



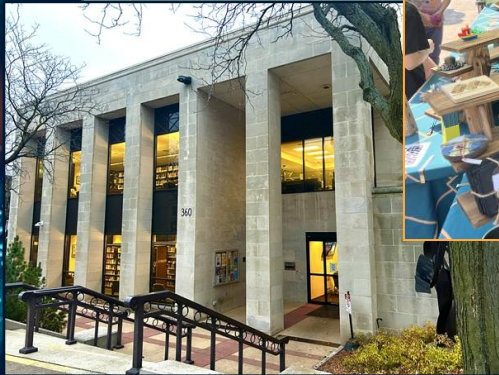
Michael Kerth

From Pipe Cleaners to

POWER MAKERS

Transforming a Failing Craft Room into a
Thriving Tech-Driven Maker Space

Carnegie-Stout MakerSpace



- The MakerSpace is part of the Carnegie-Stout Public Library in Dubuque, Iowa. (service pop approx. 100k)
- Opened in 2016
- Started from a grant that gifted 4 small 3D printers and private funds/donations.
- The MakerSpace is open whenever the library is.

Carnegie-Stout MakerSpace



Carnegie-Stout MakerSpace



MAKERSPACE
• STRATEGY • INNOVATION • CREATION •

A long, light-colored wooden cabinet with a grey countertop houses several 3D printers. The printers are enclosed in glass safety enclosures. On the left side of the counter, there is a metal shelving unit with a white mug that says 'MAKE SPACE' and a small digital display. The cabinet drawers and doors are labeled with various categories of supplies:

- MACBOOK AIR COMPUTERS
- PATRON LAPTOP
- MISC.
- 3D PRINTER TOOLS (PRINT AND UP)
- PERFOR. MEDIA
- PLASMA CUTTER
- PLASMA SUPPLIES
- SPECIALTY FILAMENT
- MULTICOLOR FILAMENT



Carnegie-Stout MakerSpace



Carnegie-Stout MakerSpace



Carnegie-Stout MakerSpace



COLORING SUPPLIES
GLUE GUNS
STICKER MAKER

HEAT GUN

SUBLIMATION
BLANKS

SUBLIMATION
BLANKS

Cricut
CRICUT CUTLEBUG
CRICUT HAT & MINI PRESS
CARDSTOCK



Carnegie-Stout MakerSpace



CRICUT CUTTING MATS

CRICUT LIGHTPAD
ASSORTED CRICUT TOOLS

VINYL MATERIAL

INFUSIBLE INK SHEETS & PENS
IRON-ON MATERIAL

ICOLOR SUBLIMATION PAPER

VAQUFORM MATERIALS

INK REFILLS FOR
ROLAND, iColor and PRIMERA PRINTERS

WHITE TONER
TRANSFER PRINTING

UNINET

2-Step Standard S4

SC-F570

EPSON

616.0472 NON-FICTION 630.9173
630.89 641.5

SO HARD
I sweat
GLITTER

641.5058 NOS

MAKERSPACE

Carnegie-Stout MakerSpace



Overview

C-SPL MAKERSPACE JOURNEY

From launch & re-launch to success

PROGRAMMING SHIFT

Growing participation by increasing availability

CONSTANT KNOWLAGE

Creating reliable knowledge anchors

3-POINT EQUIPMENT PHILOSOPHY

Equipment that gets non-makers making

The C-SPL MakerSpace Journey

Launch

Kids Craft Room

Cobbled together
and empty

2016



Re-launch

Great On Paper

Great stats, still a
ghost town

2018



Success

Expanding

Full of patrons and
ready to grow

2022 - Now

First iteration of the MakerSpace

How It Became An Unused Kids Craft Room:

- Was planned, led, and staffed by people that weren't makers.
- Space was hodge-podged together from existing equipment



First iteration of the MakerSpace

The end result:

- We didn't have what you needed, or if we did, no one knew how to do it.
- Because it didn't take knowledge to offer, kids crafting is what the space became.

