



Asa Sevelius <asa_sevelius@psbma.org>

ECS NEWSLETTER 4/2/18

Asa Sevelius <asa_sevelius@psbma.org>
Draft

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ECS Newsletter

4/2/18

ECS Mission: To Collaborate with PSB educators to create rigorous, relevant, engaging learning for all students

Goals of the Public Schools of Brookline

Goal 1: Every Student Achieving

Goal 2: Every Student Invested in Learning

Goal 3: Every Student Prepared for Change and Challenge

Goal 4: Every Educator Growing Professionally



@ECSbrookline

@tanyagregoire

WWW.ECSbrookline.weebly.com

Psbma

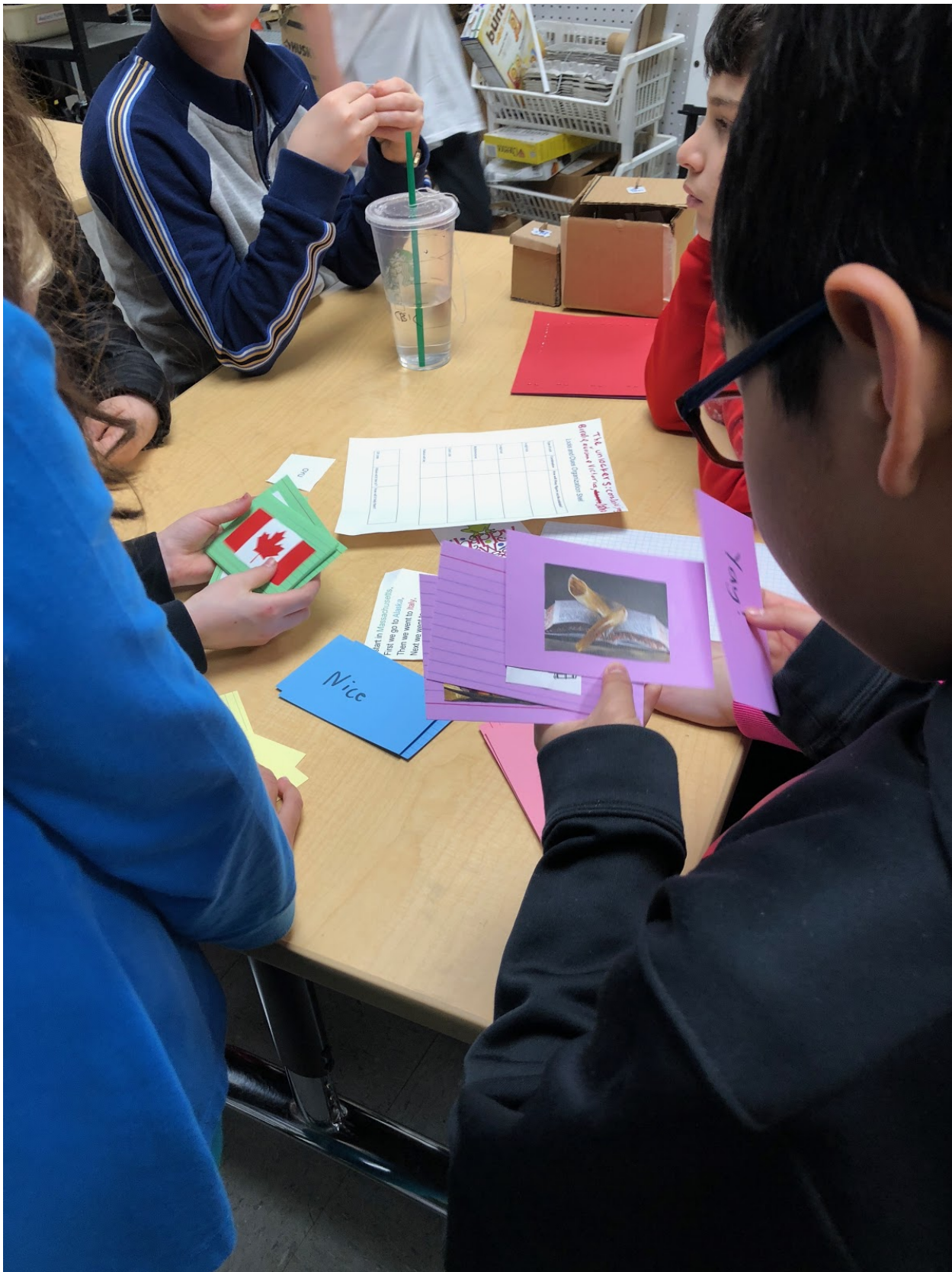
Quote of the Week

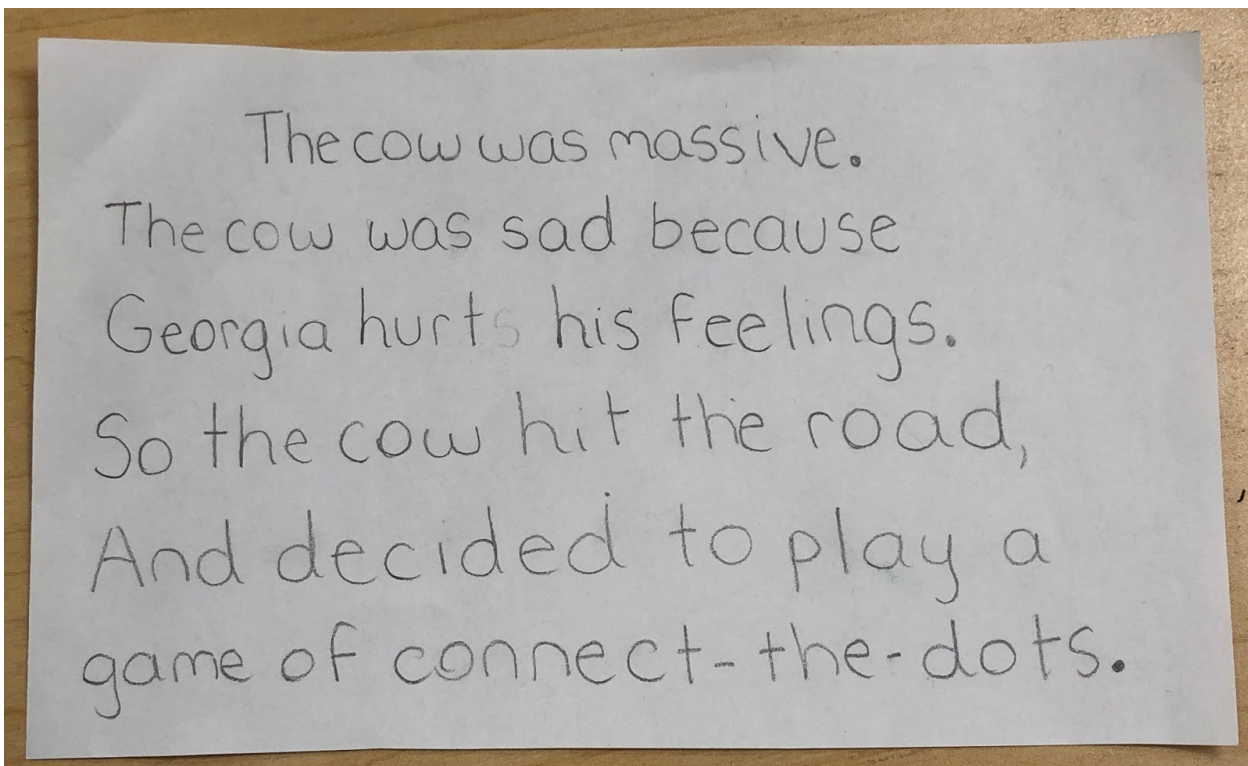
Science is basically an inoculation against charlatans.
- Neil deGrasse Tyson

