

Science – Inquiry Projects

Greetings, Scientific Inquirers.

As you know, this term you will be working independently, in pairs, or in trios to research a thick question of your choice, leading toward the Suncrest Science Fair in June. Although there are a few things along the way that you will submit for assessment, this project is really about you managing your time, going deep, and creating a visual representation of your learning. One big thing to keep in mind is that you have a hard deadline: either you are ready for the Fair or you are not; there are no extensions with this one. As with our altered books, the challenge is to meet the deadline but not rushing. I am looking for depth and complexity in your work, and, as always, your final product is something that you should be very proud for others to view.

Requirements

- A finalised version of your question, which should be specific yet open-ended
- A definition of your terms
- Detailed notes, written in your own words – these can be in any form you wish: bullet form, web, sketchnoting, other...
- A visual representation of your learning – this needs to be something that can be displayed in the gym, so essays, PowerPoints, and speeches are not options here
- Index cards noting how the content of your project is connected to other projects in the room
- A rubric that I can assess you with

Tips

- Consider making a checklist for your project
- Work backwards from the Science Fair date to plan out how you will approach your project
- If you are working with a partner or in a trio, be very clear about who is responsible for what; and if you are meeting/talking after school, make sure everyone knows what time and how – don't just say, "Let's talk tonight."
- Don't waste 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

Question

After you have submitted your question to me, I may give you feedback. It will then be up to you to resubmit the final form of your question – I will not hunt you down for it.

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? MACC students?

Some terms you would only be able to properly define after in-depth research would be:

- Life
- How
- Know

Use the template available on the class blog 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.

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 template provided to ask and answer these essential questions.

Notes

We have spent a lot of time exploring different ways of note-taking this year. I encourage you to now begin to use the one that seems like the best fit for you – this may be a combination of several different styles. One way that does not work is copying and pasting from other sources into an e-document and then changing a few words. That is not taking notes; it is adapting other people’s writing, and unless you are citing everything you use, you are in danger of plagiarism.

Regardless of what form your notes take, they should:

- Be in your own words
- Use the fewest words possible while still capturing the important information
- Contain a list of questions that you generate as you go – often, finding out about one aspect of your question will lead to subsequent questions that you realize you need answers to; your notes should contain a Question section that you add to and check off as you go

- Clearly show the Big Ideas
- Show how different ideas and details are connected
- Be organized (not just word-vomit on a page)
- Be categorized
- Be easy to read and decipher
- Include your sources (in case you need to go back and revisit the source to clarify the information and/or go deeper)
- Be thorough (one or two pages is not going to cut it)

I will ask to see your notes at least twice during this process.

Visual Representation

You have creative choice here, as to how you share your findings. You may choose a variety of forms or just one – go for thoroughness and complexity, but don't bite off more than you can reasonably chew. You may use whatever materials you wish. If you need me to supply you with things, you will need to let me know in a timely manner. Keep in mind that there may be some materials that I am not able to supply due to availability or cost. Whatever form your project takes, it should:

- Be something you are proud for others to explore
- Accurately depict your findings
- Be able to stand on a table or the floor
- Be easy to explore (i.e. information should be neat and easy to read/view)
- Demonstrate depth and complexity in your learning

Regarding depth and complexity, think of it this way:

If I were researching tennis star Rafael Nadal, in order to demonstrate depth and complexity, I would 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 he 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
- The playing style of his main rivals, Federer, Djokovic, and Murray, 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

Connections

At the Science Fair, we will connect all of our projects to each other, most likely with string. On these strands, you will tape index cards that show how your project is connected to others. This information can be written or drawn, or written and drawn.

- You must connect to at least five other projects; you may connect to as many as you wish
- Your work on your index cards should be neat and easy to read/view
- If you wish, you may type up these notes and print them on index card-sized paper cut-outs
- You are encouraged to use color and other visual elements to make these cards fun to explore

Each card should have a directional arrow and the words “My/Our project is connected to _____’s project because...”

Rubric

Use the rubrics we have used during the year as models for your own. Yours does not need to be as detailed as mine are, but it does need to show what an A, B, and C+ would look like for each of the following sections:

1. Definition of terms
2. Notes
3. Visual Representation
4. Connections
5. At least three of the Curricular Competencies you identified on your green question sheet

I suggest that you create the rubric early on in your process so that you know what you are working toward.

As always, please do not hesitate to ask for help if you are feeling stuck.

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.

Dig deep.

Don't be satisfied with easy or thin answers.

USE YOUR TIME WISELY.

Now, off you go...