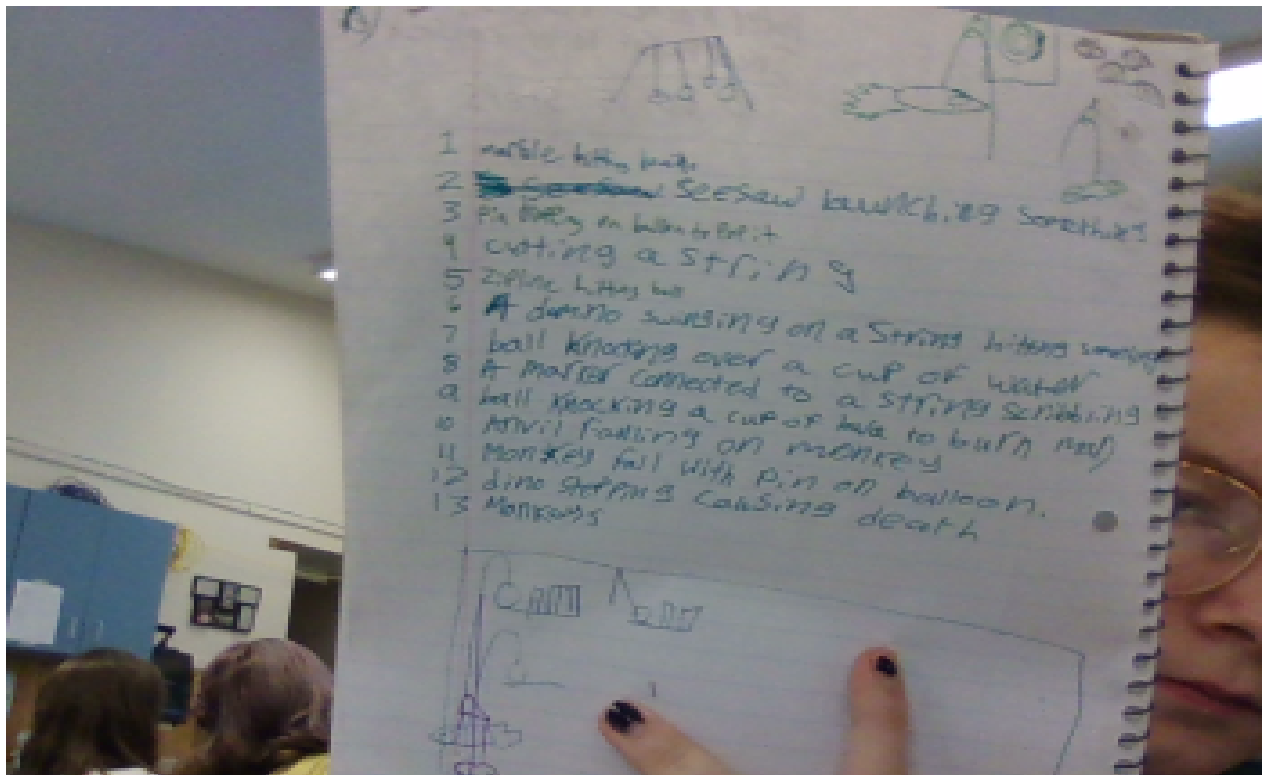


Jan 9 2023

Our team consists of Maddy, Remi, Lyrik, and Eila. We started by thinking about team names. After a long session of giggling over names like Fruity Flamingos and other silly ones, we finally decided on the perfect name of "Depressed Dinos". We also read through the rules and the team journal rules in the handbook.