Second iteration of the MakerSpace

Internal reorganization and shift to checkout items

- The MakerSpace moved under IT with some staff changes
- Focused on tech checkouts to bring patrons inside the space
- Push to 4 to 5 scheduled programs a week

Second iteration of the MakerSpace

Result:

- On paper the stats looked like we were growing rapidly
- Staff were burning out spending most of their time planning and hosting programs
- No one was making in the MakerSpace

Lessons Learned

What Didn't Work

01

Missing Knowledge

From planning to day-to-day, expert knowledge wasn't shaping the space

02

Library Style Programming

What worked for children and adult programming in the library wasn't working in the MakerSpace

03

Unaligned Equipment

Equipment that could bring patrons inside didn't get them making

Lessons Learned

Going Forward

01

Constant Knowledge

For future development and staffing, makers would guide the space

02

Come-Or-Go programming

Allow patrons to come anytime to participate or to take an to-go kit for programs

03

Easy make equipment

Acquire equipment that facilitated patrons making without huge time or cost investment

Constant Knowledge

Maker Guided Space

- Staff makers to guide the growth of the MakerSpace
- Create a full-time Master Maker position to join with IT to fully staff the MakerSpace during all library hours
- No more “come back later”



Constant Knowledge

Determining Success

- *“When can I come in to do this?”*

“Whenever the library is open someone is here that can teach you”

- *“Do I have to make an appointment?”*

“Come in whenever, we’re always here to help”

Come-Or-Go Programming

Revamping Programming

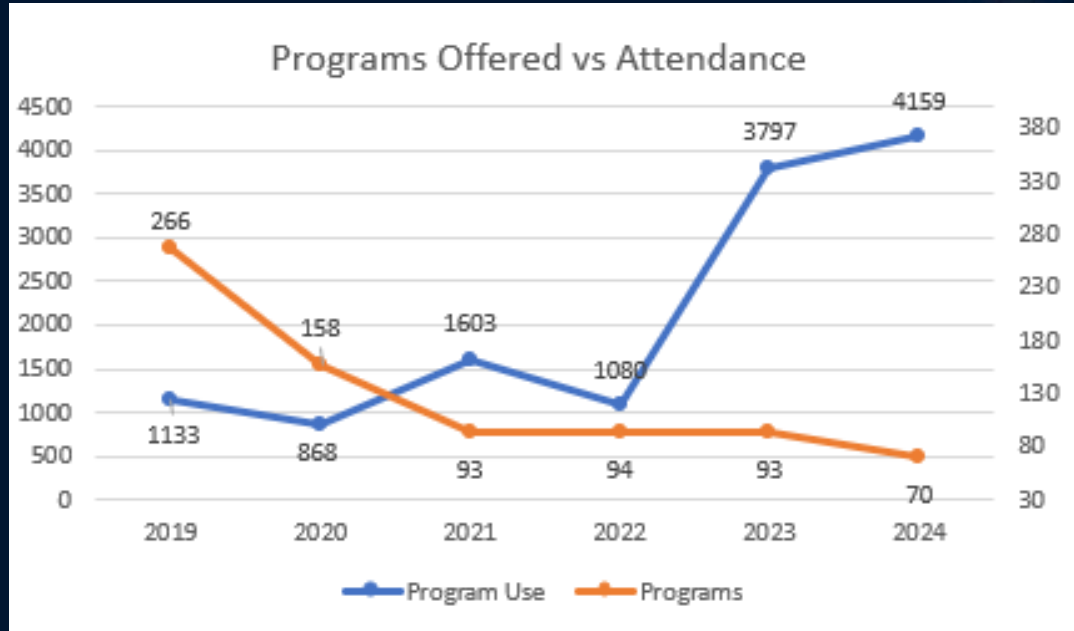
- Create programs with constant knowledge in mind
 - Entertainment vs skill building
- Higher quality, less frequency
- All-day any-day programming
- Every program has a to-go kit



