



# Sustaining your Makerspace

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Slides tonight at: <http://bit.ly/fontblog>  
MACUL 2016 | Thu 3/10/2016 | 1:00-2:00pm

Free Maker PD this summer statewide! | <http://makinglibraries.si.umich>.

# WHAT'S IN YOUR PATRONS' DREAM MAKERSPACE?

## STITCHING

- Knitting
- Crochet
- Sewing
- Needlepoint
- Ribbon embroidery
- Crewel
- Cross stitch
- Crewel
- Stitchery
- Quilting
- Tailoring
- Patternmaking
- T-shirt refashioning / Project Runway challenges
- E-Textiles
- Sewing machine
- Embroidery machine
- Serger
- Hand puppets
- Spinning

## PAPER

- Origami
- Quilling
- Paper airplanes and gliders
- Giftwrapping
- Hand-drawn comics
- Cardboard box creations
- Scrapbooking
- Collage
- Decoupage
- Silhouette Cameo
- Cricut machine
- Shadow puppets

## AUDIO/NOISE PRODUCTION

- FinalCutMusic.com
- Little Bits/KOOL electronic music kit
- Music Tools (see [aardlong.com/tools/](http://aardlong.com/tools/))
- Garage Band
- Audacity

## CIRCUITS

- Snap Circuits
- Squeaky Circuits
- Little Bits

## APPS, SOFTWARE, AND WEB-BASED TOOLS

- Animation (e.g. GoAnimate.com, Xtranormal.com)
- Comics-making (e.g. Pixton.com, MakeBeliefsComix.com)
- Photo editing (e.g. PicMonkey.com, Pixlr.com)
- Stop-Motion animation (e.g. MyCreate app)

## VIDEO PRODUCTION

- Production Room
- Green Screen
- MovieMaker
- iMovie
- FinalCut Pro

## GRAPHIC DESIGN

- Canva.com
- GIMP
- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign

## PROGRAMMING/COOKING

- HTML
- Python
- Java
- <http://scratch.mit.edu>
- Arduino microcontrollers
- Raspberry Pi minicomputers
- LEGO Mindstorm
- LEGO MaKey

## SCIENCE

- Make your own musical instruments
- Paper airplane trajectory
- Make your own speaker
- Junk box challenges

## COOKING

- Kitchen Knives 101
- Make fresh salsa
- Make smoothies
- Cookie decorating
- Cake decorating
- Frezzer jam

## WRITING

- Choose Your Own Adventure
- Six-word memoir
- NaNoWriMo
- PiBoDyMo
- Espresso Book Machine
- Stop-Motion animation (e.g. MyCreate app)
- DIY Publishing: Lulu, CreateSpace, Smashwords, Sorbdo.com

## 3D MODELING AND PRINTING

- 3Doodler pen
- 3D printer (e.g. MakerBot Replicator 2, Cubes)
- MakerWare software
- Tinkercad.com
- Sketchup.com
- Maya or Blender software

## MISC.

- Rubber band bracelets
- Shrinky Dinks
- Duct tape wallets
- Marshmallow launchers
- Junk box challenges
- Art boxes
- Candle making
- LEGO pieces
- Decorative painting
- Furniture refashioning
- Letterpress
- Printmaking

## GARDENING

- Seed exchange
- Bonsai pruning
- Flower arranging

KRISTIN FORTICHBARD & THE MICHIGAN MAKERS, UNIVERSITY OF MICHIGAN SCHOOL OF INFORMATION  
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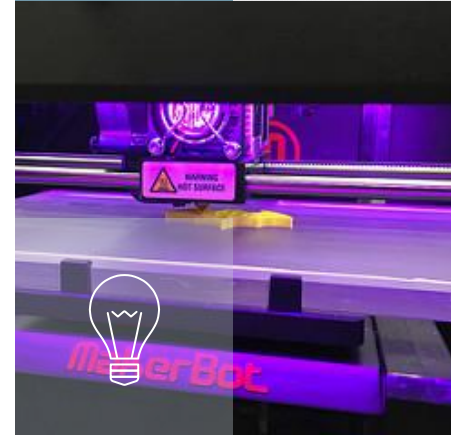
# What's in your Students' Dream Makerspace?

