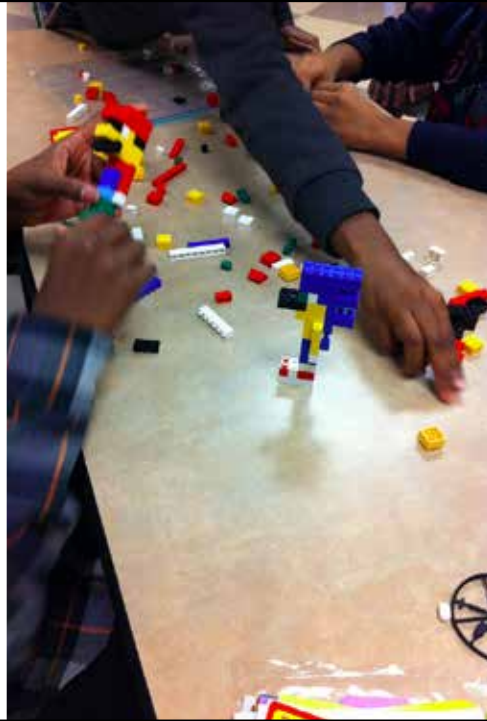


MAKERSPACES IN SCHOOLS AND LIBRARIES

Kristin Fontichiaro
University of Michigan
School of Information
@activelearning

Missouri Association of School Librarians
Sunday, April 13, 2014
1:30 - 2:30pm

Download today's slides:
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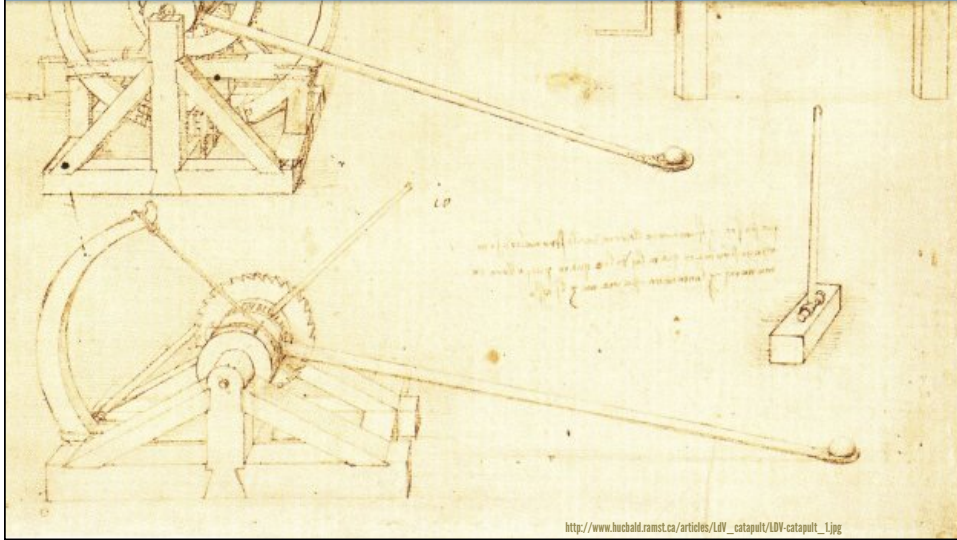
WHAT'S IN YOUR SCHOOL'S DREAM MAKERSPACE?

