

# Making as Learning

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Slides: [makinglibraries.si.umich.edu](http://makinglibraries.si.umich.edu)

Wednesday, June 15 - June 17

Houghton Lake Public Library

Multipurpose Room

hello.

**and you  
are?**

**DAY 1: PLANNING FOR MAKING**  
**MON., 6/20**

SCECH hours	Time	Agenda Item
n/a	9:30 - 10:00am	Arrival and Registration
n/a	10:00am - 10:15am	Welcome, introductions, overview of the day
1	10:15 - 11:15am	What is Making? Planning for purposeful making
.75	11:15am - 12pm	Planning for community/learner needs Needs assessments
n/a	12-1:30pm	Lunch
1.75	1:30 - 3:15pm	Collage-style making with 3D objects Articulating your mission Gallery walking
1	3:15 - 4:15pm	Guided exploratory centers with "typical" maker equipment used in many schools/libraries
n/a	4:15 - 4:30pm	Reflection Day-end evaluation
4.5	<b>SUBTOTAL FOR DAY 1</b>	



**our  
approach**

# CONNECTED Learning

EQUITABLE, SOCIAL, AND PARTICIPATORY

Connected learning is a model of learning that holds out the possibility of reimagining the experience of education in the information age. It draws on the power of today's technology to fuse young people's interests, friendships, and academic achievement through experiences laced with hands-on production, shared purpose, and open networks.

## PRODUCTION CENTERED

Connected learning prizes the learning that comes from **actively producing, creating, experimenting, and designing**, because it promotes skills and dispositions for lifelong learning, and for making meaningful contributions to today's rapidly changing work and social conditions.

## INTERESTS

Interests foster the drive to gain knowledge and expertise. Research has repeatedly shown that when the topic is personally interesting and relevant, learners achieve much higher-order learning outcomes. Connected learning views interests and passions that are developed in a social context as essential elements.

## SHARED PURPOSE

Today's social media and web-based communities provide unprecedented opportunities for caring adults, teachers, parents, learners, and their peers to share interests and contribute to a common purpose. The potential of **cross-generational learning and connection** unfolds when centered on common goals.

## PEER CULTURE

Connected learning thrives in a socially meaningful and knowledge-rich ecology of ongoing participation, self-expression, and recognition. In their everyday exchanges with peers and friends, young people fluidly contribute, share and give feedback. Powered with possibilities made available by today's social media, this peer culture can produce learning that's engaging and powerful.

## OPENLY NETWORKED

Connected learning environments **link learning in school, home, and community**, because learners achieve best when their learning is reinforced and supported in multiple settings. Online platforms can make learning resources abundant, accessible, and visible across all learner settings.

## ACADEMIC

Connected learning recognizes the importance of academic success for intellectual growth and as an avenue towards economic and political opportunity. When academic studies and institutions draw from and connect to young people's peer culture, communities, and interest-driven pursuits, learners flourish and realize their true potential.