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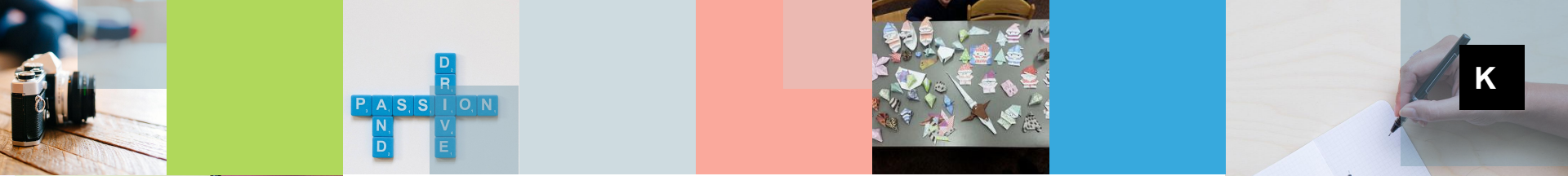


# Today we'll talk about

- How to ensure effective management of resources in makerspaces
- Having a wide range activities/tools even on a smaller budget

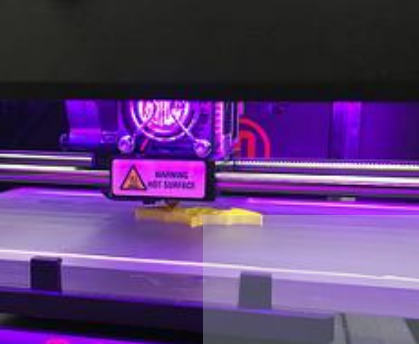
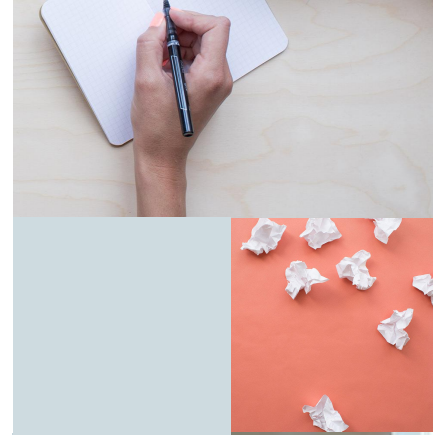






First, let's make something.

#madeatmacul



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# Now over to Amber & Mayank

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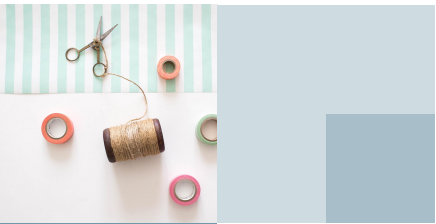
While you're working ...

Ctemakeoverchallenge.com

White House News!

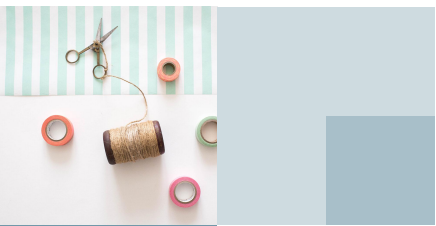
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Have you run out  
of materials even  
before the  
activity started?





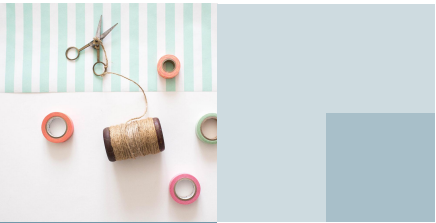
# Exhausted by the sheer amount of new stuff to learn?



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Scared that the  
most expensive  
materials get  
consumed the  
earliest...





