Science Fair logbook

Dec 13, 2023

We discussed ideas for the big question and we researched to see if our questions were good

* How do different types of liquids affect plant growth
* Could the growth of plants be influenced by the quantity of oxygen and sunlight they receive?
* Do different songs affect the way you feel?
* Does the type of media we watch impact our actions?
* Does the type of light affect how much heat capacity water has

Websites

-<https://www.nytimes.com/2019/07/25/upshot/social-effects-television.html>

-<https://pplprs.co.uk/health-wellbeing/music-reduce-stress/#:~:text=All%20of%20this%20is%2C%20of,the%20mind%20and%20the%20body>.

-[**https://extension.oregonstate.edu/gardening/techniques/environmental-factors-affecting-plant-growth#:~:text=Up%20to%20a%20point%2C%20the,achieve%20different%20plant%20growth%20patterns**](https://extension.oregonstate.edu/gardening/techniques/environmental-factors-affecting-plant-growth#:~:text=Up%20to%20a%20point%2C%20the,achieve%20different%20plant%20growth%20patterns)

**-**[**https://grove.ccsd59.org/wp-content/uploads/sites/10/2016/04/14.-Color-and-Heat-Absorption.pdf**](https://grove.ccsd59.org/wp-content/uploads/sites/10/2016/04/14.-Color-and-Heat-Absorption.pdf)

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| --- | --- | --- |
| Question | Info | Decision  |
| How do different types of liquids affect plant growth? |  | Not a good question -the answer was found on a website. |
| Could the growth of plants be influenced by the quantity of oxygen and sunlight they receive? |  | Not a good question because the answer was on a website |
| Do different songs affect the way you feel? |  | Not a good question -the answer was found on a website. however really interesting topic |
| Does the type of media we watch impact our actions |  | Not a good question |
| Does the amount of light affect how much heat capacity water has |  | Yes, it is a good question because it is not found on any websites and the materials we would need can be easily obtained |
| Which colors absorb the most light? |  | Not good - found on the internet |
| -How long does it take for chocolate to melt at room temperature, sunlight, and added heat?  |  | Good because it is not found on the internet and materials can be obtained very easily. |

!Dec 14, 2023

We continued research important info about our questions and we developed another few questions

-How long does chocolate melt at room temperature, sunlight, and added heat take?- -Which colors absorb the most light?

Jan 13, 2024

We continued working on Big questions and developed a new question- What effect does the addition of different substances have on the heat capacity of water?

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| --- | --- | --- |
| Question | Info | Decision  |
|  What effect does the addition of different substances have on the specific heat capacity of water? | Some substances may increase the Specific heat capacity of water | Yes, because our questionWas not directly found on the internet there was a different question that was answered  |

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We came up with the steps for our project

1. Get different substances ex. Salt, pepper, etc
2. Have a few different containers ready with the same amount and temp of water
3. Add the same measurements of substances to each but have a separate container with just water
4. When we know the Specific Heat capacity of water we will start measuring the specific heat capacity of the other substances
5. Compare the specific heat capacity of each substance to water
6. Record the data in a chart and see what the effects are

Jan 15, 2024

We worked on our Experimental project and came up with this:

Independent/Manipulated Variable: The independent/manipulated variable in this experiment is the different substances added to the water. (salt, pepper etc.)

Dependent/Responding VariableThe dependent/responding variable in this experiment is the specific heat capacity of the different substances after the addition of various substances to water.

Controlled Variables

1. Amount of water- The water quantity will be measured uniformly for all the experiments.
2. The temperature of the water - We will measure the temperature of the water and pour water with the same temperature in each test
3. Type of “sun”- We will use the same lights with the same voltage

 for the sun

1. The angle of the Sun - We will position the sun at the same spot for the tests ( by measuring )
2. Amount of substance -We will measure the amount of each substance we will put in equally

The real-world connection of this question is that it can help us understand how different substances can affect water temperature and therefore impact various processes that rely on water's specific heat capacity. For example, this knowledge can be used in engineering and construction to design cooling systems.

 Feb 15

We decided to create a new question for our experiment

We created a new experimental design

The Big Question: Which parachute design will have the effect of both a round and square parachute?

The Independent/Manipulated Variable would be the different designs of the parachute.

Dependent/Responding Variable: effectiveness of the parachute design, which can be measured by descent speed, stability, and impact force.

Controlled Variables (for each controlled variable listed, tell how you are going to control it):

1. Height of drop: We will drop each test subject from the same height which will be 6ft
2. The same weight for each test subject (human lego) we will make each test subject 3g by removing any additional accessories including hair parts
3. Fabric of parachute: We will make each parachute with nylon fabric
4. The amount of fabric will be the same for each parachute (15 By 15 cm)
5. length and amount of string - amount= 3 strings on each side
6. Size = each string will be 12 cm long
7. String attachment - We will hot glue the string to the parachute on the same spot accurately

Proposed steps in your experiment (if you included a step-by-step in your big question proposal, you can copy and paste):

1. We will create different designs of parachutes with the cloth without cutting any pieces out. Instead, we will fold the pieces of fabric to get our preferred shape including attaching the strings
2. We will tie the other strings to the Lego humans
3. We will drop each subject one by one
4. Before dropping it we will have a timer ready to see how much time it takes

We would like to get a shape that will have the effects of a round parachute which gets you landing on the ground smoothly and a square parachute

 gets you farther.

Feb 17, 2024

We experimented with our original design

BUT….

Realized it wasn't big enough so we would increase the size next time

Feb 18

We created 3 (hopefully) prototypes

Here are our prototypes



Pyramid

1 far smooth 1.48

2 Far smooth 2.51

3 Far bumpy landing 2.38

Rectangle

1 Far smooth 2.93

2 Super far perfectly smooth 2.98

3 Slightly far smooth 2.65

Slight folds

1 slightly far smooth 2.96

2 far smooth3.98 float before fall

3 went the farthest a super smooth landing at 3.61 float before fall