Come-Or-Go Programming

Determining Success

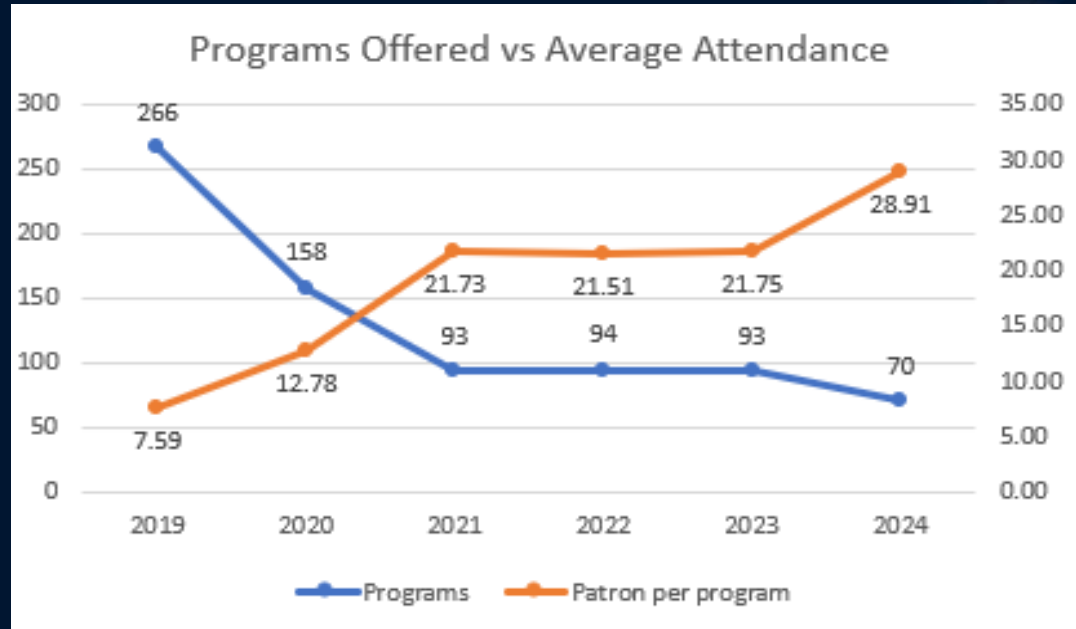
Attendance increased by 367% while reducing programs offered



Come-Or-Go Programming

Determining Success

Per-program attendance increased by 380% while drastically reducing staff overhead