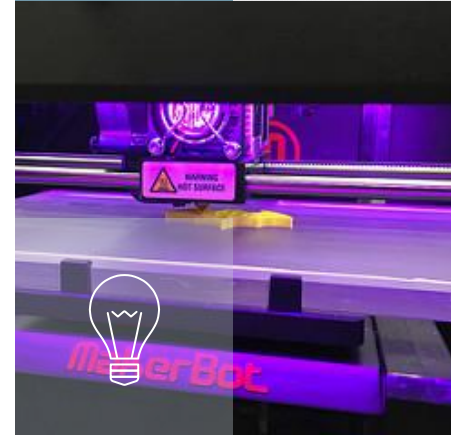
Then your Makerspace  
faces a  
**Sustainability  
Challenge!**

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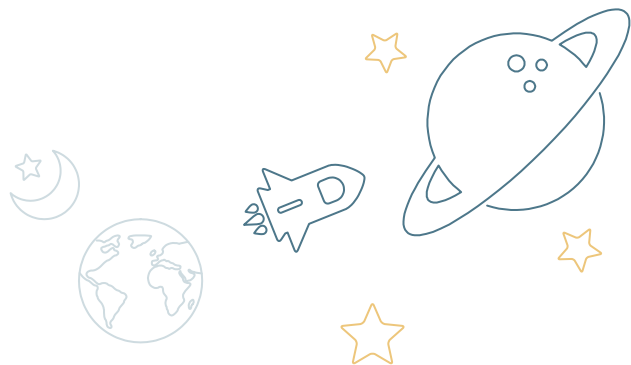
# Thinking about Sustainability

- Your long-term vision
- Budget
- Current goals of your program
- Skills
- Human Resources

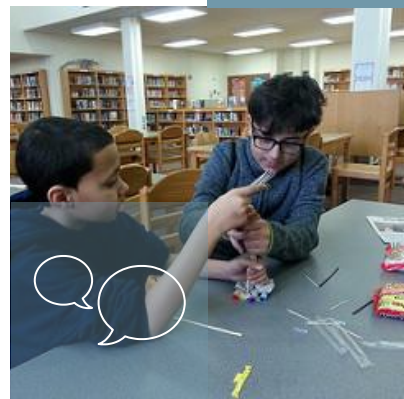








# What do you want your makerspace to **Accomplish?**



# But before we start buying things, **Let's think the purpose...**

- After-school STEM program
- Stimulate creative thinking
- Interpersonal / Collaborative skill building
- After-school relaxation



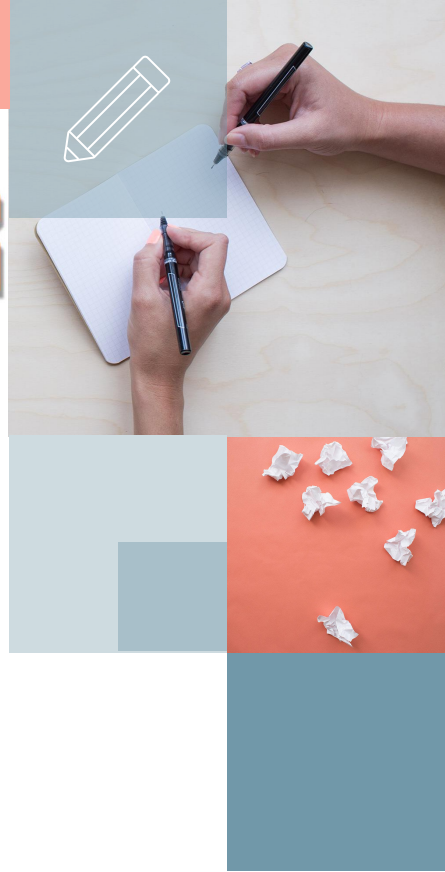
# Articulate your Vision

Some call it...

- Manifestos
- Charters
- Mission
- or “Spine” behind your makerspace

(Fontichiaro 2014)

THE  
**MAKER**  
MOVEMENT  
MANIFESTO





## Helpful to communicate to

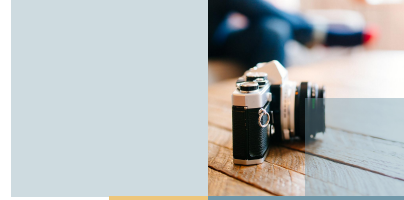
- Funders
- Community Partners
- Maker mentors
- Other like-minded people

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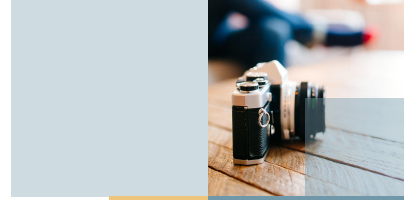
# An educator's view of makerspaces

- Making is a human experience
- Makerspaces provide opportunities for learning and creativity
- Makerspaces are an equalizer



## Now, what our stakeholders want to hear

- Making is one way to address a struggling economy and a decline in American innovation
- Making may help improve measurable student learning outcomes



# Make it your own statement

Based on \_\_\_\_\_, I see that our students 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 \_\_\_\_\_.

