



Makerspace Learning in School Libraries

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@activelearning

Slides available tonight:
<http://bit.ly/fontblog>

Fort Bend ISD
Full-day workshop
August 14, 2014

Slides posted tonight:

<http://bit.ly/fontblog>





Being Makers

Who Are Makers?

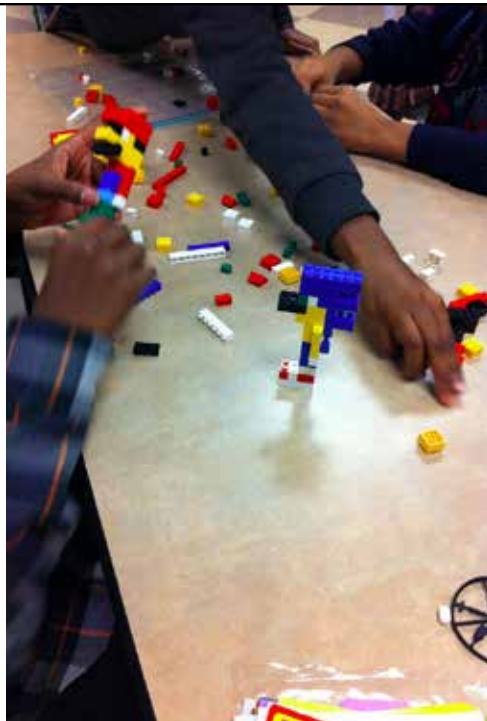
Tenets of Making and
Maker Mindset

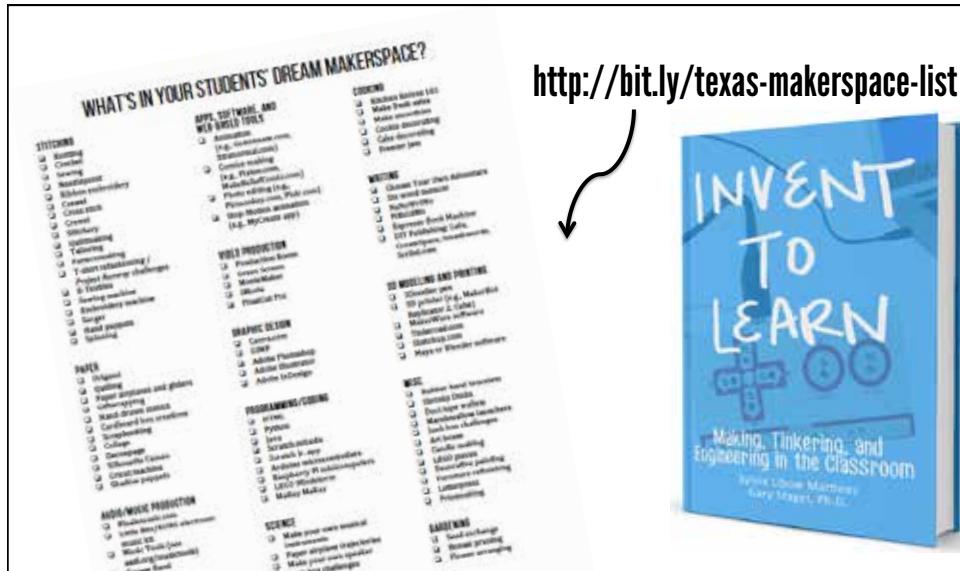
In-School Making

Assessing Making

Plus ... 3 design
challenges!

Today's Agenda





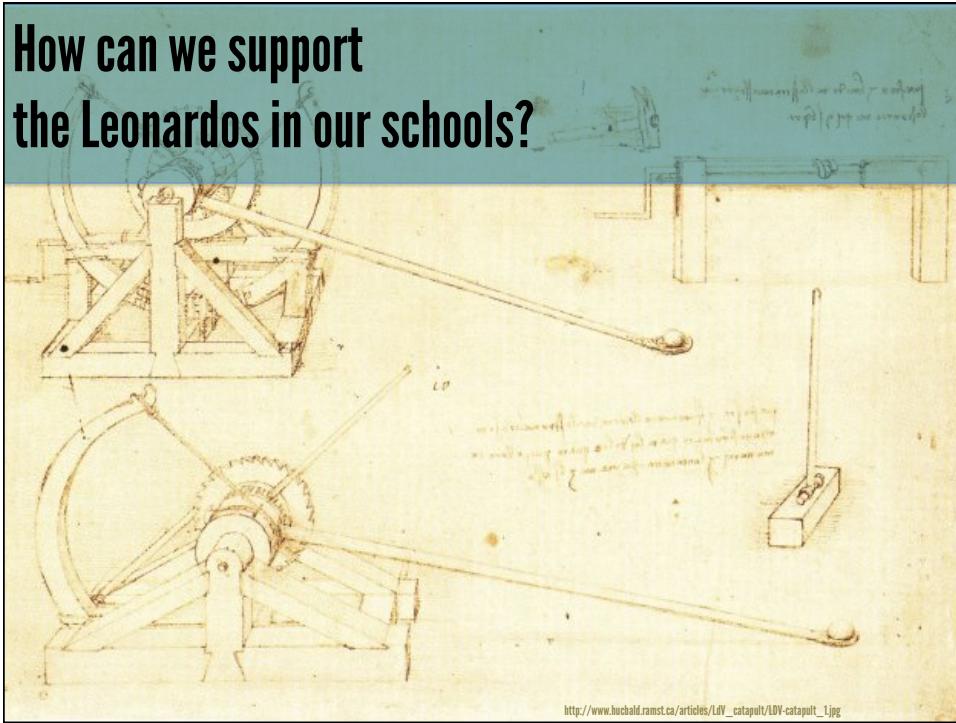
<http://bit.ly/texas-makerspace-list>

We're still learning, too!
<http://makerbridge.si.umich.edu> - @makerbridge
created by Sharona Ginsberg

