Science 9 Pathways Inquiry Project:

Final Research Paper and Presentation

Note: more detailed information on grading, etc. will be given at a later date. These guidelines are merely to help you get started, so you have less work to do closer to the date of the presentation. Plan ahead so you do not end up being overwhelmed!

You have all put a lot of effort into your science experiments. It is time to start thinking about writing up your final research paper and putting together your presentation.

RESEARCH PAPER:

- Explain, step-by-step, all the preparation, research and thought that went into your science experiment. What was the purpose of each of the steps in your procedure? Justify your experimental design. Describe any changes that had to be made to your procedure during the experiment.
- Reflect on your experiment. What did you find out? What did you do well? What would you do differently next time? What went well? What surprised you?
- Cite your research.
- Must have the following sections, in this order:
    - Introduction
        - Background research (cite this later)
        - Testable Question (see powerpoint for format)
        - Hypothesis (see powerpoint for format)
        - List variables (should tie in with procedure and materials, to follow)
            - Dependent
            - Independent
            - Control
            - Confounding
    - Experimental Design
        - Diagram of experiment (should incorporate information about how they controlled for and manipulated variables, wherever possible)
        - Procedure (step by step, with pictures)
    - Results (we will learn how to make graphs together)
    - Discussion (interpretation of results; discussion of error; future directions for this research)
    - Conclusion (answer to your testable question, based on your experiment)
    - Optional: Appendices (this is where your raw data will go, and anything else that doesn't quite fit in any of the other sections)
    - Bibliography (MLA format)

- Guidelines and Recommendations:
    - Should be *minimum* 2.5 pages (single-spaced, 11 or 12 pt font), including figures from the results section. No maximum.
    - Should incorporate all feedback from the initial proposal. If feedback was not incorporated, group should be expected to justify their decision not to incorporate the feedback.
    - Helpful Resources:
        - https://msauscience.weebly.com/uploads/1/2/2/2/122210100/science_fair_inquiry_project.pdf
        - https://gvrsf.ca/wp-content/uploads/2018/01/AMP-Guide-to-Completing-your-Science-Fair-Project.pdf
        - https://gvrsf.ca/students/handbook/

PRESENTATION:

- Above all, a presentation should be a ***story***. Sell your research to your audience. Convince the audience that your research is valuable, interesting, and worth investing $$$ in!
- Give background information for why you decided to conduct your experiment, in an engaging way.
- Communicate your results and share your conclusion(s) with your audience.
- Guidelines and Recommendations:
    - Approx 5-10 minutes.
    - Should involve all members of the group.
    - Avoid very wordy slides. Avoid reading off your slide (or your cue cards). Use videos and images to capture your audience's attention.
    - Use the hourglass method. Intro: start broad, narrow it down.
        - https://www.rosalindfranklinstem.com/scientific-writing
    - Conclusion/discussion: start narrow (with specific results), then move to bigger implications.
    - No requirement for sections that need to be in the presentation, but can base it loosely off of the research paper.
    - Practice the presentation all together as a group. Practice pointing to elements of your powerpoint.
    - Run your presentation by Ms. Au ahead of time. She will give you feedback on what you can do differently.