Current Goings On

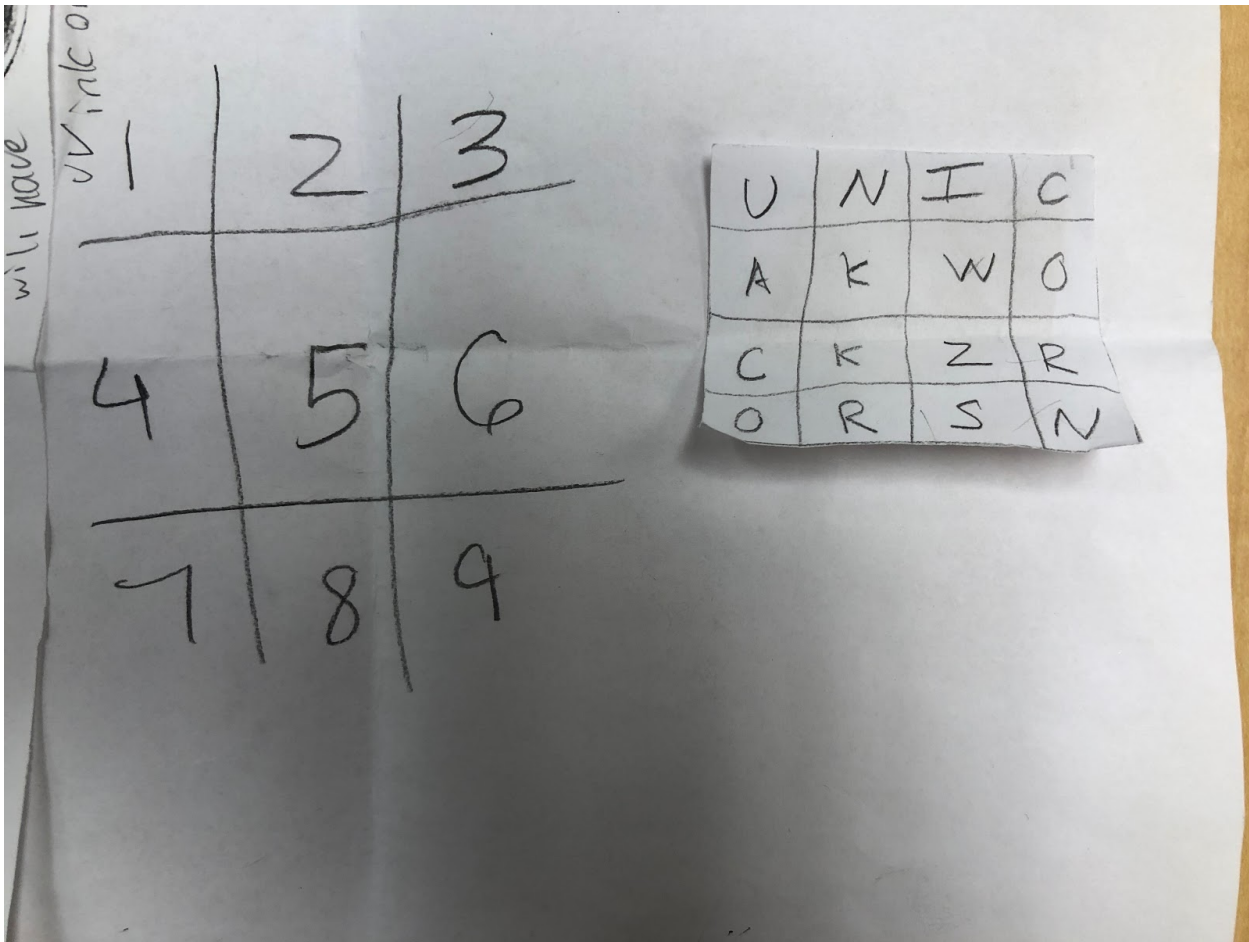
Fifth Graders Create, and Play Their own Break-Out Boxes

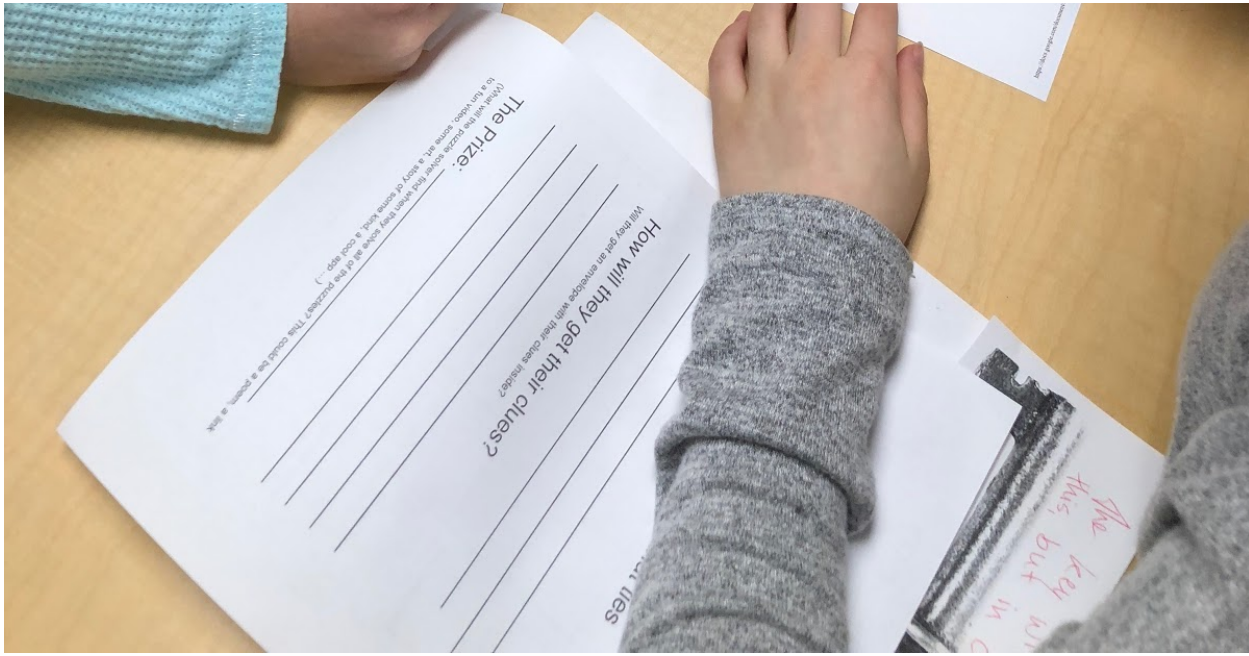
Break-Out boxes are a lot like the very popular “escape rooms” that many people love. In escape rooms, you are invited into a room in which many clues are hidden. In order to “escape” the room, you need to solve the clues to unlock the locks. In Break-out boxes, you need to solve puzzles to break IN to the box for a prize. Fifth grade students played a break-out box provided by Breakout.edu, and then chose to design their own break-out boxes. These photos are from game day, where they played other teams’ break-out boxes. Some of the boxes had a theme like “US colonies”. They all had very sophisticated clues and it was a lot of fun problem solving.