Jan 10 2023

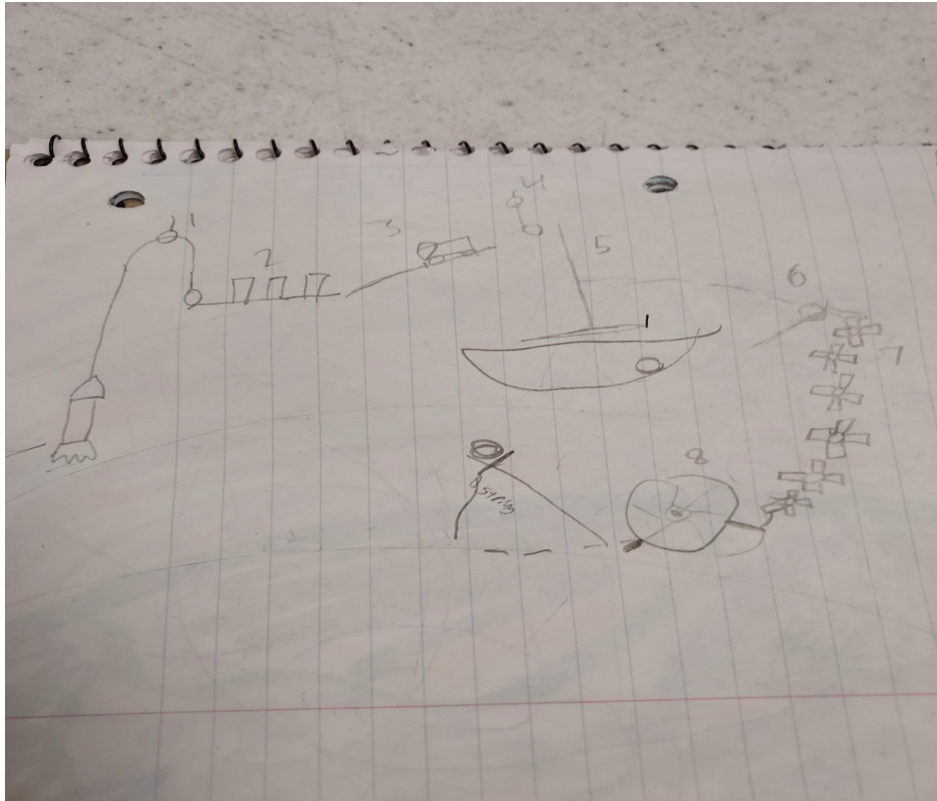
We made a small sketch of what we wanted our machine to look like. Me (maddy) and Eila thought of ideas for steps while Remi and Lyrik designed a logo for our name, the Depressed Dinos. Me and Eila had a good idea for the ending. We would have a pulley launch a rocket into the air! Here is a sketch of our idea.