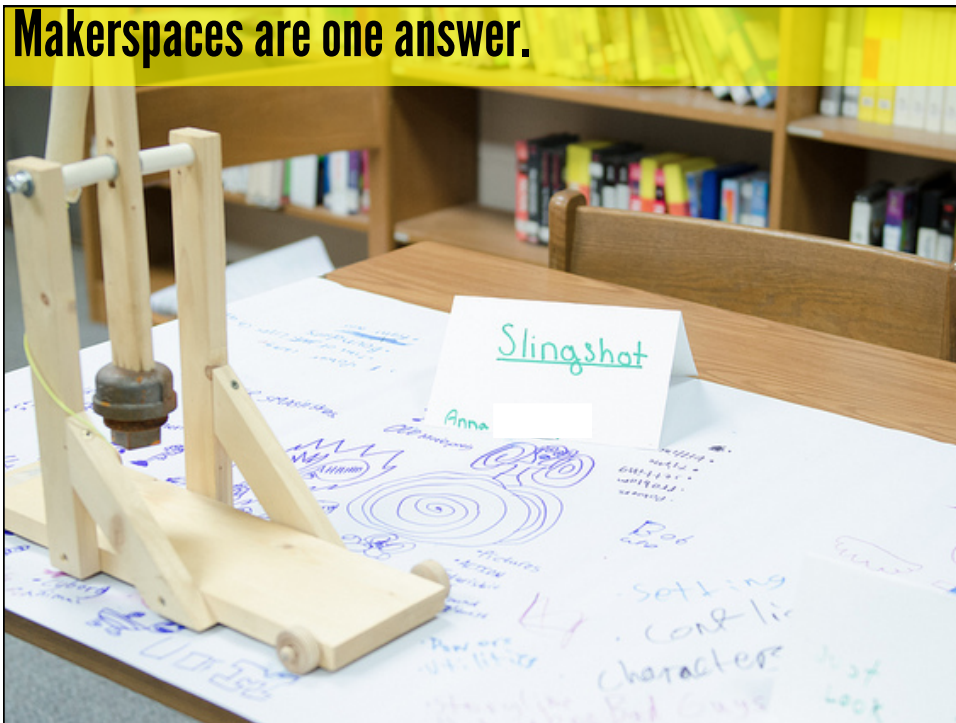


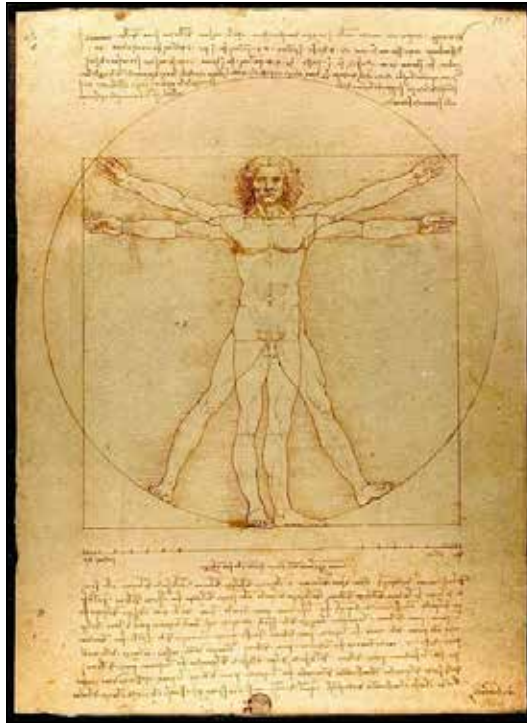


**How can we support
the Leonardos in our schools?**



Makerspaces are one answer.





**Makers
Make
Stuff.**



*Art: Mechanical Vitruvian Man by Art Mechanic on Wikimedia. CC BY-SA.
http://commons.wikimedia.org/wiki/File:ArtMechanic_Vitruvian_Man.jpg

**Makers
Transform
Stuff.**

Making isn't new ...



MAKE

Making is fundamental to what it means to be human. We must make, create, and express ourselves to feel whole. There is something unique about making physical things. These things are like little pieces of us and seem to embody portions of our souls.

LEARN

You must learn to make. You must always seek to learn more about your making. You may become a journeyman or master craftsman, but you will still learn, want to learn, and push yourself to learn new techniques, materials, and processes. Building a lifelong learning path ensures a rich and rewarding making life and, importantly, enables one to share.

<http://bit.ly/makemanifestochapter>

This is a makerspace.



This is, too.



Photo of All Hands Active, Ann Arbor
<http://www.concentratemedia.com/features/allhandsactive0225.aspx>



Ann Arbor Modern Quilt Guild at Maker Works, Ann Arbor
<http://www.maker-works.com/content/ann-arbor-modern-quilt-guild>

And so is this.



Parker Thomas,
<http://makezine.com/2013/08/11/key-qualities-for-a-school-makerspace/>

Tools
+
Support
+
Community

People
+
Process
+
Place

Dale Grover, Maker Works, Ann Arbor, Michigan

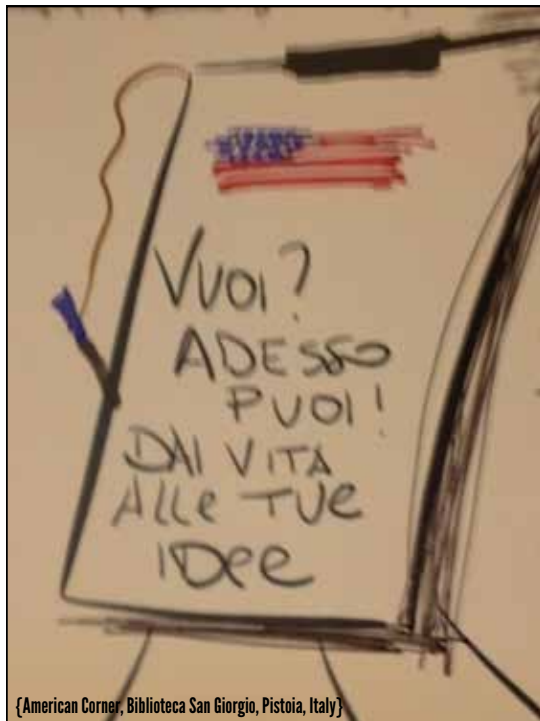
Parker Thomas,
<http://makezine.com/2013/08/11/key-qualities-for-a-school-makerspace/>

Tools
+
Support
+
Community

*EXPLORATION + FORMAL AND INFORMAL LEARNING +
PEER LEARNING + EXPOSITION + CONTENT?*

People
+
Process
+
Place

Dale Grover, Maker Works, Ann Arbor, Michigan



{American Corner, Biblioteca San Giorgio, Pistoia, Italy}

Want to?

Now you can!

**Give life
to your ideas**





Mindset and culture come before the tools.

What mindset do you want to develop in your students?



**Our makerspaces
hit the mark when
makers are working
from their
“center of gravity”**

(Dewey 1900)

Some Things to Consider ...



#1: Know Your Purpose Before You Buy Anything.

Entertain? Inform? Educate?

Enhance academics? Fill a void in academics?

Have one-off projects or build a community?

Welcome new makers? New services for existing makers?

Turn and Talk: What's Your Purpose?



Example: Michigan Makers

- Create community around making
- Balance DIY exploration with guidance from mentors
- Create sustainability and replicability
- "Have something for every member of the family"



#2: Consider Short- And Long-term Projects (and start small).



3: Embrace Open – and Open Source -- Thinking.



'Arduino Uno R3' by SparkFun Electronics on Flickr. CC-BY.
<http://flickr.com/photos/sparkfun/8406865880/>

Corollary: Look for Partners & Sherpas.



