

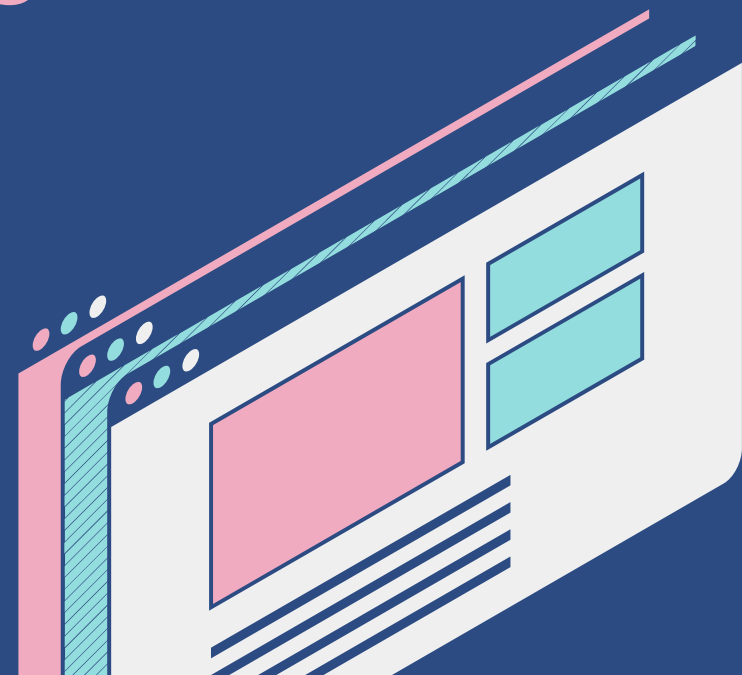
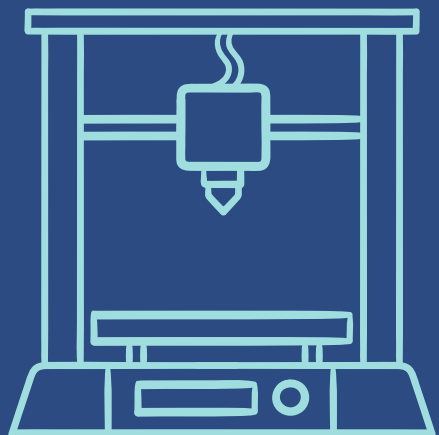
# Implementing a Makerspace Apprenticeship Program



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Resources: [bit.ly/mitchellmakerspace](https://bit.ly/mitchellmakerspace)



# Hello!

**Name:** Lauren Mitchell

**Job Title:** Director of Makerspace & Computer Science teacher at Sacred Heart NYC

**Education:** CU Boulder Computer Science & Math Masters from NYU Tandon School of Engineering

**Hobbies:** running, skiing, knitting, creative coding, spending time with my dog Ada, and (obviously) making

**Resources:** [bit.ly/mitchellmakerspace](https://bit.ly/mitchellmakerspace)





# Questions that Inspired me

How can we create a makerspace that is attractive, engaging, and inspiring for women?

How can we create a *culture* that inspires everyone (in the community) to be makers?

Resources: [bit.ly/mitchellmakerspace](https://bit.ly/mitchellmakerspace)



# What is the "culture" of your makerspace?

Use pictures, words, and examples to describe the ideal culture in your makerspace on a post-it

-lifelong learning

Lauren Mitchell

-peer-to-to  
education

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-authentic  
interdisciplinary  
Integration

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-risk taking

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camaraderie

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# My Definition of a Makerspace

I define a makerspace as a space that emphasizes the following skills:

- Builds community
- encourages risk-taking
- Develops troubleshooting and problem-solving muscles
- Inspires girls to be makers (of anything),
- Facilitates a lifelong love of learning.