ACTIVE RELEVANT REAL-WORLD EFFECTIVE HANDS-ON  
NETWORKED INNOVATIVE PERSONAL TRANSFORMATIVE



# **String + Pencil + Index Card = Our Opening Activity**



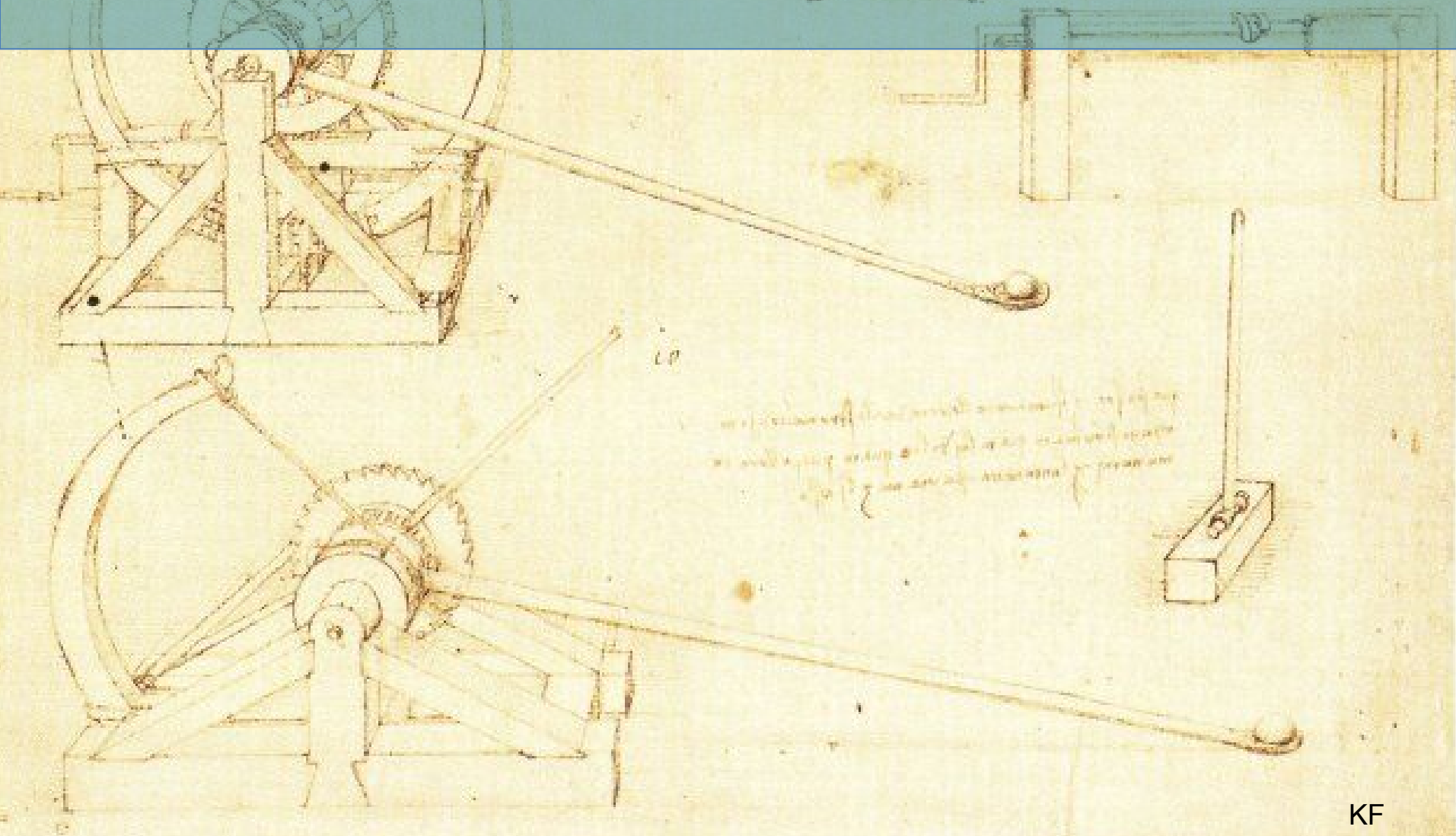
**What did you make?**





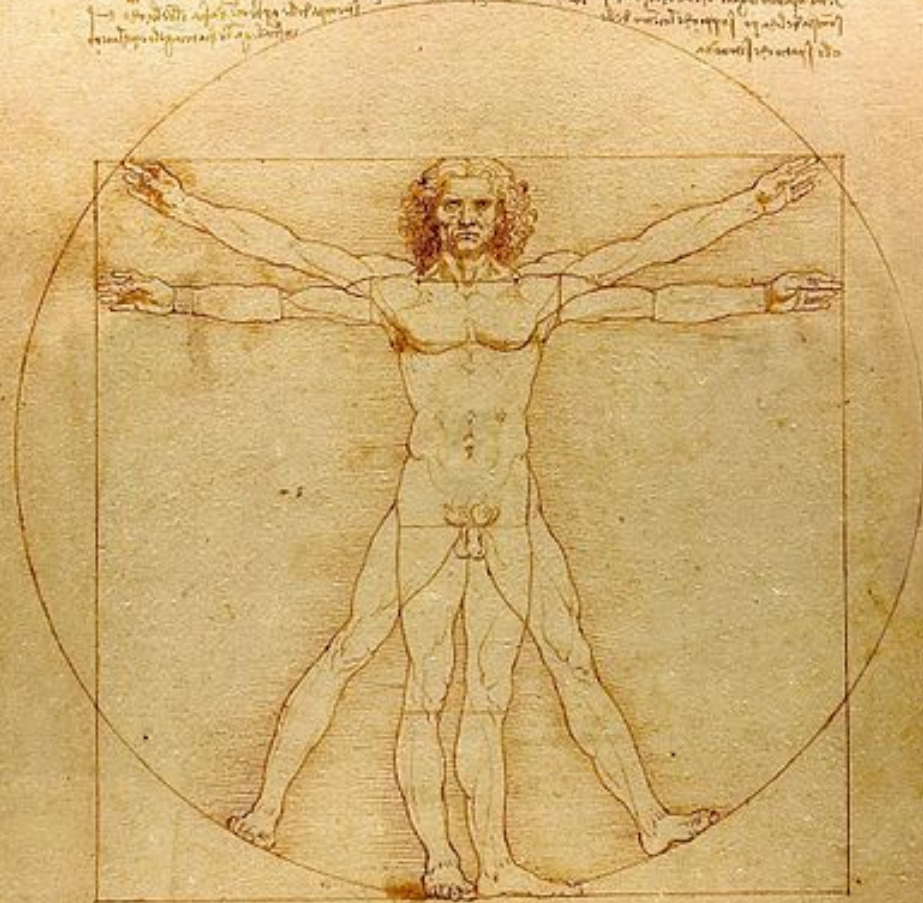
# **“Dogfooding”**

# How can we support the Leonardos in our schools?



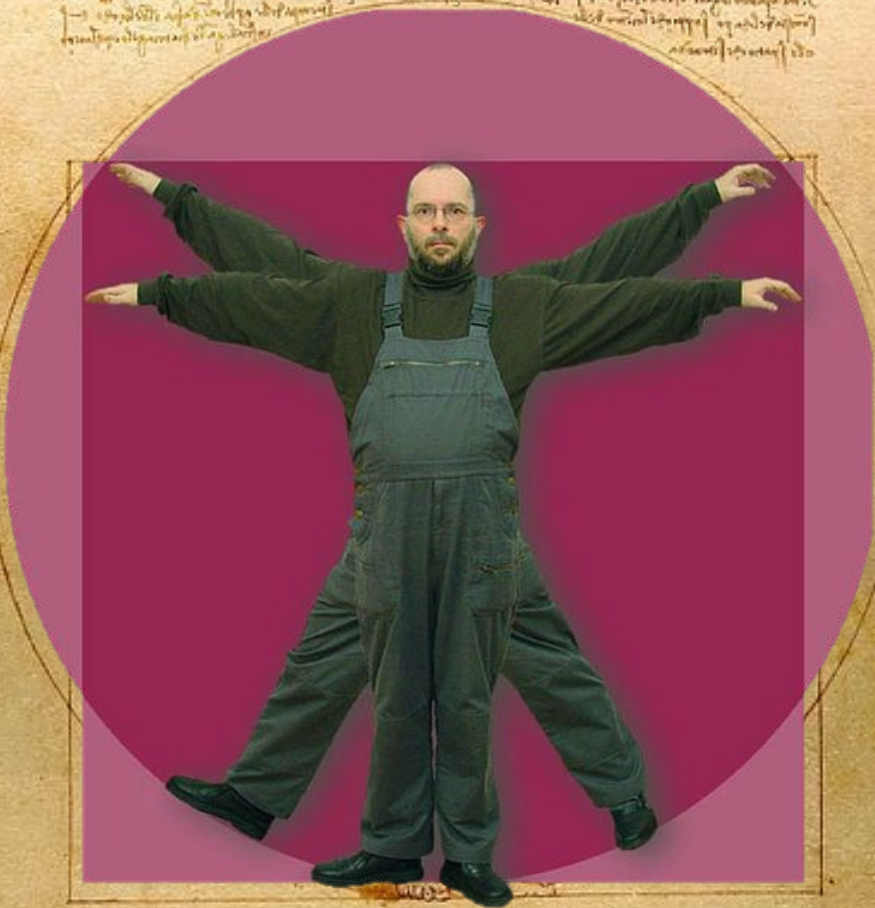
# Makerspaces are one answer.