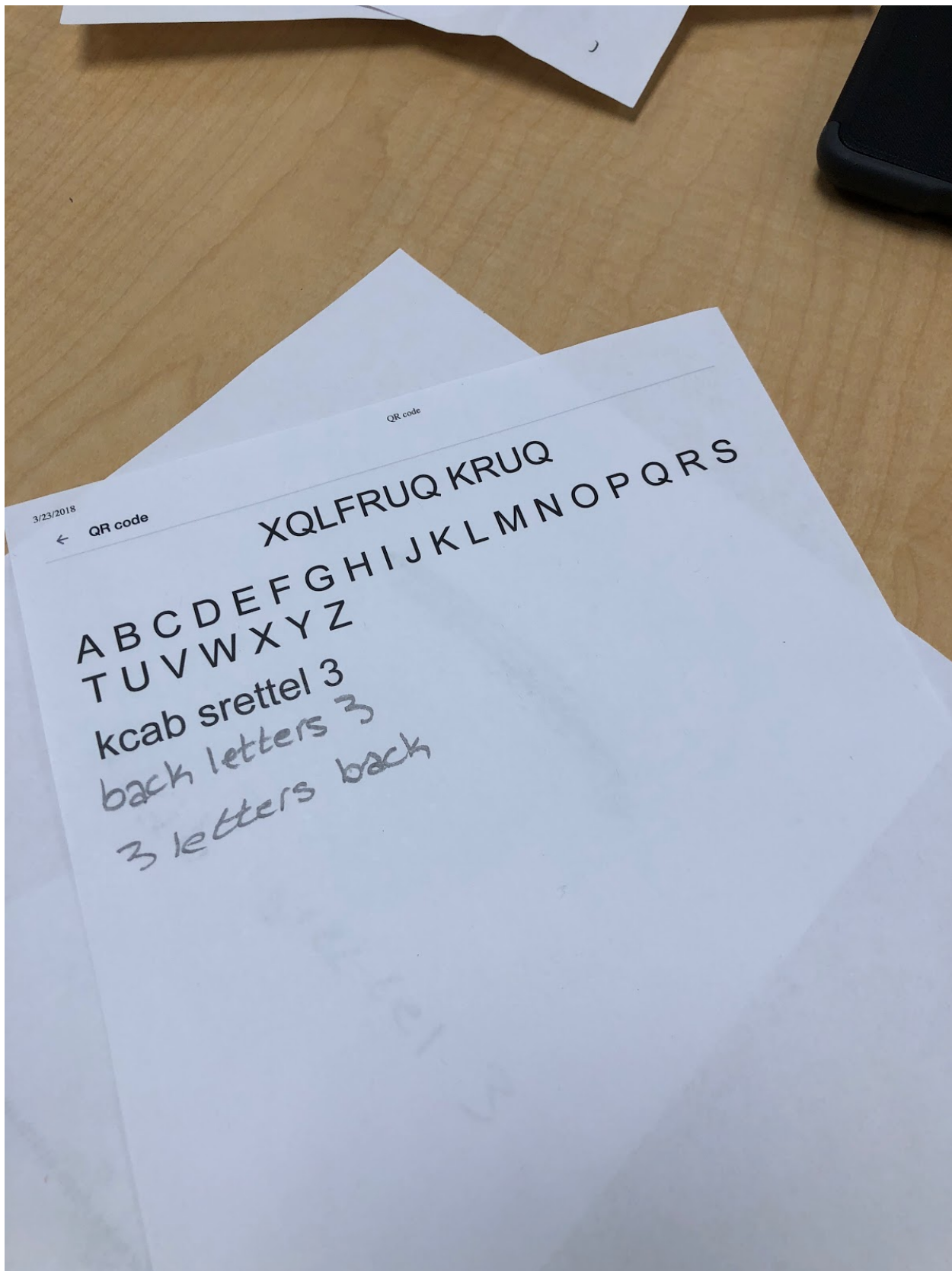












Polymer Science Lunch Group

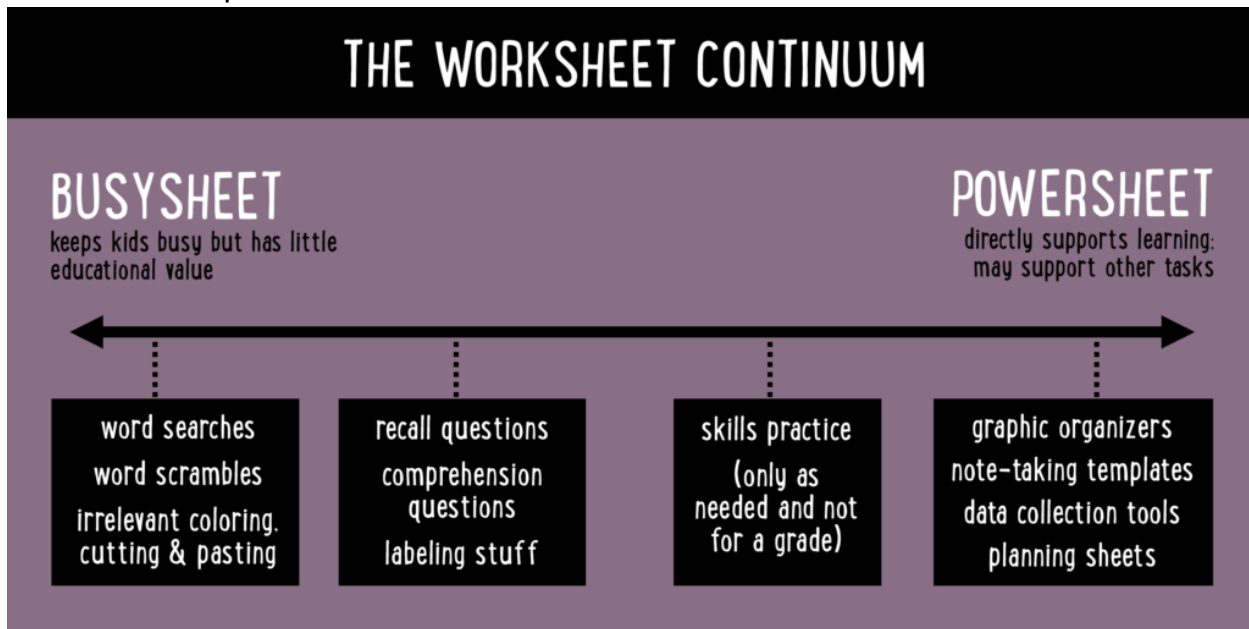
This group came to me to ask if they could have a lunch and work on making slime. We're exploring the properties of different slime recipes.



Articles and Resources

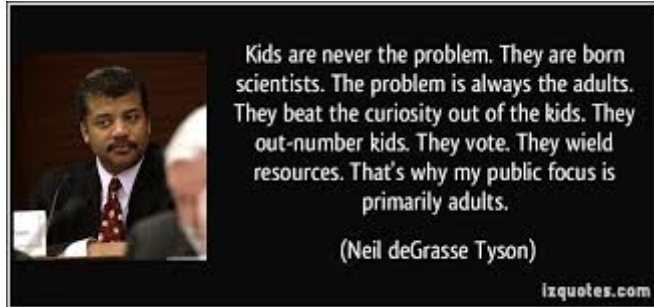
Frickin' Packets

Do we lean on packets and worksheets too much? This is an excellent, articulate article with many solutions and a powerful video.



[Kids Are Born Scientists](#)

Watch this great video by one of my very favorite people, Neil DeGrasse Tyson



[Guiding Students to a Healthy Math Identity](#)

Young mathematicians need to see that the keys to success are passion and dedication, not speed and always being right.