Jan 16 2023

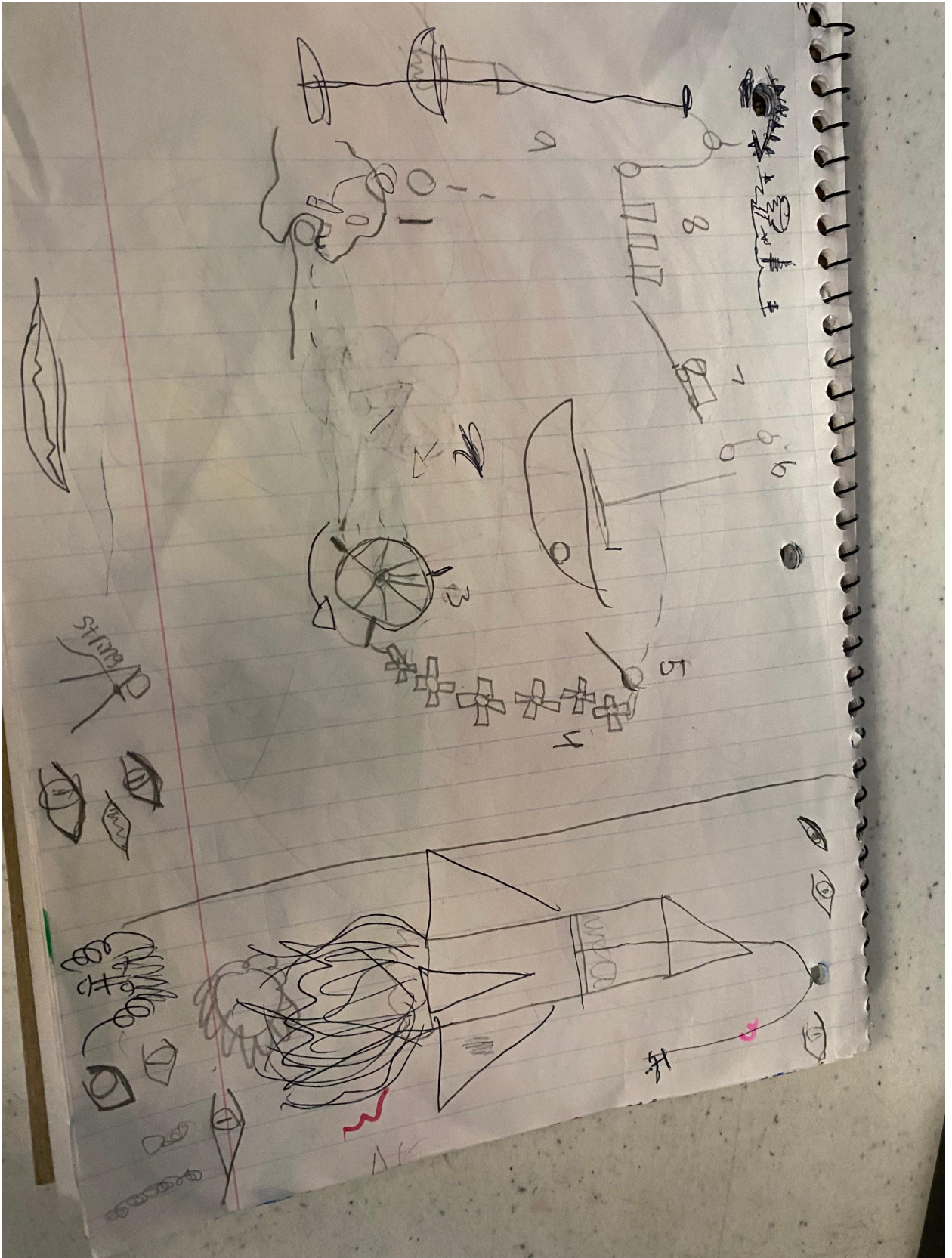
Today at school we worked on the design of our project. We came up with a ton of steps! We just need 2 more steps, but we decided that we want to try to get more steps, maybe 3 or 4 more, so we have 12 or 13. We are hoping to use a chemical component

in our project, but we might not. Here is a photo of our design.



Jan 17 2023

Today we thought of more ideas for our project. We are still hoping to do a chemical reaction but we might not be able to. Our idea for it is a baking soda and vinegar reaction shooting out the bottom of the rocket. We came up with a few ideas, one is to make a Dino head that we push a ball into and use it a a track. Here is a picture of our design.



Jan/20/28

Today we worked on our rocket design and planned our sketch out more. We could have been more productive and got our last steps in but we were a bit distracted. All in all we did okay and there's still time for more work.

Jan/24/23

Today, before lunch started, we had an hour and a half to work on our engineering project. One of the many things we were able to work on was the gears, and figuring out that when we made them, assuming we would make them out of cardboard, we would have to add supports through the middle of them so then they didn't bend. Another thing that happened during this work period is that we brainstormed ideas for a way to add another step. We were thinking of making it so the gears would be split in half, and one of the halves could be another step. In conclusion, I feel like we were able to complete a few things that I've been wanting to work on, and I can't wait till we were able to finish this.

Jan 25, 2023

Today we worked on what we wanted to make the rocket out of and how it looked. We are still working on testing out the gears we want to include. I think our design is pretty good, but we still need to figure out if we want to do a chemical reaction in our machine or not. We also experimented with different cardboard type things, and we worked on our dinosaur head we want to use to start our machine.