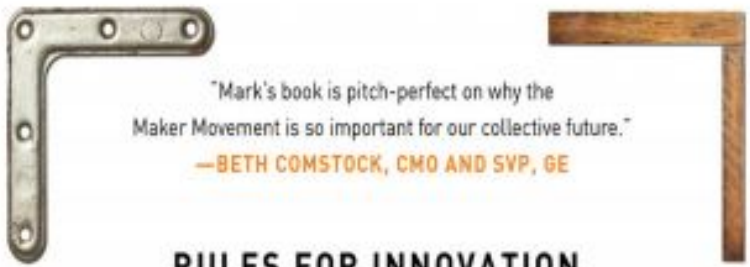


# Makers Make Stuff.





# Makers Transform Stuff.



"Mark's book is pitch-perfect on why the  
Maker Movement is so important for our collective future."

—BETH COMSTOCK, CMO AND SVP, GE

**RULES FOR INNOVATION  
IN THE NEW WORLD OF  
CRAFTERS, HACKERS, AND TINKERERS**

THE

**MAKER**

**MOVEMENT**

**MANIFESTO**



**MARK HATCH**  
CEO, TECHSHOP

[http://bit.ly/  
makermanifestochapter](http://bit.ly/makermanifestochapter)

## **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.



**This is a makerspace.**





# This is, too.





**And so is this.**



**And this.**



KF

**This, too.**



**tools vs. outcomes**

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

Tools

+

Support

+

Community

People

+

Process

+

Place

A

Dale Grover, Maker Works, Ann Arbor, Michigan

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

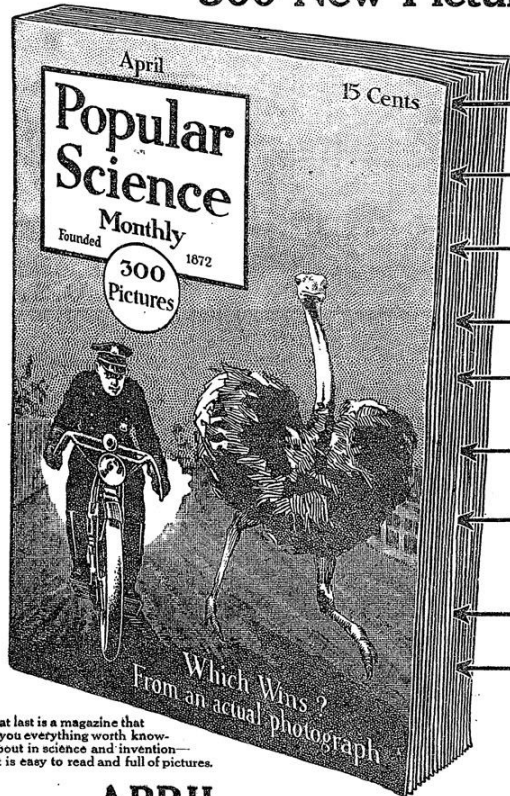
Tools  
+  
Support  
+  
Community

People  
+  
Process  
+  
Place

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

Dale Grover, Maker Works, Ann Arbor, Michigan

All this for 15 cents—  
**300 New Ideas**  
**300 New Pictures!**



Here at last is a magazine that gives you everything worth knowing about in science and invention—and it is easy to read and full of pictures.

**APRIL**  
**Popular Science**  
**Monthly**

**15¢ On all Newsstands—get your copy today**

*Do you know—*

- ← **That you can row in your bath-tub?**  
the newest idea for exercising at home See page 486
- ← **How roller-skates save time in the office?**  
the newest idea in speeding up office boys See page 494
- ← **How to make a hen lay self-preserving eggs?**  
the newest stunt for keeping eggs fresh See page 507
- ← **How smoke is laundered?**  
the newest idea in fuel saving See page 562
- ← **How to make an automobile tire out of a rope?**  
the newest idea in emergency repairing See page 587
- ← **How factory work is made easier by music?**  
the newest use for the phonograph See page 582
- ← **How a "flivver" was converted into a small locomotive?**  
the newest idea for utilizing worn-out automobiles See page 541
- ← **How war-spies work?**  
the newest ways of getting the enemy's secrets See page 590
- ← **How to make real gold out of goldfish?**  
the newest idea for small farmers See page 569

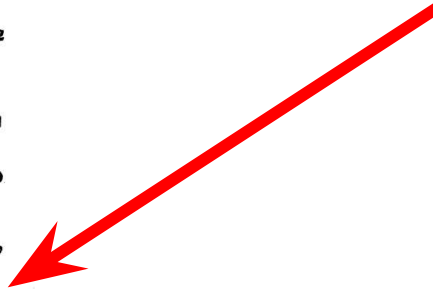
**Do you like to make things?**

The April number shows how to make a kite-camera, a combination drawing-board, writing-desk and cupboard, an acetylene gas generator, a self-rocking developing-tray and 59 other interesting and useful articles for the home and work-shop.

**Learn about these and all the 300 newest ideas in the April Popular Science Monthly.**

Popular Science Monthly, 239 Fourth Ave., New York

**Making isn't new ...**



[http://upload.wikimedia.org/wikipedia/commons/0/04/Popular\\_Science\\_Monthly\\_1916\\_Ad.jpg](http://upload.wikimedia.org/wikipedia/commons/0/04/Popular_Science_Monthly_1916_Ad.jpg)





Icon. Stralensis invent. 1561. Galle fecit.

14. COLOR OLIVI.  
Colorem oliui commodum pictoribus, Inuenit insignis magister Eyckius.





"Darron's messy workbench" by Darron Birgenheier on Flickr. CC-BY. <http://flickr.com/photos/darronb/6450960321/>  
 "Question Mark?" by Tiffany Terry on Flickr. CC-BY. <http://flickr.com/photos/35168673@N03/5425591246/>  
 "nagami kumquat" by david on Flickr. CC-BY. <http://flickr.com/photos/23465812@N00/4347402017>  
 "s1k" by Andres Rodriguez on Flickr. CC-BY. <http://flickr.com/photos/symic/9725504427/>  
 "Vintage General Mills Toaster 1949-1951" by Grannies Kitchen on Flickr. CC-BY. <http://www.flickr.com/photos/47600671@N04/4568463926>  
 Other photos courtesy of Michigan Makers