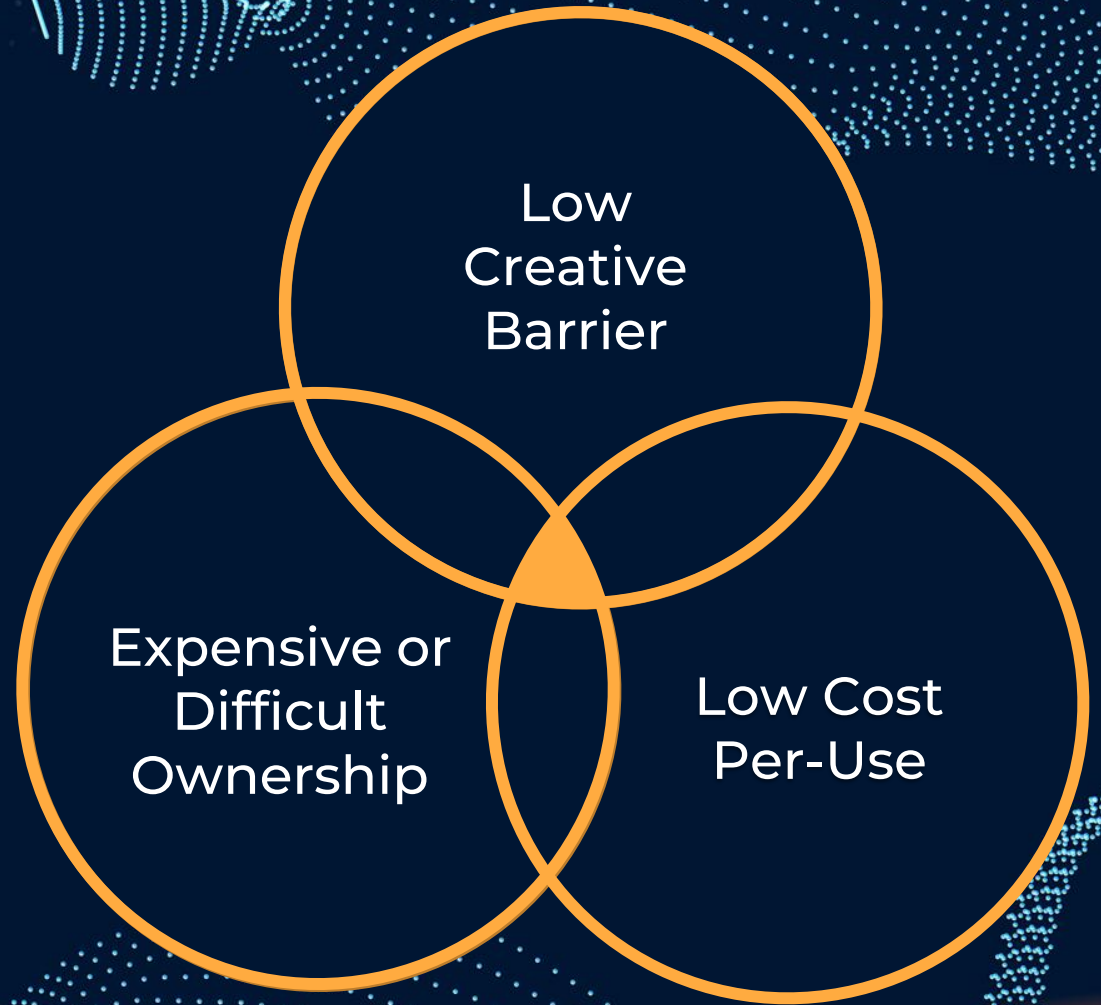
Easy Make Equipment

We knew What Didn't Work

- Anything in the MakerSpace that patrons had at home didn't get used
- Patrons wanted to make things of value – but didn't have time to spend hours learning first
- Anything they could make had to cost less in time/money than just ordering it



3-Point Equipment Philosophy



Easy-Make Equipment

Low Creative Barrier

- Patrons need to be able to create something worthwhile without specific maker skills
- Patrons should be creating with 5 minutes or less of staff assistance
(not including ongoing guidance – that's why we're here!)
- Anything created with the equipment should have value

Easy-Make Equipment

Expensive or Difficult Ownership

- Typically too expensive for someone to own themselves
- If it could reasonably be purchased, it is too hard to maintain/repair for your average person
- Maybe it is just too big to have in your home.

Easy-Make Equipment

Low Cost Per-Use

- Cheap enough that patrons are happy to spend the time making it.
- Watch out for closed systems and expensive consumables
- Often means going with the “difficult to maintain” option.

Perfect for
the MakerSpace



Low
Creative
Barrier

Expensive/
Difficult
Ownership

Low Cost
Per-Use

Equipment Added Overview

Following our criteria, we've added a lot of great equipment these last four years.

- Large Format Sublimation Printer
- Large CO2 Laser and two Galvo Fiber Lasers
- White Toner Printer
- Vinyl Print and Cutter
- 15 Needle Embroidery Machine
- Vacuum Former
- Sticker Print and Plotter
- Various Heat Presses
- Desktop CNC
- Large Format Inkjet Printer
- A Variety of Quality Button Makers
- Upgraded 3D printers – 12 total



Sublimation Printer & Sublimation Blanks

- Epson F570 – Added in 2021
- Large print area – up to 24”
- Inexpensive ink - \$0.31/ml
- Easy for patrons to make a cool item without craft ability
- Huge hit with patrons



Sublimation Printer & Sublimation Blanks

Inexpensive consumables = cheap for patrons to use.

