

Calgary Youth Science Fair Log Book



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Project Title: How Does Applied weight Affect Oobleck

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Date Started: Dec 15, Monday, 2025

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Brainstorming Ideas

Write down all initial project ideas, even the ones not chosen. Include notes on why the final topic was selected.

Date

- How Does Applied force Affect Objects Viscosity
- Aluminium foil boat
- How does Applied weight Affect The flow of Object.

Why?

My original question was about how applied force affects object viscosity. I refined it to applied weight and flow because weight is easier to measure and give clearer results. The reason we're leaning towards object is because we used to watch Emily's science Lab when little and could watch again for a recap.

Brainstorming Ideas

Write down all initial project ideas, even the ones not chosen. Include notes on why the final topic was selected.

Date

Research and Planning Page

Summarize all background research on the topic. Include notes, links to sources, or screenshots of key findings. For example, why is this topic important? What is already known about it?

Date



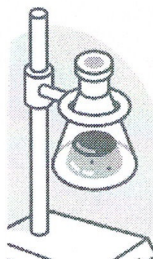
Background information

- Oobleck is a non-Newtonian fluid.
- It is made from cornstarch and water.
- It shows shear thickening behavior.
- It acts solid when force is applied.



Application

1. Oobleck is a very cool substance, it encouraged me and my friends to participate.
2. Scientific experimentation seemed very straightforward.
3. But it was very hard to understand oobleck as it had ups and downs and lefts and rights.
4. I learnt that science is very unpredictable and can do anything at any time whenever it wants.



Research and Planning Page

Summarize all background research on the topic. Include notes, links to sources, or screenshots of key findings. For example, why is this topic important? What is already known about it?

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Normally, solids keep their shape, and liquids can change shape because they flow. Oobleck is different because it does not always follow these rules. Sometimes it acts like a liquid, and sometimes it acts like a solid. When you smack or squeeze it, it becomes hard. Because of this it is called a non-Newtonian fluid. This means its thickness can change when force is applied. Ketchup is another example because it becomes runnier when shaken.

Oobleck behaves this way because of the shape of the cornstarch particles. The particles are long and thin and do not dissolve in water. When the mixture moves slowly, the particles slide past each other and it flows like a liquid. When it is pushed quickly, the particles tangle together and it hardens.

As a student, I enjoyed playing with oobleck and was curious about how it works. For my science fair project, I decided to design a simple experiment to show that applying pressure makes oobleck act like a solid.

Source:

Science World. (n.d.). *Oobleck*. <https://www.scienceworld.ca/resource/oobleck/>

Experiment Design

Write the hypothesis, variables, and materials list. Include the procedure in numbered steps. Cover the following:

- Question
- Hypothesis
- **Variables**
 - Independent Variable:
 - Dependent Variable
 - Controlled Variable:
- Materials List
- Procedure

Question:

How Does Applied Weight Affect the Flow of Oobleck?

Date

Variables

- Independent Variable: Weight applied (g)
- Dependent Variable: Mass collected (g)
- Controlled Variables:
 - - Same oobleck batch
 - - Same mesh
 - - Same starting mass (100 g)
 - - Same timing (30 sec)

Hypothesis

Our hypothesis is that when we apply more weight the cornstarch particles will clump together [becomes solid].

So in 30 seconds less oobleck will come out when I put more weight.

Experiment Design

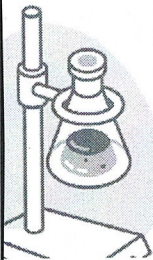
Date

Materials

1. Cornstarch and water
2. Fine metal mesh strainer
3. Flat-bottom press cup
4. Digital kitchen scale
5. Weights (200g–800g)
6. Timer
7. Mixing bowl [2]

Procedure

1. Prepared oobleck using a 2:1 ratio of cornstarch to water.
2. Placed a fine mesh strainer over a collection bowl.
3. Measured 100 g of oobleck for each trial.
4. Placed a flat press cup on top of the oobleck.
5. Applied a measured weight (0 g, 200 g, 400 g, 600 g, 800 g).
6. Timed 30 seconds immediately after placing the weight.
7. Measured the mass of oobleck collected in the bowl.
8. Repeated each weight level three times.
9. Stirred and reset the oobleck the same way between trials.



Data Collection

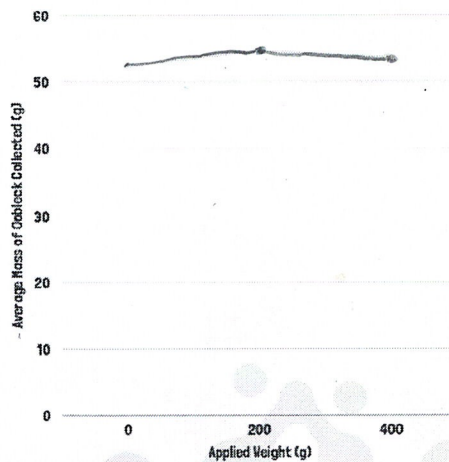
Use tables, charts, or graphs to record results. Include photos, (if possible), and/or diagrams of the experiment being conducted.

