Blessed Maria Assunta Pallotta Engineering Project 2022

Team Members:

Coach: Sheila Miller, Christine Bailey

Team members:

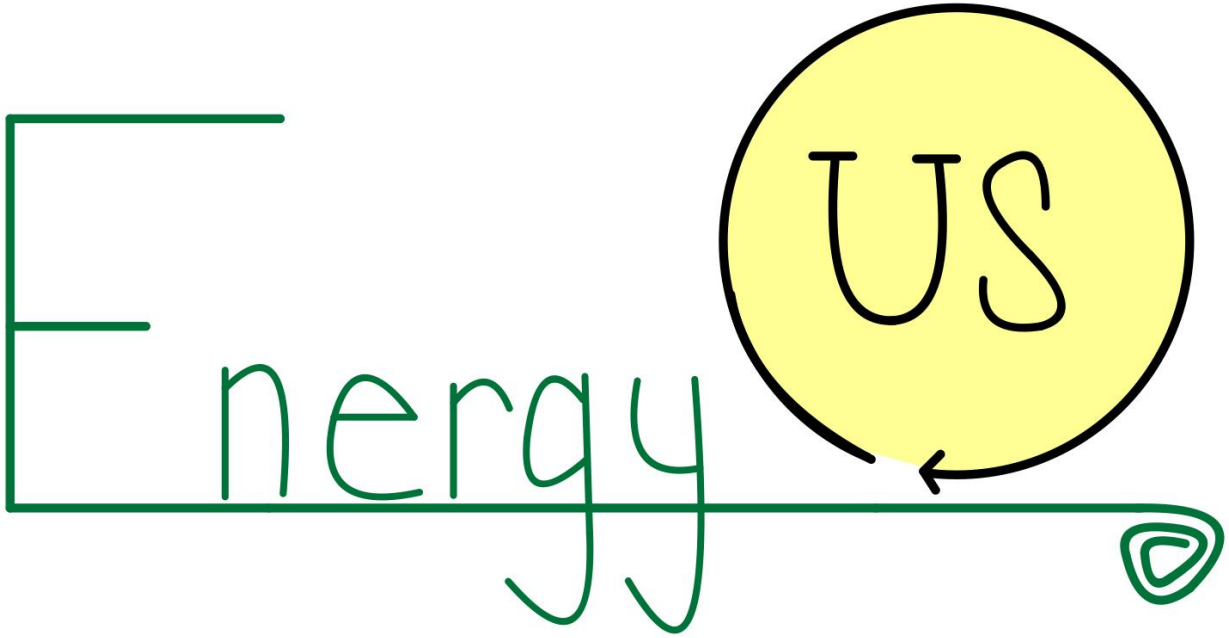
Karlie Morgan

Claire Feldmann

Anna Feldmann

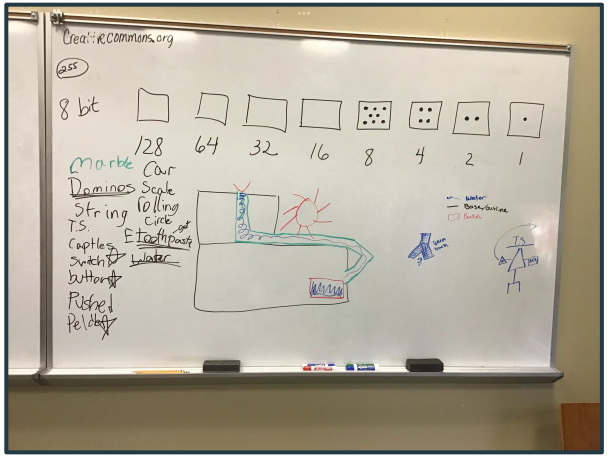
Loral Peters

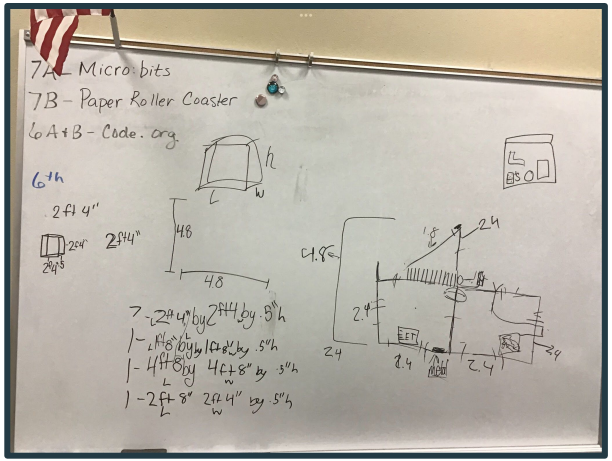
Our Theme: Energy Around Us



Ideas and Concepts

Our first idea for our machine was very different from our final machine. We thought our idea would work on paper, but once we got our wood we realized that lots of our ideas weren't possible. Before we even got the wood, we had to rethink our idea because we realized it wouldn't work how we wanted it to. Once we got the wood, we had a few ideas including a ramp that a car goes down which would hit dominoes that just wouldn't work, and we had to go back to the drawing board and find a new idea. We also had to figure out a way to start the whole machine, which was a struggle also, coming up with a chemical reaction we liked. It took a while, but we finally came up with ideas for our machine that we liked, and we made a machine we are very proud of.