<p>STITCHING</p> <ul style="list-style-type: none"> <input type="checkbox"/> Knitting <input type="checkbox"/> Crochet <input type="checkbox"/> Sewing <input type="checkbox"/> Needlepoint <input type="checkbox"/> Ribbon embroidery <input type="checkbox"/> Crewel <input type="checkbox"/> Cross stitch <input type="checkbox"/> Crewel <input type="checkbox"/> Stitchery <input type="checkbox"/> Quilting <input type="checkbox"/> Tailoring <input type="checkbox"/> Patchworkmaking <input type="checkbox"/> T-shirt refashioning / Project Runway challenges <input type="checkbox"/> E-Textiles <input type="checkbox"/> Sewing machine <input type="checkbox"/> Embroidery machine <input type="checkbox"/> Serger <input type="checkbox"/> Hand puppets <input type="checkbox"/> Spinning <p>PAPER</p> <ul style="list-style-type: none"> <input type="checkbox"/> Origami <input type="checkbox"/> Quilling <input type="checkbox"/> Paper airplanes and gliders <input type="checkbox"/> Giftrapping <input type="checkbox"/> Hand-drawn comics <input type="checkbox"/> Cardboard box creations <input type="checkbox"/> Scrapbooking <input type="checkbox"/> Collage <input type="checkbox"/> Decoupage <input type="checkbox"/> Silhouettes <input type="checkbox"/> Cricut machine <input type="checkbox"/> Shadow puppets <p>ADDI/MUSIC PRODUCTION</p> <ul style="list-style-type: none"> <input type="checkbox"/> PinMatic.com <input type="checkbox"/> Little Bot/KORG electronic music kit <input type="checkbox"/> Music Tools (see www.musictools.com) <input type="checkbox"/> Garage Band <input type="checkbox"/> Audacity <p>CIRCUITS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Snap Circuits <input type="checkbox"/> Squishy Circuits <input type="checkbox"/> Little Bits 	<p>APPS, SOFTWARE, AND WEB-BASED TOOLS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animation (e.g., Golanima.com, Xtremat.com) <input type="checkbox"/> Comics-making (e.g., Photo.com, MakeBeliefsComix.com) <input type="checkbox"/> Photo editing (e.g., Fotomaker.com, Pixlr.com) <input type="checkbox"/> Stop-Motion animation (e.g., MyCreate app) <p>VIDEO PRODUCTION</p> <ul style="list-style-type: none"> <input type="checkbox"/> Production Room <input type="checkbox"/> Green Screen <input type="checkbox"/> MovieMaker/Movie <input type="checkbox"/> FinalCut Pro <p>GRAPHIC DESIGN</p> <ul style="list-style-type: none"> <input type="checkbox"/> Canva.com <input type="checkbox"/> GIMP <input type="checkbox"/> Adobe Photoshop <input type="checkbox"/> Adobe Illustrator <input type="checkbox"/> Adobe InDesign <p>PROGRAMMING/CODING</p> <ul style="list-style-type: none"> <input type="checkbox"/> HTML <input type="checkbox"/> Python <input type="checkbox"/> Java <input type="checkbox"/> http://www.javascript.com <input type="checkbox"/> Arduino microcontrollers <input type="checkbox"/> Raspberry Pi minicomputers <input type="checkbox"/> LEGO Mindstorms <input type="checkbox"/> Makey Makey <p>SCIENCE</p> <ul style="list-style-type: none"> <input type="checkbox"/> Make your own musical instruments <input type="checkbox"/> Paper airplane trajectories <input type="checkbox"/> Make your own speaker <input type="checkbox"/> Junk box challenges <p>ROBOTICS</p> <ul style="list-style-type: none"> <input type="checkbox"/> LEGO Mindstorm <input type="checkbox"/> FIRST Robotics <input type="checkbox"/> Arduino kits 	<p>COOKING</p> <ul style="list-style-type: none"> <input type="checkbox"/> Kitchen Knives 101 <input type="checkbox"/> Make fresh salsa <input type="checkbox"/> Make smoothies <input type="checkbox"/> Cookie decorating <input type="checkbox"/> Cake decorating <input type="checkbox"/> Freerice.com <p>WRITING</p> <ul style="list-style-type: none"> <input type="checkbox"/> Choose Your Own Adventure <input type="checkbox"/> Six-word memoir <input type="checkbox"/> NaNoWriMo <input type="checkbox"/> PiBoDMo <input type="checkbox"/> Expressions Book Machine <input type="checkbox"/> DIY Publishing: Lulu, CreateSpace, Smashwords, ScribD.com <p>3D MODELING AND PRINTING</p> <ul style="list-style-type: none"> <input type="checkbox"/> 3Doodler pen <input type="checkbox"/> 3D printer (e.g., MakerBot Replicator 2, Cubex) <input type="checkbox"/> MakerWare software <input type="checkbox"/> Tinkercad.com <input type="checkbox"/> Shapify.com <input type="checkbox"/> Mays or Blender software <p>MISC.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rubber band bracelets <input type="checkbox"/> Shrinky Dink <input type="checkbox"/> Dust tape wallets <input type="checkbox"/> Marshmallow launchers <input type="checkbox"/> Junk box challenges <input type="checkbox"/> Art boxes <input type="checkbox"/> Candle making <input type="checkbox"/> LEGO pieces <input type="checkbox"/> Decorative painting <input type="checkbox"/> Furniture refinishing <input type="checkbox"/> Auto repair <input type="checkbox"/> Bike repair <p>BARBERING</p> <ul style="list-style-type: none"> <input type="checkbox"/> Seed exchange <input type="checkbox"/> Bonsai pruning <input type="checkbox"/> Flower arranging <p>WHAT ELSE?</p>
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KRISTIN FONTICHIARO IS THE MICHIGAN MAKERS, UNIVERSITY OF MICHIGAN SCHOOL OF INFORMATION
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<http://www.flickr.com/photos/activelearning/>

