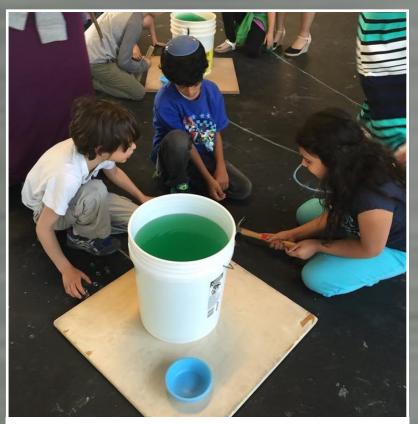
ERG MACHINES B

FORCE, MOTION, & SIMPLE MACHINES

fter completing their in-depth study of recycling culminating with a multi-media Public Service Announcement, the 2nd graders began a unit on Force, Motion & Simple Machines. They first investigated pushes and pulls, the most basic forces that affect an object. Students headed outdoors to search for objects that push or pull. When they returned to the classroom, they shared their findings making a comprehensive list. People push a door to open it, or pull a door to close it. People push a stroller, pull a wagon behind them, push someone on the swings, pull flowers to pick them, or push a button to turn something on. Objects that push or pull can be found everywhere!

his led the class to a discussion about how force and motion occur in the world around us all the time. Pushes and pulls are two types of work that are considered a force. Motion is how and where an object moves because of a push or pull. The students were eager to learn more. During Daily Reading Centers, students read informational texts about Force, Motion, & Simple



Oren, Eitan, & Tony use a wedge to lift a large bucket of water at the Brooklyn Navy Yard.

o further study machines and their impact on our love of technology. As the culminating task for the unit community, the class visited the Building 92 at the teams were challenged to design and construct a Rube Machines providing them with a deeper understanding of Brooklyn Navy Yard for their Ingenious Inventions tour. Goldberg inspired machine to accomplish a simple task. these concepts. They excitedly discovered that every- At the museum we studied simple machines and their thing in the universe moves. It might only be a small impact on our community in accordance with our essenamount of movement and very, very slow, but movement tial question this unit "How does inventions and machines brainstormed what environmentally friendly Rube Golddoes happen. The Earth is constantly moving around the effect how we live?" We used this interest to explore how berg machine they would design. Next, groups chose Sun, and the Sun is moving around our galaxy. Every- inventions and machines have changed how we live. At

were intrigued by a video presentation about accidental inventions they watched on their iPads and were eager to learn more! They researched inventions that changed the world- the telephone, airplane, car and computer Students were surprised to discover that the Internet was only invented in 1989-25 years ago! During their Technology Block with Morah Pinki, students researched accidental inventions. They then created a PowerPoint presentation to share the accidental invention's impact on the world. They combined research, information and images to make a multi-media presentation.

ext, the students watched videos of Rube Goldberg Machines. They were fascinated by the complex machines created to do something simple, like turning off the lights. They soon learned that Rube Goldberg is a cartoonist that created elaborate ways to do simple things. He drew contraptions that make simple tasks into difficult and complicated ones to poke fun at the world's

he students were excited to begin and immediately began planning. Students spilt into three groups and

STUDENTS ARE LEARNING

NYS.SCI.PS.5.1a

Observe and describe the position of an object relative to another object (over, under. on top of. next to).

NYS.SCI.PS.5.1:

Identify a force as push or a pull.

NYS.SCI.PS.5.1b, c:

Demonstrate how the position or direction of an object can be changed by pushing or pulling (forces and motion):

- Change the direction of objects by pushing and pulling using blocks, ramps, cars, and balls.
- Inclined plane

NYS.SCI.PS.5.2a:

Observe and describe how the force of gravity can affect objects through air, liq-uids, and solids.

CC.SCI.PS.4.1a:

Observe, identify, and describe a variety of forms of energy: Sound, Heat, Chemical, and Mechanical.

CC.SCI.PS.4.2a, b:

Identify the evidence for energy transfor-mations and how humans use these ener-gy transformations: Heat to light, chemical to electrical, electrical to sound, etc.

