Are You Fitter Than a 5th Grader?
*Tara Della Roca, 5th Grade*
*High Tech Elementary, Chula Vista*

Over the course of 11 weeks, 5th grade students studied the human body, learned about types of exercise that support healthy growth in kids, and worked diligently to improve their own fitness levels. Most importantly, the class developed a solution for motivating their schoolmates to exercise more frequently. They designed and built a parcour for the school—a permanent fitness circuit consisting of 13 exercise stations including a climbing traverse, tire run, balance beam and log jump.

**Teacher Reflection**
In addition to giving students a chance to study the body and explore children’s health, this project provided opportunities for students to develop their decision-making capabilities as they made the many choices required in designing and constructing the parcour. The class also learned to manage hurdles that arose at various times related to the installation of their work and additionally, challenged themselves to pursue and surpass their own fitness goals throughout the project.

**Student Reflections**
It was challenging deciding among a lot of ideas from the class. It was hard to come up with one thing for how the signs should be designed to how the climbing traverse should be painted. But after making all those choices we ended up with a parcour we’re really proud of.
—Raymond

In this project I learned that if you make a mistake then learn from it because when I painted the signs for the parcour I made some mistakes and figured out how to fix them. It was challenging to make them look just right!
—Alex

The measurements for the frames was challenging because you have to be exact. If you’re not, then pieces won’t fit together! —Jaddin

Kids need to get fit and if they’re not it might not seem bad now, but it can lead to diseases in the future. I learned to not only stay healthy, but help others stay healthy.
—Jessica
Our senior engineering students created jigsaw puzzles to introduce energy concepts to elementary age children. Each puzzle picture depicted a source or application of energy and included an age appropriate explanation laminated beneath the puzzle. The students printed their pictures using a cyanotype process and photosensitive paper prepared in class by mixing iron salts that react to form a deep blue dye (Prussian blue) when exposed to sunlight. The developed pictures were decoupaged to hardboard and cut into puzzle pieces with a laser cutter. A one page description of the energy represented by the picture was decoupaged to the puzzle frame under the pieces. During this project, students used their knowledge of how light interacts with matter to both create (with sunlight) and cut (with a laser) their puzzle pictures. They also learned to reframe a complex energy concept into a narrative engaging to a 5th grader. Students chose one of four roles: a researcher, an artist, a carpenter, and a chemist. Students assessed each other’s product for quality of workmanship, technical accuracy, and adherence to the theme. The ultimate assessment however was the level of engagement on the part of the elementary school students to whom the puzzles were presented.

Teacher reflection
I was most surprised by how much more seriously the students took the project once they realized the final product would actually get used by 5th graders. There were many glitches that could have derailed the project but they repeatedly came up with creative solutions to make sure their puzzle would get delivered. The authenticity of the deliverable was the key. I also appreciated how this project integrated so many ideas and skills, from light to energy to chemistry to writing to carpentry.

Student Reflections:
It was interesting to try and explain wind turbines to a fifth grader. It made me think about exactly how a turbine works, and how to explain it in a simple way.
—Daniel

What I found most interesting was the way that light transfers energy based on the frequency of the light. I now think of this when I think of sun burns, plants, and photos. I enjoy learning things I can use to explain things in my life.
—Madison
The Food for Thought project focused on why and how to make healthy food choices. Students researched the food industry in America and the deceptive nature of fast-food advertisements. They learned how to read food labels and discovered the many benefits of vitamins and minerals. Students selected a vegetable to grow and research, designed a kid-friendly recipe that included their vegetable, calculated the nutritional content of their recipe, cooked their recipe many times, and took professional photos of the results. Ultimately, the students compiled a professional cookbook of healthy vegetable recipes for kids. During exhibition, students in chef’s hats stood by their cookbook pages and educated visitors about the benefits of their vegetable, how they calculated the nutritional value of one serving of their recipe, and the importance of making healthy food choices.

Teacher Reflection
This project stretched beyond the classroom to connect school and home. I was struck by how powerful it was to involve parents in the critique process. Many parents told me that their child had never cooked before, or was now more appreciative of the food on their table. When you hold the cookbook in your hands, and flip through its beautiful pages, it is clear that 56 children cared deeply about their work.

Student Reflections
We made our recipe at home with the help of our family and then they tried it and gave some critique. They gave some celebrations and suggestions. We took the suggestions into consideration and changed our recipes. This was a very unique form of critique because it allowed for our families to get very involved with our project and truly get an inside look at what we were learning in class.

—Sarina

Eating fresh and balanced meals make a big difference in one’s well-being. When you eat what you choose, ask yourself, “This tastes good, but how does this affect my health?”

