

Scaling Up the

**Makerspace**

Makerspace

**Josh Ajima**  
**@DesignMakeTeach**



# Bell Ringer

## What spaces & tools do you have for making in your school?

Share

-with the person next to you and/or

<https://padlet.com/designmaketeach/xuqjs66jmlmz>



# HANDOUTS & CONTACT INFO



[DesignMakeTeach.com/TCEA](https://DesignMakeTeach.com/TCEA)

**Josh Ajima**

**@DesignMakeTeach**

**DesignMakeTeach.com**

**youtube.com/designmaketeach**

# FEATURED PRESENTER



## **Digital Fabrication in the Classroom**

**Mon, February 5th, 8:00 AM – 11:00 AM, 9C**

## **Scaling Up the Makerspace**

**Mon, February 5th, 3:30 PM – 4:30 PM, Ballroom E**

## **The Maker Mindset**

**Tue, February 6th, 9:45 AM – 10:45 AM, Ballroom F**

## **Making with Head, Hands, and Heart**

**Tue, February 6th, 11:30 AM – 1:00 PM, 6B**

## **The Makerspace Chromebook**

**Wed, February 7th, 8:00 AM – 11:00 AM, 10A**

## **3D Printing Projects That Matter**

**Wed, February 7th, 3:30 PM – 5:00 PM, 9A**



# EDUCATOR



**Instructional Facilitator for Technology**  
**-Dominion High School & Loudoun Academy of Science, Sterling, VA (2003-present)**

**Director of Instructional Technology**  
**-Clarke County, VA(1998-2003)**

**Teacher: Chemistry, 7th Life Science, 8th Physical Science, Cisco Networking**  
**-Clarke County, VA (1996-1998)**



# MAKER



**Make Magazine Review Team  
2014 & 2015**

**Featured: Thingiverse,  
Pinshape, Adafruit**

**World Maker Faire NY: Best  
in Class Ribbon**

**Outsider Art Fair NY: Tower  
Design Competition - 2nd  
Place**



# MAKER EDUCATOR

CTE MAKEOVER  
CHALLENGE



**Construct3D**  
3D PRINTING & DIGITAL FABRICATION FOR EDUCATION



## Top Educational Model

The Top Educational Model Award goes to **DesignMakeTeach** for his design, Hidden Figures. This model integrates a number of educational concepts, including 3D modeling and the physics involved with light opacity. Congratulations and we hope the Wacom Cintiq and Adafruit and 3D Hubs gift cards help you continue your inspirational work!

US Department of Education's CTE  
Makeover Challenge Winner

Stanford FabLearn Fellow

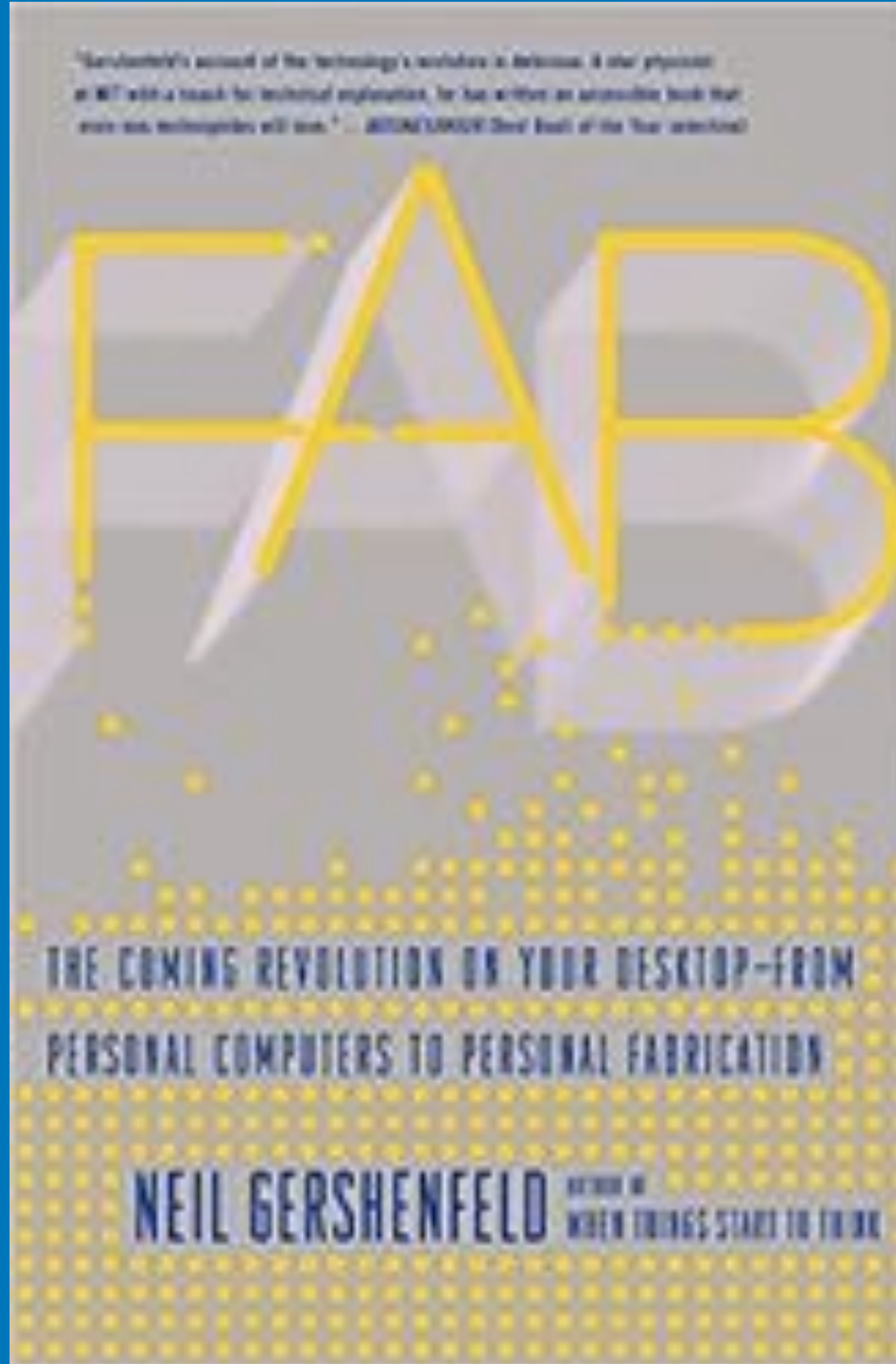
Formlabs 3D Design Awards -Top  
Educational Model