## Vision for a Makerspace Apprenticeship Program

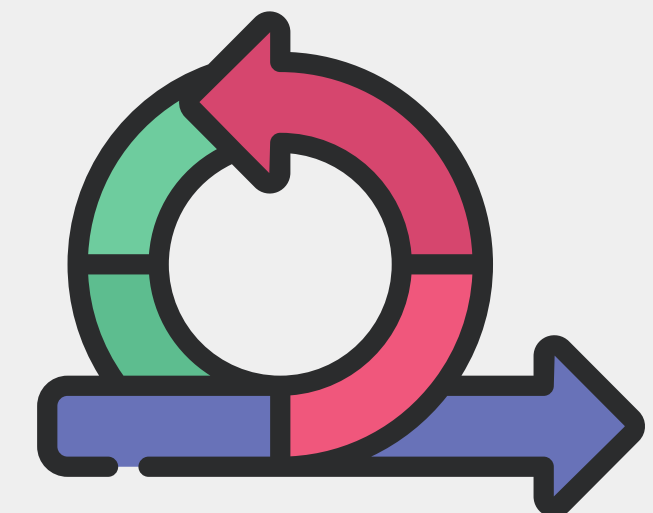
- The mission of the makerspace apprenticeship program is to create an all-female peer lead culture that breaks the stereotypes of who an engineer or a maker is.
- The apprentices serve as maker-leaders in the community to foster peer-to-peer learning, project-making, risk-taking, community, and camaraderie. Throughout the school day, students are encouraged to utilize their free periods to log hours in the makerspace.



# Utilizing the Agile Methodology

- Agile allowed me to achieve an MVP and continuously gain feedback from students In order to develop the program further
- I started with an apprenticeship kickoff where I gained feedback from students on what is needed and Iterated from there

## AGILE METHODOLOGY



# Makerspace Tour & Website

[bit.ly/cshmakerspace](https://bit.ly/cshmakerspace)



**The following slides are taken directly from  
the Makerspace Apprenticeship Kickoff on  
November 10, 2022**



# What is the Makerspace Apprenticeship?

- You are the ambassadors and apprentices for the makerspace!
- A time to tinker, play, explore, learn, take risks, and explore engineering, computer science, and other technologies.

## Requirements

- Attend a 2-hour makerspace kickoff (You are here now!)
- 15 maker hours throughout the year (7 hours before Spring Break)
- Lead 1 workshop per semester (2 workshops per year)
- Earn at least 1 badge per semester (2 badges per year)



# What the Makerspace Apprenticeship is NOT?

- This is not for credit or a grade. This is an extracurricular club with flexible "meeting" times.
- A class with formal teaching
- A place where everything is perfect and working