Jan 30 2023

Today, I (Eila) was the only person here so I started making our possible rocket by painting a tube grey. We also picked out 2 pallets to use in our project

Jan 31 2023

Today, 3 of the people in our group were here so we painted some of the cardboard that we were gonna put on the pallets black and started working on figuring out how we would make sure we could get ours out the door.

Feb 1, 2023

Today we worked on the background for our pallet. We took a bunch of different colours and splattered them onto our cardboard which we painted black yesterday. It looks like an arcade carpet right now, but we will add more details later.

Feb 21, 2023

We have started making the steps on our pallets. They are mostly cardboard right now, as prototypes for the final result. We have made about three right now, our ending step, the rocket,

and 2 other steps we have in our design connecting to them. Lyrik and Remi have been working on our final rocket model, and me(Maddy) and Eila have been working on the steps.

Mar 2, 2023

Today we painted another backdrop for our project, since we are making our original backdrop the bottom artwork for our project. We discussed what we will use for the dinosaur head we want to use as our first step, and decided to order a dinosaur toy online, and cut the head off and use that. We also have steps that we need to revise.

Mar 6, 2023

Today we screwed on the backdrop of our machine, and painted the wood we are using for our steps.

March 7, 2023

Today we worked on our rocket, glueing our steps to our machine. We also discussed how we would make the gears for one of our steps, and also how to make the dinosaur head. We may have to redo some steps, because some of them might not work. We also got the bicycle wheel we needed for one of the steps.

Mar 21, 2023

Today we had to revise some steps on our machine. We also had to take apart a bike Remi brought in, because we needed the gears that were on it. It was very hard to take it apart, and we had to get some highschoolers to help. We didn't get it fully disassembled, so we will have to finish tomorrow. We finished building the rocket, and attached a bunch of our steps to our machine. Our lever step, which is activated by the bell swinging and pushing it, is going to need some revision. Eila was not here because they were on a vacation and would not be back for a week.

Mar 22, 2023

We stayed in the Middle school during lunch today to work on our machine. We finally got the gears we needed off the bike, so we washed them, then took some time to attach them to the machine. Deciding which place to put them was hard, because we had to think of how everything would activate. We drilled holes into the wood to put the gears into. It was tricky to get them to turn each other and be in the right position.