# Some Things to Consider ...





# 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?





# Example: Michigan Makers

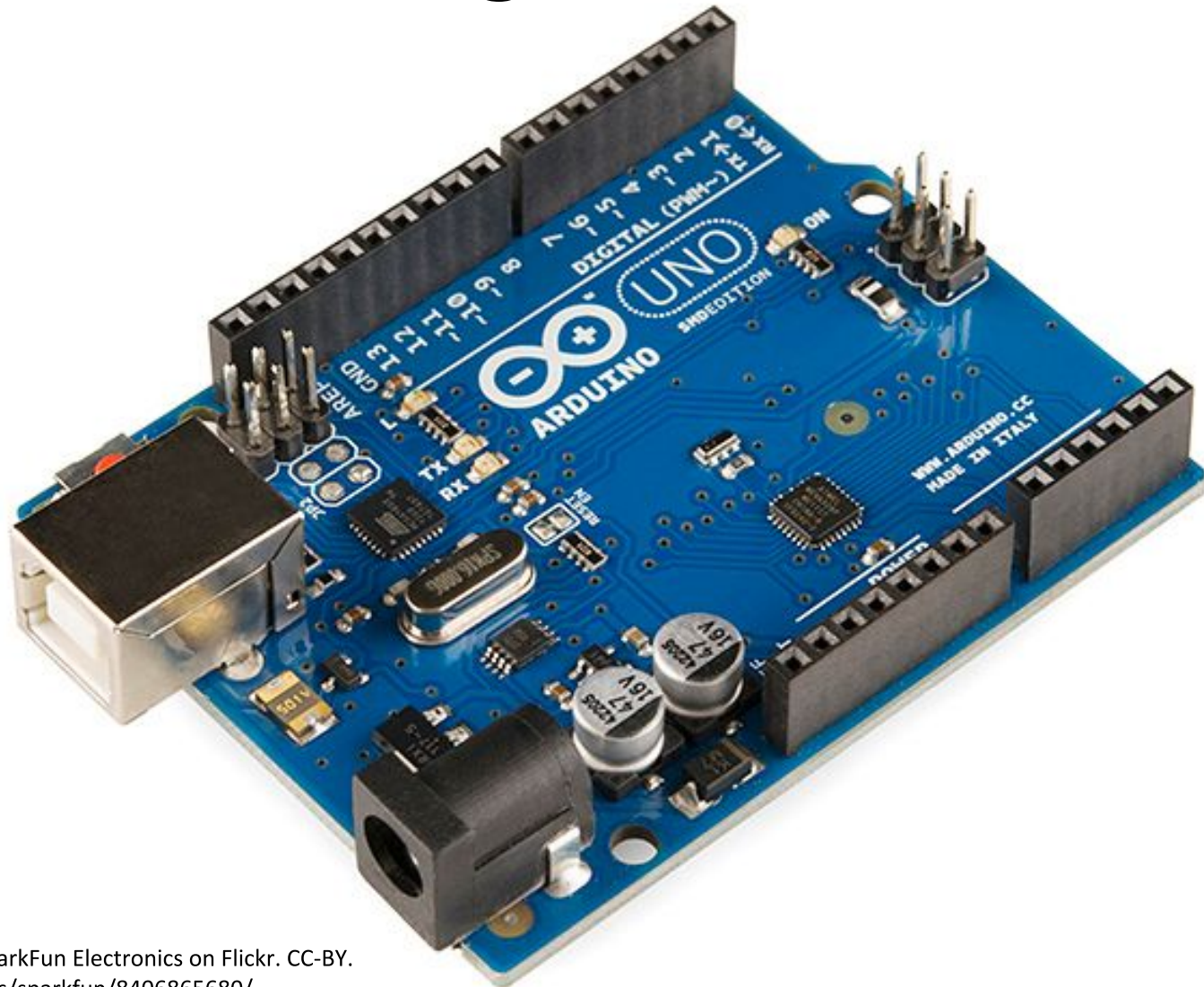
- Create community around making
- Balance DIY exploration with guidance from mentors
- Create sustainability and replicability
- “Have something for every member of the family”

**Consider Short- And Long-term Projects (and start small).**





# Embrace Open – and Open Source -- Thinking.



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

# Look for Partners & Guides.







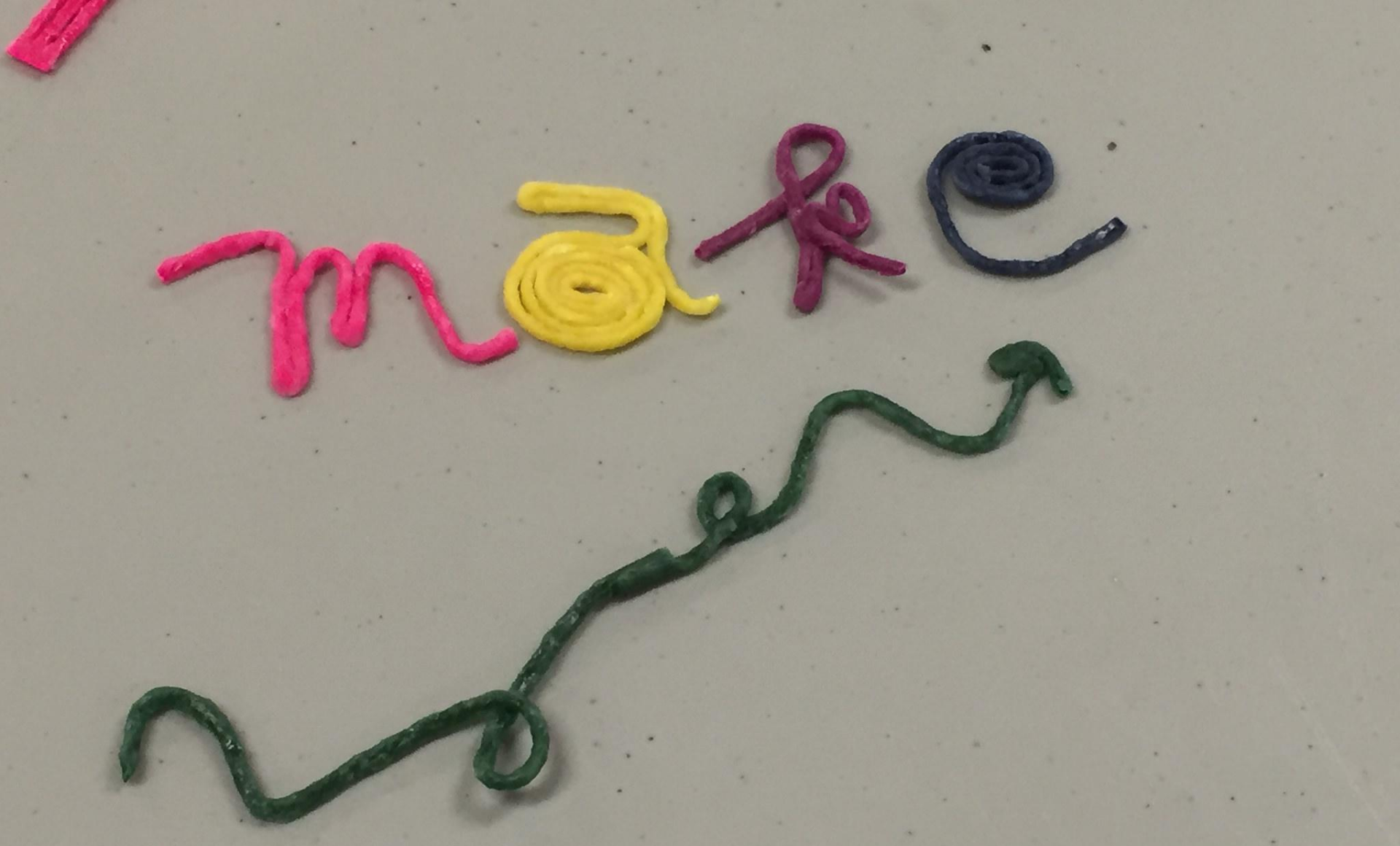
# Partner Skills, Too: Look For Mashups.