Construct3D 2017 - K12 Program Chair

VSTE Innovative Educator of the Year



# MY MAKER JOURNEY



## Neil Gershenfeld: MIT Center for Bits and Atoms

-2005 NSBA Conference

-How to Make (almost) Anything

-Personal Fabrication

-FabLabs



# UNIVERSAL DESIGN FOR LEARNING

- Multiple Means of Engagement
- Multiple Means of Representation
- Multiple Means of Action & Expression



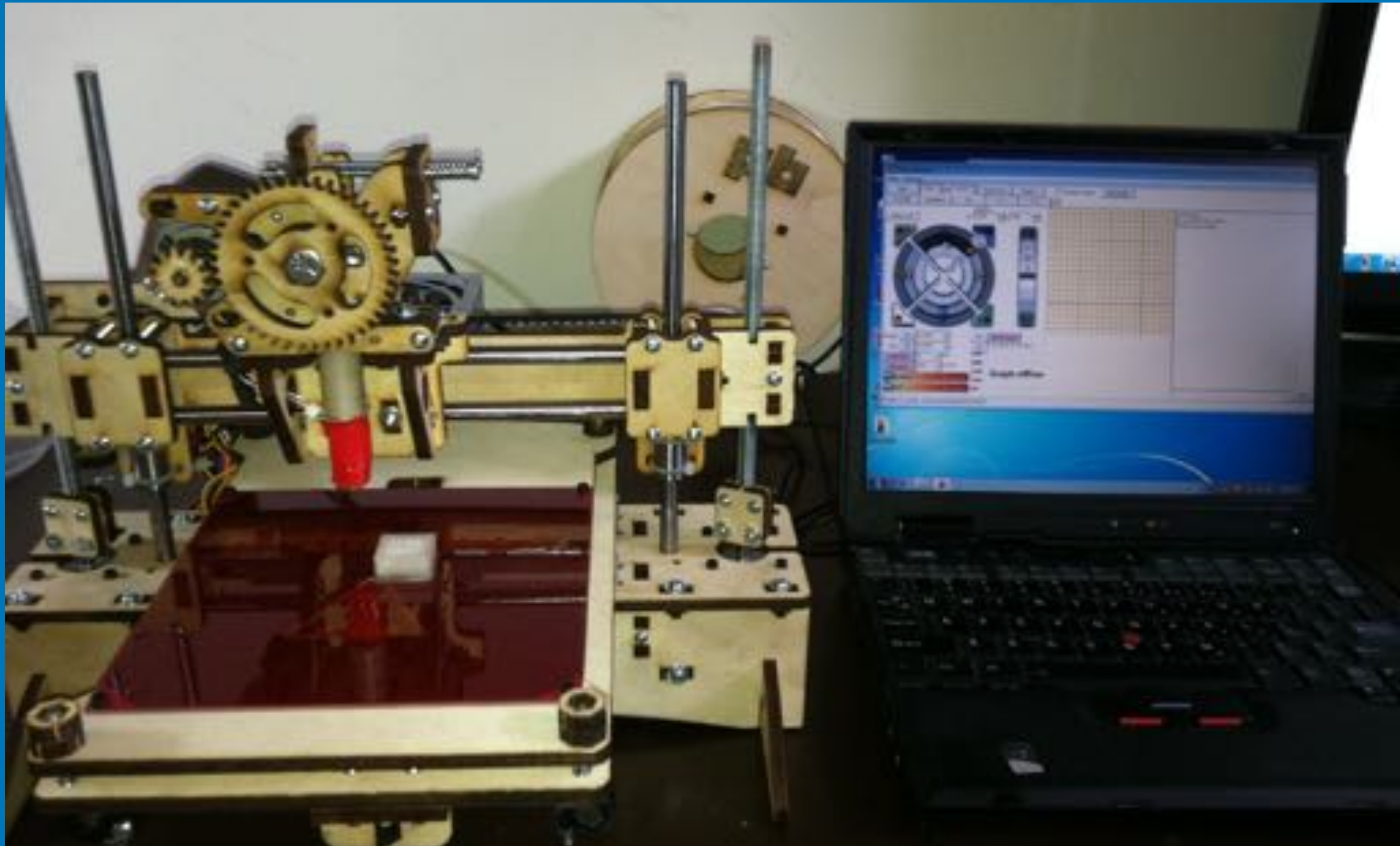


# A MAKER EDUCATION MODEL





# PERSONAL INVESTMENT



Josh Ajima - [DesignMakeTeach.com](http://DesignMakeTeach.com)

Makerspace  
is an idea



Learn  
by  
Making

What if...?