**Corollary:
Partner Skills, Too: Look For Mashups.**

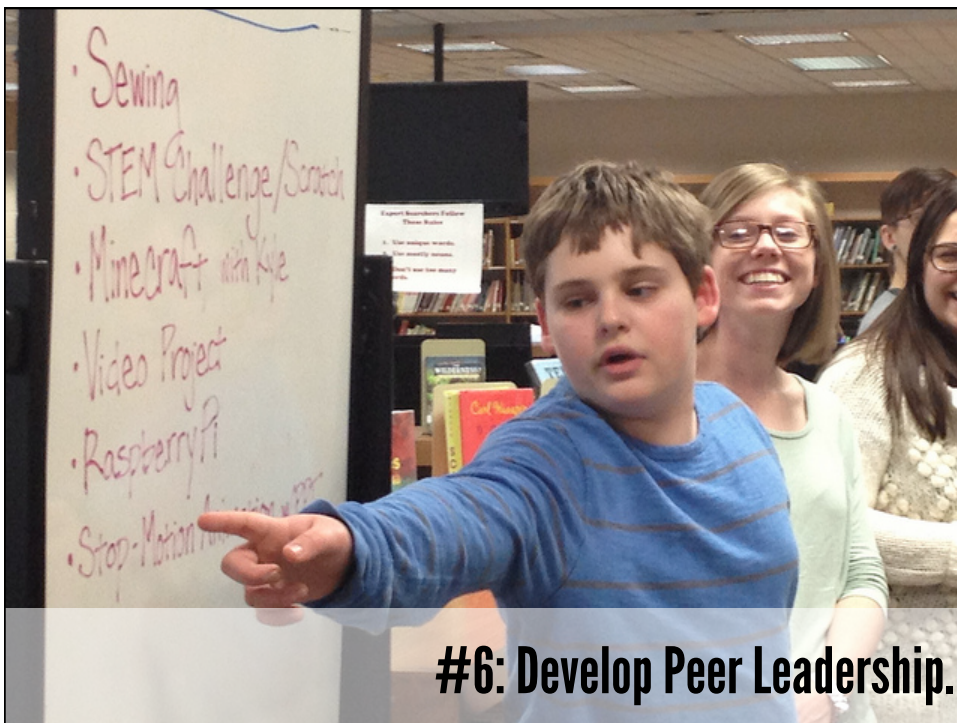


#5: Not all making is serious business.





Corollary: Sometimes, making allows for self-soothing and re-centering.



#6: Develop Peer Leadership.

Corollary: Redefine “Teacher” And “Learner.”



#7: Think Windows And Mirrors.

There is something missing in our definition, vision, of a human being: the need to make.

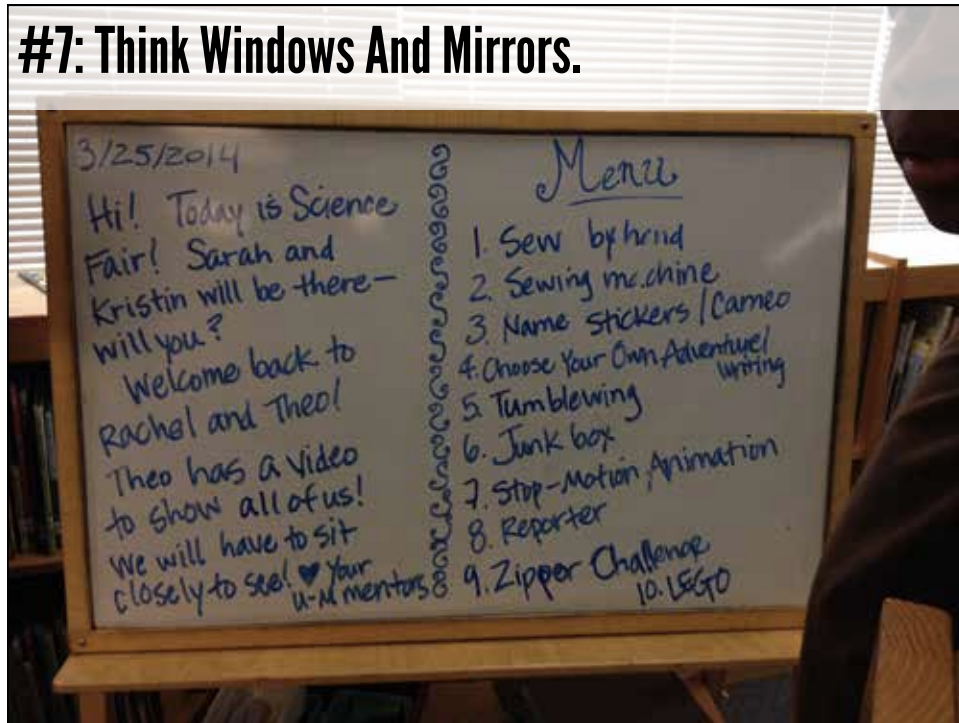
We are creatures who need to make.

Because existence is willy-nilly thrust into our hands, our fate is to make something--if nothing else, the shape cut by the arc of our lives

Making is the mirror in which we see ourselves ...

Frank Biedart, "Advice to the Players,"
<https://harvardmagazine.com/1999/09/poetry.html>

#7: Think Windows And Mirrors.



#8: Celebrate Daily Progress.



#9: Celebrate Long-term Progress.



Corollary: Celebrate by just making something.

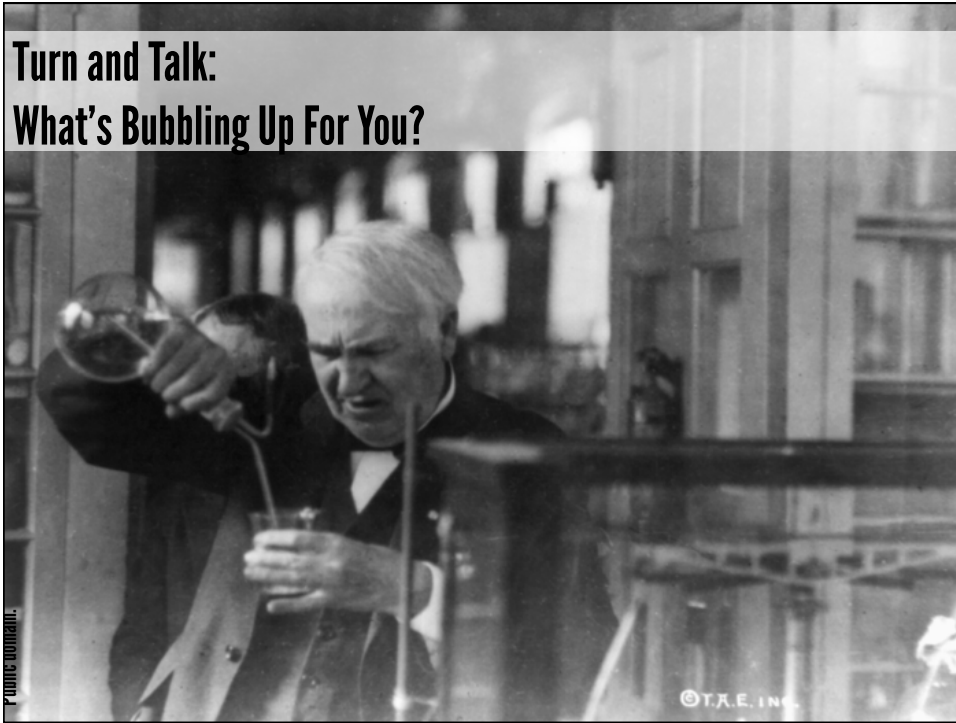


Maybe inspired by a friend?