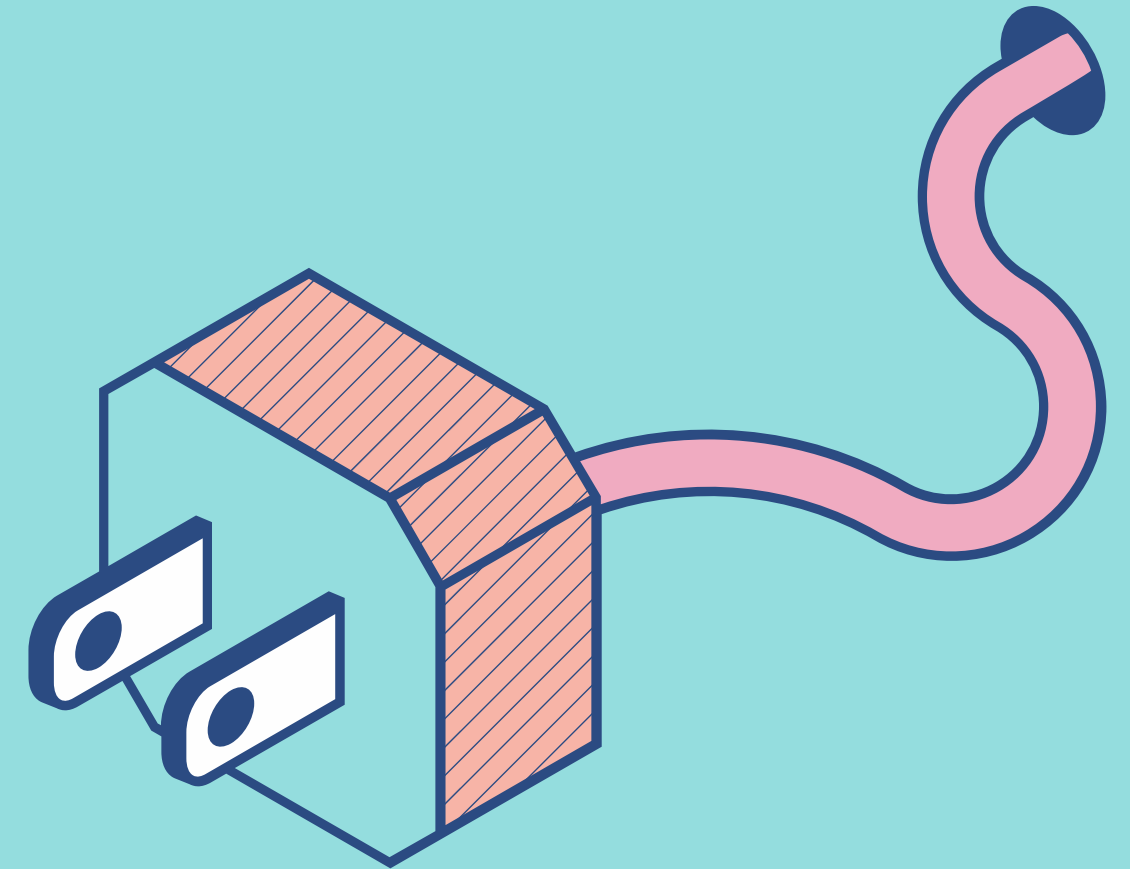
# Maker Hours

Each student is required to log 15 hours of maker hours throughout the year.

- 7 hours must be completed before spring break.
- This is roughly 1x per cycle from November-May

## When can I log hours?

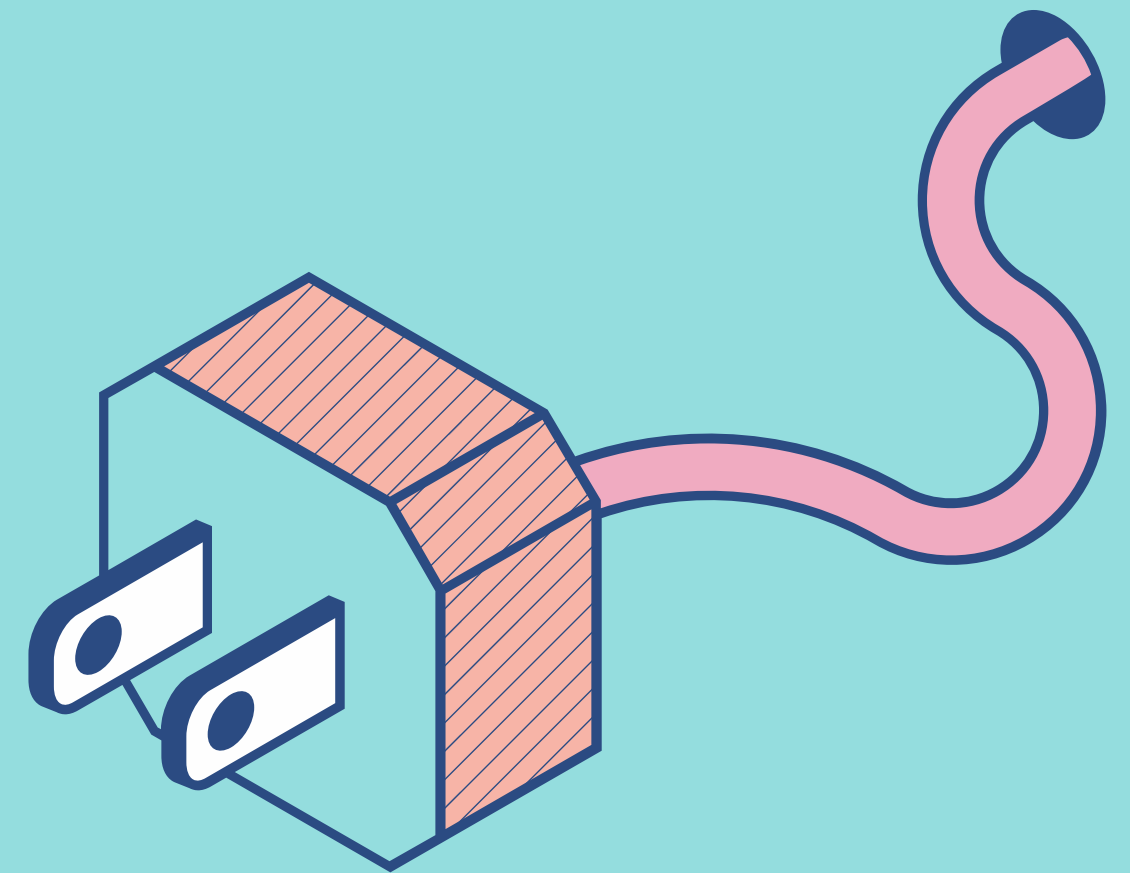
- Any time the maker space is free during the school day and an adult is present
- *Usually* whenever Ms. Mitchell or Mr. Zuffall is teaching (always double-check first)
  
- Mondays from 3-4:15pm
- Thursday from 3-5pm



# How do I log my hours?


Fill out the hour's Google form with the date, start time, end time, and a one-sentence description of what you worked on.