**LEARN  
BY  
MAKING**

**MAKERSPACE**

### **Makerspace Starter Kit**

- Recycle Bin**
- Crafting Supplies**
- Toy Boxes**
- Designer.io**
- Tinkercad.com**
- Scratch.mit.edu**
- MakeCode.com**

### **Resources**

- DesignMakeTeach.com**
- bit.ly/meaningfulmakingfile**
- inventtolearn.com/resources**
- Instructables.com**
- Diy.org**
- Code.org**
- makered.org**







Akela Silkman

@AkelaSilkman

Follow

Post #VSTE Action Item #1: Establish Makerspace.  
BOOM! Done. Thank you @DesignMakeTeach  
#makersgottamake #makerspace



Time  
Space  
Materials  
Resources



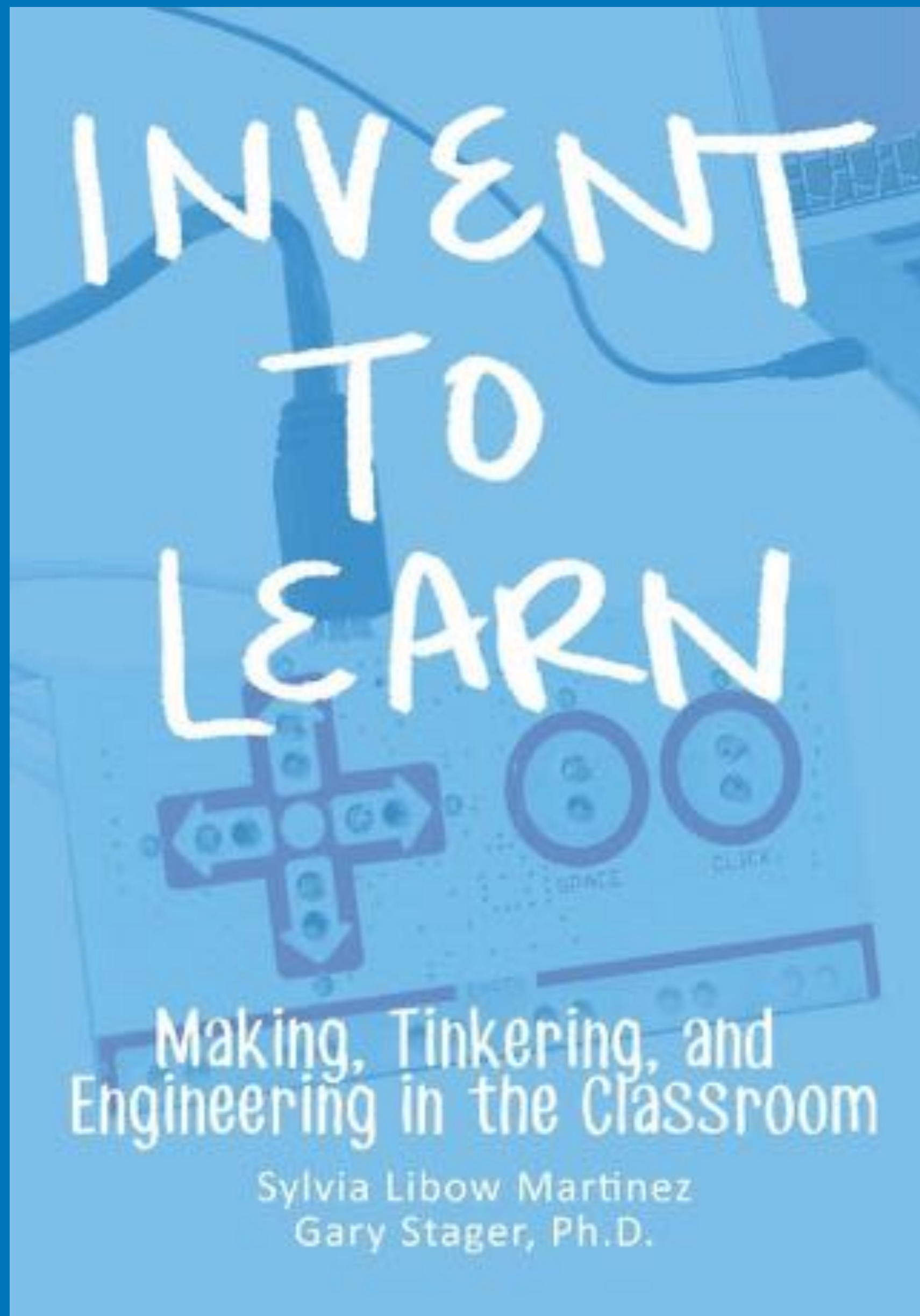






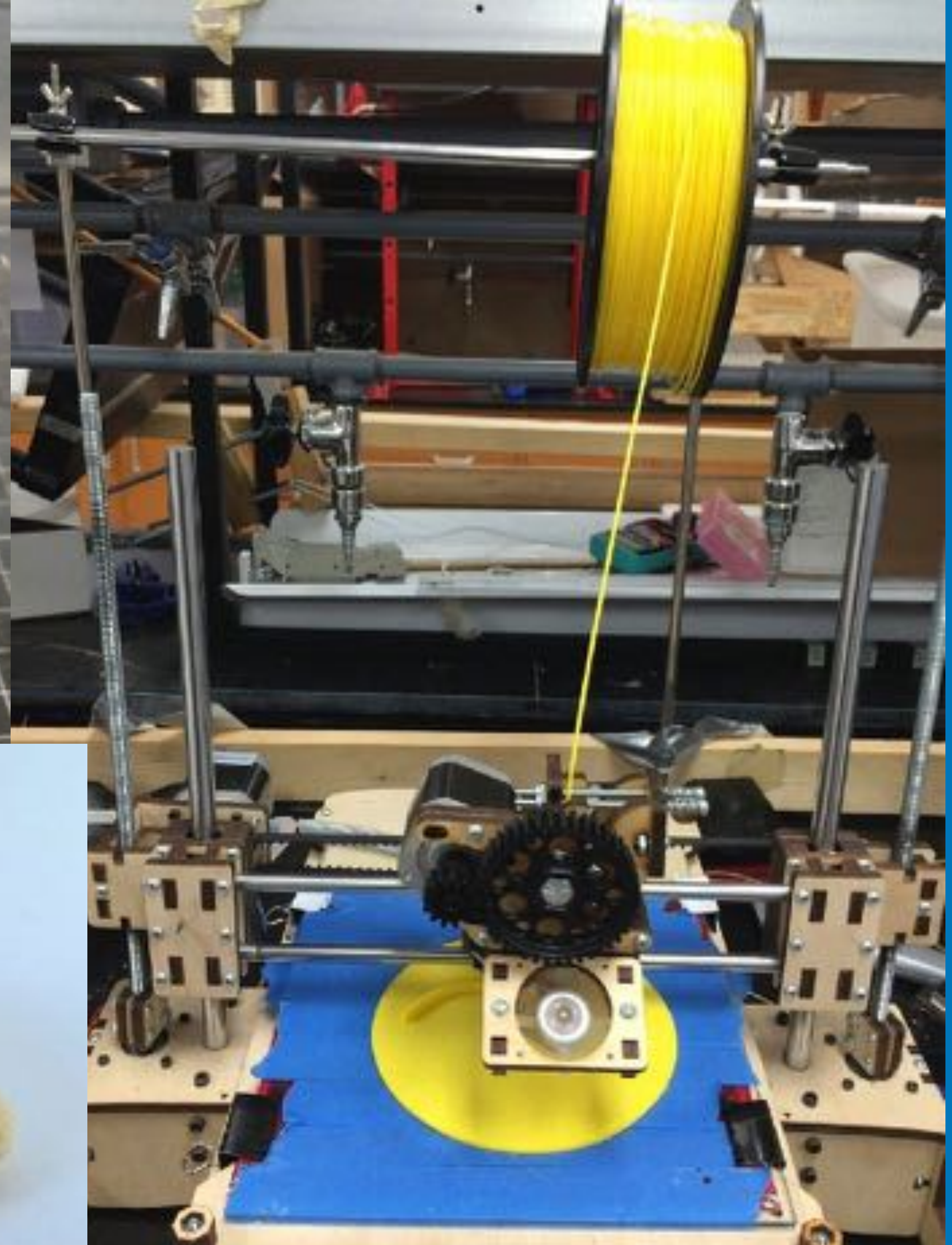
Mobile Makerspace





**Learn by Making**





**Digital Fabrication**



HOUR  
OF  
CODE

RESOURCES FAQ PRIZES

English

WATCH THE NEW VIDEO



JOIN THE LARGEST  
LEARNING EVENT IN  
HISTORY, DEC 8-14, 2014

Students

Try it

Teachers

Host it

Everyone

Support it

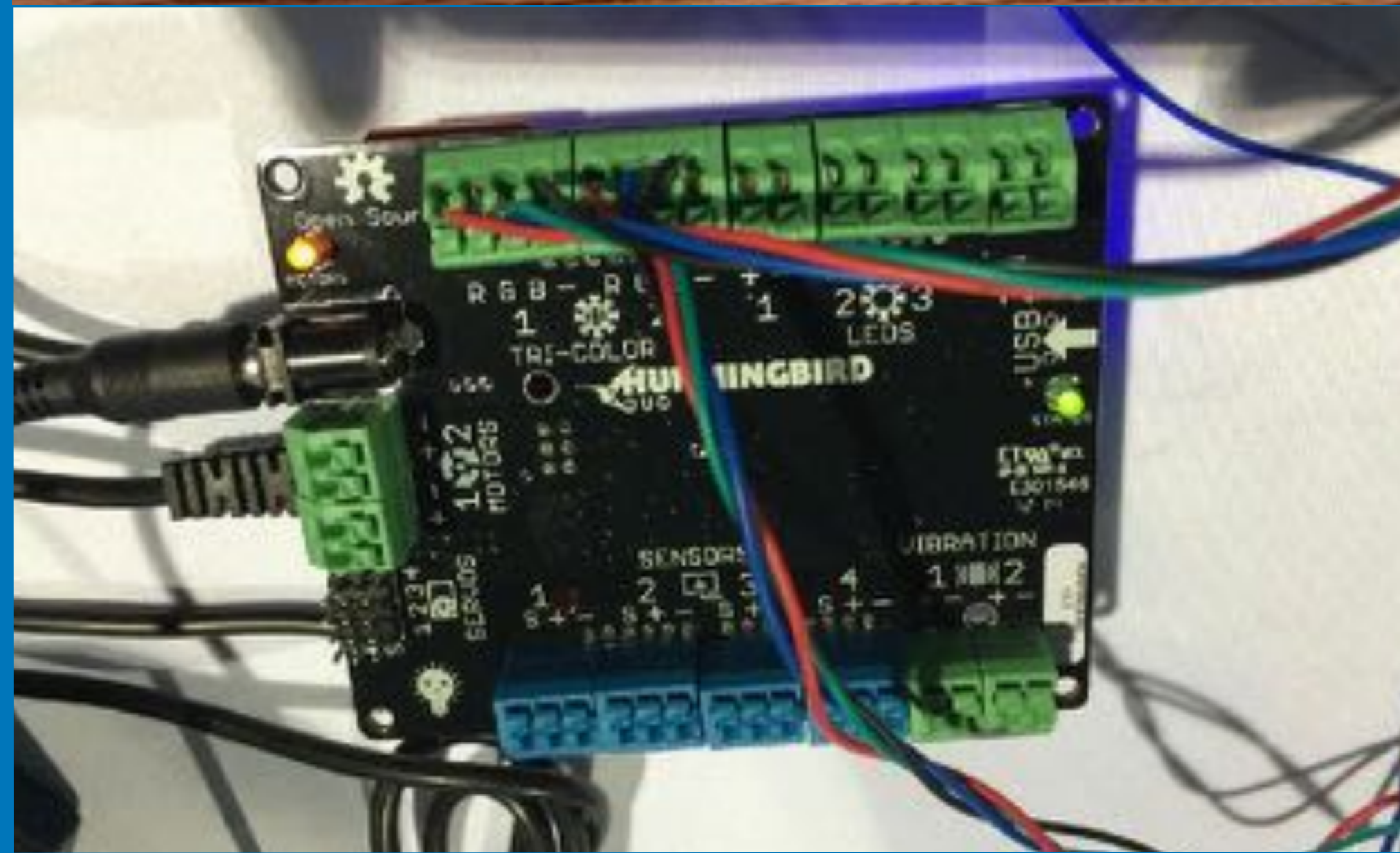
What is the Hour of Code?