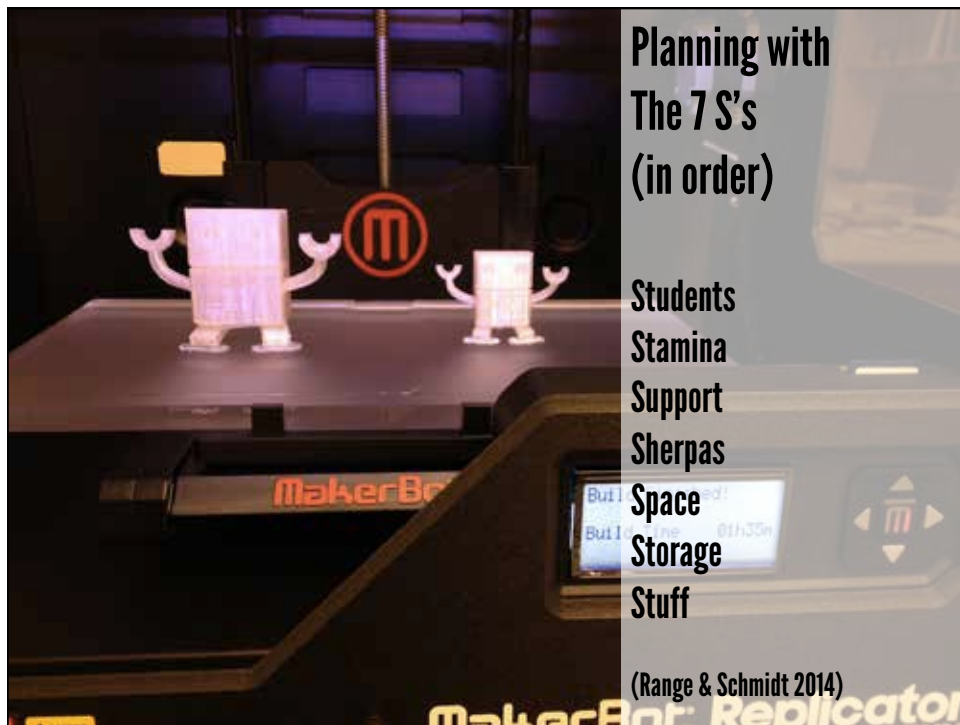
Or fixing something?

**Turn and Talk:
What's Bubbling Up For You?**



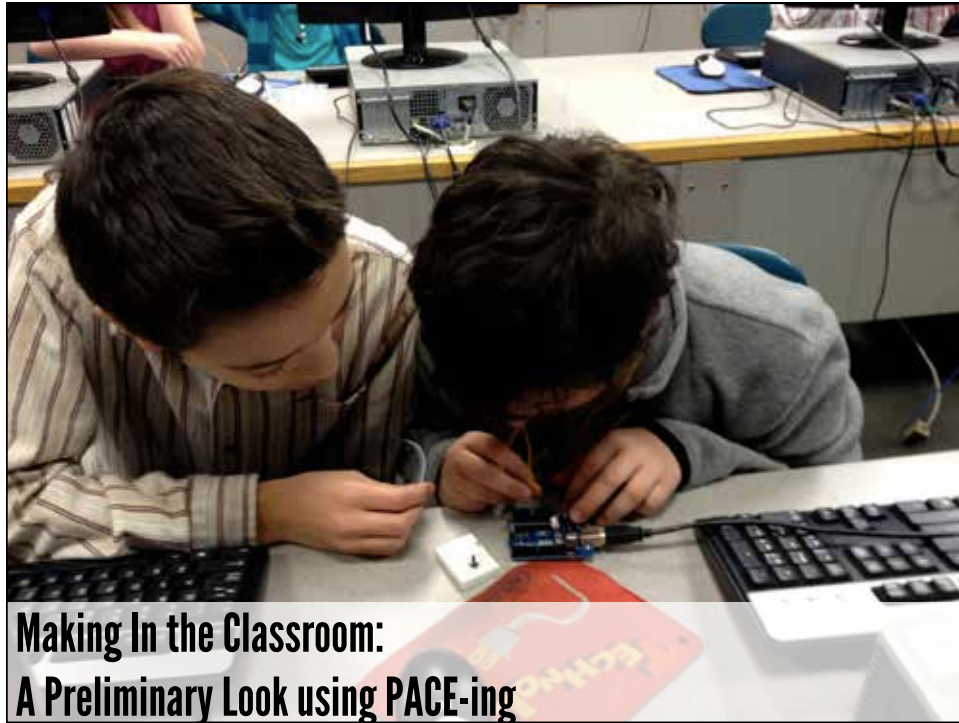
Break! Back in 15 minutes – 10:10am

"2 hour nap" by Shan213 on Flickr. CC-BY-SA-2.0.
<http://flickr.com/photos/shan213/13311840895>



hack

hack making



**Making In the Classroom:
A Preliminary Look using PACE-ing**



As you begin to formulate your plan, think about:

Process over product

Agency over teacher-directed work

Choice over following directions

Experimental mindset over "failure if it doesn't work the first time"

PACE: Process Over Product

- **Minimize direct instruction except when needed to impart specific skills (e.g., how to solder, how to link to CSS)**
- **Focus more on pathfinders, mentors, marination, and peers to guide moment-to-moment decision-making**
- **We'll talk more about assessment this afternoon**

Process - Agency - Choice - Experimental Mindset

PACE: Agency Over Teacher-Directed Work

- **Who's supposed to be learning, anyway?**
- **Who's supposed to untangle the complicated stuff and figure it out?**
- **Kits can build skills but don't substitute from the design thinking / prototyping practice of designing from scratch**

Process - Agency - Choice - Experimental Mindset

PACE: Choice Over Following Directions

- **Give students options within reasonable limits (age of student impacts amount/range of choice)**
- **Differentiate what everybody-needs-to-know from interest-driven possibilities**