OR A BETTER IDEA that someone can design?!



Makerspace Hours Log 22-23 ☆ All changes saved in Drive 🔔 🗨️ 👁️ ↶ ↷ Send ⋮

[Questions](#) [Responses](#) [Settings](#)



## Makerspace Hours Log

Makerspace Apprentices are required to log 15 hours in the makerspace throughout the school year. Fill out this form to log your hours!

First Name \*

Short answer text

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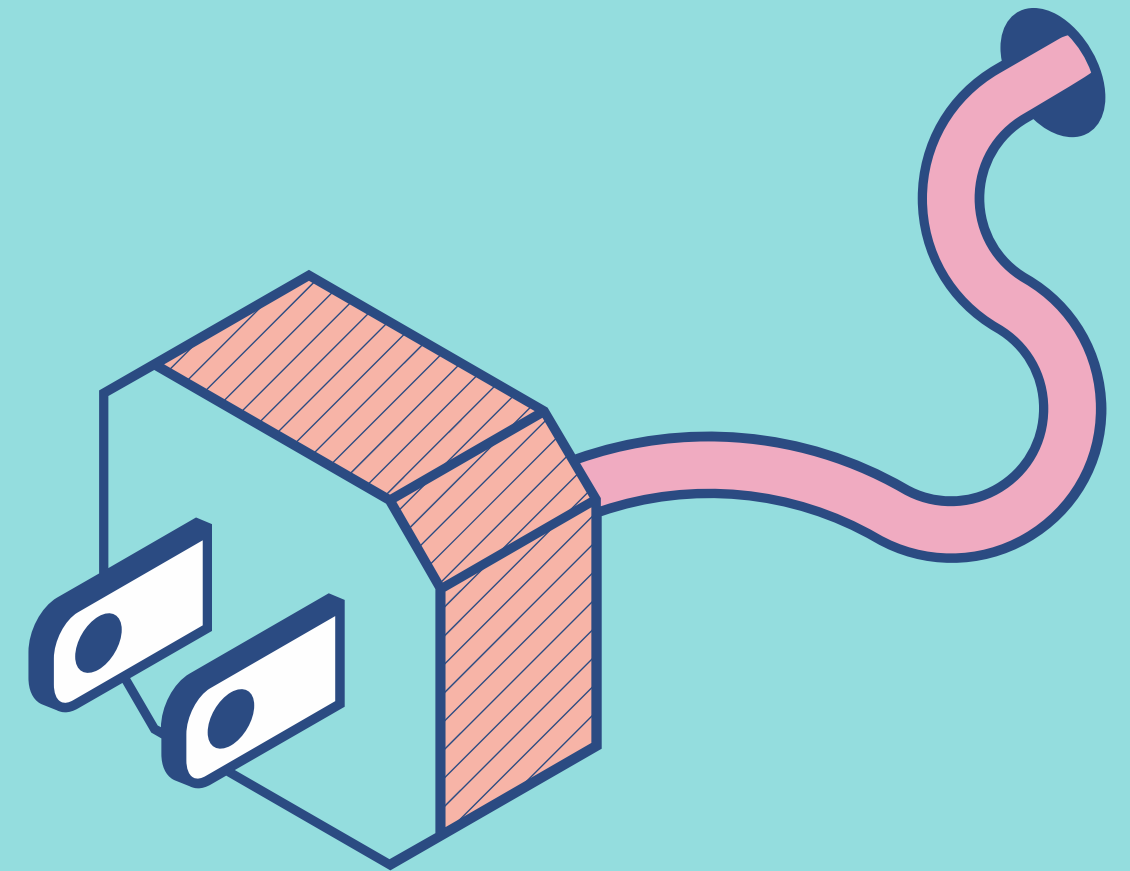


# How do I check the Makerspace Schedule?

The makerspace schedule is viewable on the makerspace website.