We stock sub blanks and sell close to cost.

Example Prices:

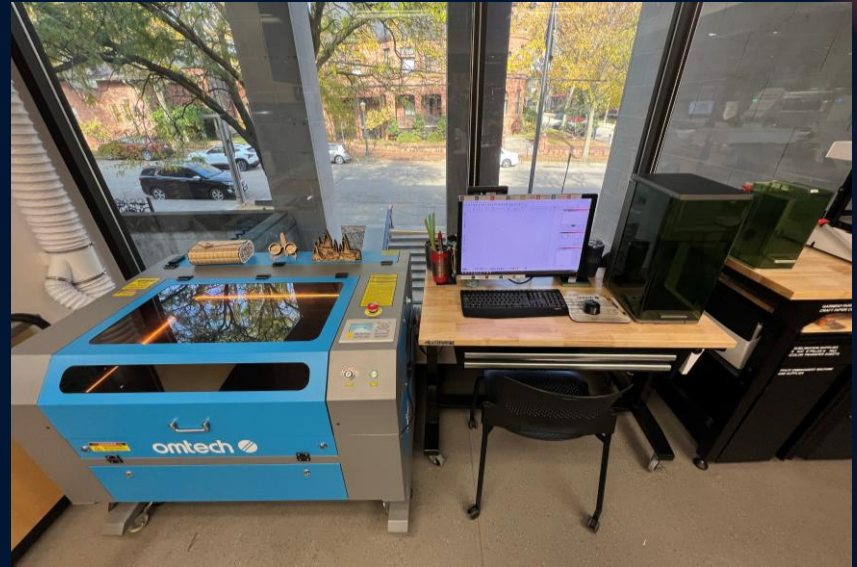
11oz Mug	\$2
15oz Mug	\$3
Puzzle	\$2
Mousepad	\$2
Coasters	\$1-2
20oz Tumbler	\$9
Photo Tile	\$3
Keychains	\$1



Laser Cutters/Engravers

CO2, Fiber, and Diode

- OmTech 60W CO2
- Xtool F1 and F1 Ultra fiber & diode combos
- Free to use if patrons bring their own supplies
- Stock sheets of wood, acrylic, MDF, & sub sheets for near cost
- Very popular – Each used daily



Laser Cutters/Engravers Rotary Attachments

- Rotary tools let you engrave round objects.
- Patrons use the rotaries to engrave:
 - Tumblers
 - Wine Bottles
 - Glass cups and mugs
 - Rings
- We stock tumblers, pint glasses, cutting boards and coasters for engraving



Vinyl Print and Cutter

Roland BN2-20

- Can print on a wide variety of vinyl and other materials
- Can print white over or under print.
- Cuts out graphics with a click
- \$3-4 per 20x12"



Multi-Needle Embroidery

SmartStitch S-1501

- 15 color embroidery
- Large hoop/work area
- Can embroider hats
- Very inexpensive for patrons to use. Flat \$2 per project covers thread and stabilizer