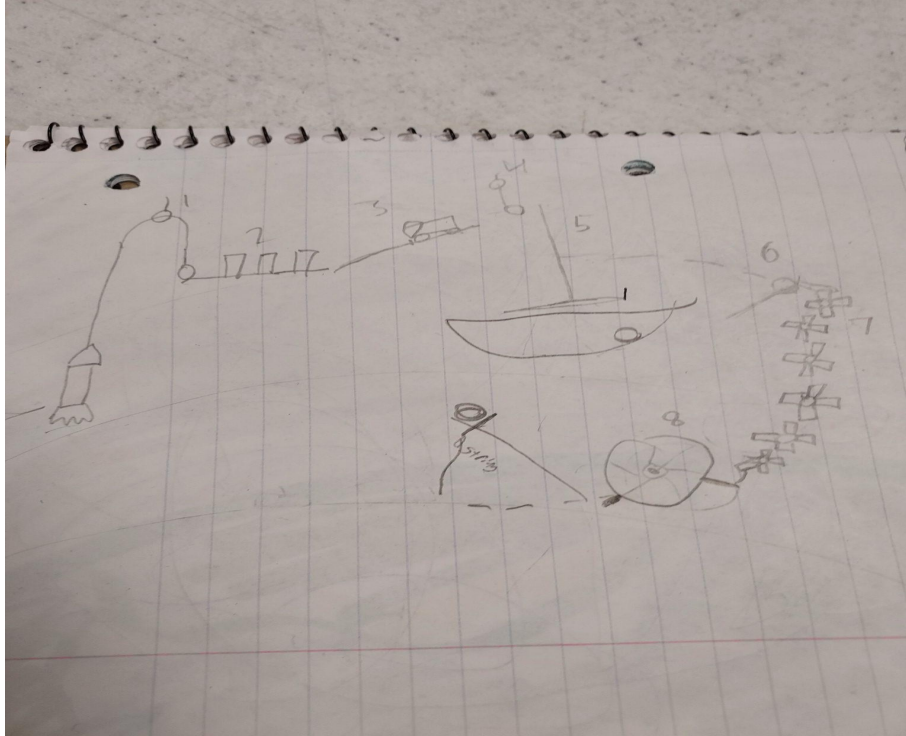
Mar 23, 2023

So today we almost finished our machine. We decided to add more steps, since we didn't quite have enough once we got most of it together. Getting the gears to work was really tricky, but we managed to do it. Our steps are pretty creative, and we think they might work. Our machine is pretty much done. All we need to do is finish the last step, and do a trial run. The end goal is to pull a rocket up, and turn on fairy lights, which are supposed to represent stars.

Machine step list

1. Our starting step is spinning a bicycle tire which has a string attached to it, which connects to a gear.
2. That gear spins, and turns another gear that is also connected to a string.
3. The last gear with the string, turns, pulling the string, which has heavy metal bolts on it, and falls off of a small platform.
4. The metal bolts fall, and pull the string they are connected to, which pulls a bell, swinging it, and hitting a lever.
5. The lever pushes a car on a platform.
6. The car rolls down a ramp, Car hits jenga-like blocks, knocking them over.
7. Jenga blocks hit a fake meteor, and it falls off a ledge, pulling up a rocket.
8. The fake meteor falls into a funnel, stopping, but knocks a marble loose.
9. The marble rolls down a track and hits a domino.
10. The domino falls onto a small cup of rocks which looks like a UFO, pushing it off the ledge, and pulling a wire which is connected to a switch on a battery pack, and turns fairy lights.
11. Where the marble hits the domino, it rolls down the platform down a ramp through the dino head
12. The marble hits a mouse that knocks a stick down
13. The stick is holding up a weight, when the stick falls, so does the weight, which then turns on another pair of lights that flash.

Planned machine sketch and description:



Original machine description:

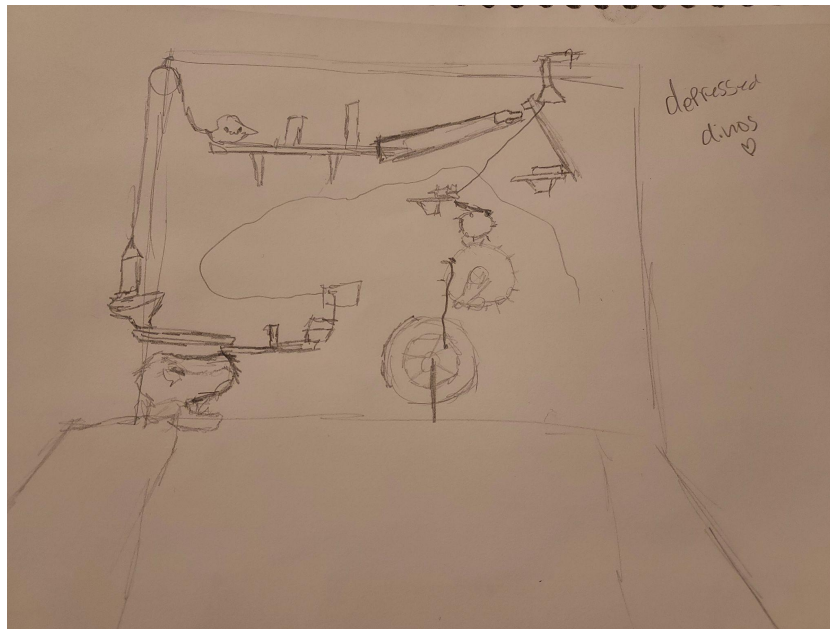
Our machine was originally supposed to have a background painted to look like the milky way, and all the marbles and materials we used in the steps were supposed to be painted to look like things in space. Our steps were originally planned to work as easily and simply as possible, but the way we had the bicycle wheel step and gear step, the bicycle wheel would need a lot of power to spin the gears, which the ping-pong ball simply didn't have. Platforms holding up the steps and stuff were going to be cardboard.