Process - Agency - Choice - Experimental Mindset

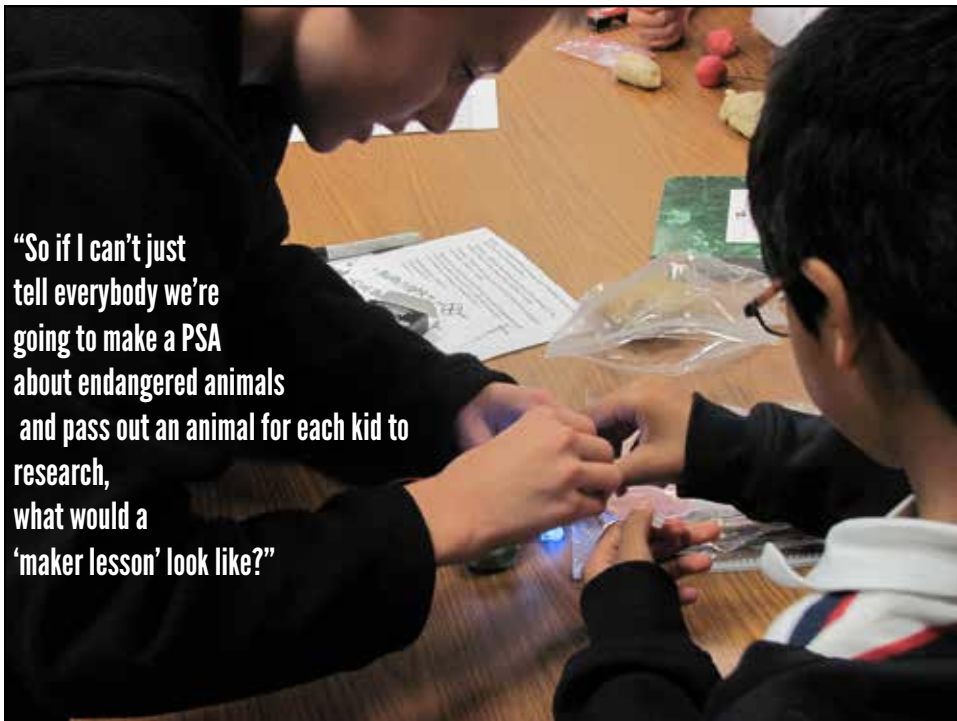
PACE: Experimentation Over Failure

- **Making is *iterative* design (think Dyson vacuum, Edison light bulb)**
- **Many of the boys you teach have been taught over time not to persevere beyond first attempt**
- **Need to build mental muscles for this new flexible way of working**

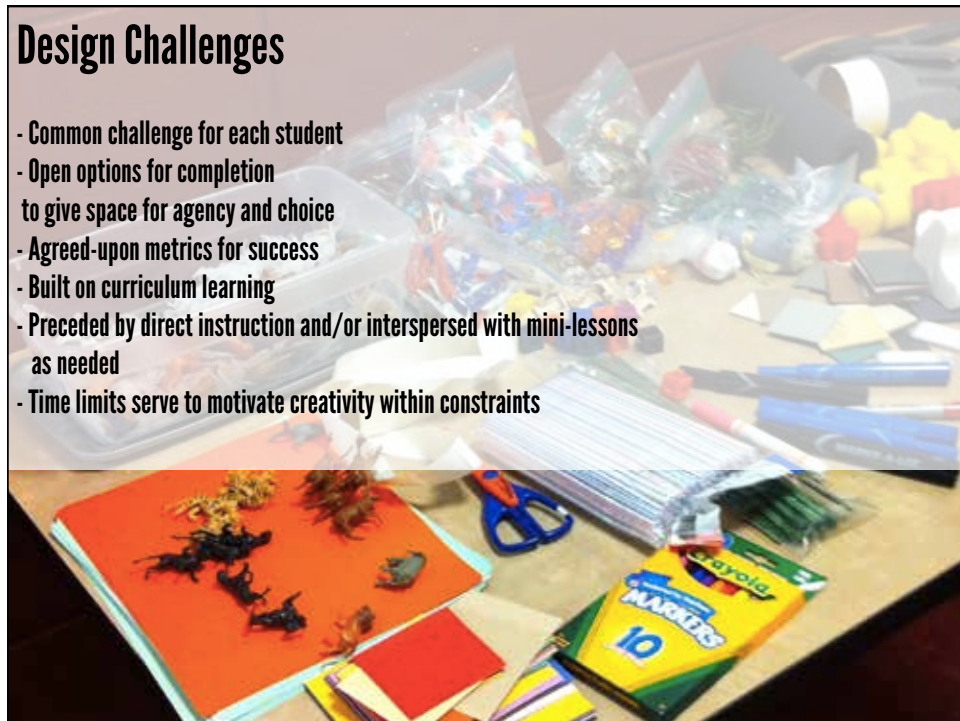
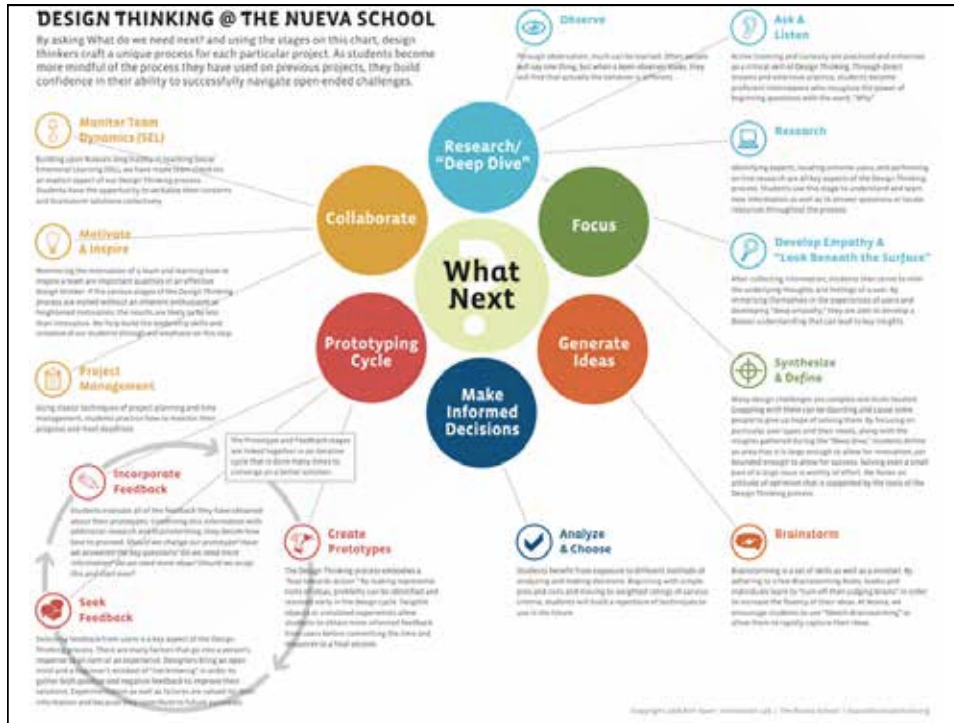
Process - Agency - Choice - Experimental Mindset