f Share on Facebook

🐦 Share on Twitter

# Programming





# Physical Computing





# Maker Cart Prototype





Library Makerspace



# Colleen Graves

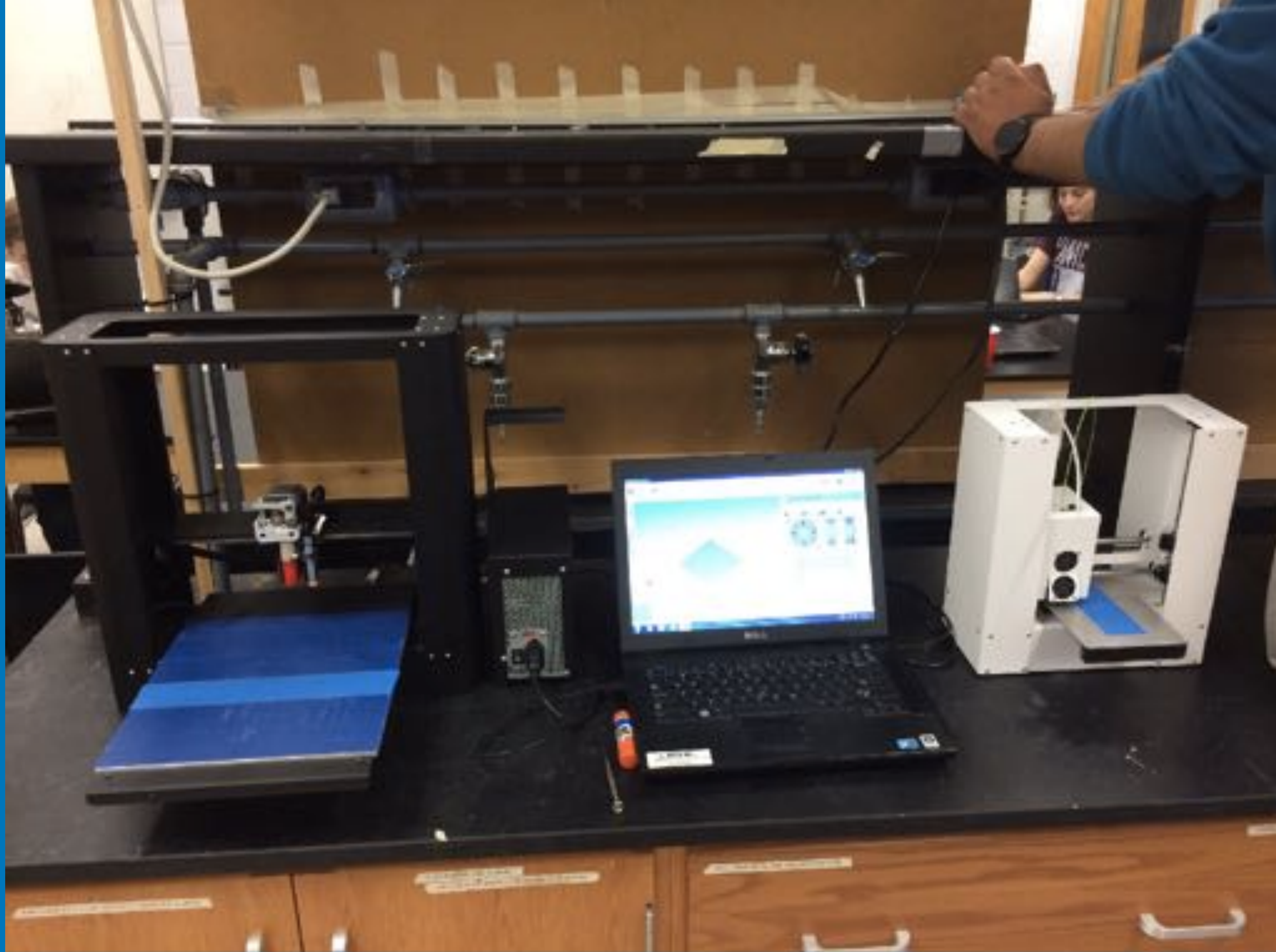






# 3D Printer Club





# Classroom Makerspace





# STEM Camp Makerspace





**DesignMakeTeach** @DesignMakeTeach · 4 Apr 2016

Woot! **Carvey** unboxing at Loudoun Academy of Science. VA winner of 50 States 3D Carver contest. Thanks [@Inventables](#)