Our original plan for our machine steps:

1. We start the machine by dropping a marble down a ramp inside of a dinosaur's head.
2. The marble then hits another marble, which is connected to a string that has a piece of cardboard holding up a heavy ping-pong ball, on top of a ramp. When it slides under the ramp, it pulls the cardboard, letting the ping-pong ball drop.
3. The ping-pong ball slides down the ramp, and pushes a piece of cardboard that is glued onto a bicycle wheel, causing the wheel to spin.
4. The spinning wheel, which has cardboard glued on it, then spins a series of gears.

5. The gears spin, and the last gear pulls back a rubber band on a plastic spoon.
6. When the spoon pulls back, the rubber will become taught, and eventually snap off. This causes a ball on the spoon to launch.
7. The ball launches, and hits a lever, the lever flips.
8. The lever hits a car, which is held in place by a piece of wood behind the wheel, pushing it over the wood, and down a ramp.
9. The car knocks over three jenga blocks.
10. The jenga blocks push each other over, and knock a heavy ball off of a ledge.
11. When the ball falls, it pulls up a rocket, which is the end of our machine.

Finished Machine description and sketch:





Finished machine description:

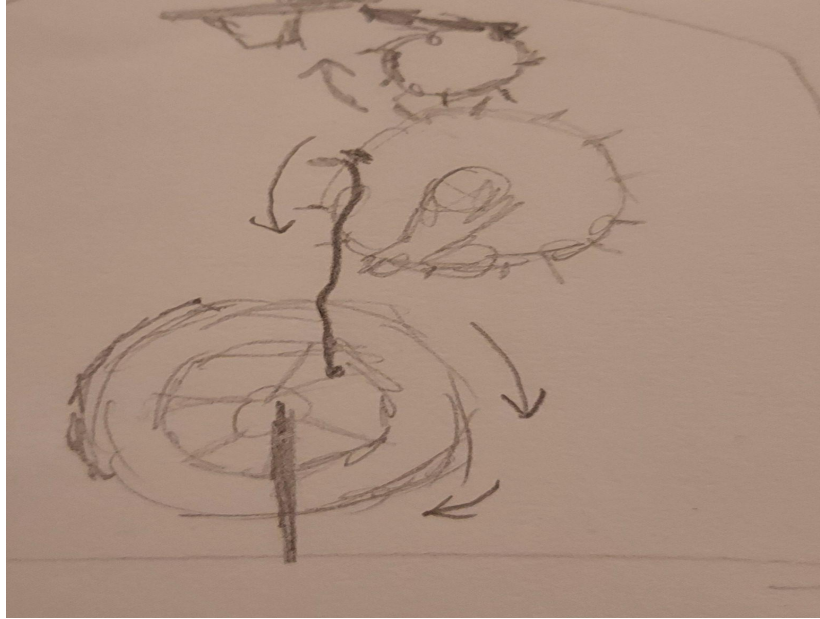
The backdrop of our machine looks like an arcade floor, which is cool, it looks good. We changed the start of our machine, so now we start it by spinning the bicycle wheel. It is connected to the gears by a string, so when we spin it, it turns the gears as well. We are hoping that the gears work, since it took a long time to figure out the right position to make them spin. We changed the ending of our machine to having something pulling a switch connected to the fairy lights, turning them on. It took a while to get the fake meteor that's connected to the rocket, to fall into the funnel. It kept missing it, so we had to put cardboard around the funnel to direct it.