#madeatmacul





## 2. Reusable, extensible equipment that scales

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## What will give you more value?



### Drawdio

- Assembling a nifty tool to make electronic sound through an electrified pencil

**\$17**

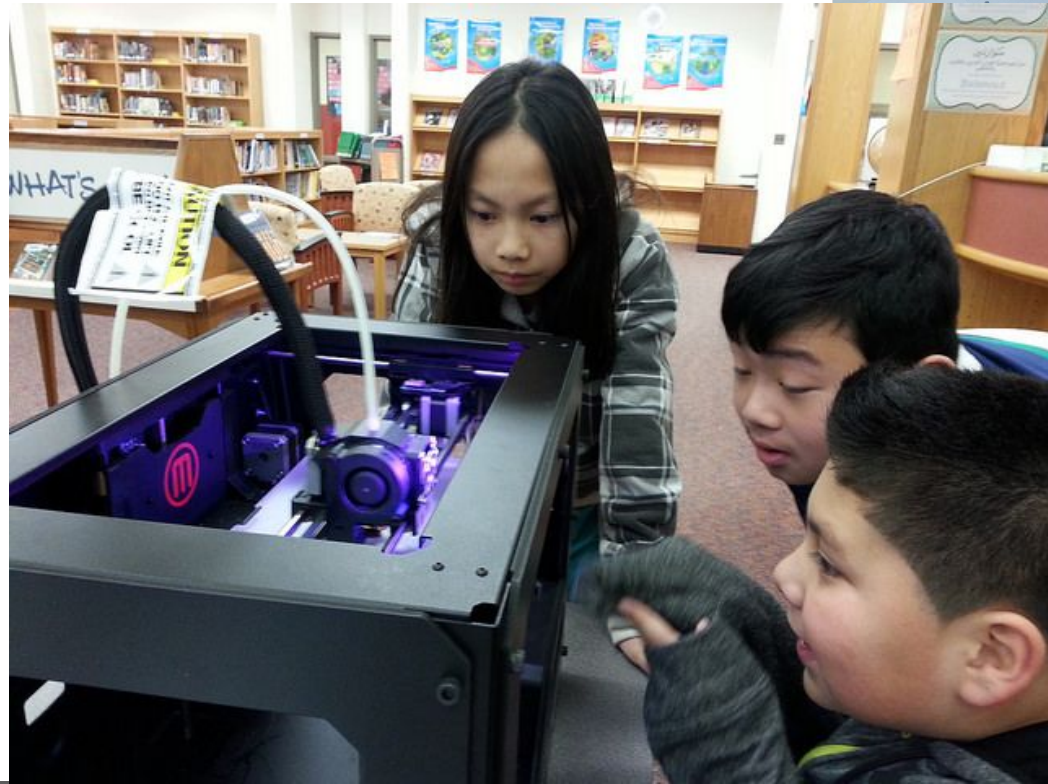
### Legos

- A box of endless creativity that can be a part of several activities

**\$30**



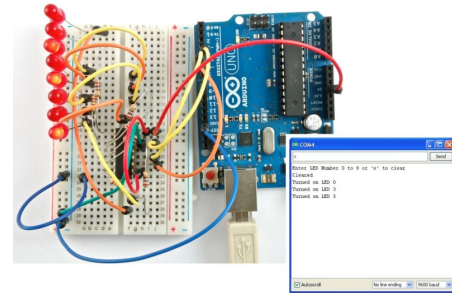
# 3-D printers are cool but...