**A Way to Begin
Thinking About Your
Project Planning ...**



**“So if I can’t just
tell everybody we’re
going to make a PSA
about endangered animals
and pass out an animal for each kid to
research,
what would a
‘maker lesson’ look like?”**



Design Challenge Seeds

- Design an **invention** that would fix _____
- Create a **prototype** that would _____
- Research and identify a **solution** that _____
- Create a **stamp/statue/logo/mascot** for _____ based on what you know about _____



Examples

- We have studied how _____ influenced society by harnessing/inventing _____. What new global challenge do you see needing to be solved? **Create a pitch/prototype/advertisement** for your solution.
- People with Parkinson's have difficulty eating soup because their hand shakes. **Research existing solutions** and design an alternative
...
- **Superheroes project** (Jan Chernin, Greenhills School)





- Parking Lot Questions
- Lunch?



This Afternoon's Agenda

- A few more resources
- Maker Challenge 2
- Planning for Making
- Assessment (oh, yes, I said it)
- Maker Challenge 3

21st Century Skills Innovation Library:
Makers as Innovators

Some of today's most incredible innovations are coming from the global community of makers. Their tinkering, inventing, and tinkering share information and technology through one common thread: Makers will discuss how they can put the creative, innovative, and entrepreneurial fire away on fire.

Cherry Lake Publishing LIBRARIANS' BOOKS

NEW FOR FALL 2013

cherrylakepublishing.com

Named a "Top 10 Series Nonfiction" by *Booklist*, 4/1/2014

"Here's a series many librarians need as much as their readers ... the volumes in this cutting-edge series communicate a level of energy that elevates the challenging material into need-to-know-right-now stuff."

NEW! 3D Modeling - Soldering - Squishy Circuits - Web Design with HTML 5

School Library Makerspaces
Grades 6-12

School Library Makerspaces, Grades 6-12
Leslie Preddy
Libraries Unlimited, 2013
<http://bit.ly/preddybook>

Leslie B. Preddy

Make Something #2 Recycle Bin Challenge

COMPUTER TRAINING
for MEN AND WOMEN
It Makes "GOOD SENSE" to Attend

The ONLY School in the Delaware Valley with 2 Computers
IBM 360/20 and IBM 360/30
ON SCHOOL PREMISES

DAY AND EVENING COURSES IN:
Basic Programming (300 Hours) Executive Secretary
Comprehensive Programming Computer Management
(1000 Hours) Data Processing Librarian
Data Processing Machine Repair Electronics
Computer Technology Key Punch

PAY AS YOU LEARN

VETERANS APPROVED — FEBRUARY CLASSES NOW FORMING

PHILADELPHIA INQUIRER Date: 3,5000
JANUARY 12, 1969 A direct line to Ad-Taker

HELP WANTED
Nurse, Male or Female, to work in hospital setting for commercial enterprise. Licensed by Pennsylvania Board—One Year Professional Experience, rotating shifts for night work. Salary range \$3,581.00. Liberal fringe benefit. Fourth Development Center, C. Heights, Pa. 268,000, ext. 200.

NURSE, LPN, Rn exam. At least 1000 hrs. & 10-12 shift. Co. OPERATOR—read line-up between do Hopper machine, oil seal. Good working conditions, 40 hrs, shift schedule & benefits. Wm. Gabel, contact. Apply with covering Co. 1234 Cott RD. HO 7-4100.

PHARMACIST—CHURCH. No. 40 Write to: Pharmacist, Lutheran Church, Cotters Valley Rd. 14, Pa. 19027.

PHARMACIST—Aggressive individuals filling duties in a progressive, fast-paced environment. We are seeking a General Practitioner. Call Mr. Gil 610-494-0724, ext. 200.

PROFESSIONAL immediate opportunity experienced good results without disabilities to handle all aspects of business & financial. Good salary & benefit. CC office. Call LO 8-1111. No. for appointment.

PLACEMENT SERVICE
OR VETERAN TRAINING
Automation Institute
Have Accepted Positions
in this Dynamic New Field
FREE CATALOG
LO 9-2360

Found newspapers by Ryan Brunsvold on Flickr. CC-BY-2.0.
<http://flickr.com/photos/ryanbrunsvold/5490058566>

Your Challenge! By _____ (in 20 min.)...

Individual Challenge

- Create a sculptural representation of the theme or conflict of your favorite book or historical event.
- Be prepared to explain the choices you made.
- Use a sticky note to create a catchy title and informative subtitle, like this:
Alone Among Others: A Key Social Theme in *Hamlet*

Group Challenge

- Merge your supplies.
- Start by collecting data from group members about something that new students struggle with at your school.
- Use that data to focus on a single problem.
- Brainstorm solutions.
- Build a prototype.
- Be prepared to explain the choices you made.
- Use a sticky note to create a catchy title and informative subtitle, like this:
Friend Tracker: An App to Help New Students Find Kindred Spirits

Or ... create your own challenge and be ready to explain it to others.

Or ... be a group reporter! See Kristin

Gallery Walk until _____

- Framing gallery walk/exposition etiquette with kids
- Move your creation to the back of the work area (leave your workspace as is)
- Remember your caption! Fun title: Informative subtitle
- Take turns staffing your station




todaysmeet.com/fbpd

(Please put "Q1" or the like **and your grade level(s)** before typing your answer to help us all keep track.)

Q1: How much structure would your students need to do a task like this?

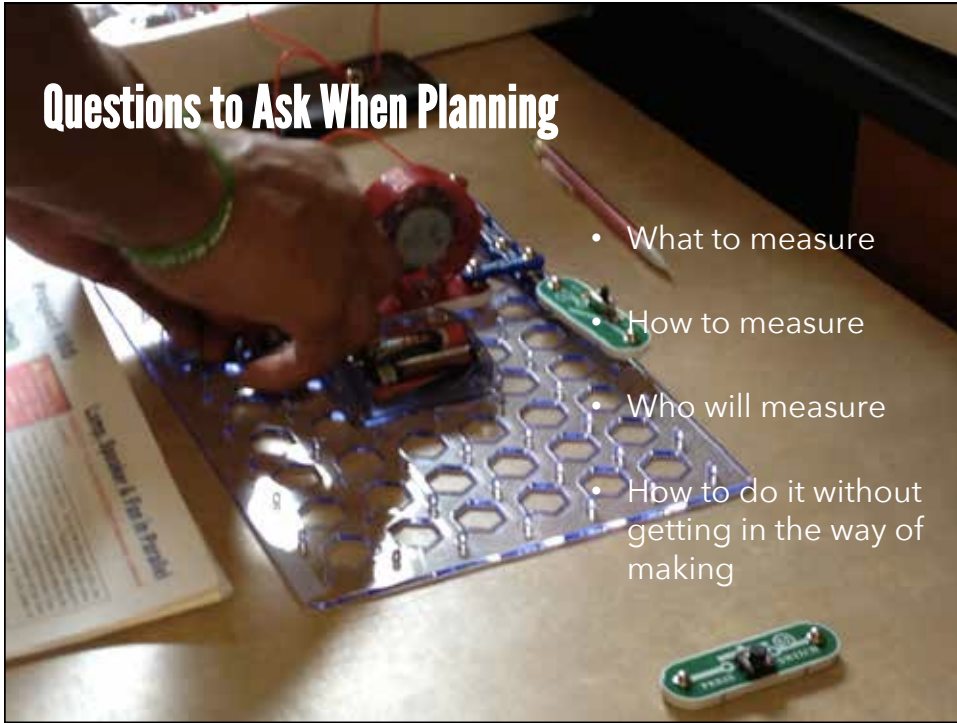
Q2: If you wanted to do a digital version of this project, what would it look like?