<http://bit.ly/masl-list>

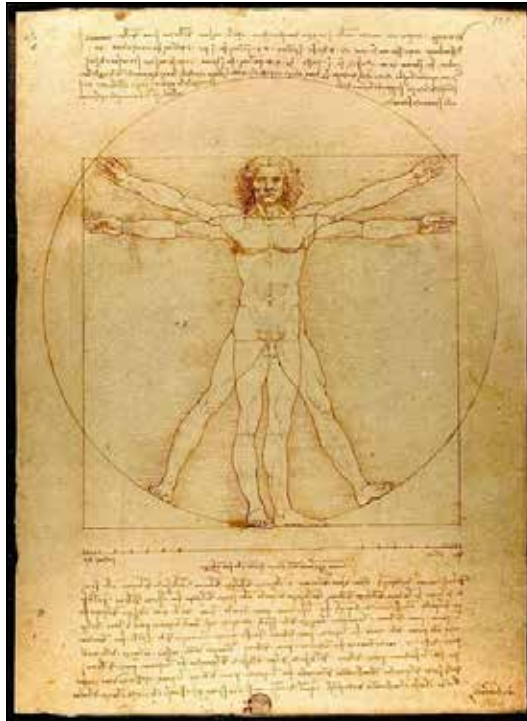
How can we support the Leonardos in our community?



http://www.huchald.ramst.ca/articles/LDV_catapult/LDV_catapult_1.jpg

Makerspaces are one answer.