It's about the fun, magic and the art of math!

[Frameworks for Reflection](#)

Students get a metacognitive boost by pausing to think back on how and why they performed learning tasks.

[The Art of Reflection](#)

Portfolios allow students to regularly reflect on their learning process—deepening their connection to content.

TINKERING TENETS

Every day at the Exploratorium, we witness firsthand how empowering tinkering can be—we're there for the head scratching, the trial and error, and the *aha!* moments that result from engaging your world, both physically and mentally. Here we've put together a few of our daily practices and some of the ideas that guide us in our work, and we hope that they will help you in your own tinkering adventures.

MERGE SCIENCE, ART & TECHNOLOGY

On their own, science, art, and technology all make for interesting, fun, and rewarding explorations. But when you mix them together, you get a veritable tinkering trifecta in which technological tools and scientific principles let you express your own artistic vision. Plus, we find that when you make something that's personally meaningful to you, you get especially motivated to make it work, leading to tons of great insights into your chosen tools.

USE FAMILIAR MATERIALS IN UNFAMILIAR WAYS

The world is full of stuff that was invented to do a specific job. But taking a common object and putting it to new use will likely result in unexpected, surprising explorations—like making music with walnuts or crafting tiny cities of tape. A bonus: These materials are often cheap and easy to find, and their universality means you can use them in near-infinite ways.

CREATE RATHER THAN CONSUME

REVISIT & ITERATE ON YOUR IDEAS

EXPRESS IDEAS VIA CONSTRUCTION

PROTOTYPE RAPIDLY

When you have a new idea, it's incredibly helpful to get it out of your brain as soon as possible—to sketch a design or build a working model with stuff you have lying around. That way, you can make it real, work it out, and develop a concrete understanding of your next steps, then move on to Phase 2.

EMBRACE YOUR TOOLS

We love tools. Beyond being just plain useful, they're also an extension of your own critical thinking, letting you physically investigate the way things work—to get in there and pry, screw, hammer, and wire your way to a deeper understanding. And when you learn how to use a felting needle, multimeter, or hand drill, you open up a world of possibilities that allow you to fix things, remix things, and bring something new into the world.

BE COMFORTABLE NOT KNOWING

GO AHEAD, GET STUCK

When you tinker, you're going to mess up. You're going to get frustrated, fail, and maybe even break a thing or two. We call this getting stuck, and believe it or not, it is a very good thing. Failure tells you what you don't know, frustration is making sense of that failure in the moment, and taking action leads to a new way of knowing. Treat each of the problems that arise as a problem to play with—rather than a problem to solve—and practice working through times of frustration without judging yourself. You'll find that you develop an astonishing capacity for new understandings.

REINVENT OLD TECHNOLOGIES (AND DISCOVER NEW ONES, TOO)

In this book, you'll encounter dozens of technologies (some old, some new) from all types of art practices and industries. We encourage you to consider all the possible tactics out there that can help you realize your vision—whether your project requires old-school woodworking, photo-making techniques from the 1800s, or relatively newfangled circuitry and programming.

SEEK REAL-WORLD EXAMPLES EVERYWHERE

TRY A LITTLE "SNARKASM"

We like to joke around while we tinker, and we call our particular brand of well-meaning wit and unapologetic playfulness "snarkasm." A little humor helps—it's enjoyable and it alleviates the pressure of trying to make something work.

BALANCE AUTONOMY WITH COLLABORATION

Tinkering with other people can be a blast and is a valuable way to get things done. It makes you explain your ideas, allows partners to cross-pollinate and share skills, and lets everyone be part of something larger than themselves. On the flip side, we advise going solo from time to time—it will equip you with a richer knowledge of your tools and materials, and you'll feel your confidence, your dexterity, and even your brain expand.

PUT YOURSELF IN MESSY, NOISY & SOMETIMES DANGEROUS SITUATIONS

Tinkering can get tricky. Prep to use your tools safely, and practice techniques for cutting, drilling, soldering, and welding. But the dangerous aspect of tinkering is a powerful motivator—it forces you to slow down and pay close attention to what you're doing. A little caution goes a long way.

TAKE YOUR WORK SERIOUSLY WITHOUT TAKING YOURSELF SERIOUSLY

Because tinkering should be fun. And when you let go of your ego, you give yourself permission to focus and play. That's when the good stuff happens.

Equity/Every Student Achieving

Why Are Black Students Punished So Often?

How can this information inform us about how to fix the achievement gap?

