Science Fair Logbook - Emaan, Mfoniso

October 5th, 2024 - Deciding our partners

* We decided (Emaan and Mfoniso) to be partners.

October 16th, 2024

* We signed an agreement to be partners saying: if we have an argument we will deal with it with respect, we will be kind to each other, respect each other’s ideas/contributions, meet up at the library whenever we are free to work on the physical project, and that we both will be responsible for the work put into our science fair project.

October 17th, 2024

We were researching which topic/question/idea to do for our project (the following):

* Genetic Modification of crops/plants
* Slime
* Plant observation project
* Lava lamp experiment

We found the following science-related information about each topic:

Genetic modification of crops/plants: is a process that involves inserting DNA the genome of a plant/crop. To genetically modify plants, new DNA is transferred into plant cells. Then the cells are usually grown into tissue culture where they develop into plants. The seed made by these plants will inherit the new DNA. [What is genetic modification (GM) of crops and how is it done?](https://royalsociety.org/news-resources/projects/gm-plants/what-is-gm-and-how-is-it-done/#:~:text=GM%20is%20a%20technology%20that,will%20inherit%20the%20new%20DNA.) - We realized that this is the main part of science and there isn’t really anymore to explore, we thought and came to the point where we could not really personalize this to our own project/ could not make a fixed question/topic and could not think of any experiments we could run to prove any point.

Slime: Glue has polymer molecules that make liquid. The borax adds borate ions, which link the polymer molecules to each other (forming a chemical reaction). [Kids Love Slime: The Science Behind the Gooey Craze | Ozobot](https://ozobot.com/kids-love-slime-exploring-slime-videos-and-the-science-behind-the-goo/#:~:text=The%20American%20Chemical%20Society%20has,can't%20stop%20playing%20with.) - We had much more to research about and there were a lot of resources we could use to get more information, but this topic did not cling to us because there weren't many reasonable questions we could form using this topic.

Plant observation project: For this research project we did not really research but had lots of ideas and was our second option for various reasons. We had many pictures/visions/views/ideas on how we can present this project: we can do observations where we plant a marigold with plant food, and plant a marigold without plant food to observe the differences. We wanted to revolve our experiment on how much plant food helps the plant/nourishes the plant. (We picked a marigold because of its features of resilience; Calgary’s cold winters, the length of time used to plant it; very short, and we can find the marigold’s seeds in our local supermarket). Our problem though is that even though the marigold’s time length to grow is short, it is only short compared to other plants otherwise it's a long wait.[Planting & Caring for Marigold Flowers - Garden Design](https://www.gardendesign.com/flowers/marigold.html#:~:text=Marigolds%20germinate%20quickly%2C%20sprouting%20within,easy%20to%20grow%20from%20seed.) Another problem we encountered is not having the plant food having much/lots of differences. There might not be many or BIG physical differences leaving us with nothing to prove. We thought about whether we can use a different substance to compare (perhaps the amount of sunlight), there might also have the same problems or we will have to restart the project (regrow the plant), which will take another 8 weeks.

Lava lamp experiment: some different ingredients can make a lava lamp effect.

1. Salt, vegetable oil, water, alka seltzer
2. Coke, mentos, oil
3. Water, vegetable oil, food coloring, alka seltzer

We personalized this experiment by comparing each of the three lava lamp experiments to see which will make the best one. The science: the alka seltzer and the mentos in both experiments serve as a fizzy tablet to create the lava lamp effect. The fizzy tablets in our experiment produce carbon dioxide which forms bubbles. The carbon dioxide brings the denser liquid up with it since carbon dioxide is a gas and is denser than two of the main liquids in each experiment. When the carbon dioxide reaches the top the water goes down, through the oil, and the cycle repeats until the fizzy tablet dissolves.

On this day we also decided to pick the lava lamp experiment to be our science fair project recognizing that it is easy (for both of us) to research. It is one that we are very confident about and have many visions on how we can personalize it to be our science fair project. We also picked this topic because it is one that is complex but also slightly simple for us to research. We also choose this topic

Friday, October 25th, 2024

* We started a google slideshow presentation for our science fair project - for when we start working on it physically, we can print the slideshow out to make our physical project.

Friday, November 15th, 2024.

* We made a list on which physical materials we are going to use for science fair

: Emaan: coke, oil, food colouring, salt. Mfoniso: water, mentos, cups, alka seltzer.

Sunday, December 1st, 2024.

* Mfoniso bought the cardboard trifold and writing tools for the science fair.

Sunday, December 15th, 2024.

* We both started to make a visual presentation online on Canva so we can make our physical project later.

Monday, January 27th, 2025.

* Mfoniso and Emaan bought all the materials we needed for the three trials of the experiment.

Wednesday, January 29th, 2025.

* Mfoniso printed out the slides from the online slideshow at school so that Mfoniso and Emaan could work on it after school.
* Mfoniso went to Emaan’s house to do the three trials of the experiment. After that, we worked on the trifold together and finished a good amount of the overall trifold.