#MakerCamp

Polylactic Acid, Partnerships, & Payouts

Michael Casey
Christopher Baker
In the Beginning (Fall 2013)
http://chattlibrary.org/4th-floor

4th Floor at Chattanooga Public Library
Melrose Center at Orange County Library System

http://tic.ocls.info/
# MakerCamp vs. MakerSpace

<table>
<thead>
<tr>
<th>MakerCamp:</th>
<th>MakerSpace:</th>
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<tr>
<td>Flexibility in Location</td>
<td>Purpose-Built Space</td>
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<tr>
<td>Minimal - Flexible Staffing</td>
<td>Dedicated Staffing</td>
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<tr>
<td>County-Wide Partnerships</td>
<td>Limited Geographical Reach</td>
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<td>Minimal Equipment Needed</td>
<td>Larger Equipment Investment</td>
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<tr>
<td>Easily Reproducible Program</td>
<td>Heavier System Investment</td>
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<td>Facilitated Pilot Approach</td>
<td>Greater Public Expectations</td>
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<td>Lower Cost of Entry</td>
<td>Higher Cost of Entry</td>
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<td>Financial Failure</td>
<td>Financial Failure</td>
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Partnerships

Public Libraries

Schools

Self-published Student Works in Catalog
After-hours Access to Technology & Software
Robotics and Raspberry Pi Programming
MakerCamp and 3D Printing
Hands-On Demo

Partnerships: Hands-On

NORCROSS HIGH SCHOOL MEDIA CENTER

Photos
Courtesy
Buffy Hamilton
http://theunquietlibrarian.wordpress.com/
“...Watching the 3D printer make stuff was an amazing experience. I hope to see it make stuff again in the future at the public library because I really liked watching designs people created get made. I also hope to come up with a design of my own to be with the 3D printer.”

“The 3D printing machine was an awesome thing to see at work. I think that if the school had one, it would be really cool because we could use it to do prototypes for a project. So I would really like for there to be one, or for us to do or help to get one.”
MakerCamp: People

Buffy Hamilton
Jennifer Lund
Steve Thomas
Amy Billings
MakerCamp: Tools & Resources

- MakerBot Replicator 2
- Google Apps (Forms/Drive)
- Samsung Chromebook
- TinkerCad
- Thingiverse
- MakerWare
- Meshmixer
- netfabb Basic
Building Learning Making
Building:
MakerBot Replicator 2

Cost: $2,399 (now under $2k)
Material: PLA plastic
*Modified with Poly-Carbonate Glass Panels, Lid, and Filament Dust Filter
Building: Polylactic Acid (PLA)
# Building: Google Apps (Forms/Drive)

## 2014 MakerCamp (FULL)

**PLEASE NOTE:** MakerCamp 2014 is now FULL and registration for this event has been closed. If you would like to add your name to a waiting list please fill out the form below.

Signup to participate in the 4-day MakerCamp at the Gwinnett County Public Library Peachtree Corners Branch on June 9 through June 12. From 1PM to 5PM daily.

Learn the basics of 3D design and then print your creation on the library’s Makerbot 3D Replicator printer.

Participants will be required to attend all 4 days of the MakerCamp and must be rising high school students (entering 9th, 10th, 11th or 12th grade as of August 2014).

## My Drive > MakerCamp 2014 Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Maker 2 - Sam</td>
<td>3rd</td>
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<tr>
<td>Maker 20 - Ben</td>
<td>3rd</td>
</tr>
<tr>
<td>Maker 3 - Alysa</td>
<td>3rd</td>
</tr>
<tr>
<td>Maker 4 - Alex</td>
<td>3rd</td>
</tr>
<tr>
<td>Maker 5 - Patrick</td>
<td>3rd</td>
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</tbody>
</table>

- Completed Prints
- Cory Doctorow Books as Free eBook
- Empty Maker Folders
- 3D Printing - Tech Quarterly - Econom
- 3D printing_3D printing scales up - The Economist.pdf
- 3D printing... How 3D printers work ... The Economist.pdf
- mc invite.jpg
- Turning Students Into Engineers with 3D Printing.pdf
- Video Links
Building: Samsung Chromebook

**Cost:**
$199 ($235 w/ Apps Management)

**Versatility:**
TinkerCad, Thingiverse, and other browser-based resources.
Supported Google Apps infrastructure for MakerCamp participant accounts and sharing.

**Features:**
8+ hours battery life
Lightweight
Easily portable
HDMI-out port
USB 2 and 3 ports
MakerBot @ GCPL
A resource guide for the MakerBot Replicator 2 and 3D Printing at Gwinnett County Public Library.

Learn more at: lib.gwinnettpl.org/MakerBot
Learning
Learning

- Exposure to new technologies and tools
- Basic 3D modeling and design software
- 3D printing issues - dimensional printing, negative space, design strength, design angles, etc.
- Functionality of design
- Self-directed projects more engrossing than supplied projects
- Develop a passion learning through design and creation of unique and personal item
- Teaches power of invention and building
Learning: Tinkercad

- All-in-one 3D Design package
- Lessons: Basics - Complex techniques
- Browser-based; no installation
- Free account
- Share Projects
- Gallery of Customizable Objects
- Many Import/Export options

Basics

- Lesson: Learning the moves
- Lesson: Camera controls
- Lesson: Creating holes
- Lesson: Scale, Copy & Paste
Learning:
Thingiverse

PRACTICAL ✶ EDUCATIONAL ✶ CUSTOMIZABLE ✶ FUN
Learning: MakerWare

- Manage & Print 3D Designs
  - Scale
  - Orientation
  - Placement
- Default & Custom Profiles
  - Resolution
  - Fill
  - Speed
- Print Preview Management
  - Support Material
  - Rafts
  - Time
  - Material
- Print Status & Control
Making: 3D Printing
Making: 3D Printing
Making: netfabb Basic & MeshMixer

**netfabb Basic**  
*Free, limited functionality*  
Used to cut 3D Models into individual pieces for printing (x, y, z - axis)

**MeshMixer**  
*Free; full functionality*  
Used to repair gaps in prints, create custom supports, and preview overhangs
Making: Making Other Stuff
Making:
Also...Learning
Looking Outward...

Chicago Public Library’s Maker Lab
http://www.chipublib.org/#/filter/make/make-at-cpl

Piscataway Public Library’s Make it Yourself: MakerSpace
http://piscatawaylibrary.org/MiY
Looking Forward...

- Expanded Access:
  - Technology for Teens
  - Early Education Tools
  - Retirement Center STEM Outreach
  - STEM - Focused Resources & Programs
  - Guided Creation through Production
  - Community Partnerships
  - Publically Accessible 3D Printing
- GCPL’s MakerBot Guide
  - lib.gwinnettpl.org/makerbot

- TinkerCad
  - www.tinkercad.com

- MakerBot Thingiverse
  - www.thingiverse.com

- Buffy’s MakerCamp Post
  - Partnering for Possibilities
    - http://bit.ly/WGFgQa

- GCPL’s MakerCamp Storify
  - https://storify.com/stevelibrarian/gcpl-makercamp-1

Photo: Steve Thomas @stevelibrarian
Thank You!

Questions

Presentation Link
http://goo.gl/JnypDZ

Michael Casey - IT Director
mcasey@gwinnettpl.org

Christopher Baker - Training Manager
cbaker@gwinnettpl.org

Gwinnett County Public Library