# CTE MAKEOVER CHALLENGE

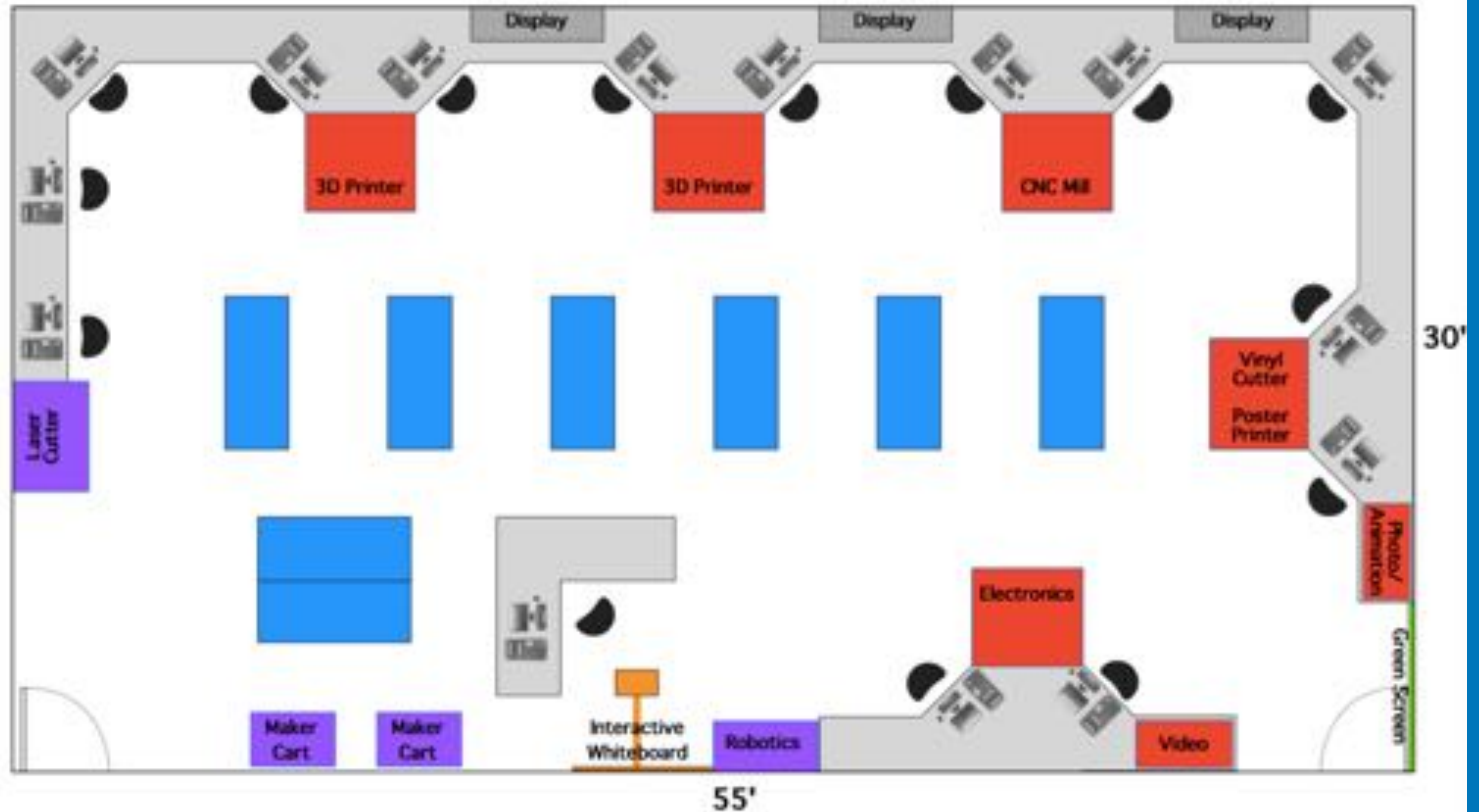
Calling on high schools to design  
makerspaces that strengthen next-generation  
career and technical skills.







# Dominion Makerspace







## Lessons:

- [Lesson 0: Orientation and Overview](#)  
Kick off your Bootcamp experience by participating in orientation.
- [Lesson 1: Making and 21st Century Skills](#)  
Discover how making can strengthen skills that will allow students to succeed in the 21st century economy.
- [Lesson 2: Learning through Doing](#)  
Explore the topics and skills that can be taught using makerspaces and the projects, tools, and materials needed.
- [Lesson 3: Plan It, Make It](#)  
Draft the design, identify the right tools, and plan how you will construct your makerspace.
- [Lesson 4: Identifying and Engaging Your Community](#)  
Consider how your community can contribute to building and sustaining your makerspace.
- [Lesson 5: Budgeting and Resources](#)  
Make your plans a reality by drafting a budget and coming up with ways to gather the resources you will need to build a sustainable makerspace.



