especially in science classes, is a well proven technique for enhancing critical thinking skills, helping to build a stronger understanding of the underlying concepts, and helping students develop deeper insights into the material. It can also help students become more aware of and in control of their own learning. As teachers you will be required to take steps to improve your students critical thinking and metacognitive skills, so it will be helpful to you to practice it now. Plus, it will help you learn more.

Although there are many techniques for enhancing reflective thinking skills, reflective writing may be one of the most useful to use in this class setting. Partly this is because we are already keeping science journals, so it is easy to incorporate reflective writing into our activities. Partly this is because, as teachers, you will also be encouraged

to incorporate writing into all your class activities, not just science. Therefore the technique we will adopt in this course is short reflective writing exercises tied to each of our activities or investigations.

At the end of each activity you will have some time to engage in some reflective writing about what you have just done, and the topic of the activity. Take a few moments to think about the experience, your thought processes, and what you may have learned. Are you still confused by anything? Did anything happen that surprised you? What did you learn? Did the experience spark any other ideas for you? How might you use this kind of activity in the future or improve on it? With a bit of practice, reflective writing will come more naturally. In the meantime, consider writing about one or more (more!) of the following:

1. Questions I have about the activity or the course material it covers.
2. Something I learned from the activity.
3. Something interesting, surprising, or cool that happened that really got me thinking.
4. How the activity did or did not help me understand the course topic.

Line of Learning

The “Line of Learning” is a useful technique for improving your awareness of what you are learning. It is a reminder that learning is an on-going process. This is also a technique you will be encouraged to use in your elementary classrooms.

After you have completed your writing on a given topic and we have concluded any discussions or follow-up activities, you will be asked to draw and date a line under your original work. Then you will write a brief section under the “Line of Learning”, adding to or revising your original thoughts, conclusions and/or reflections. You may find that you have additional ideas. You may find that you have changed your mind about something you wrote earlier (that’s okay!). All of these things go under the “Line of Learning.”

Science Journal Grading Rubric

	Great Job!	Pretty Good	Needs Work	Please Ask For Help
Organization	Table of Contents (TOC) and Index is up-to-date; all pages are numbered; all entries have titles and labeled sections; numbers, bullet points and/or spaces separate items within sections.	Only a few missing TOC or Index entries, page numbers, titles, or sections labels, and/or section items not well separated.	More than a few missing TOC or Index entries, page numbers, titles, or sections labels, and/or section items not well separated.	Many missing TOC or Index entries, page numbers, titles, or sections labels, and/or section items not well separated.
Completeness / Required Elements	All entries contain appropriate sections (as needed): procedures, hypothesis or predictions, data or observations, results and/or conclusions, questions, reflections.	Only a few entries have one or two missing sections.	More than a few entries have missing sections or a few entries are missing several sections.	Many missing sections throughout the journal.
Observations	Describes in detail many characteristics of the object, process and/or phenomena that is being studied.	Describes in detail a few of the characteristics of the object, process and/or phenomena that is being studied.	Provides some description of more than one of the characteristics of the object, process and/or phenomena that is being studied.	Attempts to describe at least one characteristic of the object, process and/or phenomena that is being studied.
Diagrams / Tables	As appropriate, detailed, clearly labeled diagrams and/or tables are used to clarify elements of the activity, the data or results.	Appropriate diagrams and/or tables are mostly used, or only a few lack needed labels or details.	Appropriate diagrams and/or tables are only occasionally used, or several lack needed labels or details.	Diagrams and/or tables are rarely used, or many lack needed labels or details.
Conclusions	A logical explanation of the activity's results is provided based upon observations and/or data from the activity, and prior knowledge.	A possible explanation of the activity's results is provided mostly based upon observations and/or data from the activity, and prior knowledge.	The explanation of the activity's results does not quite logically follow from or is only partially based upon observations and/or data from the activity.	The explanation of the activity's results is illogical or is not based upon observations and/or data from the activity.
Reflections	Entries provide a thoughtful and detailed description of how the activities have influenced the student's understanding of the topics.	Entries provide some insight into how the activities have influenced the student's understanding of the topics.	At least a few entries provide some idea of how the activities have influenced the student's understanding of the topics.	Entries provide little to no insight into how the activities have influenced the student's understanding of the topics.
Neatness / Clarity	All entries and sections are neat, legible, easy to read, and largely free from grammatical errors or misspellings.	Most entries and sections are neat, legible, easy to read, and largely free from grammatical errors or misspellings.	Some entries and sections are neat, legible, and easy to read, or many contain grammatical errors or misspellings.	Few entries and sections are neat, legible, and easy to read, or most contain grammatical errors or misspellings.

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