

Galaxy Girls - Team Journal



Team Members:

Eleasha Kuehl

Hazel Clemmens

Aliyah Neuenschwander

Leah Rada

Madison Theissen

Coach - Samantha Rubenzer (7th grade science teacher)

Table of Contents -

<u>Item:</u>	<u>Slide Number</u>
Machine Changes Over Time	3
Applied STEM Processes	4
Blueprint Rough Draft	6
Blueprint Final Draft	7
Machine Steps	8
Materials Itemized List	9
Machine Cost & Recycled Percentages	10
Reflections	
Eleasha	11
Leah	11
Aliyah	12
Hazel	12
Madison	13
Bibliography	14

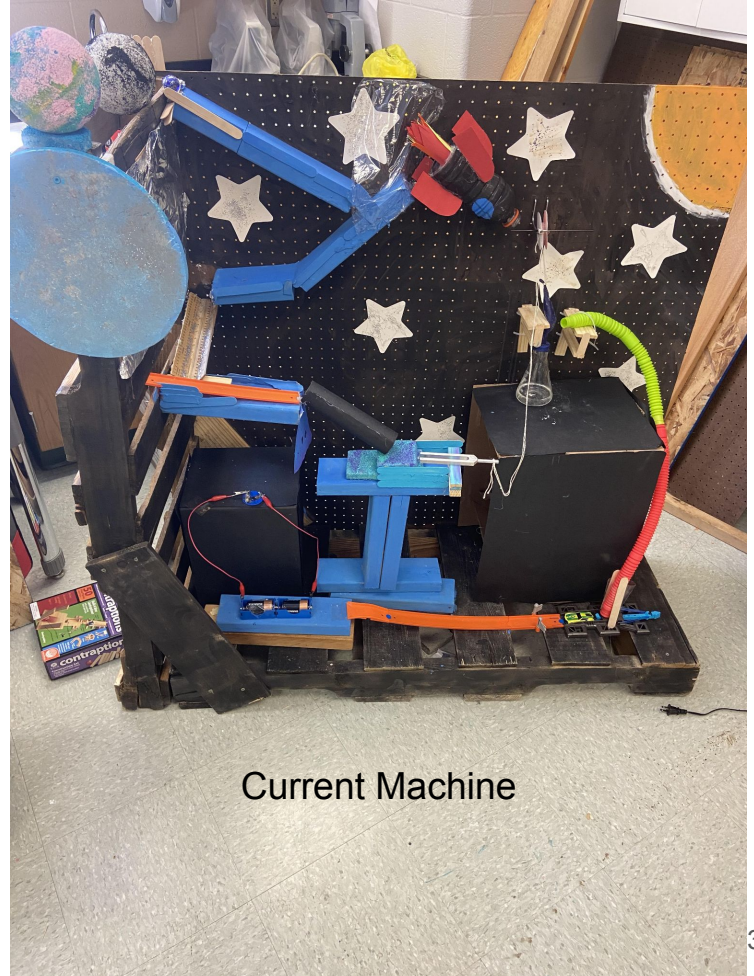
Engineering Design Changes Over Time - Eleasha

How did ideas for the machine change over time?

Our theme changed and our ideas started to become more creative thanks to Hazel. Eleasha had the base work done and the marble run was done, when our team saw it, ideas went through our heads. At first we did not have advanced steps, but we challenged ourselves and included steps that weren't required. The moon and the rocket were going to be included in our project, but instead we used it for decoration. We were going to use PVC pipe but instead used a fidget toy so we can manipulate it. If one thing didn't work, we always found another way.