Q3: Would you assess this? If so, how?



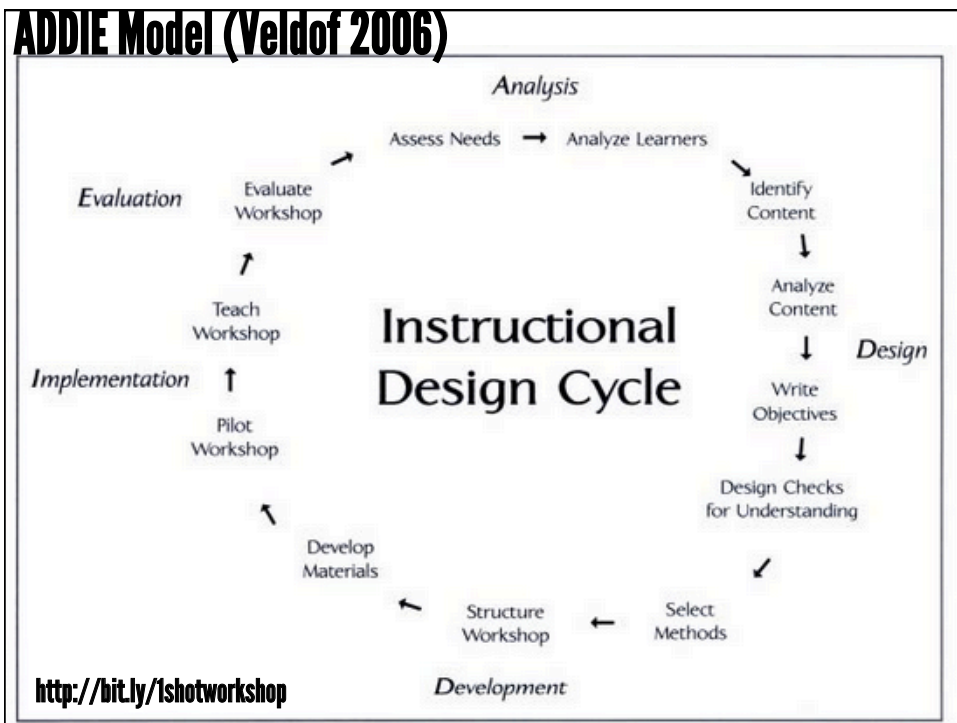
Planning for Making

- **Backwards Design (Wiggins & McTighe)**
 - “What do you want your students to know and be able to do as a result of this?”
 - Academic (content)
 - What holds content back (teamwork, hanging out)
 - Dispositions/Habits of mind (perseverance, flex. Thinking)
 - Economic (budgeting for materials)
 - Etc.
 - **Measure success against these goals**



Questions to Ask When Planning

- What to measure
- How to measure
- Who will measure
- How to do it without getting in the way of making