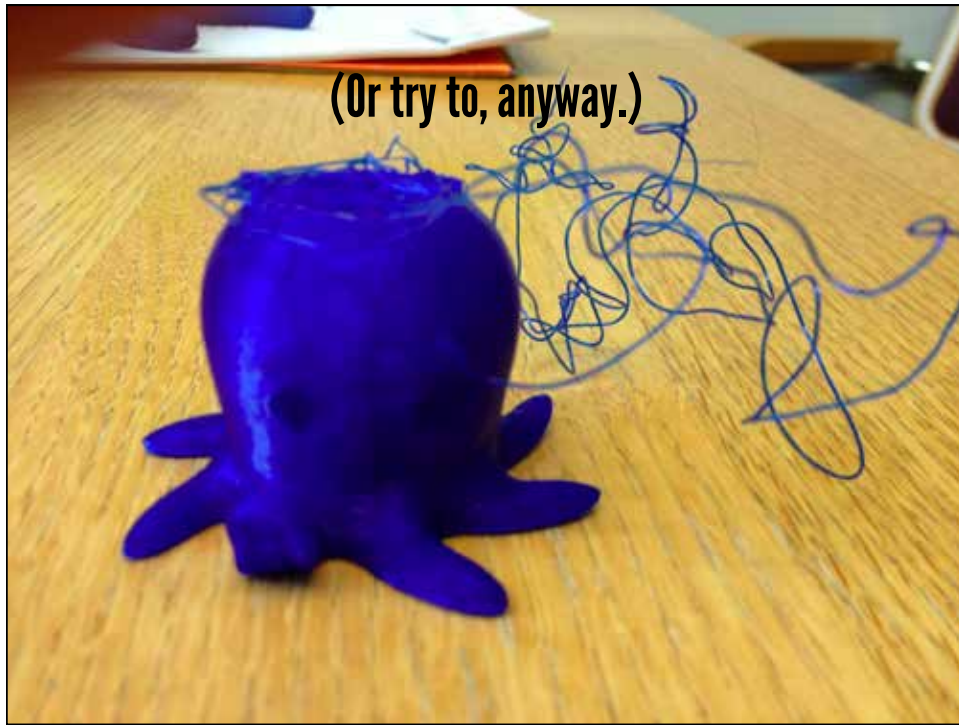


**Makers
Make
Stuff.**



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

**Makers
Transform
Stuff.**



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/>

EXPLORATION + FORMAL AND INFORMAL LEARNING + PEER LEARNING + EXPOSITION

Tools
+
Support
+
Community

People
+
Process
+
Place

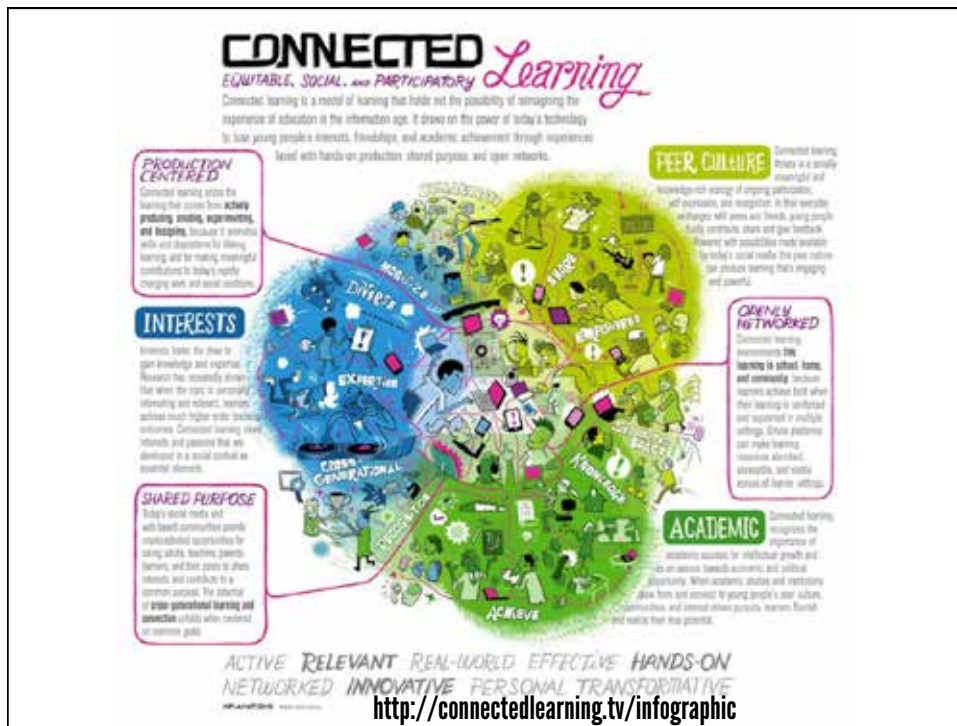
Dale Grover, Maker Works, Ann Arbor, Michigan





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

(Dewey 1900)



#1: KNOW YOUR PURPOSE BEFORE YOU BUY ANYTHING.