Actions

Full Material List

- Wood
- Cup
- Paper Clip
- String
- Race Track
- Water bottle
- Cardboard
- Marble
- Lego Wheel and Axle
- PVC Pipe
- Scissors
- Magnets
- Hammer
- Rulers
- Dominoes
- Duck Tape
- Paint

Purchased Materials

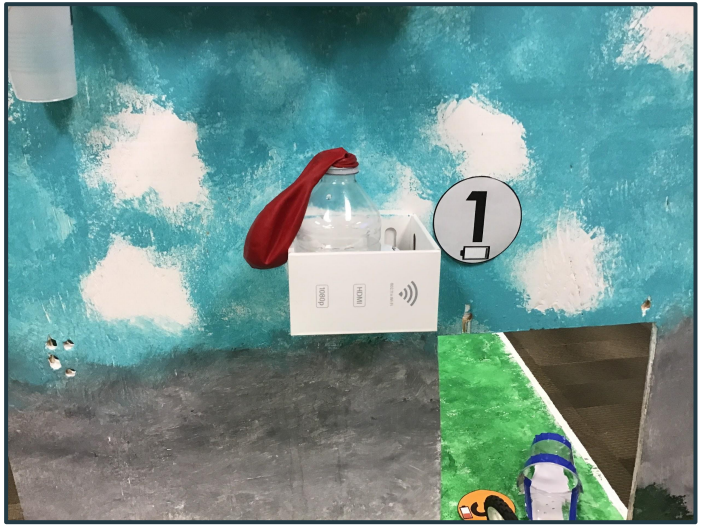
- Vinegar: $2.95
- Baking Soda: 75 cents
- Mousetraps: $2.98
- Balloons: $1.00(x2)

Full Actions List

1. Baking Soda Balloon
2. Bridge Moves Up
3. Cup and String
4. Golf Ball and Track
5. Wheel and Axle
6. Lego Axis
7. Track and Golf Ball
8. Marble and Ruler
9. Lego Cardboard Winch
10. Hammer Swing
11. Weights, String, and Scissors
12. Girl Springs Up
13. Lamp lights up

Time for an adventure...

Action 1: Baking Soda Balloon



Recycled materials:

- cardboard
- headphone box
- push pin
- scrap wood

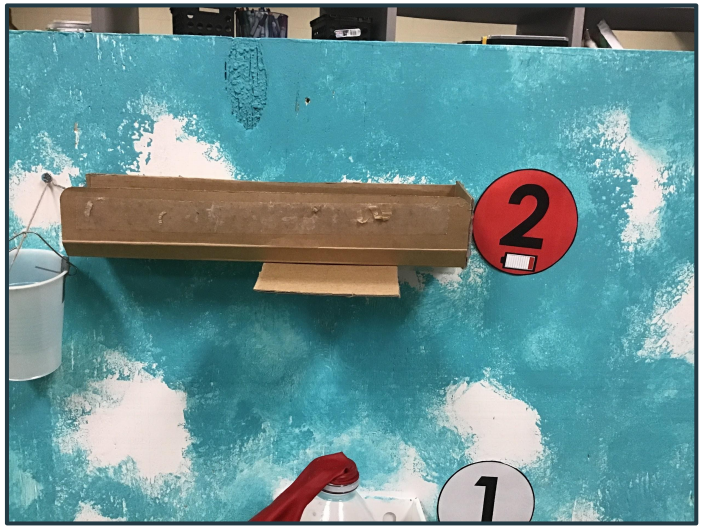
Purchased materials:

- Balloon
- Baking Soda
- Vinegar

Type of energy: Chemical

Real life example: volcano science project

Action 2: Bridge Moves Up



Recycled materials:

- Cardboard
- Push pin
- Marbles
- Wooden Skewers

Purchased materials:

- None

Type of energy: Mechanical

Real life example: Bridge goes up for a towboat

Action 3: Cup and String

Recycled materials:

- Cup
- String
- Paper Clip
- Legos

Purchased materials:

- None

Type of energy: Gravitational

Real life example: Ziplining

Action 4: Golf Ball and Track

Recycled materials:

- Golf ball
- Race track
- Boxes

Purchased materials:

- None

Type of energy: Gravitational

Real life example: Bicyclists on a hill

To the playground...

Action 5: Wheel and Axle

Recycled materials:

- Legos

Purchased materials:

- None

Type of energy: Mechanical

Real life example: enter a roundabout

Action 6: Lego Axis

Recycled materials:

- Legos

Purchased materials: None

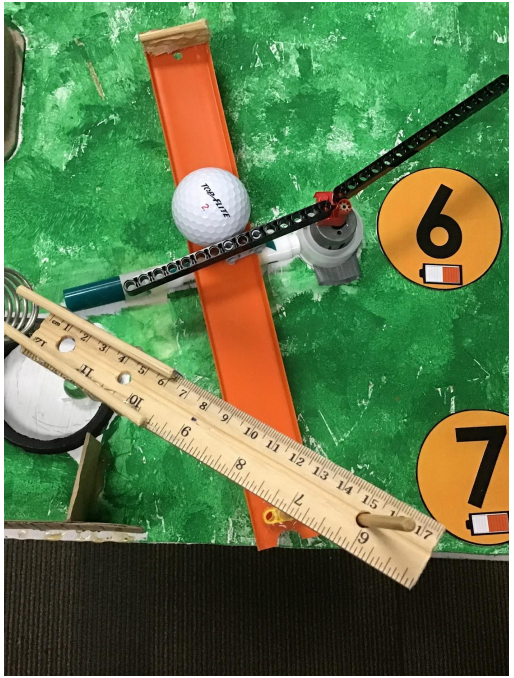
Type of energy: Mechanical

Real life example: merry-go-round

Action 7: Track and Golf Ball

Recycled materials:

- Track
- Golf ball
- Skewer
- Legos



Purchased materials: None

Type of energy: gravitational

Real life example: teeter totter

Action 8: Marble and Mouse trap

Recycled materials:

- Ruler
- Marble
- Skewers
- Mouse trap

Purchased materials: None

Type of energy: Gravitational

Real life example: slide

Action 9: Lego Cardboard Winch

Recycled materials:

- Cardboard triangles
- Legos
- Hook screw
- String

Purchased materials: Mousetrap

Type of energy: Mechanical

Real life example: monkey bars

On a car ride...

Action 10: Hammer Swing

Recycled materials:

- Hammer
- String

Purchased materials:

Type of energy: Gravitational

Real life example: opening a car door

Action 11: Weights, String, and Scissors

Recycled materials:

- Toilet paper tube
- Ziplock bag
- String
- Scissors
- PVC pipe
- Weights
- Washers
- Small magnets
- Rulers
- Tongue depressers

Purchased materials:

Type of energy: Mechanical

Real life example: putting car into drive, and stepping on gas pedal

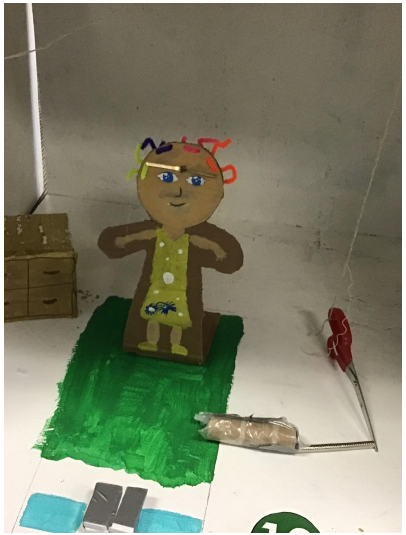
Time to get up...