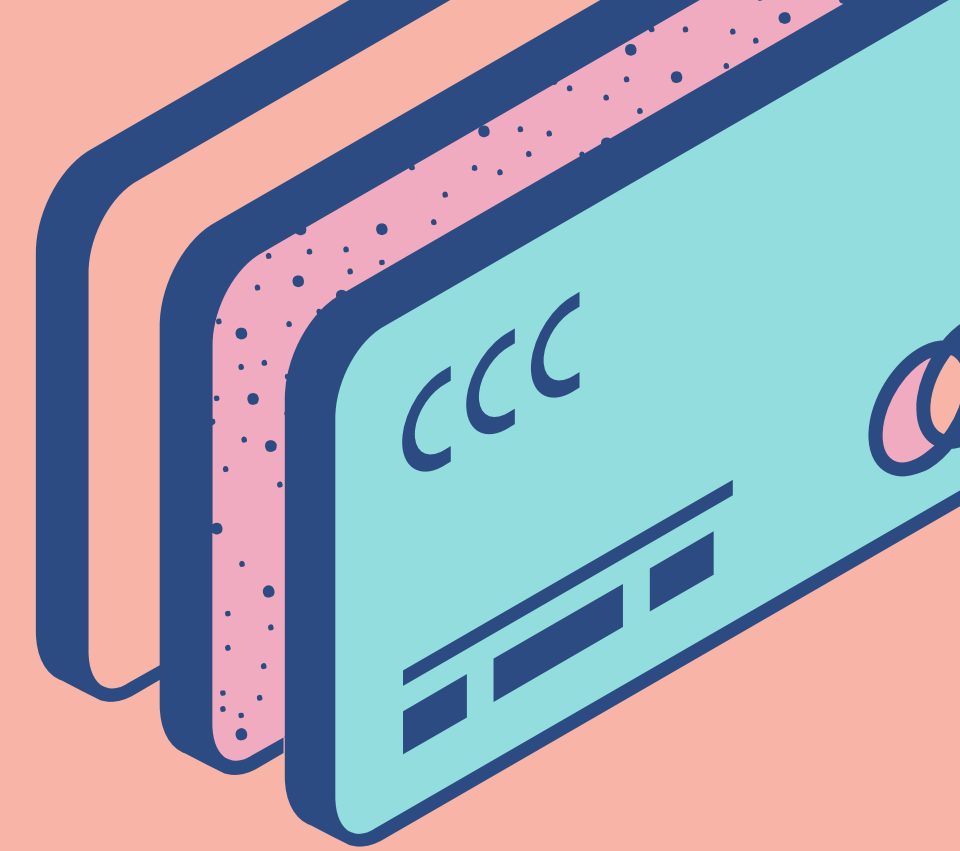
All Apprentices are welcome to come during free periods or during Ms. Mitchell classes with permission.

Take a look at your schedules and fill out this shared sheet on hours you are free



# Workshops

EACH MAKERSPACE APPRENTICE IS REQUIRED TO HOST 2 WORKSHOPS PER YEAR (AT LEAST 1 BEFORE SPRING BREAK)



## What is a workshop?

A time for students to showcase and teach what they have been exploring with the greater community. You must already have a badge in this tool in order to host a workshop.