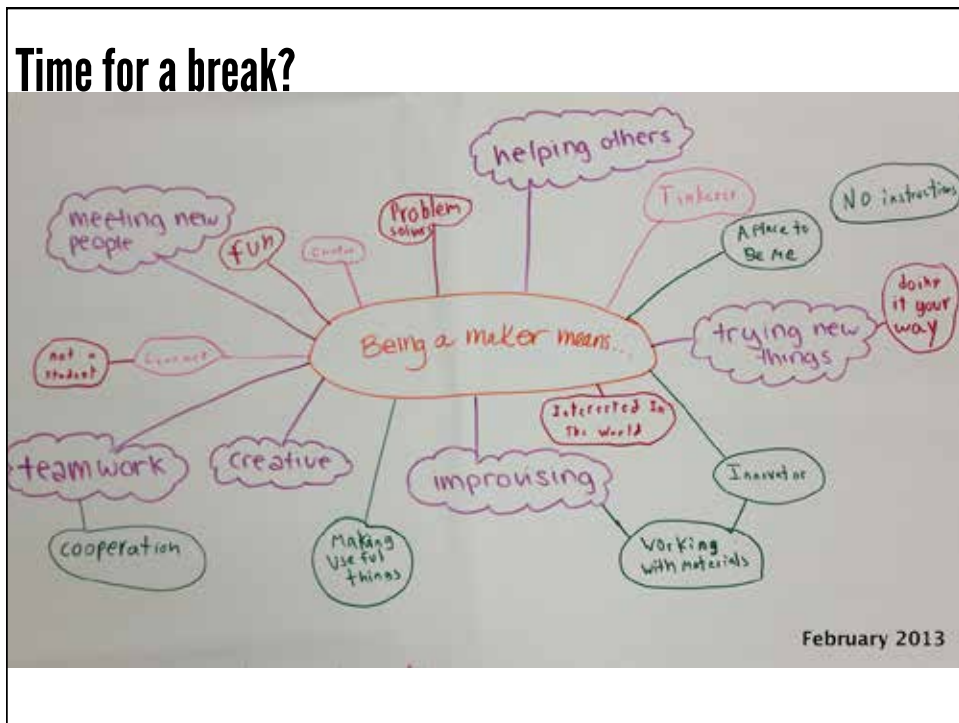


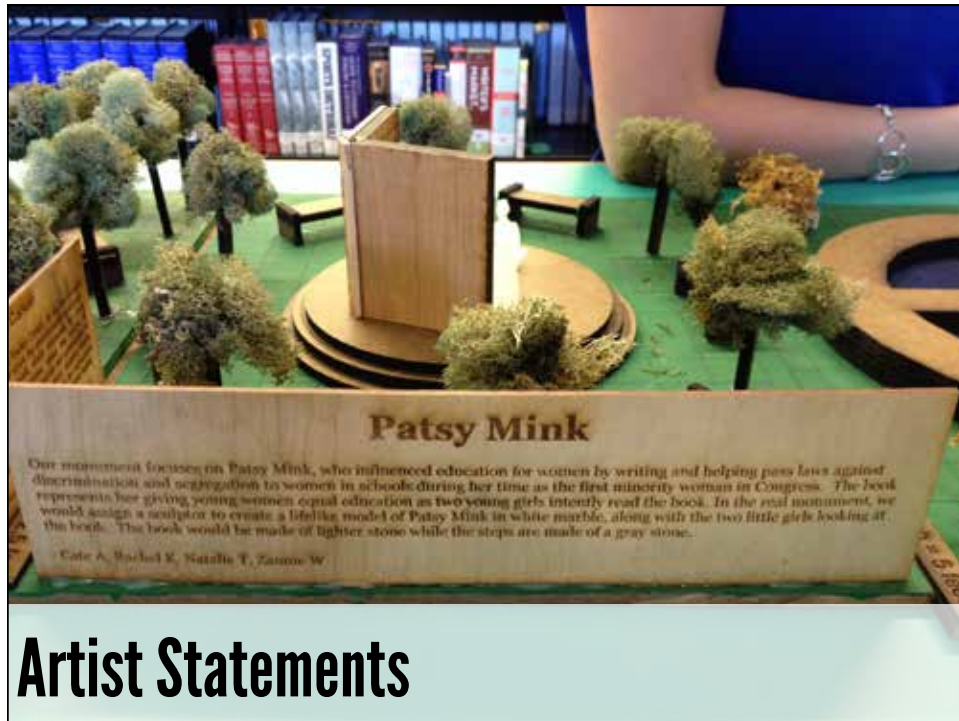
Documentation

- **Plimpton = “participatory journalism”**
 - You = “participatory researcher”
- **Photos**
- **Videos**
 - Peer interviews
 - Pitches
 - “What are you working on?”
 - Reality TV confessionals
- **Journals, progress diaries, surveys (caveat emptor!)**

What do I measure/grade if not the product?

- Project Proposals / Work Plans / Project Management tools
- Process tools (journals, photo diaries, etc.)
- Tickets out the door
- Artist statements





Artist Statements

Author's purpose / Artist's statement

Can convey

- Purpose/intent
- Process (if succinct)
- Inspirations
- Unpacking of your thinking about the product you made

Great resource for your teaching:
<http://www.artbusiness.com/artstate.html>

Author's Purpose/Artist's Statement

Formative Assessment

- "Ticket out the door"
- Index card
- A few sentences or a paragraph
- Cloze sentences:
 - "The visuals I chose are meant to _____."
 - "I chose this medium because _____."
 - "The visuals in my slide deck are meant to _____."
 - "I'm including this primary source image because _____."

Summative Assessment

- Multiple paragraphs
- Extended thought
- Reflects on the finished product and on the process



Artist's Statement

This group of pictures was completely unexpected. I arrived in Italy last autumn as a Visiting Artist at the American Academy in Rome, with plans for a project involving fascist-era beachfront architecture in Ostia, and perhaps something centered on gardens in the funky postwar outskirts of Rome. But on our first day there I made my own pilgrimage to the Pantheon, one of my favorite places to be in Rome, and usually a primary destination.

A constant stream of visitors enters and exits the Pantheon all day. For the most part, they have their recording devices held high over head as they enter, forgoing the old-fashioned step of looking at something first, then photographing it. No, these pilgrims have their memories immediately farmed out to digital data storage, safely ensconced for retrieval at some later date. There was something charming about it, something universal and soothing, not comical exactly but focused and intense, a hint of the divine in an otherwise mechanized world: Everyone gazing vicariously into the oculus, the eye of God. I fell into a rhythm, studying the screen of my own camera and watching for the moments of rapture and deep concentration, moving invisibly from one subject to the next. I was lost in my own rapture, my mind quiet but for the occasional visit from the ghost of Walter Evans, whose pictures of subway riders during the early 1940s were never far from my thoughts.

The 45 photographs in this exhibition were made on four days in October 2012 with the Sony Nex-7 digital camera. I want to thank my wife Terry Hogan for her love and thoughtfulness, Daniel Leivick for his advice and assistance in many aspects of this exhibition, Liz Celeste, Craig Weiss, Elizabeth kohnke, Gail Wight, the Stanford University Department of Art and Art History, and the American Academy in Rome.

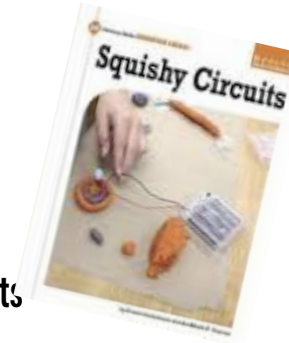
Joel Leivick, Robert and Ruth Halperin Professor in Photography, Department of Art & Art History, Stanford University.

Dedicated to my friend Richard Gordon.

Improve these!

- **Elementary:** We made a prototype of a stool. It is cool. It is blue. We like blue. You can sit on it.
 - **Middle/High School:** We studied chairs people sat in. We asked them what made their chairs comfortable. We made the seat out of a ball because people said they wanted more exercise when they sat.
- **Purpose/intent**
 - **Process (if succinct)**
 - **Inspirations**
 - **Unpacking of your thinking about the product you made**

Final Challenge: Squishy Circuits!



- **AnnMarie Thomas of U of St. Thomas: TED Talk introducing Squishy Circuits**
 - https://www.ted.com/talks/annmarie_thomas_squishy_circuits
- **Super Awesome Sylvia's Show on Squishy Circuits (recipe makes 1/2 batch of dough)**
 - <https://www.youtube.com/watch?v=UDZo51k2BWO>
- **Not just for young kids! Buffy Hamilton on SC:**
 - <http://theunquietlibrarian.wordpress.com/2014/03/16/teen-tech-week-diy-2014-duct-tape-squishy-circuits-and-makey-makey/>

Gallery Walk

- | | |
|---|--|
| <ul style="list-style-type: none"> • Pick one of the artist statement elements to the right and practice sharing it orally! • Taydaelectronics.com • 100 LED bulbs for \$10 • Other vendors: Radio Shack, Adafruit.com, Makershed.com, Sparkfun.com | <ul style="list-style-type: none"> • Purpose/intent • Process (if succinct) • Inspirations • Unpacking of your thinking about the product you made |
|---|--|



Recap

- Prioritize mindset over tools
- Bake in process, agency, choice, and experimentation
- Evaluate reflective pieces, not products, to maximize risk-taking
- Use title:subtitle, artist statements, journals, Instagram process diaries, etc., to track student thinking
- You have three easy projects under your belt already!

**Good luck! We can't wait to see what you come up with,
and we're here to help!**

Kristin Fontichiaro
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@activelearning
<http://bit.ly/fontblog>