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# Scientific Storytelling

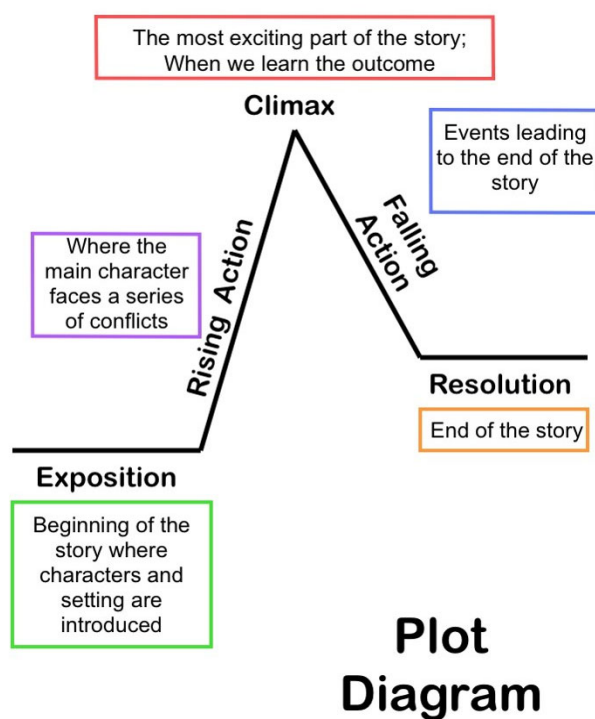
## NARRATING SCIENTIFIC EXPERIMENTS THROUGH JOURNALING

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Chemistry, biology, and physics are among the many introductory science courses that require you to write lab reports for your experiments. If you are like me, you learned in high school how to calculate results from experiments, but not necessarily how to best communicate them. At West Point, though, as a Life Science major, I've had to write countless lab reports. To be honest, the process can sometimes feel a bit mundane and mechanical. How can we get around that?

Answer: by thinking about lab reports more like stories. To me, the most important and exciting starting point for a strong lab report is a comprehensive and frequently-updated lab journal (as recommended in the Chemistry Supplement to the *Dean's Guide to the Documentation of Academic Work*). A well-documented journal should explain how you obtained your results and what they mean in context of the experiment.

The process of maintaining a journal for an experiment is very similar to that of **telling a story**: you should be aware of the setting, rising action, climax, falling action, and resolution from your experiment. By clearly narrating your thought process and goals throughout your experiment in your journal, you'll be able to translate your findings to the lab report in an efficient and organized fashion. In higher-levels of science, your lab journal will serve as the cornerstone for effective research and strong publications—but in the meantime, it will also get you through lab reports in any introductory science course.



**Narrative Journaling** emphasizes the importance of answering the following questions: *Why did I perform this experiment? What was the goal of the experiment? How did I conduct the experiment? What results did I find and in what context did I find them? Why do my results matter?* By reflecting on these questions, rather than just checking the box for each section of a journal, you will be prepared to shape your lab report in the form of a narrative that is coherent and understandable. What's the difference between the journal and the report? Think about it this way: your lab journal should serve as a comprehensive log of your experiment, while your lab report is a distilled, polished version of your lab journal.

## Starting the Experiment...

(The Setting | Introduction)

A clearly stated purpose for your experiment establishes the background and setting for your story. Hence, you should **identify and state your purpose** upfront in your journal. Ask yourself the question: *“What am I trying to achieve and understand?”* and pose your own answer to this question. After you finish, you’ll compare your original prediction to the actual outcome for the experiment. Rushing to complete a experiment without understanding the purpose of a lab can lead to systematic error.

## Explaining the Steps...

(Rising Action | Materials or Methods)

Just as a story has rising actions or events that lead up to the climax, you need to explain the materials and methods that lead up to your results. As you journal, note each step of the experiment as well as any **observations** you make along the way. Detailed observations **serve as descriptive tools** for outside readers to understand the key components of your experiment and visualize them. There should be a logical progression between each step so others can repeat your work, if necessary.



## What Happened?!

(The Climax | Results)

The results of your experiment serves as the climax and most exciting portion of your experiment. Leaving naked numbers in your journal as your results would be an injustice to the significance behind your data. Professors recommend adding images, calculations, tables, or figures to your notebook if they support or illustrate qualitative attributes of your results. Remember that **stories are multi-modal** and the way you present your results should be too! Bring your numbers to life by accompanying your numbers with visual context for how they were obtained and calculated.



## Talk About the Numbers.

(Falling Action | Analysis, and...)

Now that you’ve revealed the climax of your story, you must also explain the falling action! This comes at the spot in your journal where you reflect on, wrestle with, and ultimately explain the **significance of your results**. It is particularly useful to compare what you initially expected to happen to what actually happened in your experiment. Ask yourself: *“Why did I obtain these particular results? Were there any systematic errors?”*



## What can you Conclude?

(Resolution | Discussion)

To properly end your journal entry, or entries, you should include a conclusion or future directions section similar to how a story offers a final resolution. Explain whether or not you were able to accomplish the **purpose** of your experiment. Also, jot down some ways you think you could improve your experiment in the future (so as to obtain better results). Lastly, draw out any implications you can think of from your data—perhaps follow-on experiments that other researchers could conduct—so that you’ll be ready to leave a lasting impression on the reader (of your journal, or of the lab report you’ll be ready to write up from the journal!).