Cost of machine and recycled parts:

100% recycled parts

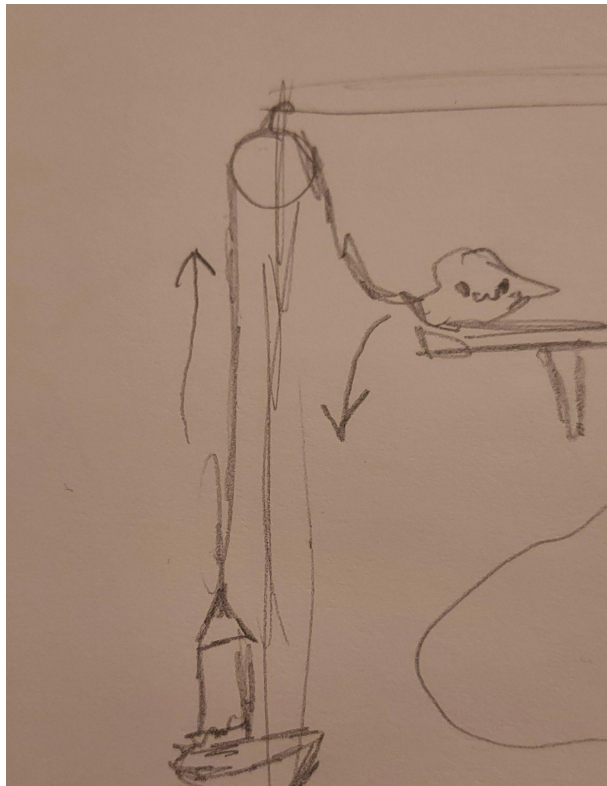
0\$ spent

Applied STEM process:



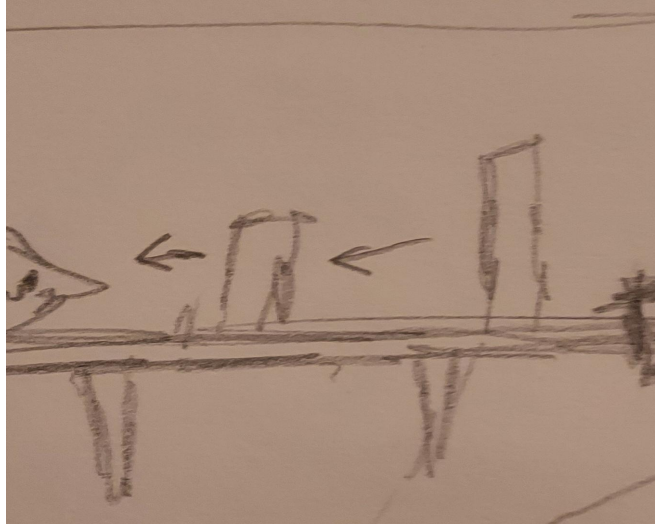
Bicycle wheel step:

The bicycle wheel step shows motion in action, which is activated by us spinning the wheel.



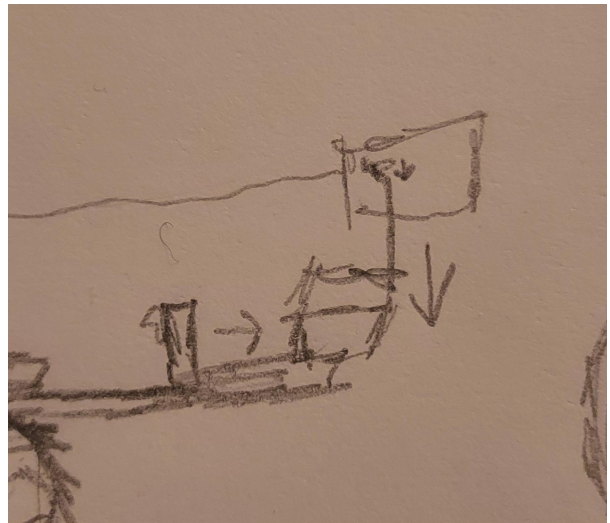
Rocket being brought up step:

Shows the use of a simple machine, a pulley, which uses weight on one end down, and to pull another weight up.