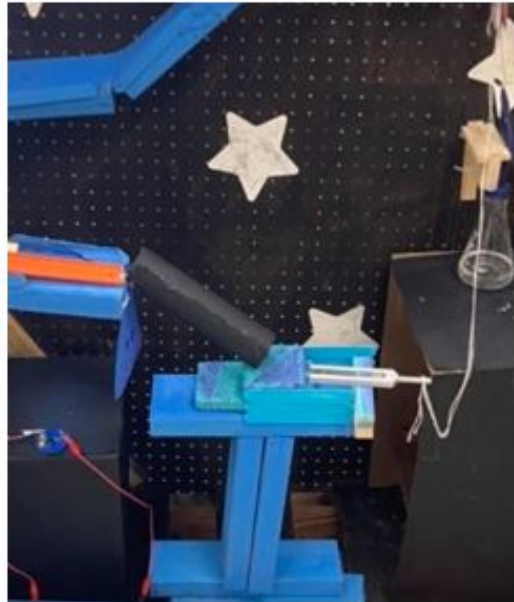
Beginning Machine



Current Machine

Applied STEM processes - Hazel

1. Pulley System - One design problem was the pulley and making it work. We started with a cup at the end of a string, our goal was to get something to fall in the cup. When we tried it, it would not work, because it was too heavy. We could not get the weight right, so we used something with a fixed weight to tie to the string (we used a tuning fork) and took out the cup.



2. Pulley System - Also with the pulley system we needed to find a way to measure the right distance to put the pulley on the peg board so that the balloon would inflate where we wanted it to. If it was too high the balloon would tilt away from the marble, and if it was too low the balloon would not hit the marble at all.

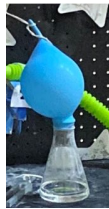