Action 12: Girl Springs Up

Recycled materials:

- Cardboard
- Rubber band
- Tongue depressor
- Duck tape
- Pipe cleaners
- Paint

Purchased materials: None



Type of energy: Elastic

Real life example: waking up in the morning

Action 12: Lamp Lights up

Recycled materials:

- Cardboard
- Paper
- 3D print scraps
- Hummingbird
- Microbit
- Distance sensor

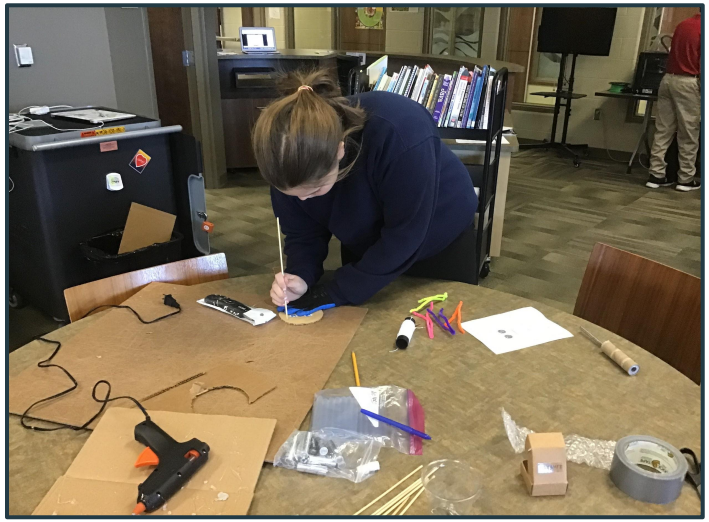
Purchased materials: None

Type of energy: Elastic

Real life example: Turning on the light in a room

Progress Pictures 1-10-22

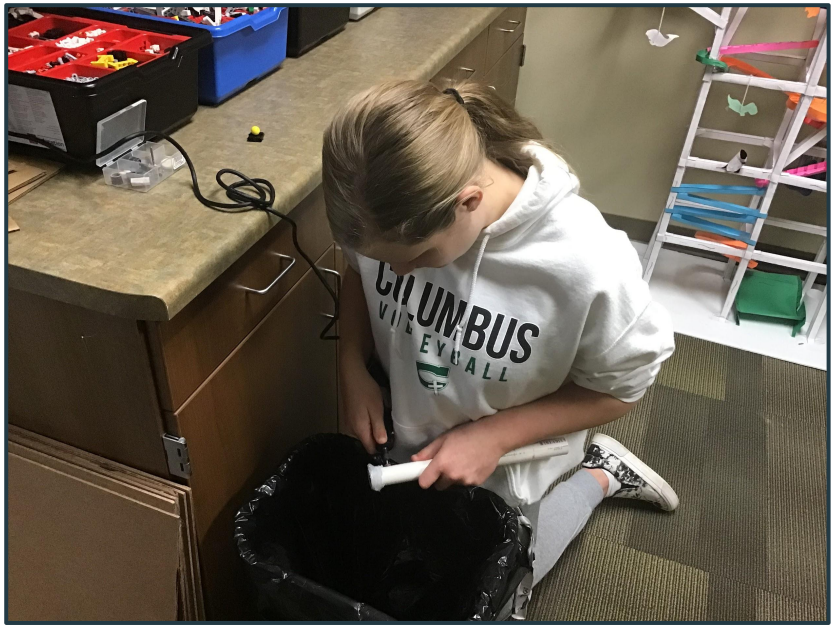
Progress Pictures 1-20-22