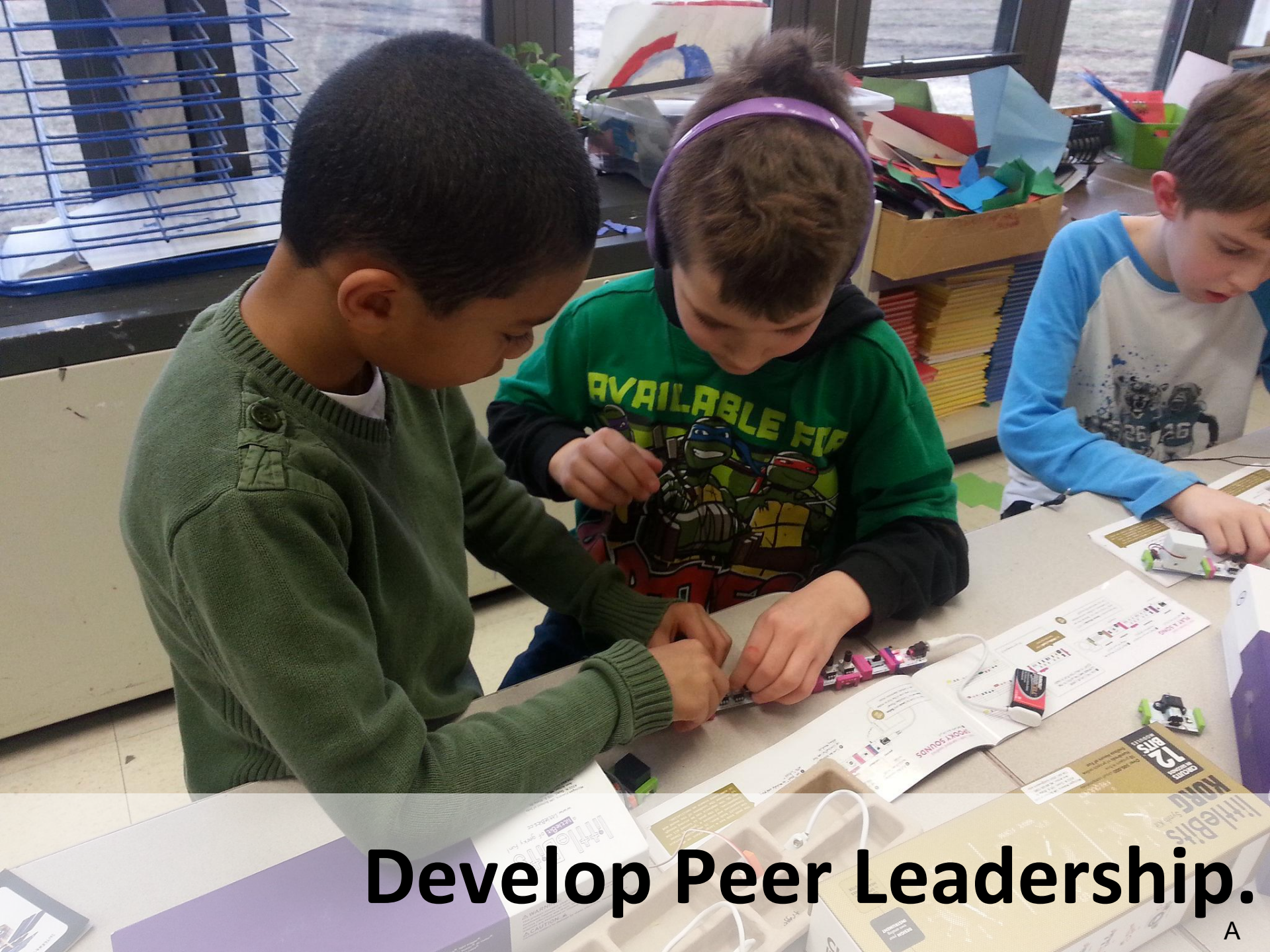
**Not all making is serious business.**





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





**Develop Peer Leadership.**

# Redefine “Teacher” And “Learner.”





# Match Mentors with Learners.



Marshmallow Towers



Egg Drop Challenge



# Think Windows And Mirrors.

3/25/2014

Hi! Today is Science Fair! Sarah and Kristin will be there—will you?

Welcome back to Rachel and Theo!

Theo has a video to show all of us!

We will have to sit closely to see! ♥ Your U-M mentors

## Menu

1. Sew by hand
2. Sewing machine
3. Name stickers / Cameo
4. Choose Your Own Adventure / Writing
5. Tumblewing
6. Junk box
7. Stop-motion Animation
8. Reporter
9. Zipper Challenge
10. LEGO