Entertain? Inform? Educate?

Enhance academics? Fill a void in academics?

Introduce concepts and tools or provide access for savvy users?

Have one-off programming or build a community?

Create an in-house community? Serve as an-ramp?

Welcome new makers? Provide new services for existing makers?



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”
- Welcome female makers

#2: EMBRACE OPEN SOURCE THINKING.



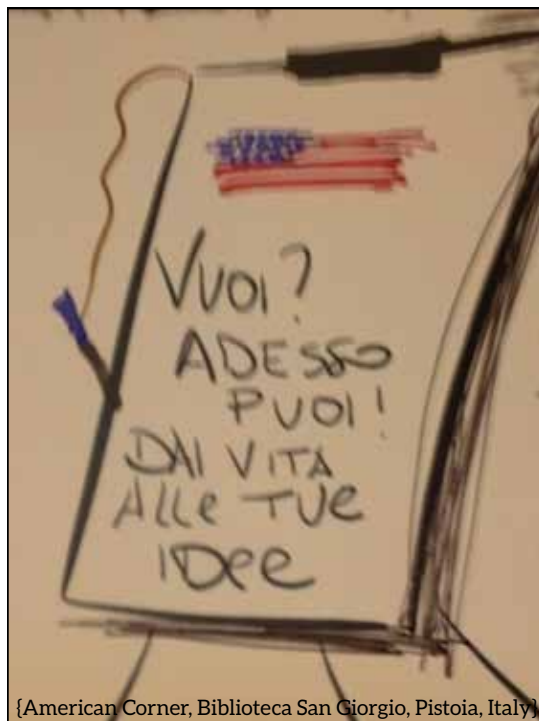
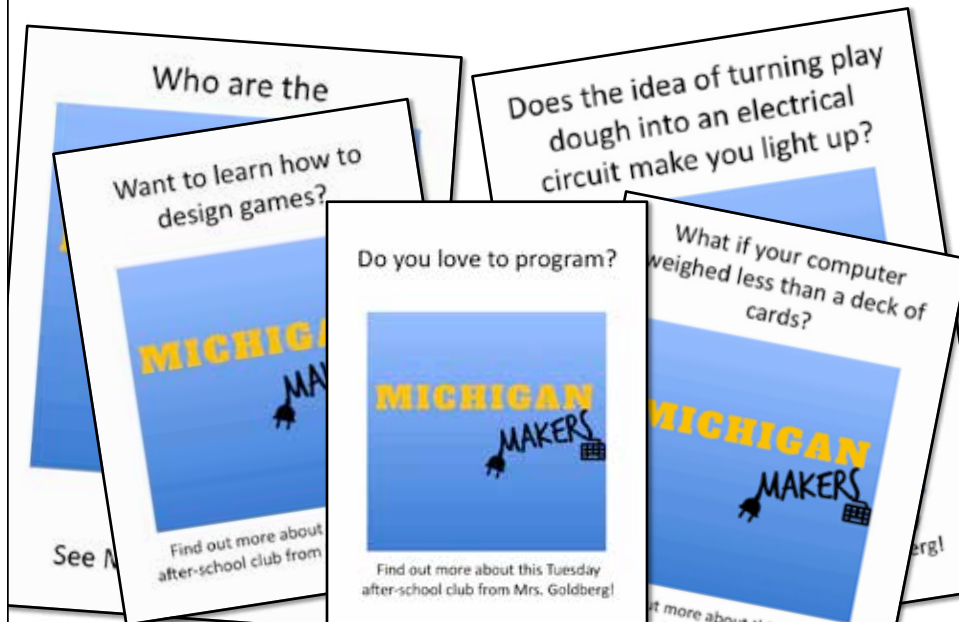
'Arduino Uno R3' by SparkFun Electronics on Flickr. CC-BY.
<http://flickr.com/photos/sparkfun/8406865680/>

#3: PARTNER – DON'T COMPETE – WITH OTHERS.





