Science Journals

It’s a science journal not science journal...

- “Science Journal” can refer to a peer reviewed publication, such as Nature
- “Science journal” can also refer to a personal notebook that shows your ideas, sketches, and notes relating to a scientific topic

WHAT: A science journal or a science notebook is a way of keeping track of your ideas, questions, observations, and discoveries in an orderly manner that you may reference later. Unlike a formal report, however, a journal is a place to collect thoughts in a style all your own. You can add notes back to earlier pages as you go or even include clippings from newspapers or articles. Journals provide a chance to gather information and make it yours.

HOW: When keeping a science journal, what you record and how you record it are up to you. There are a few practices, though, that can prove helpful in the long run.

1. Attention to detail: many scientific discoveries have hinged upon noticing a subtle attribute or relationship that others may not have observed. Be specific in your observations.
2. Date everything: sometimes it is important to know exactly when an observation was made, right down to the time of day. For an Earth observation, the information might be important in terms of natural cycles. For personal observations, a date can help give you context for what other information or ideas were in your thoughts at that time. Inventors seeking patents sometimes rely on showing their notes as proof of when they first conceived an idea.
3. Cite where information comes from: whether it is the location of an observation or a useful website, you can reference it clearly or find it again.
4. Use your own words: rephrasing information helps you to make sure you understand information well enough to describe it in a new way and helps prevent unintentional plagiarism.
5. Enjoy yourself. This is your notebook: you can record your idea as a haiku or as a line drawing if you want.

WHY: Science journals can serve a number of purposes: providing a record of your thoughts, storing notes or observations for later use, recording unknowns for later exploration, honing your writing and analytical skills, or allowing for deeper contemplation of difficult questions.

Scientist’s Corner! What do Isaac Newton, Lewis and Clark, and Rosalind Franklin have in common with Charles David Keeling? They all kept journals or notebooks, and you can too. Join the illustrious ranks of note scribblers!

Image credit: “Isaac Newton,” Godfrey Kneller painting, 1689
Types of Entries:

- **Observation:** An entry describing something you have seen, heard, or experienced. The style may be fragmented and include drawings.

- **Reflection:** An entry that records thoughts, questions, or personal opinions on scientific topics.

- **Innovation:** Diagrams or written records of your own new ideas or inventions. Always include the date you recorded the idea!

- **Wonder, Research, and Discover:** An entry that tracks information and the development of your thought process as you answer a question or hypothesis that is of interest to you.

- **Lab Journal:** Detailed notes on discussions or experiments, usually performed in a laboratory or class setting. Writing style should be formal, work should be shown, and details should be meticulous.

**Profile:** Dr. Jane Goodall began her initial research on chimpanzees as a young woman full of enthusiasm but without a degree in science. Although she later returned to school and received a degree, many of Jane Goodall’s later groundbreaking discoveries and papers were based on the observations made during her first year at Gombe, Tanzania (1960-1961). Without detailed notes and observations, she would not have been able to produce convincing support for her influential observations, such as the use of tools by chimpanzees. Jane Goodall’s journals from Gombe, therefore, provided valuable evidence for later papers as well as insight into the human aspect of the process and progress of her studies.

*Image credit: Jane Goodall writing in her tent at Gombe, Courtesy of the Jane Goodall Institute / Hugo van Lawick*
Sample Exercises:

• **3-2-1 Activity:** List three things you have learned in the last week, two questions you have, and one symbol that represents a topic on your mind. Choose any of the items for further research. Investigate this one item, and record what you discover. Then, record your conclusions or further questions as a result of your investigation. Did you refute or confirm and item you thought you knew? Did you answer one of your questions, or did you explore the topic which you drew as a symbol? (adapted from Chesbro, 2006)

• **Column Comparisons:** Divide your page into four columns. In one column write down a list of things or phenomena that can be observed within 5 blocks of where you live. In the second column, write down 1 thing you think you know about each item in the first column. Next, choose several items from column two, and devise a related test that can be conducted through observations within your neighborhood. Record these test plans in column three. Conduct your tests, and record your observations in the fourth column. Be sure to include drawings and diagrams.

• **7 Step Investigation:** Select a question to which you believe you can find an answer. Begin by recording what you already know. Then, asks your friends and family for input on the question. What do they believe? Next, write down common themes and ideas from the information you have collected so far. What do you notice? From there, devise a strategy to learn more, using reliable resources. After researching your topic, summarize what is known and unknown about your subject. Finally, look at the new answer you have come up with and rate it on a scale of 1-10 for how certain it is. (Sample questions and more detailed directions can be found on the AGCI website agci.org, in the “Classroom” section. Choose a topic, such as “atmosphere,” and click on the image of an apple to find the exercises.)

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**Further journaling Resources**

• Journaling methods, value of science writing, and NSTA standards *(excellent teacher resources)*

• Formal Science writing (for students & professionals).