From the article: ... suspensions are helping to drive the achievement gap between white and minority students. Suspensions and expulsions are also linked to the disproportionate numbers of minority students in the criminal justice system.

Teaching Tolerance - Educator Grants

Who has a good idea for this grant?

From the article: These projects offer teachers the resources necessary to create safe and welcoming classrooms that reflect the outcomes described in the Teaching Tolerance Social Justice Standards. Preference is given to projects that emphasize student action and promote student voice.

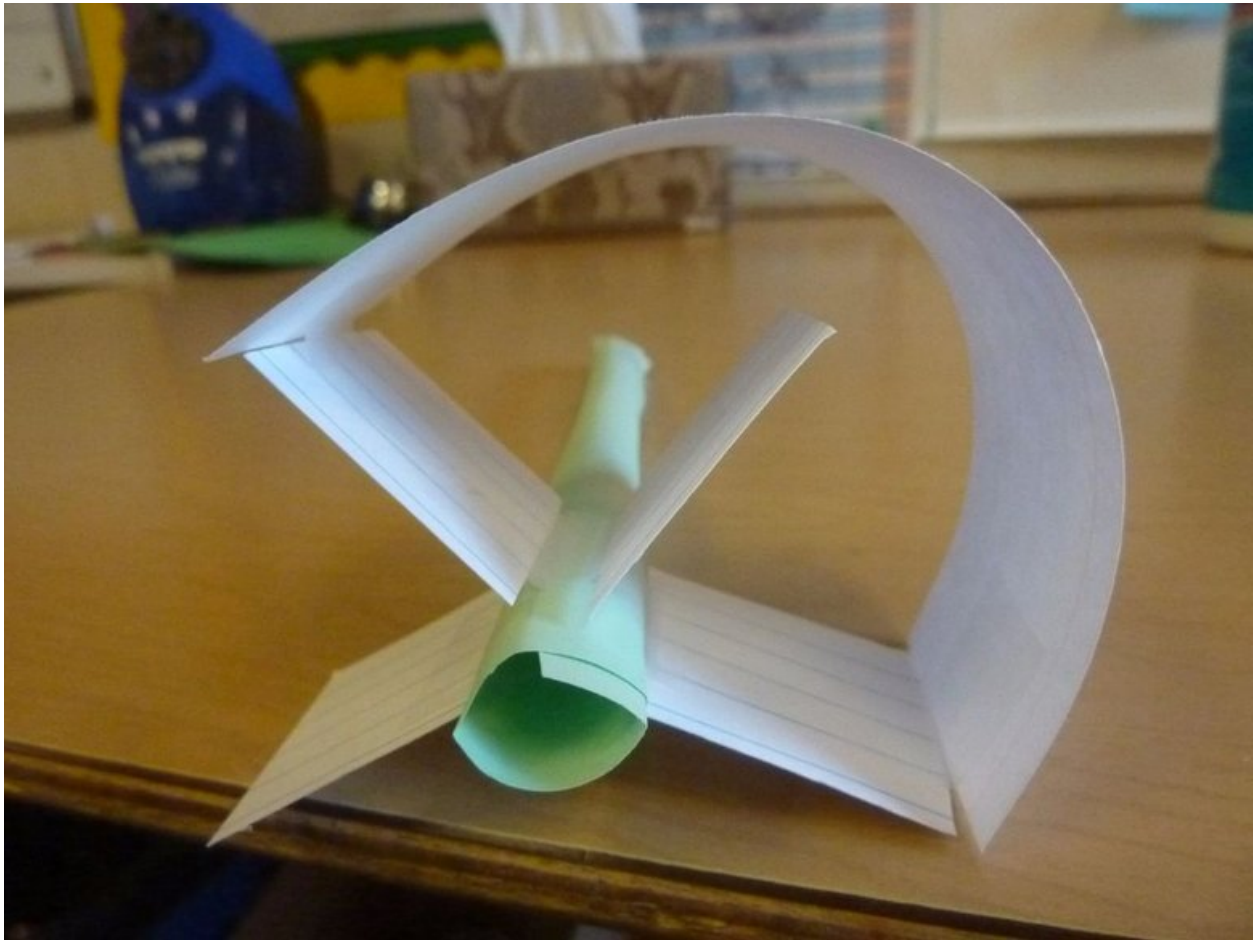
Tinker Time

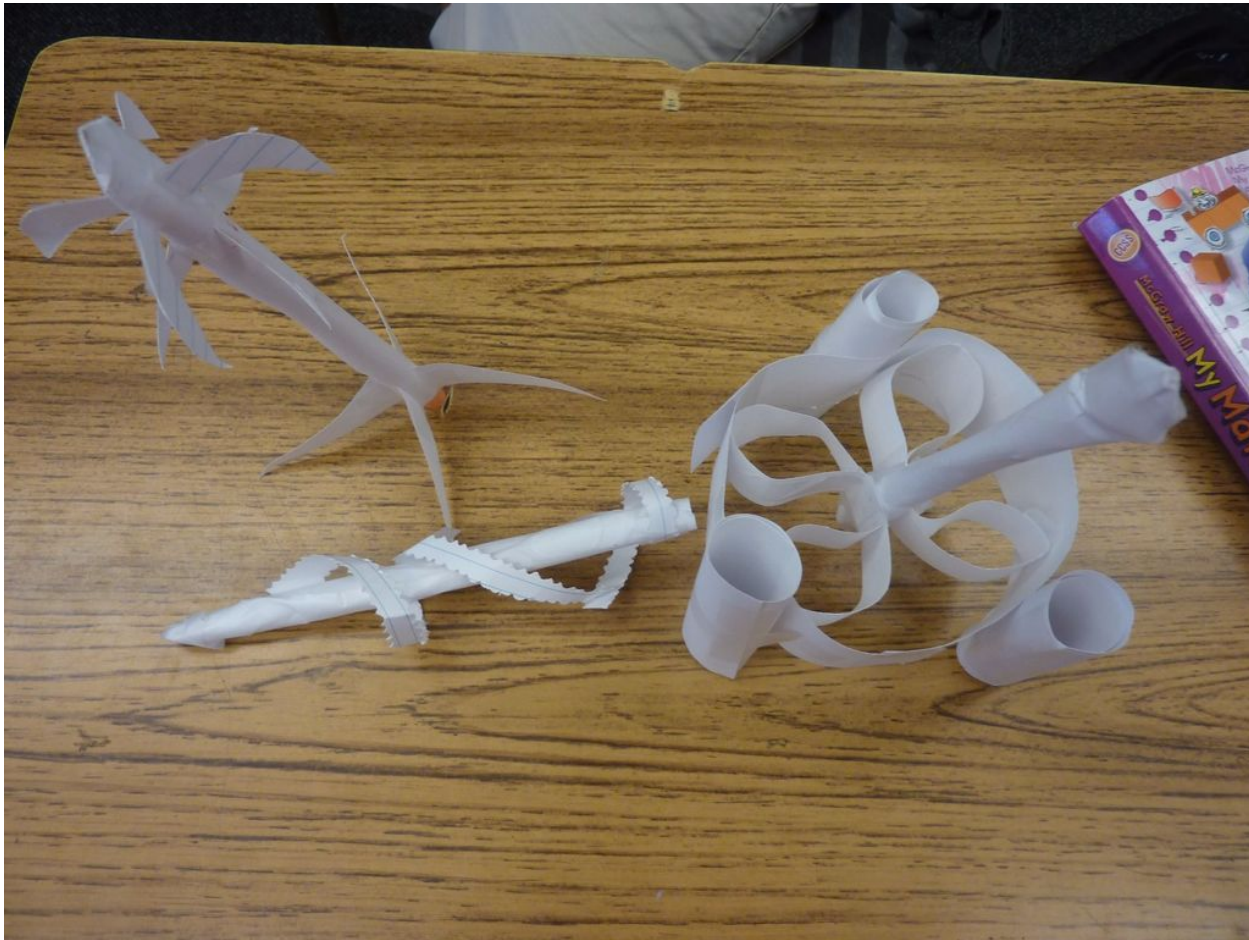


Paper Straw Rockets

These are fun and easy to make with materials that are easy to find. I made these with 5th graders after school, and they messed around with getting the rockets to do different things (spin, curve, go long distance, hit a target) by changing the fins. We had a blast (pun intended!) (photos below are not from my group).

From the article: Curiosity. Imagination. Perseverance. And FAIL SPECTACULARLY!





Opportunities

[Women in STEM: Volunteer at STEM Pathway's SET in the City, Apr. 7](#) (Thank you Newton STEM)

Women in STEM fields are invited to participate on April 7 in the 10th annual SET in the City, a program for girls in Grades 9-12 to explore academic paths and careers in STEM. Volunteers in STEM careers are needed for the program's Science Information Bazaar, to be held 10:30-11:30AM in the Photonics Center at Boston University. There will be tables set up for you to bring some demonstration, exhibit, poster, or computer application to share with the girls. [Register online](#) to volunteer. For more information, email setinthecity@bostongirlsstem.org.
