

Project Title: STEAM Catapult Contest

School: Jamestown Elementary School

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Brief summary of the project

Every year on November 1st, Jamestown Elementary hosts a STEAM catapult contest. Before the event students collect recyclable materials from home. Teachers are encouraged to use this as an opportunity to teach about what materials are recyclable and reusable. On Halloween students in grades third through fifth work in small teams of 2-4 students to construct a catapult from the recyclables. Teachers are encouraged to use the building process as an opportunity to reinforce or teach simple machine and/or physics SOLs and/or the design thinking process. The next day each grade level takes a turn to launch foam 'pumpkins' on the soccer field to see which catapult can send the pumpkins farthest. Students from younger grades watch the event and cheer on the teams. At the conclusion of the event the students take home their catapult.

Getting Going

How did the project start?: The school's Science and Nature Committee wanted to create school-wide science events that occurred once a quarter. The committee chose recycling as the first theme for an event based on the Sustainability Liaison's Site Wide Assessment results, which showed that trash was being mixed into the recycling bins. This event was seen as an opportunity to educate students about which materials could be reused or recycled.

Who were important people to contact at the beginning?: The school principal was first contacted to get support for organizing the event. Next, the classroom teachers were informed of the event so they could plan for the potential impact on their schedules and to prepare for storing the recyclables. Finally, the students' families were contacted by classroom teachers in their weekly newsletters to request donations of recyclable materials.

What are the threshold resources that need to be identified at the beginning before proceeding further? (For example, robust parent volunteer network, elevated loading docks, nearby outdoor spigot.):

- Foam balls to be used as pumpkins (it is helpful to store them for use the following year)
- A large outdoor space to host the catapult contest
- A megaphone or other device to amplify the voice of the teacher who narrates the event

What are the policies (if any) from APS or elsewhere that may affect the project and need to be considered?: None

What budget and/or funding sources were needed?: None

Implementation

Did you pilot or test the project and then scale it up? If so, describe your process. We held the first STEAM Catapult Contest in the fall of 2018 and due to its success continued the event as an annual event in the fall of 2019.

As you rolled the project out, how did you present this to students and encourage their participation?

- Grades PreK-2: Teachers were encouraged to teach students about what materials are recyclable and could be reused. This could be done during a Morning Meeting or another time the teacher chooses. The students then learned about the contest and that they could help by collecting recyclables at home and bringing them in (this information was also sent home in each teacher's weekly newsletter to families). Students delivered the recyclables they brought in to third through fifth grade classes.
- Grades 3-5: Teachers were encouraged to teach students about what materials are recyclable and could be reused. This could be done during a Morning Meeting or another time the teacher chooses. The students then learned about the contest and that they would need to help collect recyclables at home and bring them in (this information was also sent home in each teacher's weekly newsletter to families) to have enough supplies for their catapult building. Students kept the recyclables they brought in a communal collection in their classroom for the day they would build their catapults. Students were assigned to teams by their teachers for building and launching the catapults. Teachers were also encouraged to use the building process on Halloween as an opportunity to reinforce or teach simple machine and/or physics SOLs and/or the design thinking process.

Approximately how many students were actively involved, and how many were affected?: About 300 students built catapults. About 600 students were present for the launch.

What obstacles were overcome? Are there continuing obstacles? What lessons did you learn from doing this?:

- Collecting enough recyclables from home has been challenging. We learned to also collect recyclables from the classroom leading up to building day.
- We found providing students with connecting supplies such as tape, glue, and rubber bands is helpful to the building process.

Will the project continue into future years? If so, how will you keep continuity? Do you plan modifications?:

- Yes, it is now an annual tradition that is hosted by the Science and Math Committee (formerly the Science and Nature Committee).

- If school is a virtual and/or hybrid model: The plan could be modified to teach about recyclables and simple machine and/or physics SOLs through a video lesson. Then students could each build their own catapult at home, launch a standard-sized ball (such as a tennis ball or balled up piece of paper), and measure the distance the ball flew. Videos of the launching could be posted onto Flipgrid and/or the measurement data could be used for a classroom math lesson.

What effect has it had on the school?: This event supports building community as a school, increases joy and authentic application of physical sciences (simple machines, physics, etc.), and has helped students develop more awareness of what materials are recyclable and reusable.

Are there photos that could help others visualize how this worked for you? If so, please insert them here.



Replication

Do you have resources you used that would be helpful for someone trying to replicate this project?

Would you be willing to share them?:

- Weekly newsletter blurb to send to K-2 families: On Halloween morning, students in third through fifth grades will be working together to build their very own catapults! They will have a “pumpkin catapult” competition the following day for the younger grades to watch. Students will be making these catapults out of recycled materials and other materials they collect. Please start to save and send in any and all clean recycled material. Here are some potential items you may want to have your child bring in:
 - Potential Supplies: cardboard, cans, bottles, tongue depressors, tape, plastic spoons, aluminum foil, rubber bands, paper towel rolls, etc.

What else should someone wanting to implement a similar project at their school know?