#4: CAST A WIDE NET. WELCOME ALL KINDS OF MAKING.



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

**Want to?
Now you can!
Give life to your ideas**

We intentionally plan activities that appeal to both genders.



{Surprise! Boys like sewing machines more than girls do.}

“You need to be making *something*.”



#5: MATCH MENTORS WITH LEARNERS.



East Middle School

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Phone: 734 / 416-4950 • Fax: 734 / 416-4949
A Michigan Department of Education Accredited School

PLYMOUTH-CANTON
Community • Schools

Scott Busak
Principal
Christopher Morax
Assistant Principal

4/24/13

To whom it may concern,

I am writing about Michigan Makers, an after-school program at East Middle School. In Michigan Makers, you learn differently than you would in a regular classroom. You learn about how to make an endless list of things. Makers learn how to work with programs like Scratch. They also learn about things that other makers around the world have created, like Arduino's, and the Raspberry Pi. Makers learn about other concepts like board game design, conductive clay, 3D printing, making comics, and sewing too. With all these things, you are free to use your creativity in coming up with your own creations. But it's much more than that. Along the way, you learn about teamwork and problem solving. You meet other people who have completely different brains and ideas and thoughts, and who have the same interest in making that you do.

The graduate students came every week to our school. They spent tons of their time to make it work, and they taught us so much. They were very patient, and endured all of our questions. They made the learning fun, and actually learned with us too. The students encouraged us to step out of what we were used to doing. We could show our projects and creations to them, and they would give us helpful feedback. They would give us their honest viewpoints: what was great, and what we could fix. They didn't teach us by handing us textbooks and assignments. They taught us by guiding us, then letting us figure things out on our own and solve problems in our own way.

The main thing I got out of Michigan Makers is a love of making. I met fascinating people. I got an understanding of how to use different programs and new skills. I also got many more ideas for cool projects I could work on in the future.

A school/library/community center/company should hire the graduate students because they are very dedicated. They have a lot of patience and know how to work well with people. They are enthusiastic about every idea. They have tons of amazing ideas, and they can make anything possible.

Sincerely,

Himaja

Himaja

In Michigan Makers ... you are free to use your creativity in coming up with your own creations.

But it's much more than that. Along the way, you learn about teamwork and problem solving.

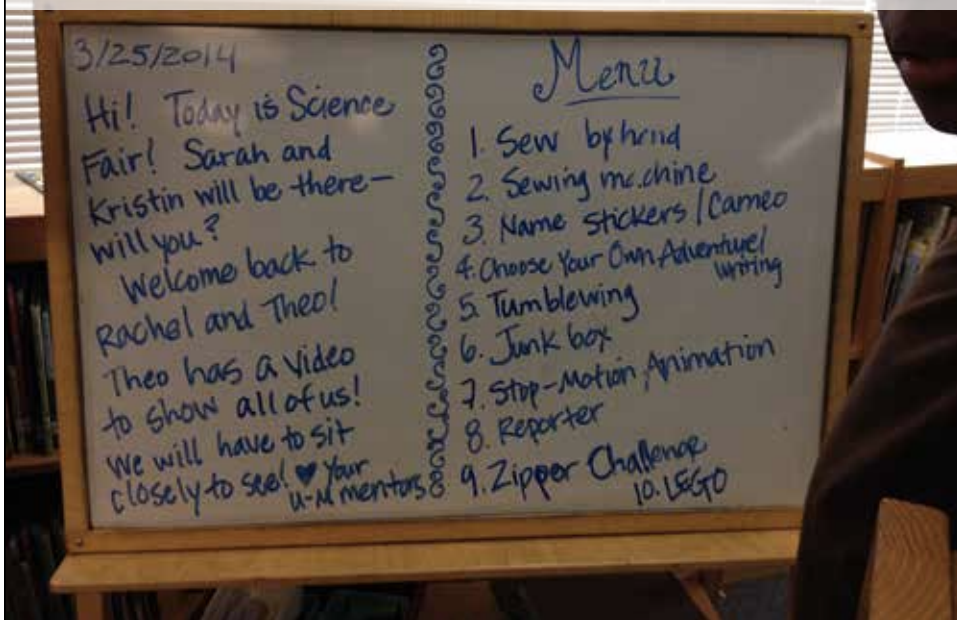
You meet other people who have completely different brains and ideas and thoughts, and who have the same interest in making that you do ...