Applied STEM processes - Hazel

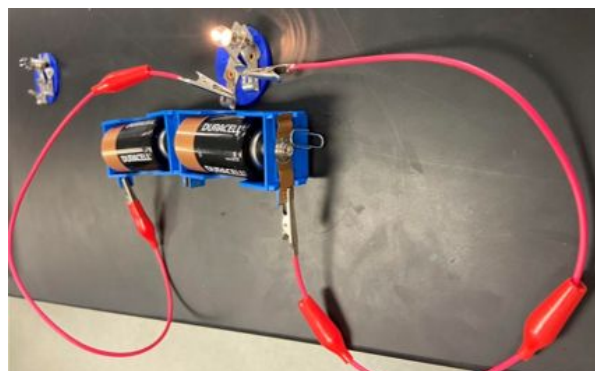
3. Rulers - We had tinfoil as a step in the marble run. In this design, the tinfoil was too weak. We made this step stronger by make a ramp out of rulers and hot glued it to the pegboard and put a jenga block to hold it up underneath.



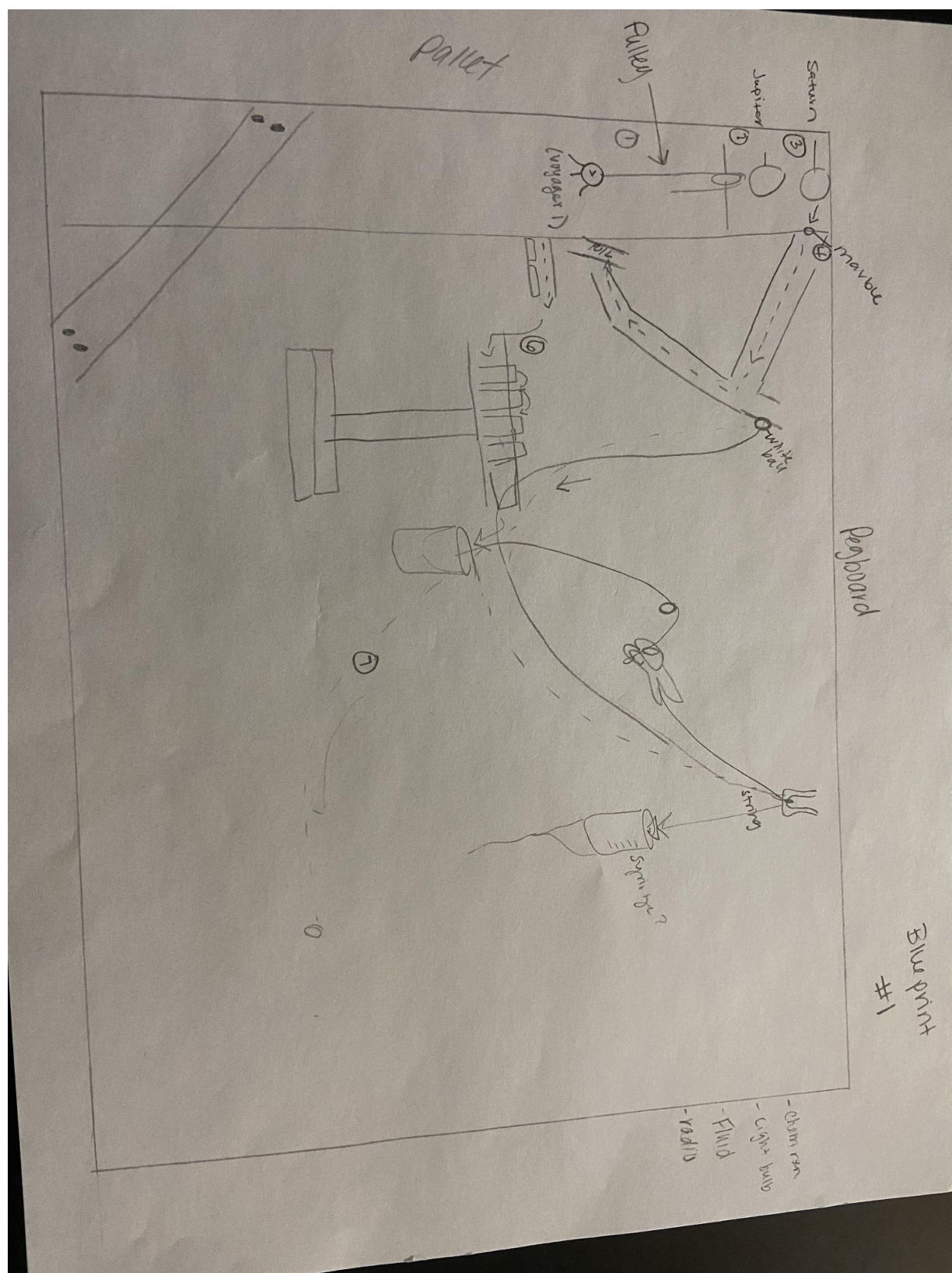
4. Chemical reaction - This step had many problems. We had to buy vinegar about four times because we could not figure out our measurements. We added too much baking soda to the balloon and it weighed the balloon down, when we didn't use enough baking soda it would not blow up enough. We even tried switching the vinegar to the balloon and the baking soda to the beaker, but that did not work either. We finally found that we needed less baking soda and more vinegar to make more gas.