# 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>*



# Celebrate Daily Progress.





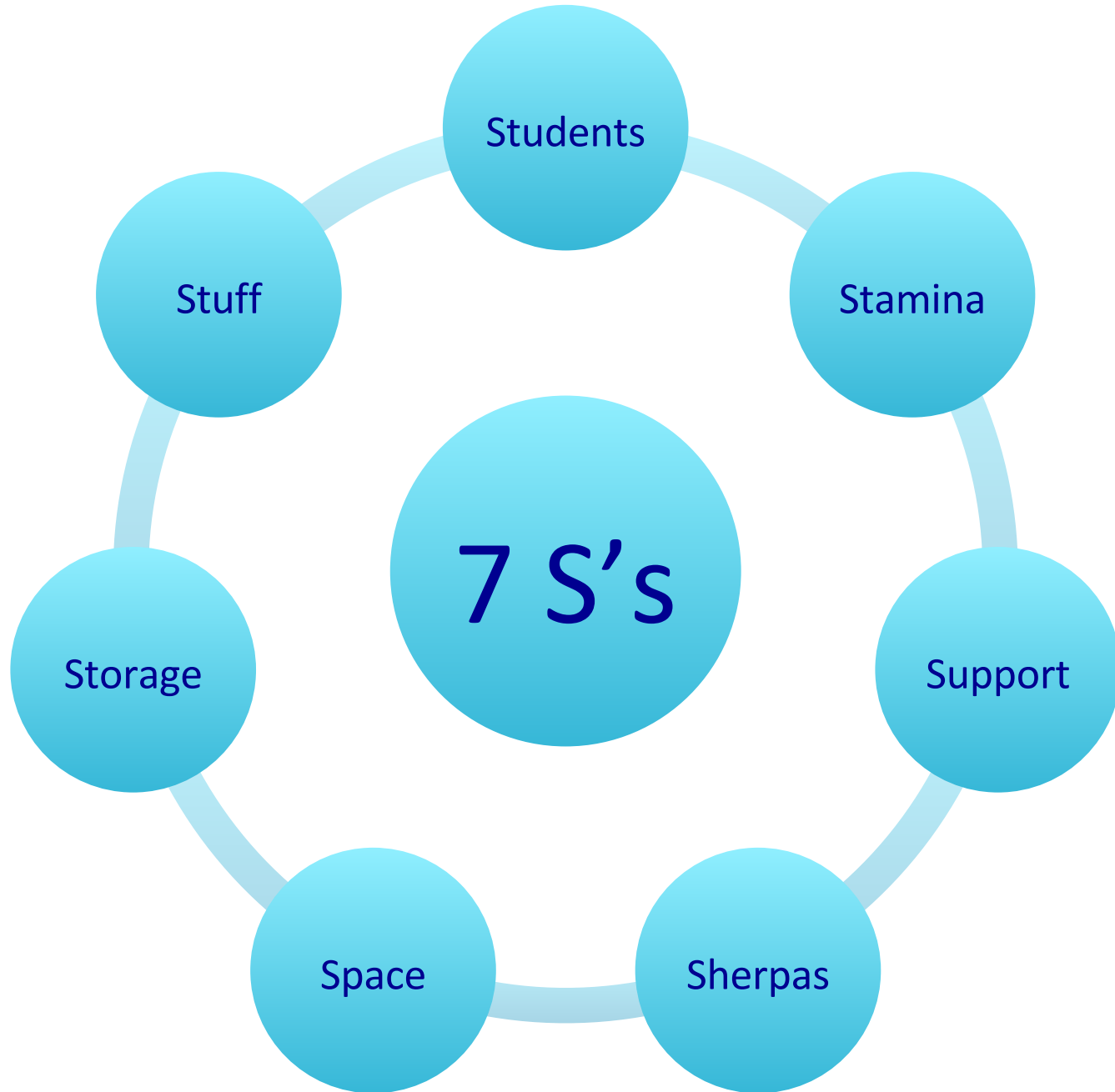
# Celebrate Long-term Progress.





