Science Inquiry Project

Greetings, Scientists. This term, you will be building on the research and notetaking skills we explored in Term One by exploring a scientific question of your choice. Toward the end of the term, you will share your findings with the class.

There are 6 stages to this work.

1. Come up with an open-ended but specific **question** that will guide your research.

2. **Define the terms** (words and/or concepts) within your question—this is divided into two parts:

    a. Are there words that have multiple meanings? If so, you will need to decide which meaning relates to the context of your question.

    b. Are there words/concepts that you don't fully understand yet? If so, you will need to engage in some research to discover the meaning of those words/concepts.

    You will record these definitions in the "Definition of Terms" document.

3. **Research**—here, you will (hopefully!) actively apply the feedback you received on your brain research (ask me if you forgot). It will be important to:

    a. Actively follow the criteria for notetaking.

    b. Take purposeful steps forward with your research and notetaking skills.

    c. Track your sources.

    d. Explore at least the minimum number of required sources.

4. **Subsequent questions**: as you dig into your research, you will discover that new questions arise that you will need to explore before bringing that new information back to help you with your research into your original question.

    You will record these new questions in the "Subsequent Questions" document.

5. **Prepare** to share your learning to the class.

6. **Share** your learning to the class in a short presentation. We will talk about what this will look like closer to that time.

Advice: don't go straight to the "Share your learning" stage in your mind (this might freak you out); instead, focus on one stage at a time, starting with #1. This will help build your confidence.

Definition of Terms

This will be an on-going process. There are certain terms that you will need to define before you can begin your research, and there are terms that you will only be able to properly define after you have engaged in in-depth research.

For example, take the question "*Is there life in outer space, and if so, how will we know?*"

Some terms that you would need to define before beginning your research are:

- Outer space: do you mean outside of our solar system? Within our solar system? Both? Just the Milky Way Galaxy? Just the Local Group? Anywhere in the Universe?
- We: do you mean anyone and everyone? Scientists? Astrobiologists? Canadians? Grade 6/7 students?

Some terms you would only be able to properly define (as they relate to your question) after in-depth research would be:

- Life—what do you mean by Life? Carbon-based life, like humans, or any kind of life, like methane-based lifeforms? Sentient life (the ability to think)?
- How—what is the process by which humans can discover life beyond life on Earth?
- Know—what do you mean by know? See it? Communicate with it? Find evidence of the existence of life, even if we don't see the lifeform itself?

Use the "Definition of Terms" document provided and continue to add to it as you go along. I will ask to look at it once during the first weeks of the project and once at the very end.

Subsequent Questions

As you engage in your research, you may discover that more questions are generated that need answers in order for you to go further with your overarching inquiry question. Use the "Subsequent Questions" document to ask and answer these essential questions.

How will you keep these two documents from getting lost? (Hint: accordion folder.)

Criteria for Notetaking

Regardless of the format you use, **the criteria** for notetaking is the same:

- **Use of Emphasis/Hierarchy of Size**: Are the Big Ideas and main sub-topics—and the really essential information—clearly identified in a way that pops out to you, the viewer?

- **Written in your own words**, unless you are recording a quote and clearly identifying the speaker or author of the quote.

- **Using the fewest amount of words possible to express each idea**, will still working to achieve clarity of communication—this is where things like abbreviations and symbols will really help, as will breaking ideas down into chains of connected information.

- **Use of visuals to capture complex information**—remember that a visual can be a labelled drawing, but it can also be things like charts and tables and Venn diagrams and short comics.

- **Systems of organization**—purposeful use of containers, color, and features such as a key or legend to help categorize information.

- **Thoroughness of approach**—this is a Term-long project: that should be reflected in the quantity of your notes.

- **A focus on how and why**—collecting facts is just the first step; the real work is in exploring the how and the why beneath and between the facts.

Required Number of Sources

1. At least 5 websites.

2. At least 5 videos or documentaries or podcasts.

3. At least 2 books (real books!)

You can use Wikipedia and AI as starting places for your research, but they do not count toward the required number of sources.

How and Why

Regarding how and why, here's one way to think about it:

If I were researching tennis star Rafael Nadal (in a Social Studies context), if I was really digging into how and why, I might need to learn about and report on the following:

- How to play tennis
- The history of tennis
- The geography and history of Spain, particularly Manacor, where Nadal lives and was born
- The history of Spanish tennis players and how Nadal fits into and/or breaks these patterns
- Nadal's playing style, including how he changed the sport/broke the established patterns and rules of how players play
- How left-handed players differ from right-handed players, in terms of training and tactics
- How the brain functions in terms of left- and right-handedness, and what happens in the brain when someone who is naturally right-handed makes their left hand their dominant hand
- The playing style of his main rivals, Federer, Djokovic, Murray, and Medvedev, especially how these styles are different from Nadal's, and what challenges and advantages these differences give him
- The history of his injuries, including an understanding of how those injuries affect the body, how they are caused, and how they are treated
- A projection about what his future will be as a player, based on all of this knowledge

Tips

- Don't fritter away your class time in idle chatter with other people: talking is fine, but keep it centered on the work; the more you do in class, the less you will have to do at home

- Make sure that you don't get sidetracked by shiny information – ask yourself, "If this related to my question or is it just cool?" Consider keeping a "Cool Info" section in your comp book to satisfy the shiny information itch while keeping it separate from your notes.

- Do not hesitate to ask for help if you are feeling stuck.

- Dig deep. Don't be satisfied with easy or thin answers.

- **USE YOUR TIME WISELY.**

Now, off you go…