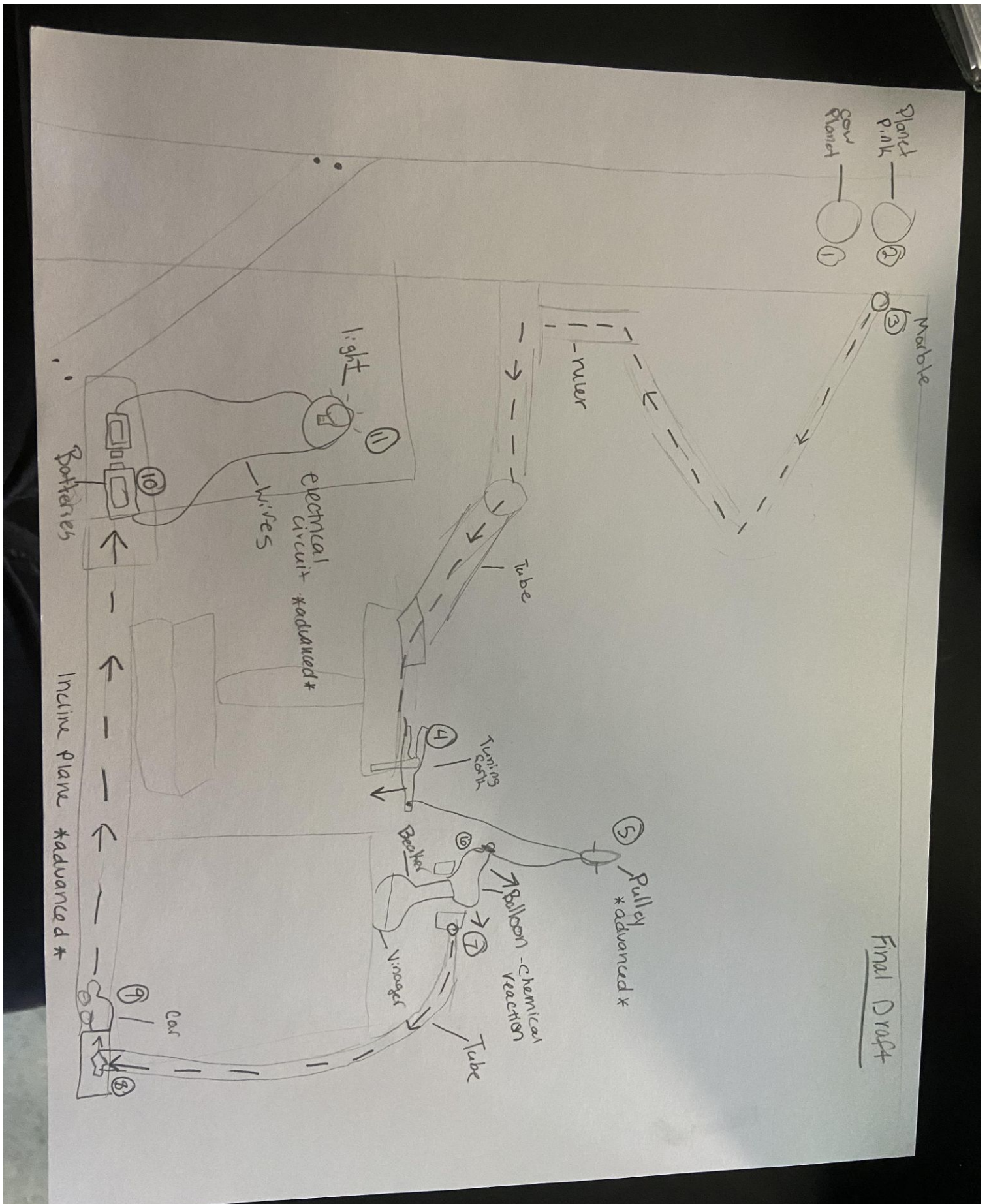
5. Electrical circuit - We wanted to end the run with technology. We used a light bulb. We looked up how to make a circuit and borrowed the supplies from another teacher. We had to find a way to make the batteries touch and we tried lots of things (dominoes, paperclips attached to something moving, and even tried rolling a marble into it). The toy car was the most accurate when hitting the batteries.