**Celebrate by just making something.**





(Range & Schmidt 2014)  
A



**You've been sitting for a while.  
Let's take a break!**

**break until 11:15**

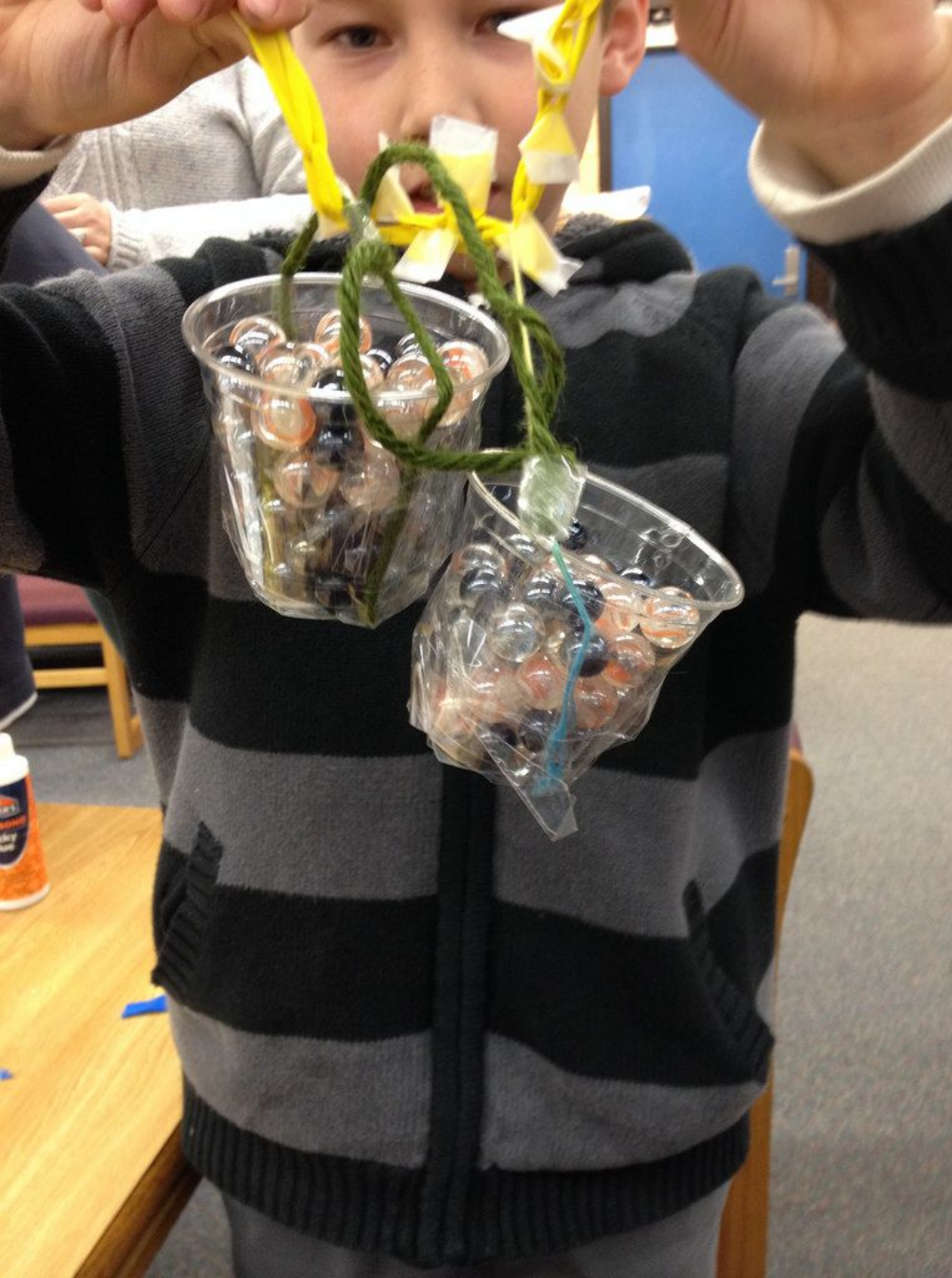
**slides at**

**<http://makinglibraries.si.umich.edu>**



**determining purpose**

**why does  
this matter?**



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

**(Dewey 1900)**





Photo by U-M Photography  
<https://www.flickr.com/photos/michiganmakers/15719112054/>

**Mindset and culture come before the tools.  
What mindset do you want to develop in your  
patrons/learners? How do you know what folks  
want?**

# Data Points

- Suggestion Boxes
- Informal conversations
- Focus groups
- Surveys
- School Curriculum
- Library Circ Patterns
- Petting Zoos (pool your resources!)
- Mel.org → Databases > DemographicsNow
- ESRI Tapestry (<http://www.esri.com/landing-pages/tapestry>)

# ZIP Lookup

What Your ZIP Code Says About You.



Tapestry Income Age Population Density

For ZIP Code

49774



## Top Tapestry™ Segments

61% Salt of the Earth ✓

39% Rural Resort Dwellers ✓

Want to know more? Esri's Tapestry™ Lifestyle Segmentation classifies the US population into 67 market segments and provides comprehensive lifestyle details.

[More about Tapestry](#)

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LTC, Esri, HERE, DeLorme, NGA, USGS, NPS, NRCAN





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What Your ZIP Code Says About You.



Tapestry Income Age Population Density

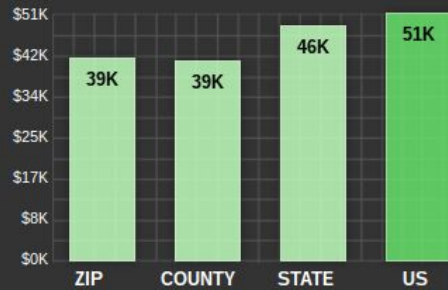
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## Median Household Income

Legend



- < \$32,984
- \$32,985 - \$47,727
- \$47,728 - \$67,106
- \$67,107 - \$99,321
- \$99,322 - \$200,001

Want to know more? Esri provides comprehensive demographic, lifestyle, business, and consumer data for areas large and small—from the US down to block groups.

[More about Demographics](#)

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# ZIP Lookup

What Your ZIP Code Says About You.



Tapestry

Income

Age

Population Density

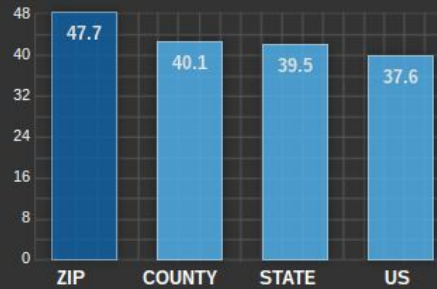
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## Median Age

Legend



- < 14.7
- 14.8 - 34.7
- 34.8 - 41.8
- 41.9 - 48.6
- 48.7 - 80.7

Want to know more? Esri provides comprehensive demographic, lifestyle, business, and consumer data for areas large and small—from the US down to block groups.

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# ZIP Lookup

What Your ZIP Code Says About You.



Tapestry Income Age **Population Density**

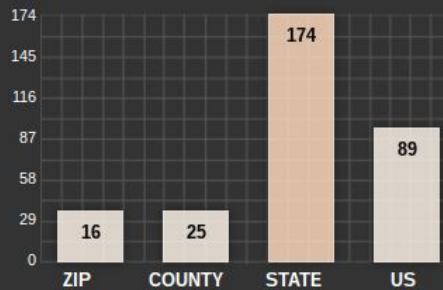
For ZIP Code



## Population Density

Legend

Number of people per square mile



Want to know more? Esri provides comprehensive demographic, lifestyle, business, and consumer data for areas large and small—from the US down to block groups.

[More about Demographics](#)

[Contact Us](#)



- 100 or less (desert)
- 101 - 1000 (rural)
- 1001 - 5000 (suburban)
- 5001 - 25,000 (town, city)
- 25,001 - 75,000 (urban)
- 75,001 or more (metropolis)