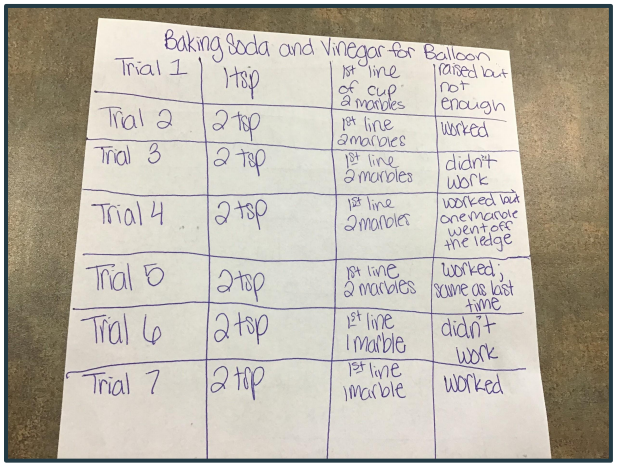
Progress Picture 1-25-22

Progress Pictures 1-27-22

Progress Pictures 1-28-22



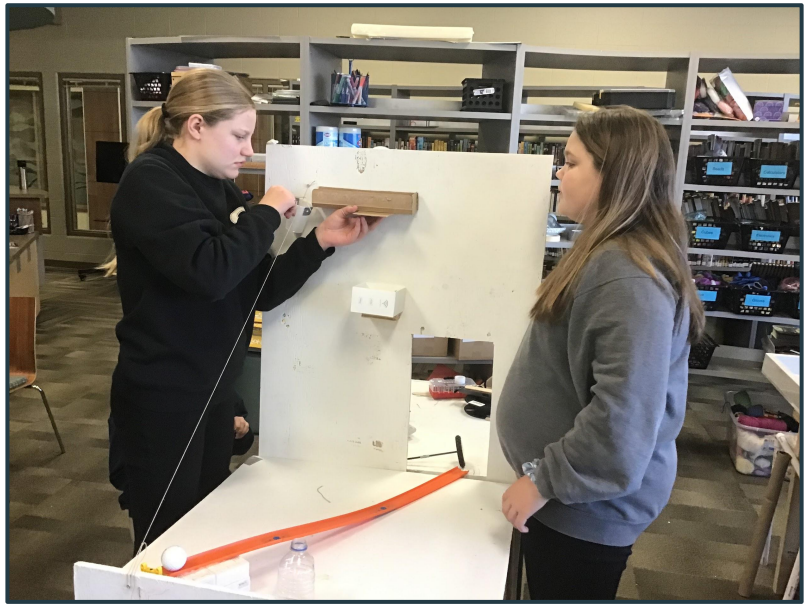
Progress Pictures 1-31-22



Baking Soda and Vinegar for Balloon

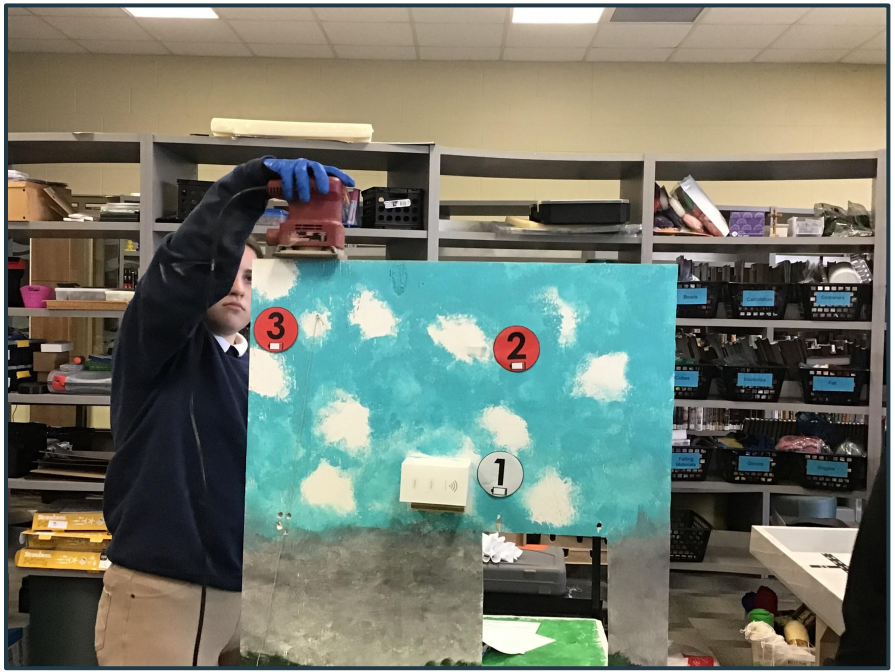
Trial 1	1 tsp	1st line of cup 2 marbles	raised but not enough
Trial 2	2 tsp	1st line 2 marbles	worked
Trial 3	2 tsp	1st line 2 marbles	didn't work
Trial 4	2 tsp	1st line 2 marbles	worked but one marble went off the ledge
Trial 5	2 tsp	1st line 2 marbles	worked, same as last time
Trial 6	2 tsp	1st line 1 marble	didn't work
Trial 7	2 tsp	1st line 1 marble	worked