# CTE MAKEOVER CHALLENGE

**PROUD TO BE A  
PRIZE WINNER**

Excited to build our  
makerspace this summer!

**Woot!!! We won #CTEMakeover Challenge!  
Time to get to WORK!**



**10 Prize Winners**

**640 Applicants**





**Future home of Dominion Makerspace is looking extra sparkly ✨ after deep clean.**





**Check out the new countertops!!! Looking good 🙌🙌**



## Makerspace

- General Crafting
- Laser Cutting
- 3D Printing
- CNC Mill
- Vinyl Cutter
- iFixit Repair Station
- little Bits prototyping
- cubelets
- arduino kits

Planning our new MAKERSPACE 🤔





#CTEMakeover sponsors are AWESOME!!! 📦





**Community Build Out Day #DHSMakerspace**





**New teachers helping setup the Heat Press.  
Hot! Hot! Hot! 🔥**





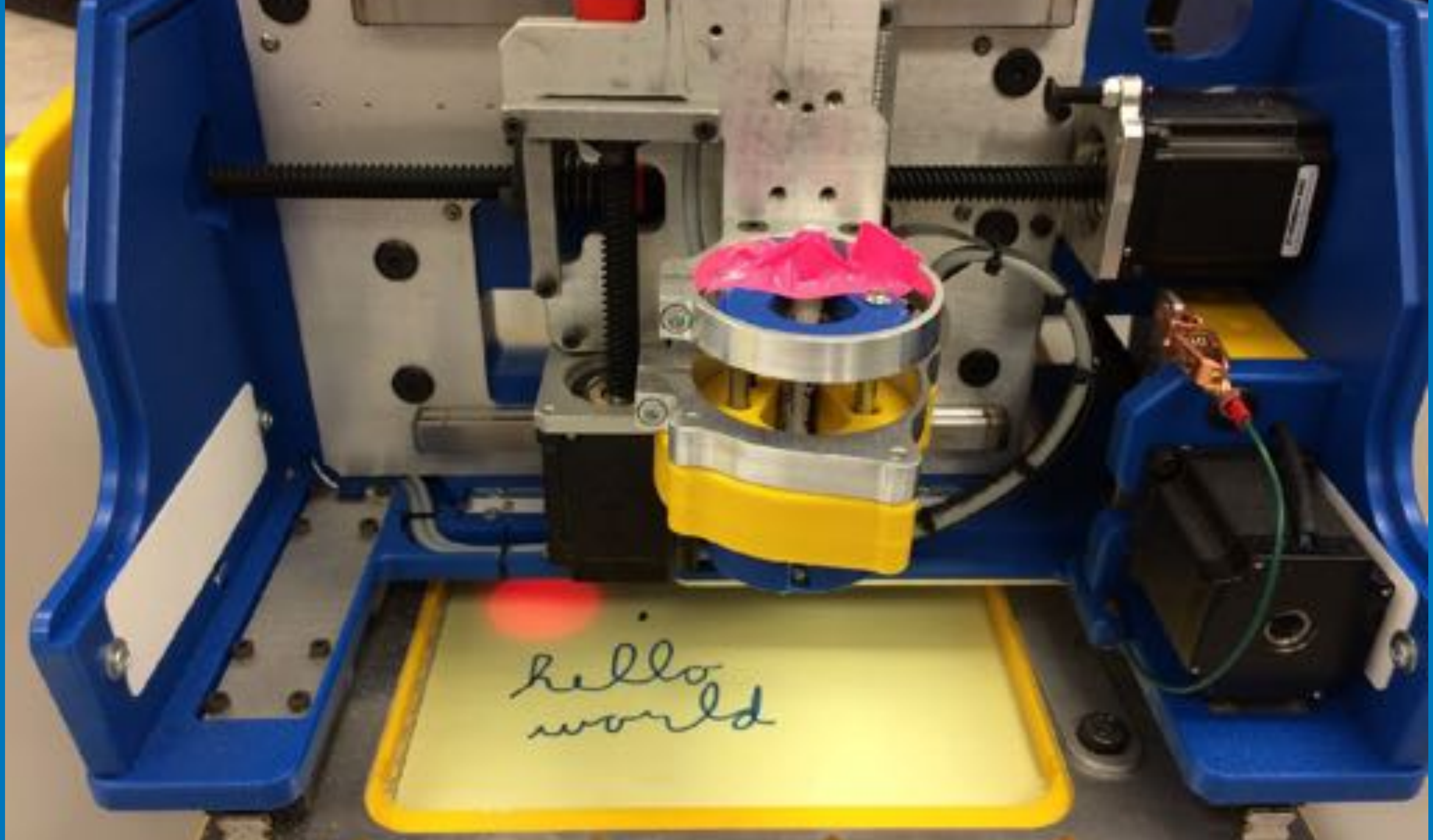
**Mr. Baker working hard on his summer vacation setting up the new vinyl cutter #CTEMakeover**