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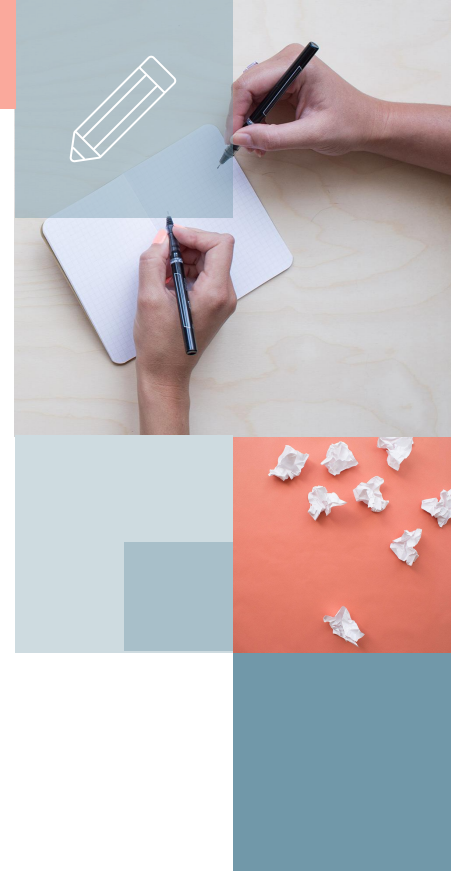
# What could be some options?

- Flexible reusable tools
- Just some of the several options



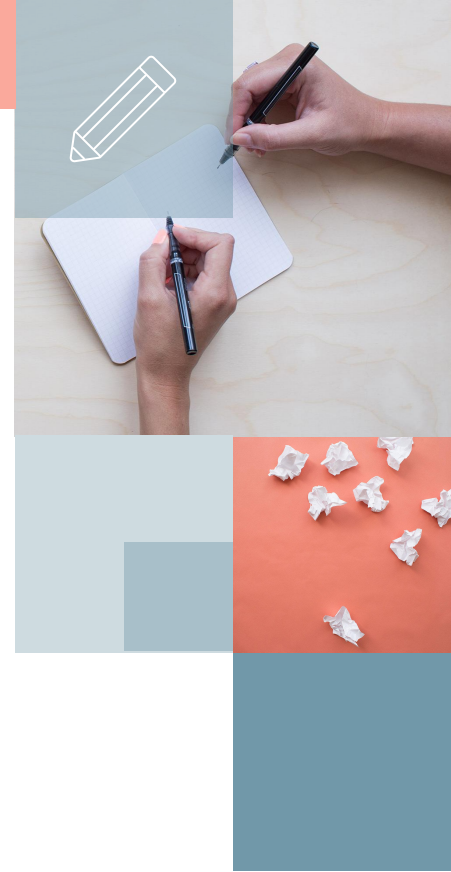
# Before purchasing any new tool

- How versatile is the tool? Can it scale up as students' knowledge grows?
- Is it a one-time activity or something that can span several sessions?
- Will it allow working in a group?
- Will the tools work for multiple age groups?
- Can it be combined with other tools to truly allow tinkering?



# Set a per-participant budget

- Much of mainstream maker movement assumes one individual making with personal budget
- Your work needs to scale!
- \$2 per person projects
  - Few LEDs, wires and batteries
  - Fabric, thread and needles
  - Thrift-store glass, etching cream and brushes
  - Knitting supplies







PASSION

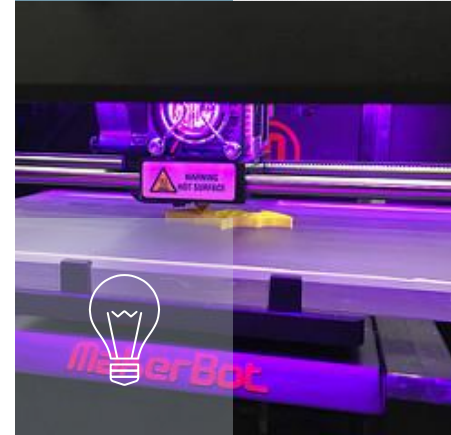
### 3.