CC.SCI.PS.4.1b, c, d:

thing is in motion!

uring the next science lab, students were chal- how they work. Students explored technological innovalenged to construct a marshmallow blaster with a tion through the lens of the Yard's history and accompartner. Teams were given card stock, tape, scissors, plishments. They learned about pioneering iron and and, of course, marshmallows. They experimented with steam shipbuilding, advancing radio technology and dethe materials to create a design that blasted marshmal-veloping medical anesthetics at the Naval Hospital. After lows the farthest. Students discovered the factors that many hands-on activities such as lifting a bucket of water affect force through the design process. Each team took with a lever or pulley and screwing legs on a table, stuturns blasting their marshmallows measuring and record- dents developed a greater understanding of how simple ing the distance traveled. After three rounds of blasting, machines can make work easier and faster! Our stustudents discussed which design worked the best and dents really enjoyed using pulleys to lift heavy objects why. They found that group threes marshmallow blaster and how much easier it made the task of lifting the bucket propelled it furthest. The marshmallow blaster from group of sand. The trip further fueled the 2nd graders' interest in three went the farthest traveling 25 centimeters in its final inventions and how machines have transformed the way

trial. When we discussed as a class why group threes they live. marshmallow traveled the furthest students stated that uring their next Science Lab, small groups visited six groups three's marshmallow followed the guidelines out- U stations spending 20 minutes at each. At the Clever lined in the activity the best. Their marshmallow was Levers Station, they experimented with levers and dis-

er and all agreed that machines make work easier.



Aria, Eli, Sarina, & Kai experiment with the design of their Marshmallow Blasters.

the Brooklyn Navy Yard we studied simple machines and



Samantha, Tony, & Elmira select found materials to use to construct their machines.

rah Elizabeth to select which simple machines they

Observe and describe how heat is conducted and can be transferred from one place to another.

CC.ELA.W.7:

Conduct short research projects that build knowledge about a topic.

CC.ELA.2.7W

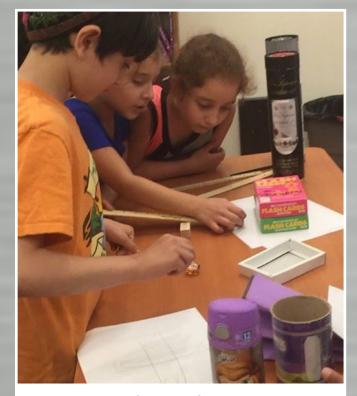
With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

CC.TECH.D.6:

Designs a solution or product, taking into account needs and solution or product, taking into account needs and constraints (e.g., cost, time, trade-offs, properties of materials, safety, aesthetics).

NYS.NA-VA.K-4.1:

Understanding and Applying Media, Techniques, and Processes.



Emanuel, Aria, & Emma figure out how to get multiple machines to work together.

snug inside their tube and did not have much room to covered how they make lifting a load easier. At the In- names for their machines. One team decided they would

move inside their tube. They discussed how blasting a cline Plane Station, students compared the amount of construct a machine that would water a plant and named marshmallow is "work", a force that is applied to an object force it takes to lift a load and to drag that load to the their machine "The Water Blaster." Another team decided and moves it. They brainstormed what makes work easi- same height up an inclined plane. They investigated how that their machine would water a plant as well and a wheel and axle make moving something easier at one named their machine "Food Waterfall." The third group Station and how a pulley can make lifting an object easier decided that their machine would recycle a can and at another. They also explored wedges and screws iden- named their machine "Can Trasher."

tifying the difference between a nail and screw. The stu- he groups then worked with Morah Sarah and Modents were quickly becoming Simple Machine experts. 🗨 tudents questioned what a machine that is made would include in their Rube Goldberg machines. Stu-Omore than one simple machine is called. Through dents enjoyed constructing ramps, pulleys, levers, wheel research, they learned that a compound machine is a and axels and wedges. After many trials and problem

machine with one or more simple machines working to- solving, the students were very pleased when the multigether to make work easier. Teams collected examples ple parts of their machine successfully worked together. of compound machines found in their classroom and As a final step, students filmed their machines with an shared them with the class.

iPad using iMovie.

he class discussion shifted to how inventors use simple or compound machines in inventions. Students

CHABAD OF NORTHEAST QUEENS

2014-2015 2ND GRADE