**Students running 1st print on new @Makerbot  
#3DPrinter**





**Hello World! @Handibot portable #CNC**





So thankful for @othermachine partnership!  
Desktop CNC in the classroom ❤️





Woot! @iFixit Repair Station. Fix that 📱





Teacher PD in #DHSMakerspace 🍏





Making model of economy in new #makerspace 🤖💰💰💰





SWAG for teacher PD 🏆





**Learning to make our own stickers = More profit  
Marketing teachers are pumped! #CTEMakeover**





CTE students are designing their own products 🧐





**Creating public products using real-world tools 🌐**  
**#OTTW #LCPS16**



**"Journalists should be  
watchdogs, not lapdogs"**  
**- Newton Lee**

**Checkout the new quote in the newspaper room  
Vinyl for the win.**







**Students assembling 1st Maker Cart!**  
**Mobile Classroom #Makerspace** 🚚🔧





Maker Totes loaded up for the Maker Cart! 🌈





**Maker Cart Prototype #1: Ready for 32 students**





Sweet! Maker totes getting their 1st use. 😊👍





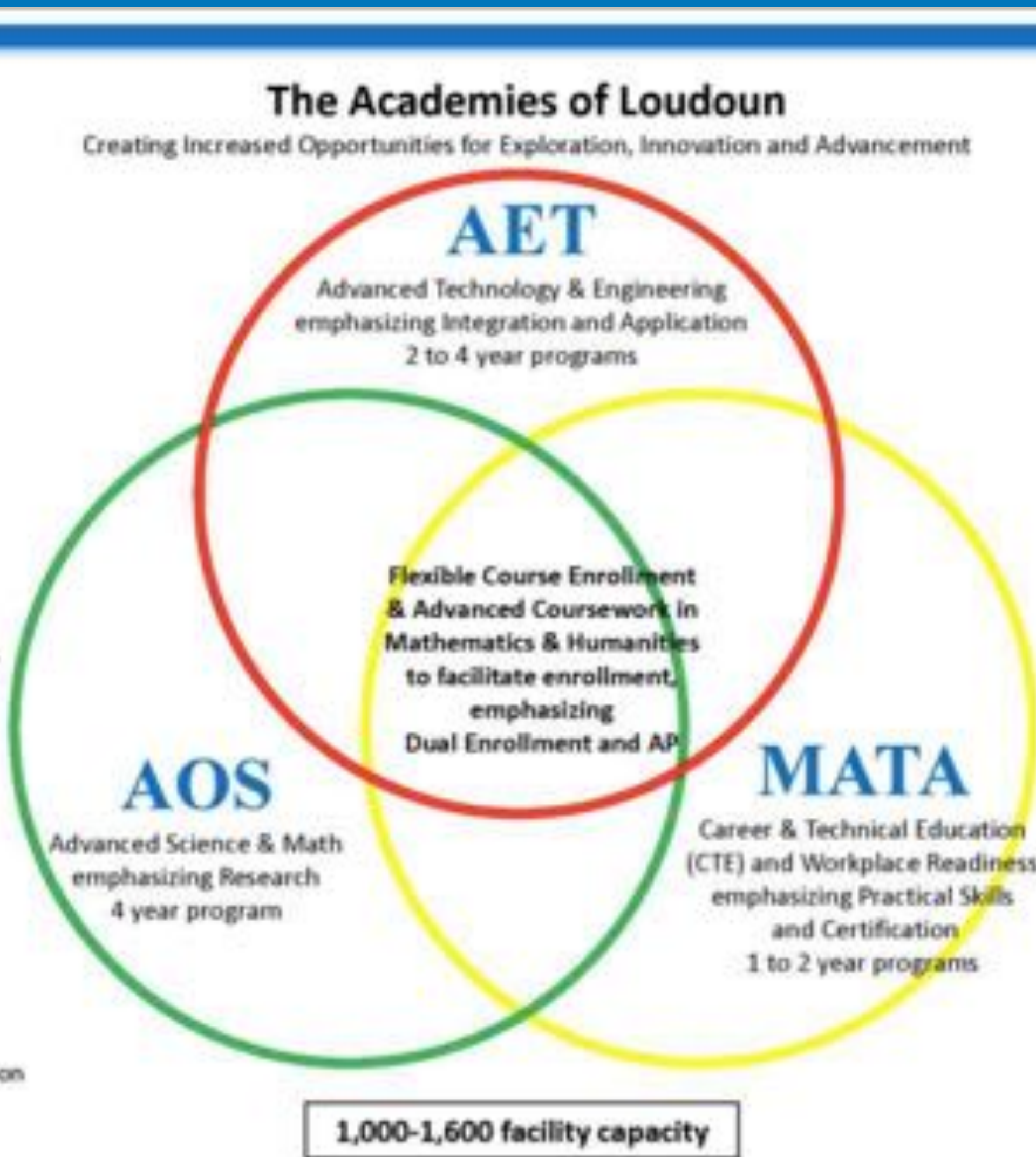
**1st Social Science Class in the makerspace.  
Building new civilizations. #CTEMakeover**





**Paying It Forward: Sharing #CTEMakeover w/ PVHS**





- 15,480 S.F.
- HIGH FLEXIBILITY
- HIGH INFRASTRUCTURE
- INTENTIONAL TRANS-DISCIPLINARY SPACE



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# Challenge

Create a 90 sec video describing  
**YOUR** next steps for scaling up  
your makerspace.

<https://flipgrid.com/c1488f>





# HANDOUTS & CONTACT INFO



[DesignMakeTeach.com/TCEA](https://DesignMakeTeach.com/TCEA)

**Josh Ajima**

**@DesignMakeTeach**

**DesignMakeTeach.com**

**youtube.com/designmaketeach**



# Provide Your Feedback

Remember to evaluate my session!

Complete this session's survey within the event in the TCEA Mobile App or visit [www.tcea.org/surveys](http://www.tcea.org/surveys).