Progress Pictures 2-1-22



After Regionals...

Progress picture 4-20-22



Steering Wheel

We added a steering wheel in our third quadrant, On a Car Ride, to make it look more car like. We made it out of cardboard, and glued multiple pieces together to make it look like a steering wheel.

Lamp

We added a lamp, which had a distance sensor so when our girl sprang up, the lamp would turn on which symbolized turning a light on in the morning.

Mirror

We added a mirror that was really a CD to the bedroom wall to give the bedroom more decoration so it looked more like a bedroom.

Couch and Pillows

We made a couch out of cardboard for the bedroom, and we made some pillows out of foam and felt to give the bedroom more decoration. We hit glued felt to the cardboard and foam to make it look like a couch and pillows. The couch was originally going to be a desk, but we decided it looked more like a couch so decided to make a couch instead.

Our Final Machine

In quadrants

Our Four Quadrants

Our Final Machine

Meet Our Team

We're Really Cool

Anna, Karlie,

Claire, and Loral

Mrs. Bailey

Mrs. Miller

We are an all female team Here's some background!

In the very beginning when we first started we didn't have Claire and we had one male on our team. He bailed on us and we wanted a fourth member. We decided we would like to have an all female group, and Karlie had a person in the back of her mind of who would be good for this team so she asked Claire and she joined the team. The all female team was a coincidence until we asked a fourth girl to join on purpose (this choice may or may not have been to prove a small point). We also have two seventh graders and two eighth graders (also may or may not be chosen to prove a point.)

Karlie Morgan

I’m Karlie an 8th grader at Blessed Maria Assunta Pallotta middle school in Waterloo Iowa. I enjoy online drawing, driving, animals, sleeping, and engineering. One thing I like about our project is the chemical reaction. One thing I don’t like about our project Is the amount of trials it took to get everything working the way it should. A few of the many things I took into consideration during the time I was deciding on being on this team or not was if I think I could bring good ideas to the table and finding time to work on this project. I had a lot of fun with these girls and we may have made a few messes and I personally have become closer with the other ladies on this team and created some good friendships I hope will last.

Anna Feldmann

My name is Anna I’m a 7th grader. I enjoy coding, art, video games, sports and baking. I love traveling and spending time with my family. I personally joined this team to have fun and think of cool ideas. I loved working on this because I get to use my creative side to make our final project. I also loved working with these girls, it wouldn’t have been this fun and enjoyable if they weren’t there. We all became really close throughout this whole experience. I’m really grateful that I joined this team for my teammates and the knowledge that I got with making our project.

Claire Feldmann

My name is Claire and I am in 8th grade. I enjoy reading, writing, and creating things. I also like to hike in the mountains and going on vacations to Colorado. I decided to be a part of the engineering project because I wanted to try something a little out of my comfort zone, and do something I'd never done before. I've never made something for a competition and go to compete with it, and I wanted to have that experience. I've learned a lot about being a part of a team and creating a machine that can work consistently since joining this team. I've also gotten closer to the other members of the team, and am happy with the way our relationships have grown. I am very happy with what I've learned with this project, and the friendships I've made.

Loral Peters

My name is Loral, and I am in 7th grade. I enjoy art, robots, and legos. I also enjoy fishing, camping, and hunting with my family. I chose to do this engineer project, because I wanted to try something new. I wanted to meet new people and become their friends. I personally love that it's a team of all girls so we can show that girls can do as much hard work with engineering as guys can. I really enjoy the time being spent with the other teammates, they really work hard. We all show kindness and have lots of teamwork. I came to this team knowing that I would leave this team with new friends and I am.

Word count: 1,125