—Izadora & Aleia

Find our cookbook on Blurb: http://www.blurb.com/b/4063342-food-for-thought
In pairs, students chose and then researched a controversial historical figure that had both a positive and negative impact on history. Students created a fact sheet and eventually wrote a persuasive essay. Next, the names of the historical figures were randomly selected out of a hat to create the rap battle pairings. Teams of four students now worked together to create lyrics for a rap battle. While the majority of the research and writing was being done in Humanities class, students worked on creating a beat suitable for a rap battle in their Multimedia class. Students then recorded their written lyrics over their beat, created costumes, and filmed a music video in front of a green screen and then edited to create an entertaining video that was exhibited on YouTube.

**Teacher Reflection:**
We both share an affinity for the YouTube channel Epic Rap Battles and, while the original content may not be appropriate for school, we thought it would be a great place to start for a project idea. Our goal was to support our students in creating rap battles that were not only school appropriate, but that were more historically accurate than our inspiration on YouTube. It was a great opportunity to have students demystify historical figures, seeing that even heroes have flaws and villains aren’t complete monsters.

**Student Reflection:**
The most useful aspect that I learned from this project was something that wasn’t intended. I did learn a lot of history and multimedia, but the biggest thing I got out of this project was how to not care about looking silly. At first I held back and was afraid of making facial expressions and doing funny dances. As I got more comfortable, not only did the clips become better but I felt better and had more fun while being filmed. After completing this project I feel extremely proud and satisfied about my final YouTube video. —Hana

To view videos go to [http://www.youtube.com/multimediabh](http://www.youtube.com/multimediabh)
First Grade Scientists explored the world of matter all around them! They wondered...

- What is matter?
- How can we change matter?
- How can we use this knowledge to help others?

Investigating solids, liquids, and gases led to several fun creations such as play dough, chalk, goo, and bubbles. Our scientists had so much fun exploring and learning about matter that they decided to share their creations with others; they each prepared a Matter Activity Box to donate to children at San Diego’s Ronald McDonald House.

Teacher Reflections
Going into this project we wanted to tap into first graders’ natural curiosity and excitement, so we built the learning around hands-on, messy explorations. Our instincts were right. First grade scientists couldn’t wait to see what each day had in store for them! Their enthusiasm became a natural bridge linking their initial curiosity to authentic learning. As scientists, they wondered, tested ideas, discovered new ways of thinking, and made connections between matter and the world around them. Our students understood the importance of helping families at The Ronald McDonald House and empathized with what it would be like to be away from the comforts (and toys!) of home. Our scientists knew they weren’t making bubbles, play dough, and chalk just for themselves—they were excited to give their Matter Activity Boxes away. As teachers who work with the littlest of learners, we were proud this project included so much excitement and learning, and benefitted the community.

Student Reflections
This project was awesome because I learned what matter is, how it works, and how it changes to other kinds of matter.

—Zuri

I feel happy because the Ronald McDonald House kids have something to play with so they won’t be bored.

—Khalel

Now that I donated my activity box I’m so proud of myself. I feel like a party is in my heart!

—Carlo
Students and teachers built this project from scratch. We started with students’ questions about the world and themselves. From those questions, an overarching theme for a semester project emerged: The end of the world. After brainstorming and selecting doomsday topics, students conducted authentic research on a wide variety of topics, stretching across academic disciplines. Each group arranged field trips and interviews with local organizations and experts in order to get answers to their essential questions. Finally, they wrote, illustrated and designed a magazine to reveal their findings. The published piece was accompanied by Flash animations. Our magazine launch party (exhibition) took place the day before the supposed Mayan apocalypse (December 21, 2012). We sold 65 copies in just two hours!

Teacher Reflections

The democratic design of this project has shifted my mindset about project design and learning. I watched my class tackle complex issues in their research, interview college professors and take the lead on scheduling field trips. Together we found natural connections between science, mathematics, English, technology and social studies. The project proved to me that a democratic approach to learning is definitely a way to deepen learning.

—Bobby Shaddox

Throughout both the design and execution of this project, I was continually blown away by students’ ideas, effort, and collaboration. Students stressed over how important it was for them to make their own choices and work with others. In this project, I definitely felt more like a facilitator or even a participant than a teacher. One of the best parts was watching students make decisions about how to design a project that were similar to decisions I would have made.

—Allie Wong

Student Reflection

I remember the satisfaction that I felt when I was presenting my work at exhibition. They were amazed that a group of 6th graders could do this type of work. When we actually have a say in the project, it makes it more fun for all of us. We had design input which made it more interesting. I would definitely want to try this again.