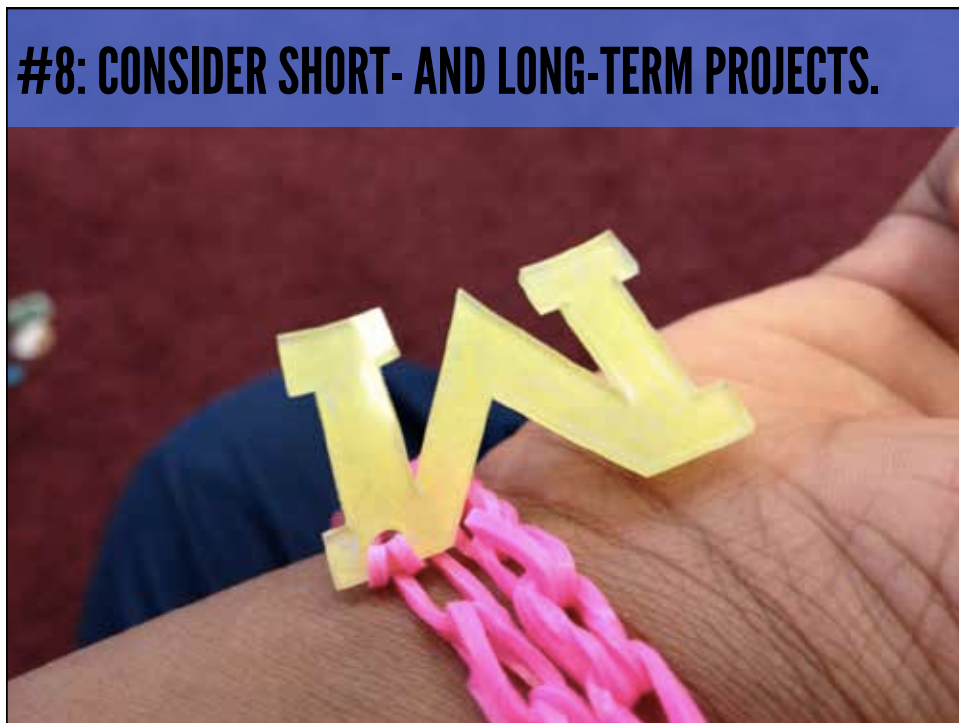
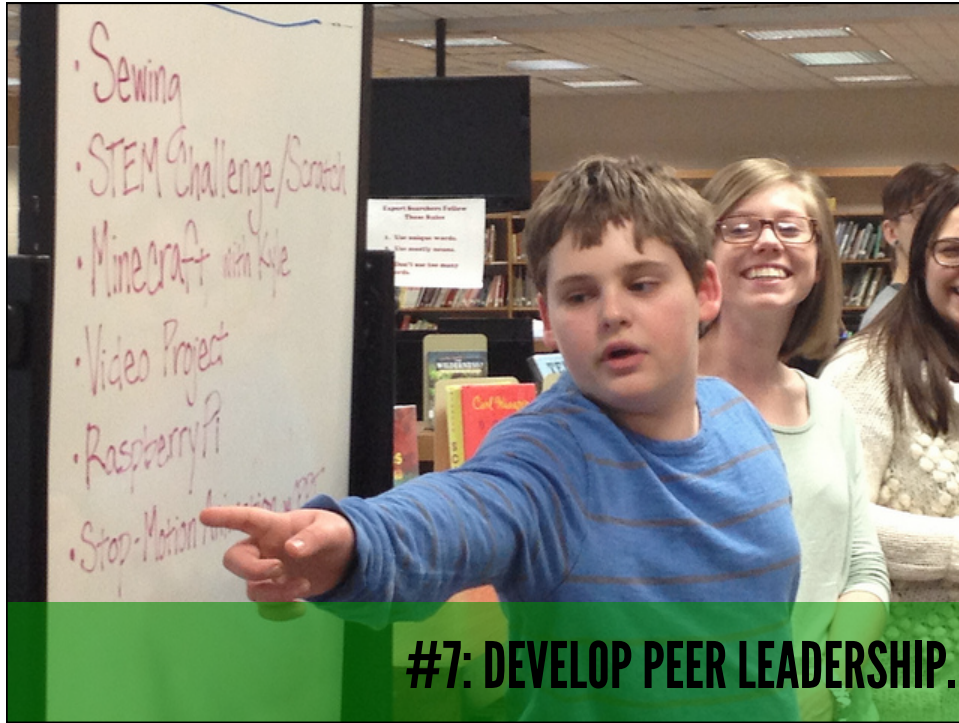
The [graduate] students encouraged us to step out of what we were used to doing. They taught us by guiding us, then letting us figure things out on our own and solve problems in our own way.