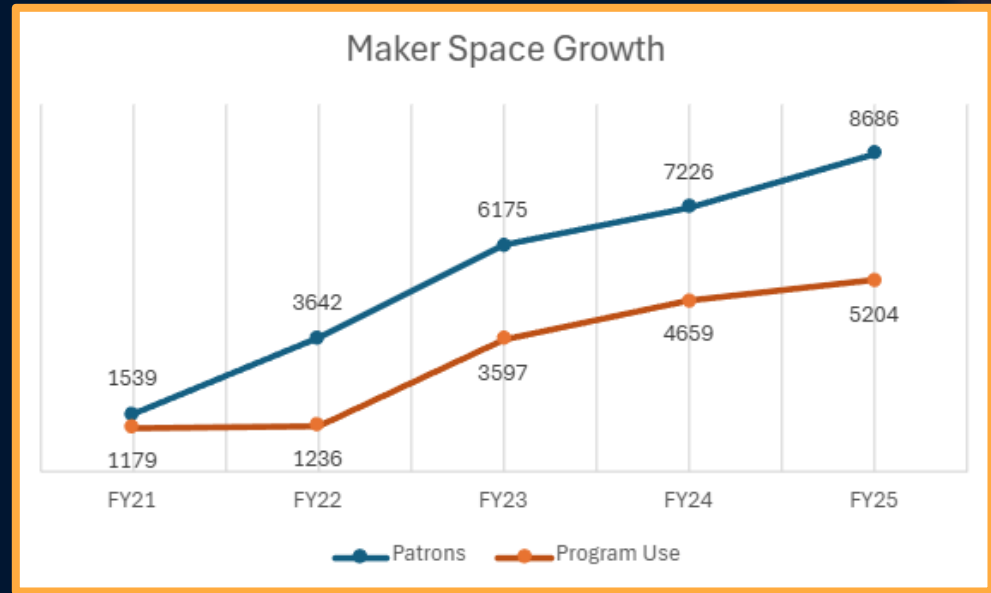


Patron Use

Determining Success

Year-over-year growth in patrons and program attendance

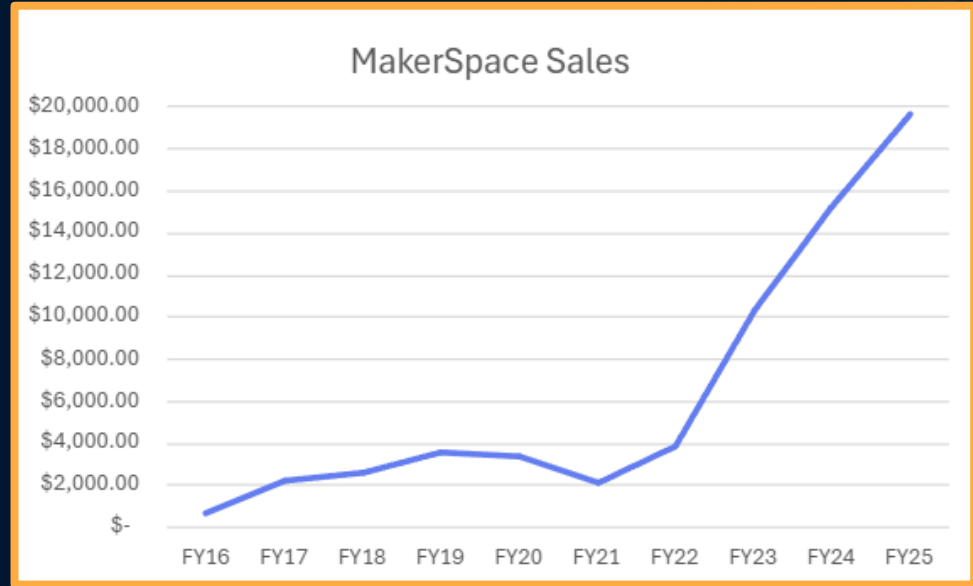
But more importantly – more makers



Financially

Determining Success

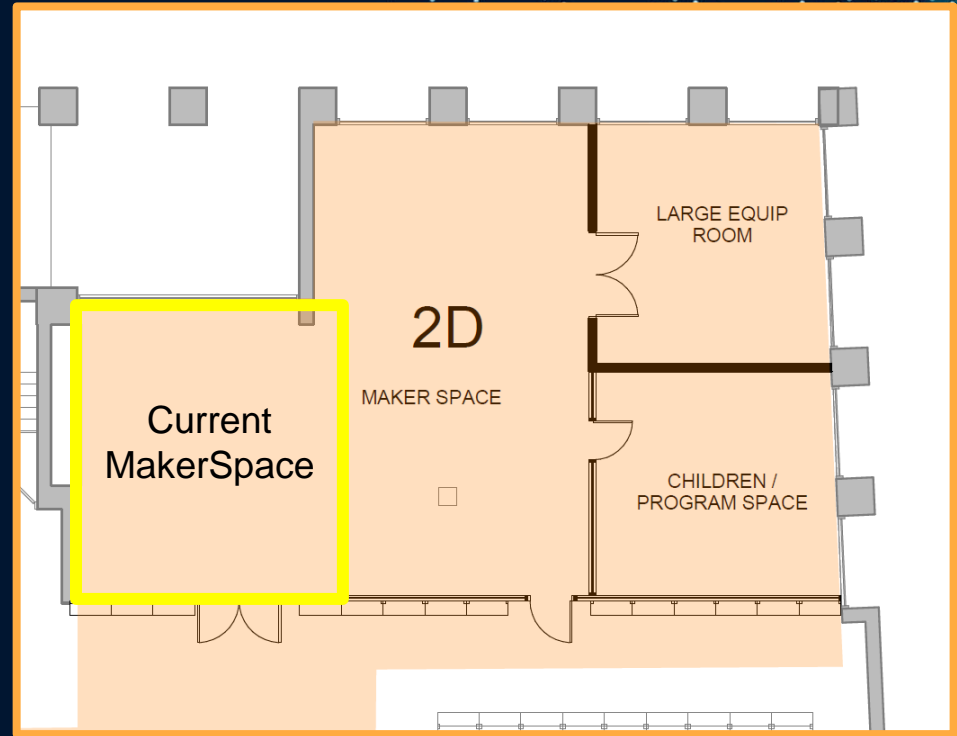
Providing high value
to patrons at high
volume lead to self-
funding



Physically

Determining Success

We're bursting at the
seams and expanding



Lessons Learned



What Worked

Constant Knowledge

- Dedicated, knowledgeable maker staff
- No knowledge gaps – Staff in the MakerSpace can use everything in there confidently
- Makers guide the space - Goals are to enhance the space, not look good on spreadsheets

What Worked

Programming Shift

- Programming available whenever the library is open
- Flexible for patrons as come-or-go
- Fewer programs so staff can focus on making not planning
- Fun instead of skill building – Patrons can come in any time to learn, they come to programs for fun

What Worked

Easy Make Equipment

- Focusing on equipment that is out of reach for most people
- Easy to learn - patrons should be making with around 5 minutes of instruction
- Equipment that makes things of value