—Langston
Students worked in groups of three or four to create boats made solely out of cardboard and packing tape. These boats were 6 feet by 4 feet (or larger) and two or more people from each group would set sail in them in the bay. For six weeks students explored the concepts of buoyancy, density, volume, and mass, and how engineering design and scaled drawings could be applied to further their understanding. They built one-eighth scaled models of their designs, tested their models, and then revised their designs on paper before embarking on a week of building their full-scale boats. The project concluded with a daylong exhibition where students showcased their learning of the concepts through demonstrations and displays, and then put their boats to the ultimate test as they sailed away in the bay.

Teacher Reflection:
For two weeks during building, my students continually told me that there was no way that this would work. They didn’t even believe me when I showed them pictures of people in cardboard boats. They especially didn’t believe me when I told them to check their calculations—they just figured that they did something wrong. They weren’t convinced until race day was upon us, and they pushed their boats out into the water for the first time. There was this magical moment and transformation that happened when they truly understood what those calculations and drawings represented. Figuring out the required volume for their boat was meaningless unless they could take those calculations and build a boat they could actually sail. What was even better was that these boats seemed to defy all odds, proving to the students that even when it doesn’t seem possible, there is always a way.

Student Reflection:
This was my favorite physics project I’ve ever done. I really enjoyed learning about density and buoyancy and all of the factors that go into things that float because it gave me a better understanding of how things around me work. It was awesome that we got to design and build our own boats using the information we learned. Testing and racing our boats in the bay was a really fun way to celebrate the end of the project.

—Agustin
The Learning Landscape
Lindsey Ott, Language Arts;
Eric White, Social Studies;
Ben Williams, Science
The G School, South Carolina

Students often complain about their learning environments, whether it’s comfort, mobility, or the aesthetics. They often describe their schools as feeling like a warehouse or even a jail. These oppressive and sterile surroundings are just not conducive to learning. In response to this need, we issued our students a challenge: design a piece of furniture better suited for the 21st century learning environment.

Throughout the project, our students learned how to empathize, synthesize data, brainstorm ideas, and prototype solutions that met engineering, humanities, and design specifications. The project culminated with students designing and building eight innovative pieces of classroom furniture to meet the needs of their clients: a class of fifth grade students that were dissatisfied by their learning environment.

Teacher Reflection
This ambitious project was led by STEM and supported by humanities. As an anthropologist, my favorite part was when our students gathered data to understand and empathize with their fifth grade users, because students are not often provided with enough opportunities to think outside themselves. The most challenging portion was engineering the students’ ambitious designs. We empowered them to pursue wild ideas, but we still had to engineer them to meet safety and durability specifications. The most satisfying part of the challenge was delivering the newly constructed furniture to our unsuspecting users. The looks on the fifth graders’ faces made every moment of this challenge worth it.

—Lindsey Ott

Student Reflection
We learned core concepts in math, science, and humanities while producing new and innovative designs for furniture. My team designed a Ferris wheel bookshelf that not only stored materials on the shelves, but also had rotating bins where the students could place their belongings. That idea allowed us to tackle a key science concept, rotational mass, in an engaging way that provided us with a great education and the elementary school with a great bookshelf.

—Jon

To learn more visit: http://vimeo.com/35233751 or www.thegschool.com

Project Gallery
The goal of this project was to recreate and interpret critical historical turning points from the last 150 years in the hopes that these creative stories would stimulate new dialogue about old stories. In order to tell the story with puppets, each student group picked their own topic to investigate, and each member of the group wrote a research paper investigating a unique aspect/angle of their turning point topic. Building on each individual student’s knowledge, groups were able to create interpretive toy theatre shows with hand-crafted originally designed paper puppets. With help from the professional puppeteer company, Animal Cracker Conspiracy, students learned to manipulate their puppets in relationship to custom animations, sound, and video works (all produced by the students).

Teachers’ Reflection
Experimental projects are the toughest to facilitate. It’s impossible to predict what the outcomes will look like as different students create work in their own unique styles. Consequently, the work is very exciting because the students and teachers wander into unknown territories. During this project, students became more and more comfortable with the steady process of critique and revision over a period of eight weeks. By the end of the project, students asked for more rehearsal time and more critiques because they knew these processes strengthened their work. The greatest lesson seemed to be that students learned to trust in the process of experimentation and believe in their capacity to produce beautiful work.

Student Reflection
The take away message of our piece, based off the life of Harvey Milk was that anyone has the power to make or inspire social change. I’ve learned that while it’s important to make change so that people’s lives can be lived honestly, it’s also important to make change in one’s perspective so that new knowledge and ideas can be shared and appreciated.

—Spencer

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http://margaretnoble.net/educator/turning-points-toy-theater/