COROLLARY: REDEFINE “TEACHER” AND “LEARNER.”



#6: THINK WINDOWS AND MIRRORS.



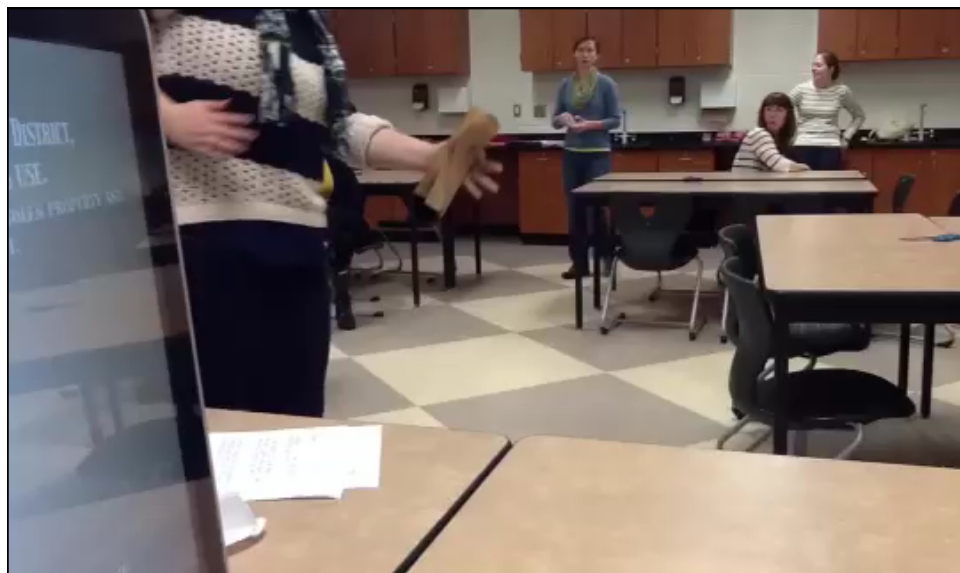


#9: CELEBRATE DAILY PROGRESS.



#10: CELEBRATE LONG-TERM PROGRESS.





Join us! We're still learning, too!
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created by Sharona Ginsberg

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