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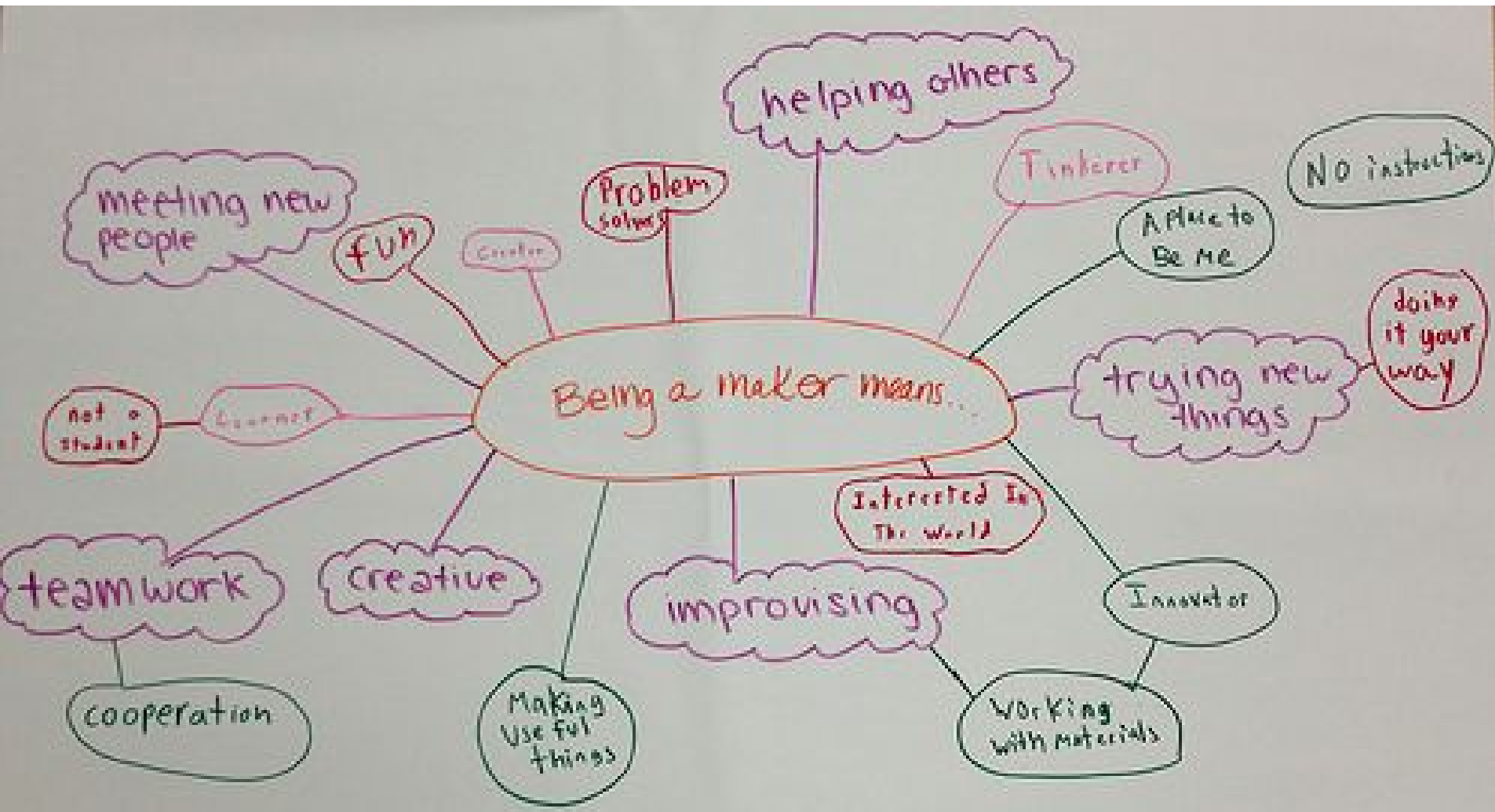
LTC, Esri, HERE, DeLorme, NGA, USGS, NPS, NRCAN





**community needs**

# Consider a charter or manifesto for your makerspace (with adults or kids).



**Based on \_\_\_\_\_, I see that our students/patrons need opportunities to \_\_\_\_\_.**

**Therefore, we'd like to launch a maker program that will give them the chance to \_\_\_\_\_.**

**In this program, we will prioritize \_\_\_\_\_.**

**We will know that we are successful if \_\_\_\_\_.**

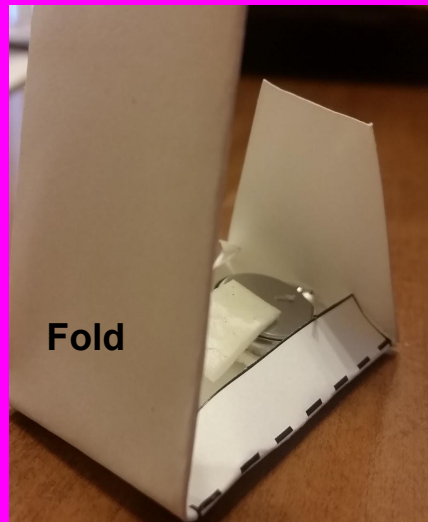
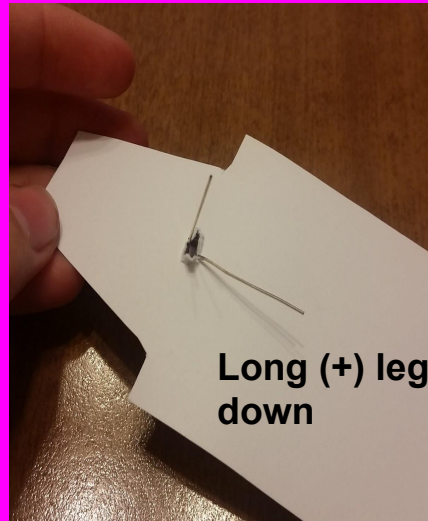
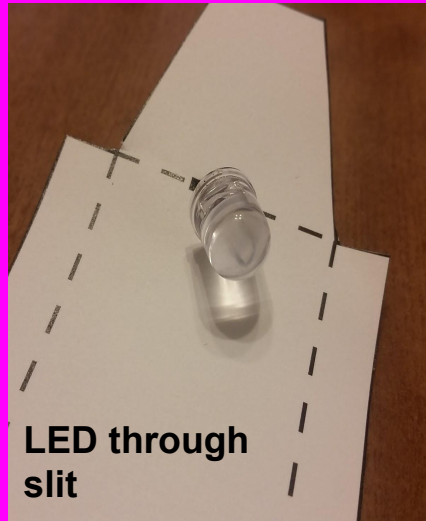


**turn & talk**

**lunch until \_\_\_\_\_**

**let's make  
something**





**now, let's hack it**

# **design your own board game**



# Design Challenge #2: Design a Board Game

an activity designed by Scott Nicholson, Syracuse iSchool

As described by Brian Mayer here: <http://www.americanlibrariesmagazine.org/blog/make-game>

The game? Awesome Time.

The rules? Take turn spinning the die and moving the correct number of spaces. First to the end wins.

# Sound boring? Hack it!

Add a few rules as situations arise ...

- Do any spaces on the game board have special attributes or cause anything to happen if you land on them? Do you need more/different places/paths on the board?
- What happens if you land on a space already occupied by another player?
- What happens if you roll a certain number on the die?
- Do you need to role the exact number on your die that it takes to reach the end?
- What's the point of the game?



Let's make Awesome Time even more awesome.

Think about what **stuff** you have in your pocket, could make out of scrap paper, or have in front of you. How could they join your game?

Now think about adding some **game play elements** that make your game more engaging and compelling.



- Interesting decisions
- Conflict
- Risk
- Resource management
- Dexterity
- Speed
- Storytelling

# activity stations

**PLEASE BRING LAPTOPS  
TOMORROW**

**reflection, day-end evaluation,  
tomorrow**

**contactmichiganmakers@umich.edu  
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