Blueprint Drawings - Rough Draft - (Hazel)



Blueprint Drawings - Final Draft (Hazel)



Machine Steps - Aliyah

Step 1 - First someone uses their finger to push Cow planet, then cow planet transfers energy to planet pink.

Step 2- The ball then hits planet pink into the marble, and then transfers energy to make the marble go down the marble run.

Step 3- then the marble is picking up momentum when going down the marble run, which means it picks up energy.

Step 4- Then the marble uses its energy to collide with the tuning fork then the tuning fork quickly falls.

Step 5- the weight from the tuning fork stimulates the pulley which fastly pulls up the other end. The string on the other end of the pulley lifts the balloon and drops the baking soda into the beaker.

Step 6 - The chemical reaction causes the balloon inflate. The carbon dioxide inflating the balloon applies pressure to a second marble sitting at the top of the pop tubes (fidget toys).

Step 7 - when the balloon puts enough force on the marble, it quickly rolls down the tube hitting the button on the hot wheels track.

Step 8- the button at the bottom of the track, releases the stored energy from the pin, like a trigger, which is what starts the motion for the car.

Step 9- The car then goes up an inclined plane track and collides the two batteries together.

Step 10 - the force of the batteries touching sends the electrical current through the wires up to the light bulb.

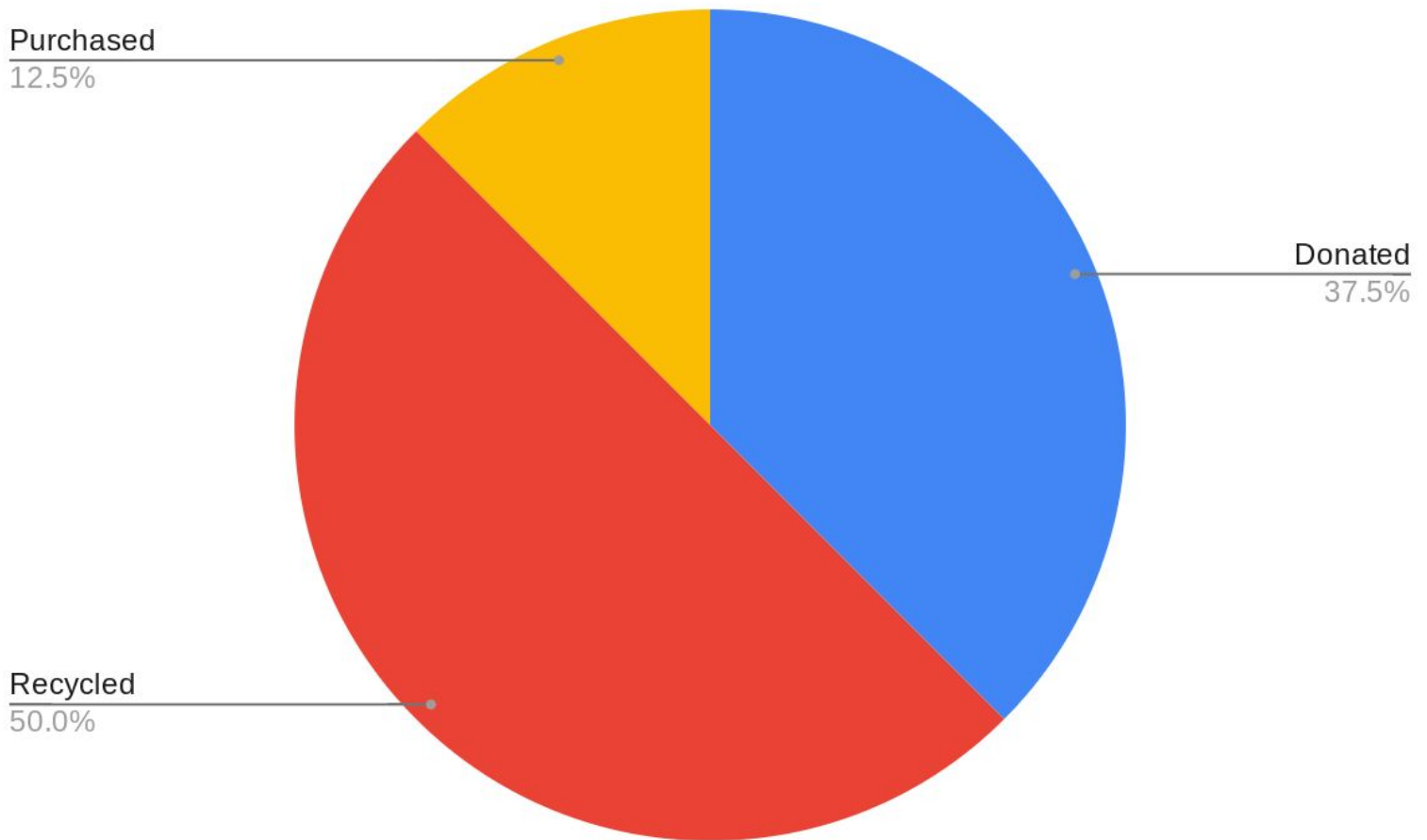
Step 10 - the run is over when the electrical circuit completes and the chemical energy turns light bulb on.

Itemization of Machine Materials - Leah

Material	Cost/Donation	Recycled?
Pegboard	\$0 - Donated from sponsor	yes
Plywood	\$0 - Donated from sponsor	yes
Glitter stars	\$0 - Team member cut out	Yes
Rulers	\$0 - Found in classroom	yes
Foam balls	\$0 - Found in classroom	Yes
Hot wheel tracks	\$0 - Coaches son let us borrow	yes
Pop tubes	\$4 - Teacher purchased	No
Mables	\$0 - Found in classroom	yes
Paper towel roll	\$0 - From janitors	Yes
Tuning fork	\$0 - Different teacher let us borrow	yes
String	\$0 - Recycled from class	Yes
vinegar/baking sota	\$2 - Team purchased	No
Balloons	\$0 - Recycled from birthday supplies	yes
Beaker	\$0 - Found in classroom	yes
Paint	\$0 - Recycled from prior schoolwork	yes
Paint brushes	\$0 - Other teacher let us barrow	yes

Cost of Machine Material Percents

We defined recycled materials as anything that we did not purchase or get donated as “new”. We spent a total of less than \$10 on the machine since most of our items were either found in our science classroom or borrowed from other teachers, janitors, parents, and classmates. Some items we borrowed and placed them in the donated category.



Reflection - Everyone!

Eleasha-

What is something your learned in the process of building this project?