# Donation of Time, Expertise & Materials

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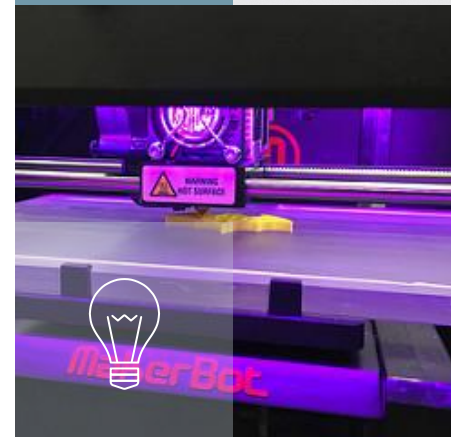
# Donations in Materials

- Donations are a quick and cheap way to have a diverse set of materials
- Crafters will easily giveaway materials they no longer need
- Accept broken toys, old VHS players, telephones for appliance autopsy (Ask kids to reuse the parts in their projects, even better)



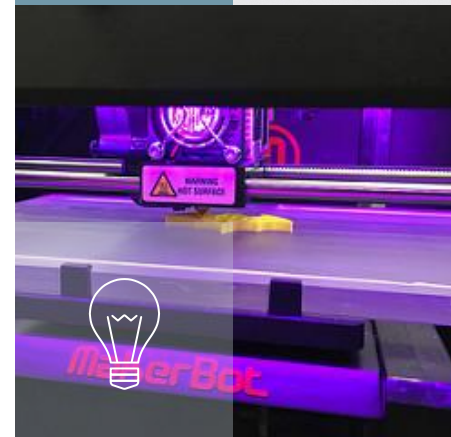
## Donations in Expertise

- Volunteer expertise will bring diversity to the kind of activities
- A healthy maker culture builds from sharing expertise and knowledge
- Invite members from local makerspaces, college student groups or local employee unions to give workshops and guidance
- Reward them for their mentorship - what matters to them?



## Donations in Time

- More hands = more skills and diversity of activities
- Ask for adult volunteers who can manage the activities or tools around you
- Can they tinker while kids work on their own projects?
- Provide opportunities to volunteers to learn new skills through self experimentation or mentorship





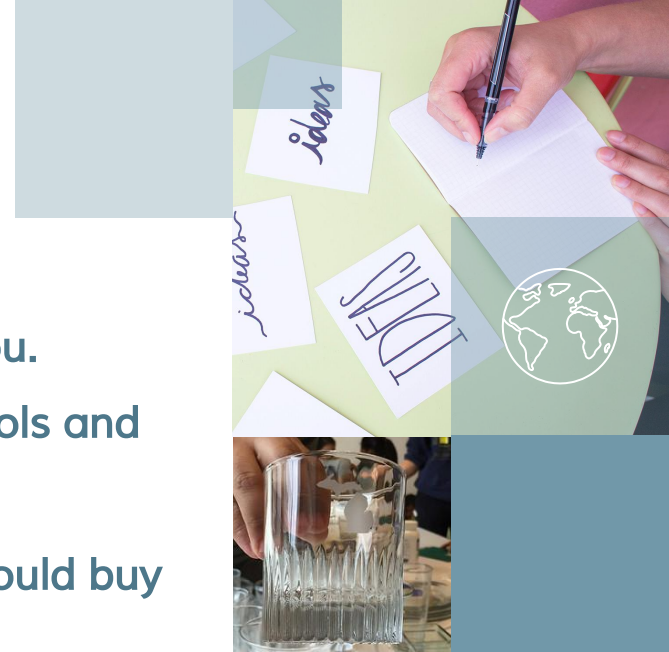
4.  
Share your resources

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## One starter option: Rotating collection

- Share your tools with libraries and schools around you.
- Think and plan collectively to buy diverse range of tools and activities
- What if one could buy electric supplies, the second could buy craft supplies and the third, sewing supplies ...?
- Diversify not only in tools/materials but skills as well.





# 5. Document Everything

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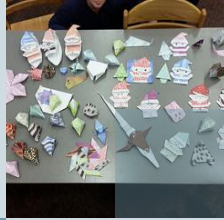
# Process, Tools, Materials, Tricks

- Start documenting at an early stage
- Use your smartphone to take pictures of kids tinkering and share their creations with others
- Seek help to post it online as a blog, tweet or facebook post
- Share not only your successes but your failures and learn from the failure of others.
- Not only help you seek further funding but help you reach out to larger audience
- This goes for students, too! See our session on assessment.



# Concluding Remarks

- Use your vision statement to plan skills and resources
- Reusable, extensible equipment will last you longer
- Seek donations in Materials, time and expertise
- Explore opportunities to share resources and skills
- Document early to help yourself and others





Questions?

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