Blocks knocking each other over step:

The blocks knock each other with a simple push, demonstrating the physics of force, much like dominos.



Weight pushed off ledge, pulling switch step:

This step is where a weight is knocked off a ledge, and pulls a switch it is connected to. The weight is just heavy enough to pull the switch, and keep it there. This is a demonstration of power, but also force.

Reflection:

Maddy: I think that this project was fun, but also difficult. I did it last year but it was less fun that year than it was this year. I am glad we managed to finish this project, but it was hard to do in time. I think the hardest part was probably deciding which steps to do. In the beginning, we all had our own ideas. It was tricky coming up with steps we all wanted in the machine. But in the end, we all had to come up with steps in the crunch time, so we just kinda did it and didn't think about it, so it was less cooperation and more just doing it, in the end. We could have

focused less on the art and more on the actual mechanics, but at least our machine looks good. At the beginning I felt like we could finish in time, but that hope kind of dissolved as we went along. I think that our machine will run smoothly though, and I am proud of it. I feel like I grew with how complicated our steps got. I feel like it really gave me a grasp on how hard it is to create functioning machines, and really gave me appreciation for people who do this all day, just building machines and problem solving. It is hard work, but I think these skills will help me in the future. Overall, I enjoyed this project like I did last year, but it was more fun this year, because our machine turned out better, our steps were more complicated and unique, and our teamwork was pretty good, and no major disagreements took place.

Lyrik: I think this project was a great learning experience and was fun to do.

We faced many challenges and had to improvise a lot of it but I think it all worked out in the end. I think we could have done a little better with coming up with an idea that we could accomplish in time. I was a bit nervous coming into the project but as we worked I was worried we wouldn't finish in time. Near the end of the project I started to feel like we were making good progress and could finish in time. Overall I think this project was fun and I'm excited to do it again next year.

Remi: it was a fun yet stressful project, we learned a lot and we have new ways to improve. It felt like we didn't have enough time and there was a lot of pressure. To me the project felt like we were going off the top of our heads and didn't really have a solid plan design. I think if we focused more on the design and the project itself we could have had more time. I wish i focused more and put more effort into it, i didn't feel like i put my full effort into this. We started getting stressed around the end and we started rushing around. We spent a lot of time on painting the background and the art. I think we should have worked on the actual project instead of just the art. Once there was a very clear due date and not a lot of time left, we pushed through and got it done. It was tricky since it wouldn't work, and the steps wouldn't work with each other but in the end we figured it out and got it to work. We have new ways to improve and we learned from the challenges!

Elia: Looking back on this project, I definitely could've done better with the way I did things. One of the big flaws with what I did was that I wasn't able to really focus on anything that well. Another thing I struggled with was that around the end of the project I was completely absent so I hadn't been able to help with what my group was doing. I'm happy with what my group made and I'm glad that the project ended up looking great. Something I did well during this project was

that when I was able to focus, in the beginning of the project, I was able to make a lot of progress working on putting together the frame. Next time I do a project like this I'll work harder on putting in more effort. All in all, even though there were flaws with the way I did everything, I'm glad that everything turned out good, thanks to my group.

Bibliography:

<https://ccaeducate.me/blog/rube-goldberg-machine-ideas/>

<https://scoutlife.org/hobbies-projects/projects/159359/how-to-make-a-rube-goldberg-machine/>

https://thatafterschoollife.com/rube_goldberg.html

<https://www.wikihow.com/Build-a-Homemade-Rube-Goldberg-Machine>