How you can make so much ideas and have to listen to your team and what kind ideas they have. Able to use things that are not made for it like the tube it a fidget so we have a ball running down. We had many laughs and giggles while doing this project.

How did this project impact your skills of teamwork, communication, time management, problem solving.

That you have to make time for you to come in and work with your team and find a time that will work for your team.

How did researching the Voyager 1 impact your ability to understand space technology?

So we can see what beyond use. When starting this project we never really thought out of box. Or what we would do if we had no phones.

How could this project impact your performance in future classes, careers, or life projects?

If something did not do well just keep doing it don't quit on your team. You have to listen to your team and their ideas.



Leah

What is something your learned in the process of building this project?

Time matters. And you need to take your time. In the beginning we weren't sure what to do. In the beginning of December we started putting our ideas together and when we would rush the build things would fall apart.

How did this project impact your skills of teamwork, communication, time management, problem solving

We always listened to each others ideas and when it failed we would come up with other ideas

How did researching the Voyager 1 impact your ability to understand space technology?

Researching voyager 1 helps us see everything in outer space. There are other things like rockets, telescopes, probes, and satellites

How could this project impact your performance in future classes, careers, or life projects?

We had to manage our time well because we had to do things in small steps and not cram stuff together and i can apply this to a bunch of stuff like volleyball, and projects in other classes.



Reflection - Everyone!

Aliyah -

What is something you learned in the process of building this project?

The teamwork. Whenever something went wrong we always had an idea and we would all listen to each other, then find the right solution to fix it.

How did this project impact your skills of teamwork, communication, time management, problem solving. We became even more of a team and even better friends. The build made me see this Because there is No I in team. If we don't work together we would never see eye to eye. And wouldn't be able to figure out how to fix things.

How did researching the Voyager 1 impact your ability to understand space technology?

It helps us understand what we cannot see. Researching things in the making of this project helps us understand more information about what we didn't really think about before researching this. Like if we didn't have our phones what would we use? We didn't really think about that. If we were to think about it now we would think about like a pigeon and paper or string phones.

How could this project impact your performance in future classes, careers, or life projects?

To help us understand the matter of teamwork. This also helps us with our future life. Maybe when we get older our kids need help on a project we could just help them and give them the information they need right away.



Hazel-

What is something you learned in the process of building this project?

I learned the importance of teamwork and other people because we all had different ideas and different knowledge that helped us work through problems

How did this project impact your skills of teamwork, communication, time management, problem solving

By coming up with ideas, testing them and seeing which one works the best

How did researching the Voyager 1 impact your ability to understand space technology?

Researching about the Voyager probes made us think about what life would be like if we didn't have any technology and the why's that it has helped us through life

How could this project impact your performance in future classes, careers, or life projects?

Our project helped us to work together and to know the importance of other ideas. For example

I'm in PBL and FFA, being in this project helped me with performing in front of others and

how to work easily with peers and listening to other ideas that might help and I might not have had.



Reflection - Everyone!

Madison-

What is something you learned in the process of building this project?

Time matters a lot because It is going to fall apart and not work then you will have to brainstorm ideas to fix it and change the ideas you had

How did this project impact your skills of teamwork, communication, time management, problem solving

It shows if you listen to people you can get a lot done.

How did researching the Voyager 1 impact your ability to understand space technology?

How they moved and found what planets look like.

How could this project impact your performance in future classes, careers, or life projects?

Just have to listen and put your ideas out.



Bibliography

<https://solarsystem.nasa.gov/missions/voyager-1/in-depth/#:~:text=Voyager%201%20was%20the%20first,to%20venture%20into%20interstellar%20space>.

<https://www.nasa.gov/image-feature/voyager-1-sees-the-great-red-spot>

https://www.nasa.gov/mission_pages/voyager/multimedia/pia17047.html

<https://youtu.be/ZEKw-TITTU8> - Video

<https://www.youtube.com/watch?v=hPIMsvKgiOg> – Rube Goldberg Advanced Steps

<http://www.nrao.edu> .

<http://www.nasa.gov/voyager>

<http://voyager.jpl.nasa.gov>

Telescopes and Space Probes-By A Scott Fetzer Company Chicago

Space Science-John Perritano

Relevance: we used the research to help with the story line and the story line of the voyager probes. Other resources were used for our advanced steps.