- If it isn't cheap to make with it then skip it

THANKS!

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Slide deck available at
<https://carnegiestout.org/mscon2025>



Getting Cost Per-Use Low

Epson F570 vs Sawgrass SG500

Epson F570

Cost: \$3,000
Ink Per ML: \$0.31
Max Width: 24"

To-date ink
Expense: \$924

Sawgrass SG500

Cost: \$630
Ink Per ML: \$2.48
Max Width: 8.5"

Vs Sawgrass
Ink cost: \$7,200

Getting Cost Per-Use Low

OMTech 60W vs Glowforge Pro

OMTech 60W

Cost: \$4,200
Laser Power: 60W
Work Area: 20"x28"

BYO chiller: \$200

Open and tinkerable
Generic parts for repair

Glowforge Pro

Cost: \$6,000
Laser Power: 45W
Work Area: 11"x19.5"
Built-in Chiller
Pretty

Closed System –
software and hardware

Making Crafting Easy - Stickers

Roland BN2-20 vs Cricut Print & Cut

BN2-20

Cost:	\$7,500
User Effort:	Press Print
Quality:	High
Results:	Consistent

Cost to Patrons:	\$2 or \$3 for 12"x20"
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Cricut P&C

Cost:	\$300
User Effort:	Intensive
Quality:	Depends
Results:	Depends

Cost to Patrons:	\$1 for 8.5"x11"
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(plus small cost to their sanity)