## Who is a workshop for?

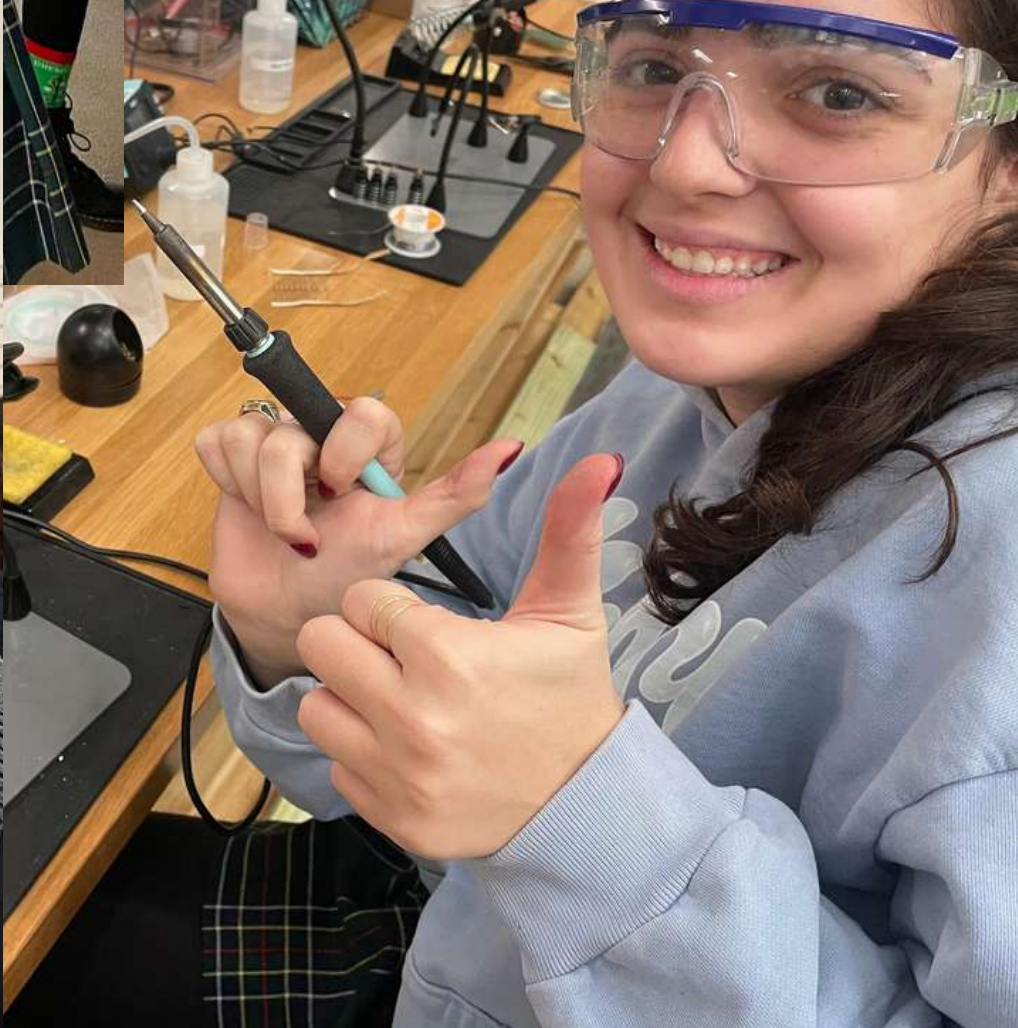
Anyone and everyone! Teachers, friends, alums, specific classes, etc.

## What constitutes a workshop?

Basically anytime you are showcasing your skillset and ideas to a group of people.

**End slides from Apprenticeship kickoff**









# A Quilt As An Artifact

- As I began observing students in the makerspace, the culture shift, and new community members joining the space, I created an artifact to document the process. I wanted to create an artifact to visually and symbolically represent the makerspace as it is now.
- Showcasing the juxtaposition between makerspace and engineering and quilting, two seemingly polar opposite trades.





# The Quilt: A Makerspace Artifact

Made by Lauren Mitchell

Sacred Heart Makerspace | NYU Tandon IDM

2022-2023



Apprenticeship Workshop Trinkets	Embroidered Javascript Code	Arduino and plant analysis
Quotes taken directly from thesis (Vinyl cut)	What will you make? (Laser cut)	Badges for makerspace apprentices. I left one open for future technologies
Integration Project This is an initial prototype for 10th grade english project on the Tempest.	Soldered stained glass. exploring alternative ways to become familiar with soldering. Attached with wire onto cardboard for stability.	Wearables
Scraps of fabric used for this quilt and around the makerspace. I make an effort to upcycle fabric from materials in the school and purchase fabric from FabSnap.	3D printing	19 apprentices 11 workshops 164.52 hours logged

# Design your own makerspace quilt

5th Grade Integration	Individual student squares	Timecapsule

Resources: [bit.ly/mitchellmakerspace](https://bit.ly/mitchellmakerspace)

# Assessment

CULTURAL SHIFT AMONG STUDENTS, TEACHERS, AND MYSELF



## Student Engagment

The apprenticeship program has allowed students to explore and apply their interests and passions beyond the traditional classroom setting. For example, a student active in social activism clubs, such as PRIDE and Campus Ministry, has utilized the makerspace to enhance her initiatives

## Teacher Engagment

There are several instances where teachers and community members came to the space wanting to create gifts for family members, requesting that students help them with this endeavor. When teachers come to the space for personal projects, such as creating gifts for family members, they showcase their love of learning and creativity. This highlights the idea of lifelong learning, which is a pillar of the makerspace program

## Personal

With the workshops and the apprentices using them during their free periods, I have given up most of my free and lunch periods. Almost every period of the day, there are at least 1-2 students in the space, and during the lunch hours, there are always several. **HOWEVER**, I was officially approved to hire a full-time makerspace assistant to help expand the program!!

# Feedback

**What excites you and what scares you about a program like this?**

**What are the limitations to implementing a similar program at your school?**

**Resources: [bit.ly/mitchellmakerspace](https://bit.ly/mitchellmakerspace)**

Thank  
you!

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