Date

Results.

Applied Weight on Press Cup (g)	Trial 1: Mass Collected (g)	Trial 2: Mass Collected (g)	Trial 3: Mass Collected (g)	Average
0	56	70	31	52.33
200	52	54	58	54.66
400	51	53	57	53.66

Effect of Applied Weight on Oobleck Flow
Mass of Oobleck collected in 30 Seconds



Results and Analysis

Summmarize what the data shows. Write whether the hypothesis was correct or not. Include any unexpected results.

Date



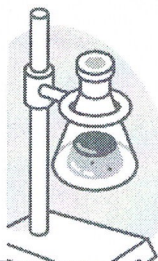
Results & Analysis

As applied weight increased, the mass of oobleck collected changed in a unclear pattern.

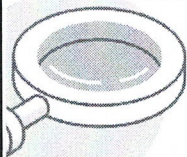
At 0 g, the average mass collected was 52.33 g.

At 200 g, it changed slightly to 54.66 g.

At 400 g, it reduced slightly 53.66 g.

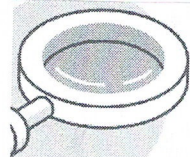
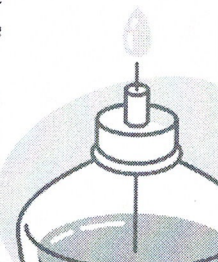
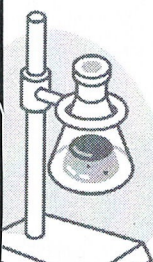


This shows that increasing applied weight (force) caused the oobleck to become more watery (in a very slight way) and flowed easily through the mesh.



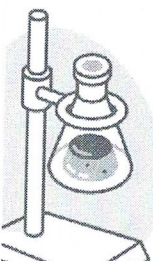
Conclusion.

- My hypothesis stated that if the applied weight increased, then less oobleck would pass through the mesh in 30 seconds because oobleck becomes more solid under greater force.
- The data did not support my hypothesis. As the applied weight increased from 0 g to 400 g, the average mass of oobleck collected increased.
- This occurred because oobleck was drying very quickly and i kept adding water to fix it. So although i was predicting that mass collected would decrease but it was almost the same, in fact it increased a bit.



Observation

1. Obleck was prepared according to ratio, but was not behaving normally
2. Results were not consistent with hypothesis
3. Water was added after each test because it was drying up
4. Results were recorded by taking 5 readings
5. Only 3 results were taken.



Reflections and Revisions

Reflect on what went well and what could be improved. Include any changes made to the experiment or procedure.

Example Prompts:

- - What surprised you about your results?
- - If you could redo the project, what would you change?

Date

Reflections and Revisions.

Even though the idea of oobleck seems simple, working with it was actually very difficult. The experiment itself was easy to set up, but the results were surprising and opposite to my hypothesis. When we increased the weight, more oobleck flowed out of the mesh instead of becoming harder. This showed me that it is easier to talk about science than to actually do it. I learned that we need to make a large fresh batch of oobleck and not reuse it, because its texture changes over time. We also need to work quickly so it does not dry out, and the type of mesh we use can affect the results. Since my results did not match my hypothesis, I would like to improve my method and try the experiment again.

Sources of Error.

There were several sources of error in my experiment. First, the oobleck kept drying out, which changed its thickness. Second, the timing was not accurate. As soon as the oobleck was placed in the mesh, it started flowing, but it was very hard to get it out of the jar. This meant the 30-second timer did not start at the same time for each trial, so the results were not exact. Another problem was that the mesh sometimes became blocked. When we washed the mesh, water stayed in it, and this extra water changed the thickness of the oobleck. I also made a mistake by adding water when the oobleck felt too thick. I learned that in science you cannot keep changing the mixture during the experiment because it affects the results.

For improvements, I will make one large fresh batch of oobleck and not recycle it. Before, we reused the oobleck after weighing it, which may have changed its texture. I will also work more quickly and keep the timing consistent. Even though my results did not match my prediction, this experiment taught me that science is not always simple. Sometimes what you expect does not happen, and you must carefully follow the procedure and keep everything consistent. It helped me understand the scientific process better.

Bibliography

Date

Science World. (n.d.). *Oobleck*. Retrieved from <https://www.scienceworld.ca/resource/oobleck/>

Emily's Science Lab. (n.d.). *Oobleck Experiment Video*. YouTube. Retrieved from <https://www.youtube.com/>

Science Buddies. (n.d.). *Oobleck: A Recipe for a Mesmerizing Mixture*. Retrieved from <https://www.sciencebuddies.org/>

Science Fun. (n.d.). *Make Non-Newtonian Goo Easy Science Experiment*. Retrieved from <https://www.sciencefun.org/>

Crash Course Kids. (n.d.). *Non-Newtonian Fluids Video*. YouTube. Retrieved from <https://www.youtube.com/>